4.8 HYDROLOGY/WATER QUALITY

This section of the EIR analyzes the potential environmental effects on hydrology and water quality from implementation of the proposed Granada Hills–Knollwood Community Plan and implementing ordinances and the proposed Sylmar Community Plan and implementing ordinances (proposed plans). It addresses stormwater runoff and urban pollutants, flood hazards, including sea level rise, drainage and groundwater resources. A regulatory framework is also provided in this section, describing applicable agencies and regulations related to hydrology/water quality. The evaluation of the proposed plans' effects on water supplies, including groundwater, is included in Section 4.14 (Utilities/Service Systems).

Several comments regarding hydrology and water quality related to drainage and flooding were received in response to the Notice of Preparation (NOP) circulated for the proposed plans. The comments focused on the importance of the Pacoima Wash and other flood control channels for stormwater management and groundwater recharge.

Baseline information for the analysis was compiled from a review of data and reports published by state agencies, environmental documents for projects in the vicinity, as well as information compiled and evaluated by the City of Los Angeles in conjunction with its stormwater management and hazard mitigation programs. These sources include the California Department of Water Resources, City of Los Angeles Water Quality Compliance Master Plan for Urban Runoff, Federal Emergency Management Agency (FEMA) floodplain mapping, the City of Los Angeles Hazard Mitigation Plan, General Plan, and Municipal Code, and other published materials. Full reference-list entries for all cited materials are provided in Section 4.8.5 (References).

4.8.1 Environmental Setting

■ Granada Hills–Knollwood CPA

Climate and Physiography

The Granada Hills–Knollwood CPA encompasses approximately 9,058 acres in the north-central portion of the San Fernando Valley (Valley). Regional climate is semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. Annual average temperature in Los Angeles is 65.0°F, with average temperatures ranges from approximately 55.0°F in winter to 75.0°F in the summer. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions. Average rainfall in Los Angeles is approximately 14 inches annually.

The CPA topography and underlying geology is varied, ranging from nearly flat to rugged and steep-sided canyons and ridges, which increase from south to north. A primary element of the Granada Hills–Knollwood CPA physiography is a large amount of undeveloped, open space and public facility land in the northern part of the CPA, which comprises approximately one-third of the total acreage in the CPA.

Surface Water Resources

Watersheds

The Granada Hills–Knollwood CPA is primarily within the Los Angeles River Watershed, which covers a land area of 834 square miles. The eastern portion spans from the Santa Monica Mountains to the Simi Hills and in the west from the Santa Susana Mountains to the San Gabriel Mountains. The watershed encompasses and is shaped by the path of the Los Angeles River, which flows from its headwaters in the mountains eastward to the northern corner of Griffith Park. Here the channel turns southward through the Glendale Narrows before it flows across the coastal plain and into San Pedro Bay near Long Beach. See Figure 4.8-1 (Regional Watersheds). The Los Angeles River Watershed drains the San Fernando Valley and the adjacent portions of the Santa Monica Mountains, Simi Hills, Santa Susana Mountains, the western portion of the San Gabriel Valley and adjacent portions of the San Gabriel Mountains, and a large portion of the Los Angeles Basin coastal plain. Most of the Los Angeles River has been channelized to control the runoff and reduce the impacts of major flood events in the region, and is concrete-lined along most of its length. Eight major tributaries flow into the Los Angeles River between its headwaters and the Pacific Ocean: Burbank Western Channel, Pacoima Wash, Tujunga Wash, and Verdugo Wash in the San Fernando Valley; and the Arroyo Seco, Compton Creek, and Rio Hondo south of the Glendale Narrows. There are 22 lakes within the watershed's boundaries and several spreading grounds, including Dominguez Gap, the Headworks, Hansen Dam, Lopez Dam, and Pacoima Dam.

The northern part of the CPA is within the Santa Clara River Watershed. The Santa Clara River originates in the northern slope of the San Gabriel Mountains in Los Angeles County, traverses Ventura County, and flows into the Pacific Ocean halfway between the cities of San Buenaventura and Oxnard. Major tributaries include Castaic and San Francisquito Creeks in Los Angeles County and Sespe, Piru, and Santa Paula Creeks in Ventura County. A relatively small portion of the southeastern edge of the CPA is within the Tujunga/Pacoima subwatershed, the largest subwatershed in the Los Angeles River Watershed.

Surface Water and Drainage

The major surface water resources in and adjacent to the Granada Hills–Knollwood CPA are: the Los Angeles Reservoir (including the normally dry Upper Retention Basin, Van Norman Bypass Reservoir, and the Lower Retention Basin); Bull Creek; and Bee Canyon Creek, which drains from O'Melveny Park. Bull Creek traverses the community from the Santa Susana Mountains to the north, running south through the area between Balboa Boulevard and Woodley Avenue, ultimately meeting the Los Angeles River at the Sepulveda Basin. Bee Canyon Creek converges with Bull Creek downstream from the Los Angeles Reservoir complex, and the combined flow then discharges to the Los Angeles River within the Sepulveda Basin. Aliso Canyon Wash, which forms the approximate western boundary of the CPA, flows south out of the mountainous area at the northwest corner of the CPA (see Figure 4.8-2 [Drainage and Surface Water Resources (Granada Hills–Knollwood CPA)]).

Runoff from the Granada Hills–Knollwood CPA flows into underground tunnels that empty into flood control channels such as Bull, Bee, and Aliso creeks into the flat central portion of the San Fernando Valley, where the runoff flows into the Los Angeles River. From this point, the Los Angeles River flows

***Source*:** Water Quality Control Plan, Los Angeles Region, June 13, 1994.

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Figure 4.8-1
Regional Watersheds

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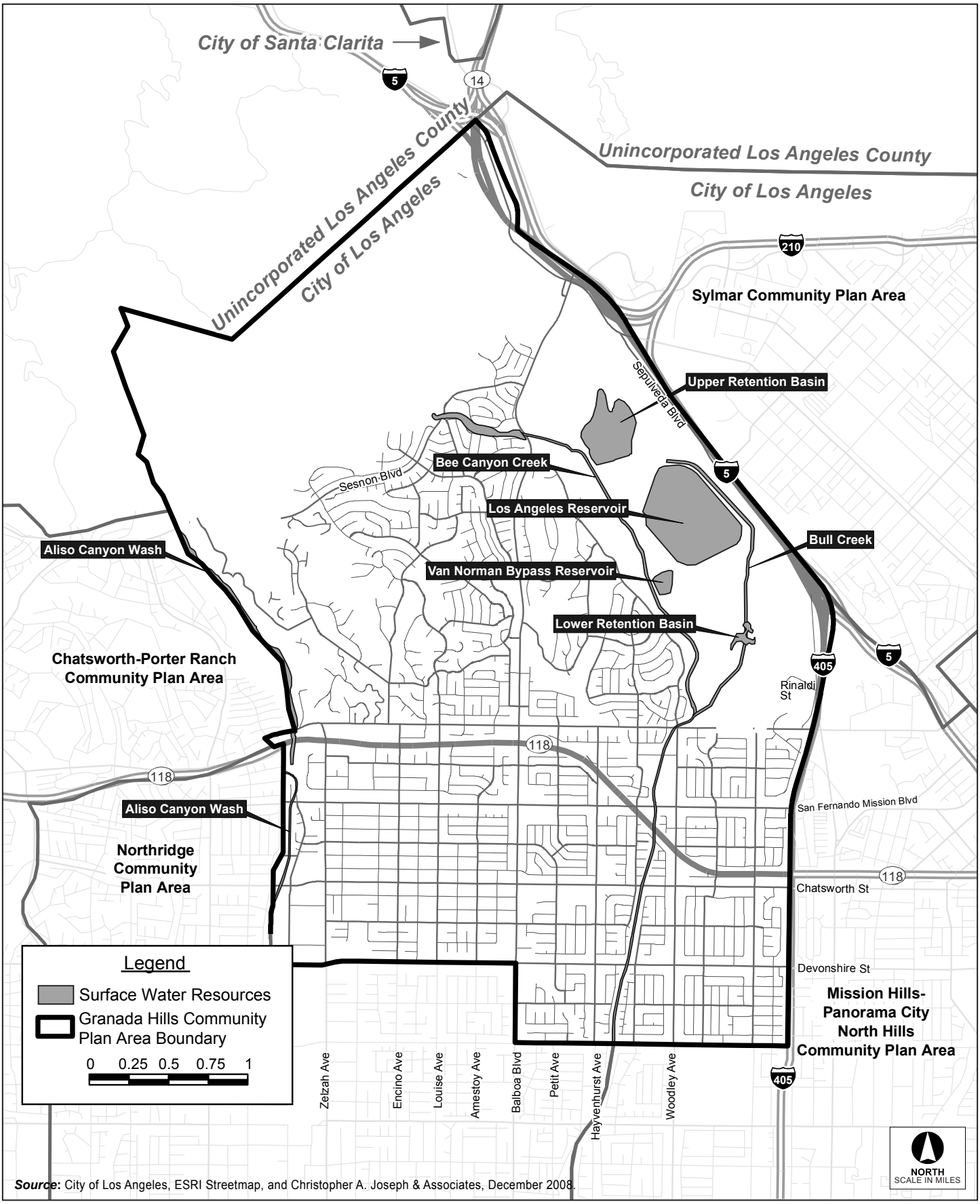

***Source*:** City of Los Angeles, ESRI Streetmap, and Christopher A. Joseph & Associates, December 2008.

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Figure 4.8-2

Drainage and Surface Water Resources (Granada Hills–Knollwood CPA)

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east, past the City of Burbank along the north side of the Hollywood Hills and Griffith Park, then flows south until it reaches the San Pedro Bay, where the river discharges into the Pacific Ocean. Below the Sepulveda Basin, flows are dominated by tertiary-treated effluent from several municipal wastewater treatment plants. Because the watershed is highly urbanized, urban runoff and illegal dumping are major contributors to impaired water quality in the Los Angeles River and tributaries.

Surface Water Quality

Water quality in the Los Angeles River Watershed is influenced by a number of factors, including climate, circulation, biological activity, surface runoff, and effluent discharges. Water column contaminants include metals (particularly cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), oil and grease, chlorinated hydrocarbons (DDT and DDE), and polychlorinated biphenyls (PCBs). Other water quality parameters such as phosphates and nitrates change from day to day and are influenced by factors that include biological processes, wastewater discharge, and stormwater runoff.

Flood Hazards

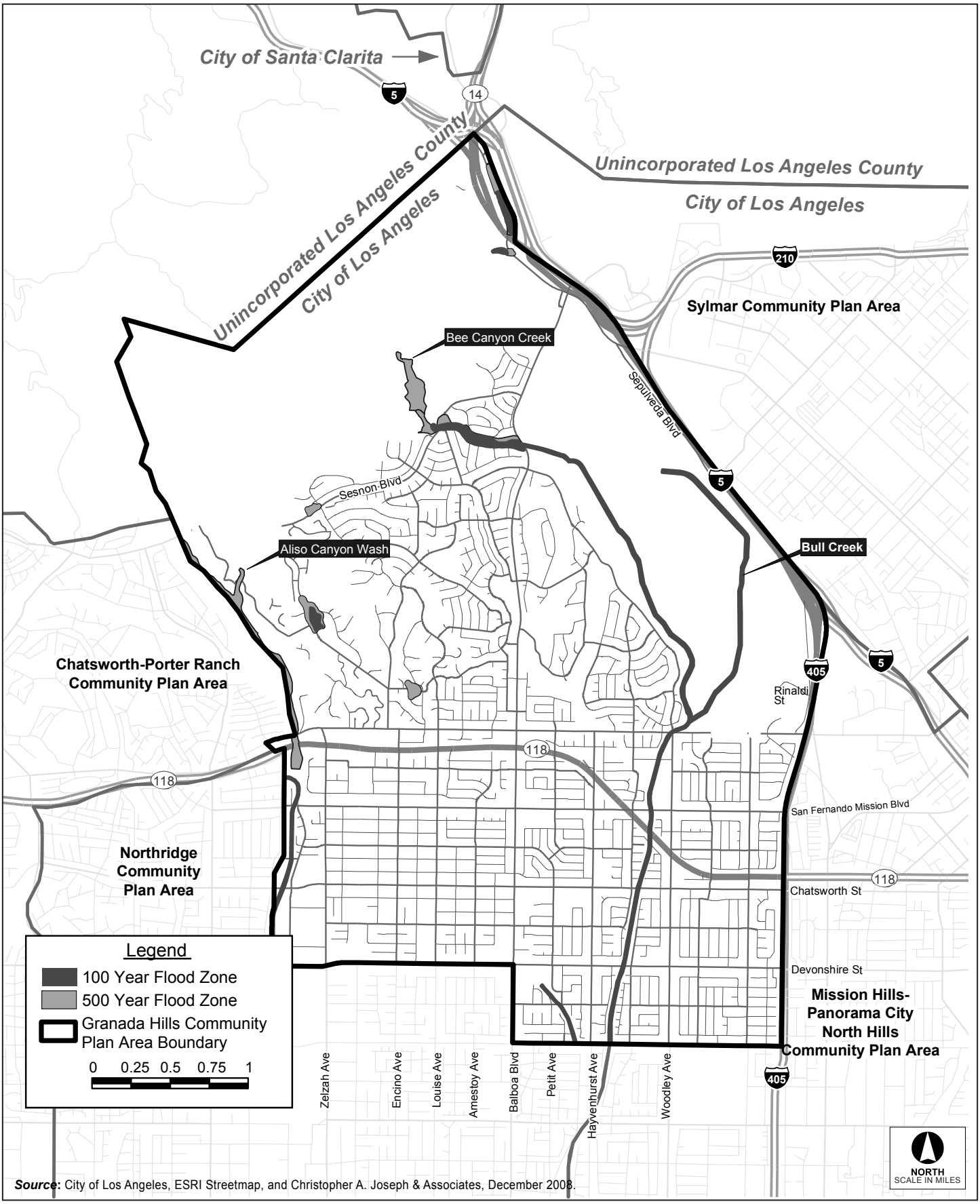
100-Year Flood

Figure 4.8-3 (FEMA Flood Zones [Granada Hills–Knollwood CPA]) illustrates the locations of areas of the Granada Hill-Knollwood CPA designated by the Federal Emergency Management Agency (FEMA) as being within the 100- and 500-year flood hazard zones. The 100-year flood hazard zone is located along the Los Angeles River channel, which forms the western boundary of the Granada Hills–Knollwood CPA. The flood hazard zone expands beyond the channel in the northwest portion of the CPA, northwest of San Fernando Mission Road. There is one FEMA-designated 500-year flood hazard zone within the CPA near Rinaldi Street between Balboa Boulevard and White Oak Avenue. Outside of the FEMA-designated flood hazard area, local flooding may also occur at low points where clogged storm drains back up storm waters.

Dam Failure Inundation

There are numerous dams in the greater Los Angeles basin. Dams typically are constructed of earth, rock, or concrete. When dams are constructed for flood protection, they usually are engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If a larger flood occurs, then that structure will be overtopped. Failed dams can create floods that are catastrophic to life and property as a result of the tremendous energy of the released water. Overtopping is the primary cause of earthen dam failure. Two factors that influence the potential severity of a full or partial dam failure include the amount of water impounded and the density, type and value of downstream development and infrastructure. Dam failure is more likely to occur in conjunction with other hazard events, such as severe weather or earthquake.

Most of the Granada Hills–Knollwood CPA is in an area at risk of flood inundation from the Los Angeles Reservoir, located in the northeastern portion of the CPA. The Los Angeles Dam and Reservoir lie between the storm water retention basins formed by the old Lower and Upper San Fernando Dams.



***Source*:** City of Los Angeles, ESRI Streetmap, and Christopher A. Joseph & Associates, December 2008.

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Figure 4.8-3

FEMA Flood Zones (Granada Hills–Knollwood CPA)

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It is an earthen dam built in 1975/76 and has a capacity of 10,000 acre-feet.[83,84] The City of Los Angeles owns and operates the dam. The dam is monitored during storms, and measures are instituted in the event of potential overflow. The City of Los Angeles has a comprehensive program in place to provide early notification to potentially affected locations in the event of possible flooding, emergency response, and disaster recovery. It is a "jurisdictional" dam, which means the California Division of Safety of Dams (DOSD) is responsible for inspecting the dam on a yearly basis to ensure it is performing and being maintained in a safe manner.

During the 1994 Northridge earthquake, the Los Angeles dam showed only minor deformation and superficial cracking. Despite the intense groundshaking, the crest of the dam moved only 1 inch sideways and settled only 3.5 inches. Overall, the dam, designed to withstand severe shaking, suffered very little damage.[85]

Seiche, Mudflow, and Tsunami

Seiches are changes or oscillations of water levels (i.e., standing waves) within a confined body of water due to fluctuations in the atmosphere, tidal currents, or earthquakes. The Los Angeles Reservoir is potentially susceptible to seiche events during strong earthquakes and is a potential source of inundation for the southeastern portion of the CPA. Mitigation of potential seiche action has been implemented by the Department of Water and Power through regulation of the level of water in its storage facilities and providing walls of extra height to contain seiches and prevent overflow. Dams and reservoirs are monitored during storms and measures are instituted in the event of potential overflow.[86]

Mud floods and mudflows cause several types of flood damage that are not characteristic of clear-water flooding. The force of debris-laden water, which can be tens or hundreds of times greater than that generated by clear water, destroys retaining walls and other protective works. Mud and debris may fill drainage channels, river or stream channels, and sediment basins, causing otherwise normal runoff to suddenly inundate areas outside the floodplains. Also, sediment and debris are more damaging to houses and their contents than clear water. Frame structures are often total losses, and if they remain intact, sediment and mud must be removed and washed out. Major floods almost always involve heavy intrusions of mud, sediment and debris. Such conditions are caused or worsened by forest and brush fires. Once the hills have been denuded of vegetation, there is more runoff and less infiltration. Even light rainfall can develop into rapid runoff with severe erosion occurring in such areas. Portions of the CPA are susceptible to mudflow/mudslides that originate in hilly terrain within and adjoining the CPA.

Tsunami is a sea wave caused by a submarine earthquake, landslide, or volcanic eruption, which can cause catastrophic damage to shallow and or exposed coastlines. The Granada Hills–Knollwood CPA is

[83] California Department of Water Resources, Division of Safety of Dams, Dams Within the Jurisdiction of the State of California, http://www.water.ca.gov/damsafety/docs/Jurisdictional2010.pdf.
[84] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Section 3K (Dam/Reservoir Failure).
[85] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Section 3K (Dam/Reservoir Failure).
[86] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Section 3K (Dam/Reservoir Failure).

approximately 15 miles inland from the Pacific Ocean, and is at an elevation approximately 1,000 feet above sea level. For those reasons, tsunami is not a potential hazard in the CPA.

Sea Level Rise

Sea level rise due to global climate change would not affect the CPA due to its inland location and distance from the Pacific Ocean.

Flood Control and Drainage Facilities

The major flood control facilities in the vicinity of the Granada Hills–Knollwood CPA are the Los Angeles Reservoir's Upper and Lower Retention Basins, the Van Norman Bypass Reservoir, the Yarnell Debris Basin, and the Los Angeles Dam and Reservoir Debris Basin. Bull Canyon Creek, which is channelized south of the Los Angeles Reservoir complex, helps to drain the east side of the CPA by directing storm water runoff to the Los Angeles River. The channelized Aliso Canyon, which also drains to the Los Angeles River, serves to drain the west side of the CPA.

Storm Drain Infrastructure

The City's storm drain system, maintained by the City of Los Angeles Bureau of Engineering, is an extensive network of underground pipes and open channels that were designed to prevent flooding. Runoff drains from the street into the gutter and enters the system through an opening in the curb called a catch basin. Curbside catch basins are the primary points-of-entry for urban runoff. From there, runoff flows into underground tunnels that empty into flood control channels such as the Los Angeles River and its tributaries. The flood control channels eventually discharge to over sixty-five shoreline outfalls along the coast. The storm drain system receives no treatment or filtering process and is completely separate from the City's sewer system.

The original storm drain system was developed in the 1930s by the United States Army Corps of Engineers (USACE). As the City began to grow rapidly in the 1920s and 1930s, rainwater that was once absorbed by miles of undeveloped land began to run off the newly paved and developed areas, leading to an increased amount of water flowing into the Los Angeles River and local creeks. These waterways could not contain the increased amount of water and the region experienced extensive flooding. In response, the USACE lined the Los Angeles River with concrete and imitated the development of an underground urban drainage system. As Los Angeles continued to grow, a complex drainage system developed.

A total of 35,000 catch basins, over 1,500 miles of underground pipes, and 100 miles of open channels comprise the City's storm drain system. In total, runoff from approximately 1,060 square miles of developed land is conveyed to San Pedro and Santa Monica Bays through approximately sixty storm drain outfalls. Approximately 100 million gallons of water flow through the Los Angeles storm drain system on an average dry day.[87]

[87] Los Angeles Department of Public Works, Bureau of Sanitation, About the Los Angeles Storm Drain System, http://www.lastormwater.org/Siteorg/general/lastrmdrn.htm.

With the exception of undeveloped open space areas and parks, almost the entire CPA is covered with impervious surfaces (roadways, parking lots, hardscaping, rooftops, etc.) that generate stormwater runoff. Storm drains and street flows are the major flood control means of draining storm water from the CPA.

Groundwater Resources

The Granada Hills–Knollwood CPA is within the geographic boundaries of the San Fernando Valley Groundwater Basin (San Fernando Basin) of the Upper Los Angeles River Area (ULARA) basins.[88] The San Fernando Basin was adjudicated in 1979 and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock. The San Fernando Basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. Located in the foothills of the Santa Susana Mountains, there are opportunities to replenish the aquifer in Granada Hills–Knollwood. The community is located above portions of both the San Fernando and the Sylmar Groundwater Basins water basins, natural underground reservoirs that have become depleted over the years as most of the ground surface in the area became impervious. These groundwater basins have the potential to provide much more of the City's drinking water needs. The groundwater basins in the watershed are critical to local water supply. Granada Hills–Knollwood's location near the Upper Los Angeles Watershed, in the foothills of the Santa Susana Mountains, provides some opportunity to capture stormwater runoff and recharge the natural underground basin levels.

The LADWP has developed several water recycling projects in partnership with local, State, and Federal agencies in order to help meet the City's future water demand. The East Valley Water Recycling Project, housed at the Donald C. Tillman Water Reclamation Plant located in the Sepulveda Basin, is one of four recycling projects operated by Los Angeles Bureau of Sanitation (LABOS) and LADWP. This water is delivered to industrial and commercial businesses for non-drinking and irrigation purposes throughout the San Fernando Valley, and is also used to recharge the underground reservoir in the northeast San Fernando Valley. In addition, the LADWP UWMP has identified other potential water sources, including water transfers, gray water, and beneficial uses of stormwater and urban runoff.

Recharge of the San Fernando basin is from a variety of sources. Spreading of imported water and runoff occurs in the Pacoima, Tujunga, and Hansen Spreading Grounds. Runoff contains natural stream flow from the surrounding mountains, precipitation falling on impervious areas, reclaimed wastewater, and industrial discharges. Water flowing in surface washes infiltrates, particularly in the eastern portion of the basin.[89] Groundwater flow in the San Fernando Basin is generally west to east. Groundwater flow in the CPA area is generally southeast. Groundwater levels show seasonal variation in response to precipitation, runoff and pumping. Water levels in this basin have been fairly stable over about the past 20 years, since adjudication of the basin. Hydrographs show variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin (ULARAW 1999). Hydrographs show 1998

[88] The ULARA basins include the San Fernando, Sylmar, Verdugo, and Eagle Rock basins.
[89] California Department of Water Resources, *California's Groundwater Bulletin 118*. South Coast Hydrologic Region, San Fernando Valley Groundwater Basin (February 27, 2004), http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/4-12.pdf.

water levels roughly equal to or higher than water levels of 1980, except near La Crescenta where the 1998 water level is about 60 feet below that of 1980 (ULARAW 1999).[90] Groundwater quality problems in the ULARA basins include volatile organic compounds (VOCs), perchlorate, nitrate, and other contaminants, primarily in the east and southeastern portions of the San Fernando basin. The City has discontinued pumping at some production wells due to elevated levels of contaminants, but efforts are underway to correct problems. There are no significant contaminant plumes in the general area of the CPA.[91]

Sylmar CPA

Climate and Physiography

The Sylmar CPA encompasses approximately 6,823 acres in the northeastern part of the San Fernando Valley (Valley). The most prominent physiographic features of the CPA include the San Gabriel Mountains, which bound the CPA on north and east, and the Pacoima Wash and Lopez Debris basin area. The south-flowing Pacoima Wash, which drains the Pacoima Reservoir canyon, flows southwest through the southern and eastern portion of the CPA where the water flows in its natural, unchannelized state allowing for groundwater percolation as the water makes its way south where it joins channelized portion as it flows to its confluence with the Los Angeles River. The topography and underlying geology is varied, ranging from nearly flat areas with subtle elevation changes to areas of rugged and steep-sided canyons and ridges, which increase to the north and east. A primary element of the Sylmar's physiography is a large amount of undeveloped, open space and public facility land in the northern part of the CPA, which comprises approximately one-fourth of the total acreage in the CPA. Open space areas such as Stetson Ranch Equestrian Park, Wilson Canyon Park and the Angeles National Forest, adjacent to the northern section of the community; add to Sylmar's natural landscape. Regional climate of the Valley is semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. Annual average temperature in Los Angeles is 65.0°F, with average temperatures ranges from approximately 55.0°F in winter to 75.0°F in the summer. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions. Average rainfall in Los Angeles is approximately 14 inches annually.

Surface Water Resources

Watersheds

Sylmar is located in the Los Angeles River Watershed, and specifically in the Tujunga/Pacoima Subwatershed (Figure 4.8-1). The Tujunga/Pacoima Subwatershed is the largest subwatershed of the Los Angeles River Watershed in north-central Los Angeles County. It includes both remote open space of the Angeles National Forest and the urbanized lands of the cities of Los Angeles and San Fernando, at elevations that range from about 560 to 7,130 feet. The watershed can generally be described in two

[90] California Department of Water Resources, *California's Groundwater Bulletin 118*. South Coast Hydrologic Region, San Fernando Valley Groundwater Basin (February 27, 2004), http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/4-12.pdf.
[91] Metropolitan Water District of Southern California, *Groundwater Assessment Study*, Report Number 1308 (September 2007), Chapter 4.

parts: the upper watershed (above Hansen and Pacoima Dams) is relatively undisturbed open space, and the lower watershed which is mostly urbanized and highly degraded. Dozens of streams feed the three main tributaries: the Big Tujunga, Little Tujunga, and Pacoima washes. The Pacoima Wash becomes channelized below the Lopez Debris Basin. Big and Little Tujunga washes meet in the reservoir behind Hansen Dam. Below Hansen Dam, Pacoima Wash joins the channelized Tujunga Wash as it flows to its confluence with the Los Angeles River in Studio City.[92]

Surface Water and Drainage

The major surface water resource in the Sylmar CPA is Pacoima Wash. The Pacoima Wash, which flows southwest through the eastern and southern part of the CPA, is a tributary to the Tujunga Wash, which ultimately drains to the Los Angeles River. The Pacoima Wash stream originates from the Pacoima Dam Reservoir in the western San Gabriel Mountains of the Angeles National Forest and proceeds south in a free-flowing stream, collecting at the Lopez Dam and spreading grounds. From there, the Pacoima Wash is encased in a concrete flood control channel as it travels south from Sylmar through San Fernando, Pacoima, Mission Hills, Panorama City and Van Nuys.

Other surface waters in the CPA are the East Canyon Channel that drains the southwestern portion of the CPA and joins the Pacoima Wash just southwest of the SR-118 and I-5 interchange and Wilson Canyon Channel, which drains the north central portion of the CPA. Wilson Canyon Channel joins the underground storm drain system at the intersection of Astoria Street and Dronfield Avenue (see Figure 4.8-4 [Drainage and Surface Water Resources (Sylmar CPA)]). The East Canyon Channel and the Wilson Canyon Channel are concrete drainage channels that serve as major flood control facilities. These concrete drainage channels generally only contain water after storms. Smaller streams in the northern part of the CPA are Hog Canyon, Sobrero Canyon, and May Canyon washes.

Runoff from the Sylmar CPA drains southerly into the flat central portion of the San Fernando Valley where the runoff flows into the Los Angeles River. Local storm drainage infrastructure is operated and maintained by the City of Los Angeles, as described for the Granada Hills–Knollwood CPA. The reader is referred to the description of the Los Angeles River drainage system under the Granada Hills–Knollwood CPA setting, above.

A prominent and familiar hydrologic feature in the CPA is the Los Angeles Aqueduct Cascades. Located in the northwest corner of Sylmar, on the east side of the Golden State Freeway (I-5), the Los Angeles Aqueduct Cascades are the terminus of the Aqueduct and point where the Los Angeles Aqueduct symbolically enters the City.

[92] The River Project, Tujunga/Pacoima Watershed Plan, April 2008.

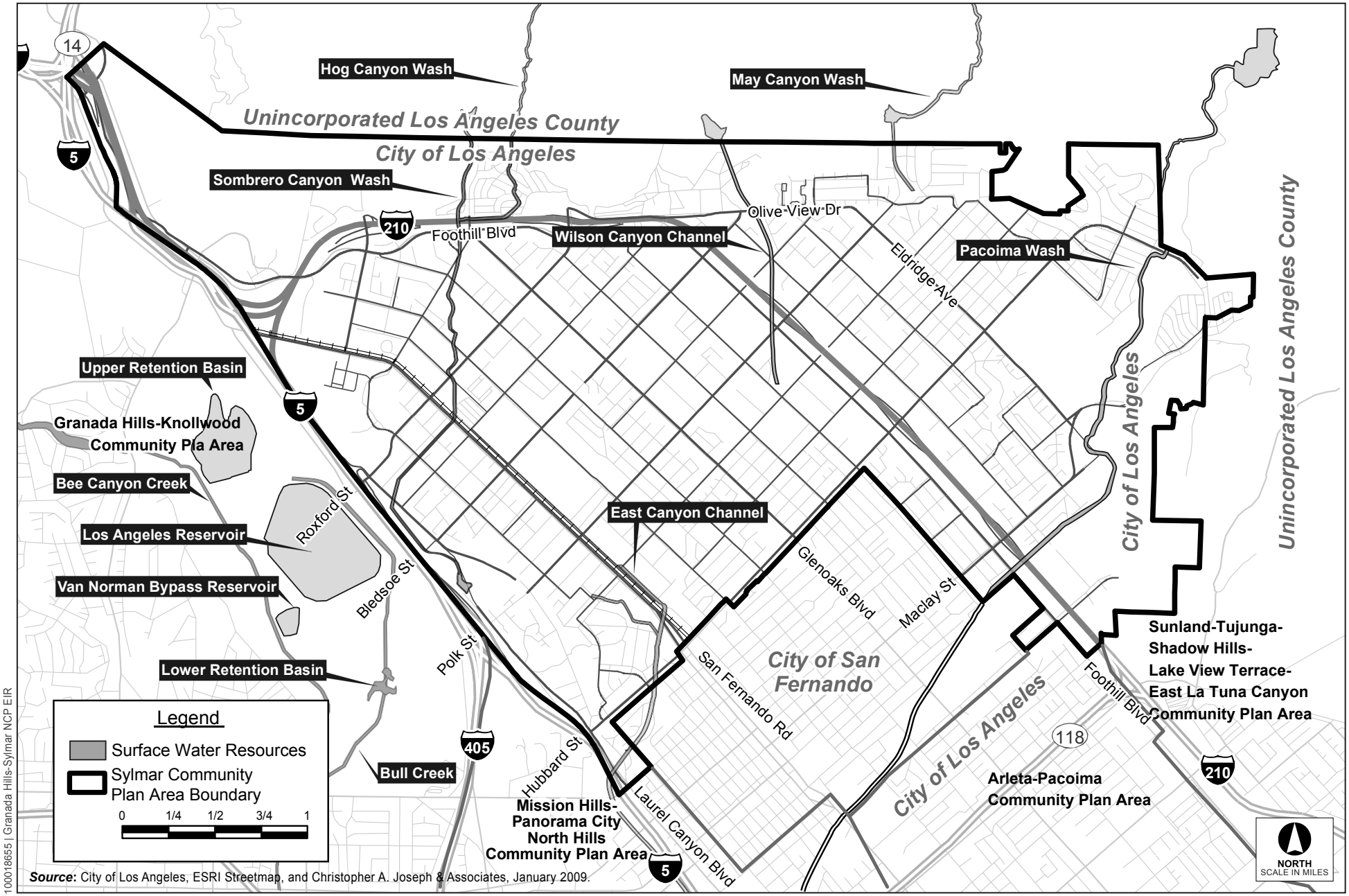

Figure 4.8-4

Drainage and Surface Water Resources (Sylmar CPA)

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Surface Water Quality

Water quality in the Tujunga/Pacoima Watershed is influenced by a number of factors including climate, circulation, biological activity, surface runoff, and effluent discharges. Water column contaminants include metals (particularly cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), oil and grease, chlorinated hydrocarbons (DDT and DDE), and polychlorinated biphenyls (PCBs). Other water quality parameters such as phosphates and nitrates change from day to day and are influenced by factors that include biological processes, wastewater discharge, and stormwater runoff.

Flood Hazards

100-Year Flood

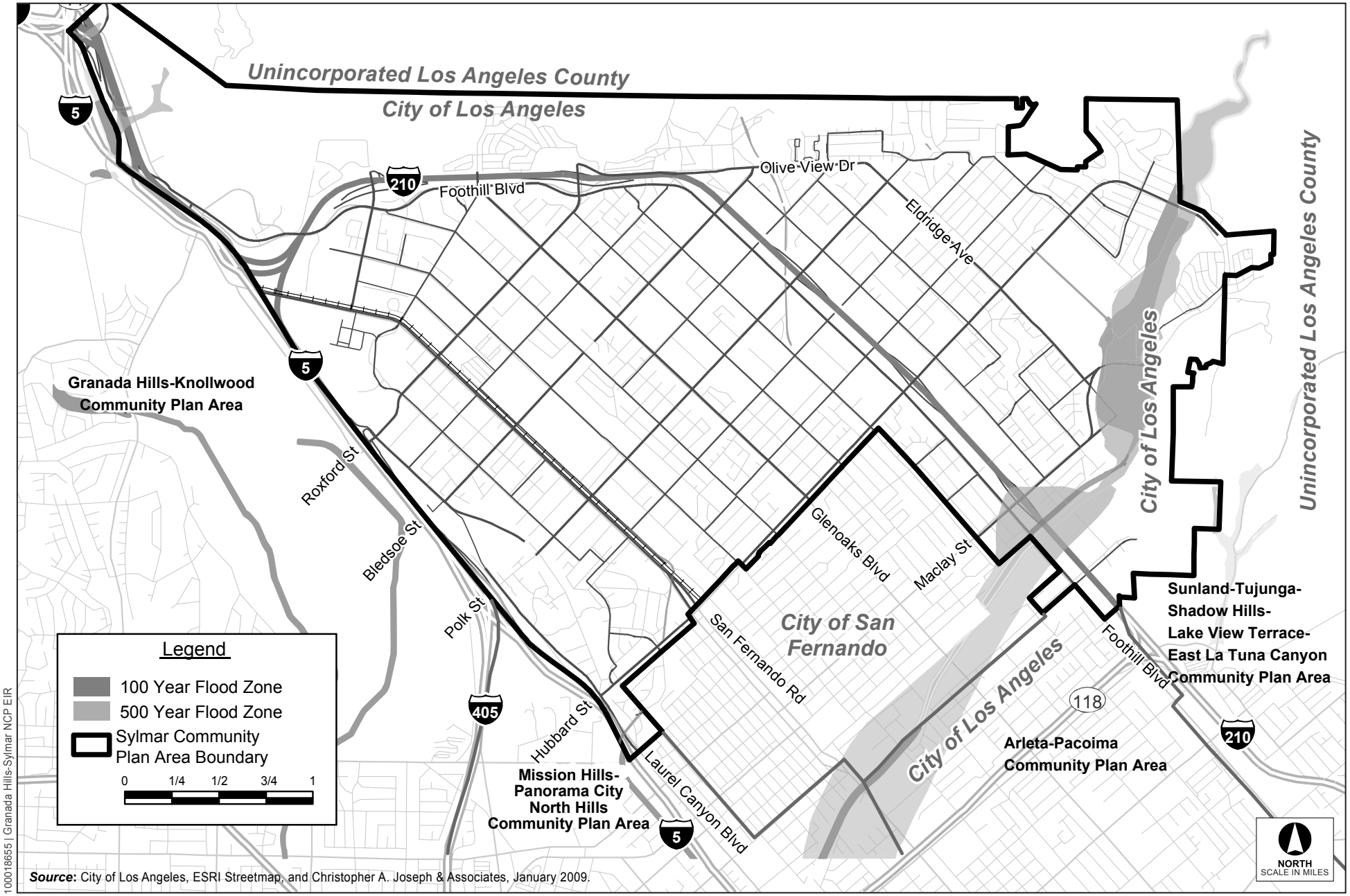
Figure 4.8-5 (FEMA Flood Zones [Sylmar CPA]) illustrates the locations of areas of the Sylmar CPA designated by the Federal Emergency Management Agency (FEMA) as being within the 100- and 500-year flood hazard zones. The 100-year flood hazard zone is located along the Pacoima Wash and the Wilson Canyon Channel. There is also a small area of flood hazard zone in the vicinity of San Fernando Road and Hubbard Street. There is one FEMA-designated 500-year flood hazard zone near the I-5 and northwestern border of the CPA.

The Los Angeles River is the major flood control means of draining storm water from the Sylmar CPA and directing it to the Pacific Ocean. Outside of the FEMA-designated flood hazard area, local flooding may also occur at low points where clogged storm drains back up storm waters.

Dam Failure Inundation

The southeast corner of the CPA is in an area subject to inundation from Pacoima Dam. Completed in 1928, it is a variable radius arch dam with a capacity of 3,777 acre-feet of water. The Los Angeles County Department of Public Works owns and operates the dam.[93] The dam is monitored during storms, and measures are instituted in the event of potential overflow. The City of Los Angeles has a comprehensive program in place to provide early notification to potentially affected locations in the event of possible flooding, emergency response, and disaster recovery. The City estimates the time of arrival between first water and dam failure is approximately 2 minutes closest to the dam and approximately 10 minutes in the vicinity of I-210.[94] Pacoima Dam is under the jurisdiction of the DOSD.

[93] California Department of Water Resources, Division of Safety of Dams, Dams Within the Jurisdiction of the State of California, http://www.water.ca.gov/damsafety/docs/Jurisdictional2010.pdf.
[94] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Section 3K (Dam/Reservoir Failure), Inundation Area: Pacoima Dam



Source: City of Los Angeles, ESRI Streetmap, and Christopher A. Joseph & Associates, January 2009.

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Figure 4.8-5
FEMA Flood Zones (Sylmar CPA)

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Seiche, Mudflow, and Tsunami

The Los Angeles Reservoir, located in the Granada Hill-Knollwood CPA west of I-5, is potentially susceptible to seiche events during strong earthquakes is a potential source of inundation for the area to the south. Mitigation of potential seiche action has been implemented by the Department of Water and Power through regulation of the level of water in its storage facilities and providing walls of extra height to contain seiches and prevent overflow.[95]

Mud floods and mud flows cause several types of flood damage that are not characteristic of clear-water flooding. The force of debris-laden water, which can be tens or hundreds of times greater than that generated by clear water, destroys retaining walls and other protective works. Mud and debris may fill drainage channels, river or stream channels, and sediment basins, causing otherwise normal runoff to suddenly inundate areas outside the floodplains. Also, sediment and debris are more damaging to houses and their contents than clear water. Frame structures are often total losses, and if they remain intact, sediment and mud must be removed and washed out. Major floods almost always involve heavy intrusions of mud, sediment and debris. Such conditions are caused or worsened by forest and brush fires. Once the hills have been denuded of vegetation, there is more runoff and less infiltration. Even light rainfall can develop into rapid runoff with severe erosion occurring in such areas. Portions of the CPA are susceptible to mudflow/mudslides that originate in hilly terrain within and adjoining the CPA.

Tsunami is a sea wave caused by a submarine earthquake, landslide, or volcanic eruption, which can cause catastrophic damage to shallow and or exposed coastlines. The Sylmar CPA is approximately 15 miles inland from the Pacific Ocean, and is at an elevation approximately 1,000 feet above sea level. For those reasons, tsunami is not a potential hazard in the CPA.

Sea Level Rise

Sea level rise due to global climate change would not affect the CPA due to its inland location and distance from the Pacific Ocean.

Flood Control and Drainage Facilities

The major flood control facilities in the vicinity of the Sylmar CPA include the Pacoima Wash, and two concrete drainage channels: the East Canyon Channel and the Wilson Canyon Channel. The Pacoima Reservoir, which actually lies north of the CPA boundary, provides flood protection for the northeastern portion of the CPA. In addition, several large debris basins are located in the foothills, which provide mud and debris flow protection for residential areas north of I-210.

The dams, debris basins, and channelized streams that comprise the existing flood protection system in the Tujunga/Pacoima watershed provide sufficient capacity to manage up to at least a 50-year storm. However, the system lacks sufficient capacity to convey both the 100-year and 133-year storms in some areas within the watershed, such as the area between the Pacoima Channel and Los Angeles River.[96]

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[95] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Section 3K (Dam/Reservoir Failure).
[96] City of Los Angeles, Sylmar Community Plan (draft), October 5, 2011.

Storm Drain Infrastructure

The City's storm drain system, maintained by the City of Los Angeles Bureau of Engineering, is an extensive network of underground pipes and open channels that were designed to prevent flooding. Runoff drains from the street into the gutter and enters the system through an opening in the curb called a catch basin. Curbside catch basins are the primary points-of-entry for urban runoff. From there, runoff flows into underground tunnels that empty into flood control channels such as the Los Angeles River and its tributaries. The flood control channels eventually discharge to over 65 shoreline outfalls along the coast. The storm drain system receives no treatment or filtering process and is completely separate from the City's sewer system.

The original storm drain system was developed in the 1930s by the United States Army Corps of Engineers (USACE). As the City began to grow rapidly in the 1920s and 1930s, rainwater that was once absorbed by miles of undeveloped land began to run off the newly paved and developed areas, leading to an increased amount of water flowing into the Los Angeles River and local creeks. These waterways could not contain the increased amount of water and the region experienced extensive flooding. In response, the USACE lined the Los Angeles River with concrete and imitated the development of an underground urban drainage system. As Los Angeles continued to grow, a complex drainage system developed.

A total of 35,000 catch basins, over 1,500 miles of underground pipes, and 100 miles of open channels comprise the City's storm drain system. In total, runoff from approximately 1,060 square miles of developed land is conveyed to San Pedro and Santa Monica Bays through approximately 60 storm drain outfalls. Approximately 100 million gallons of water flow through the Los Angeles storm drain system on an average dry day.[97]

With the exception of undeveloped open space areas and parks, almost the entire CPA is covered with impervious surfaces (roadways, parking lots, hardscaping, rooftops, etc.) that generate stormwater runoff. Storm drains and street flows are the major flood control means of draining storm water from the CPA.

Groundwater Resources

The Sylmar CPA is within the geographic boundaries of the Sylmar Groundwater Basin (Sylmar Basin) of the Upper Los Angeles River Area (ULARA) basins, which also include the San Fernando, Verdugo, and Eagle Rock basins. The Sylmar Basin is a confined aquifer system separated from the San Fernando Valley Groundwater Basin by the Sylmar Fault Zone in the underlying geology. The Sylmar Basin storage capacity is 310,000 acre-feet.[98] The Sylmar Basin is located in the northern part of the ULARA, consists of 5,600 acres, and comprises 4.6 percent of the ULARA valley fill. The LADWP currently has an annual entitlement of 3,405 acre-feet from the Sylmar Basin. Groundwater flow in the Sylmar Basin is generally southeast, with water levels ranging from 15 to 150 feet below ground surface (bgs). Groundwater levels show seasonal variation in response to precipitation, runoff and pumping. Water levels in this basin have been fairly stable over about the past 20 years, since adjudication of the basin. Hydrographs show

[97] Los Angeles Department of Public Works, Bureau of Sanitation, About the Los Angeles Storm Drain System, http://www.lastormwater.org/Siteorg/general/lastrmdrn.htm.
[98] Metropolitan Water District of Southern California, *Groundwater Assessment Study*, Report Number 1308 (September 2007).

variations in water levels of 5 feet to 40 feet in the western part of the basin, a variation of about 40 feet in the southern and northern parts of the basin, and a variation of about 80 feet in the eastern part of the basin (ULARAW 1999). Hydrographs show 1998 water levels roughly equal to or higher than water levels of 1980, except near La Crescenta where the 1998 water level is about 60 feet below that of 1980 (ULARAW 1999).[99] Groundwater quality problems in the ULARA basins include volatile organic compounds (VOCs), perchlorate, nitrate, and other contaminants, primarily in the San Fernando basin. The City has discontinued pumping at some production wells due to elevated levels of contaminants, but efforts are underway to correct problems. There are no significant contaminant plumes in the local Sylmar basin.[100]

Groundwater in the watershed is recharged through spreading grounds (Lopez, Pacoima, and Branford spreading grounds along Pacoima Wash, and Hansen and Tujunga spreading grounds along Tujunga Wash. Of the five spreading grounds, only the Lopez spreading ground on Pacoima Wash just east of I-210 is within the CPA.[101]

4.8.2 Regulatory Framework

Federal

Clean Water Act of 1972

The federal Clean Water Act (CWA) 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. The U.S. Environmental Protection Agency (USEPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs in California to the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCB). Water quality standards for the Los Angeles region are set forth in The Water Quality Control Plan Los Angeles Region Basin Plan (1995, and as amended in 2010), which is administered by the Los Angeles Regional Water Quality Control Board (LARWQCB).

Clean Water Act Sections 401 and 402: NPDES (National Pollutant Discharge Elimination System)

The NPDES permit system was established in the CWA to regulate point source discharges (a municipal or industrial discharge at a specific location or pipe) and certain types of diffuse source dischargers. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. For diffuse-source discharges (e.g., municipal stormwater and construction runoff), the NPDES program establishes a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable. The NPDES program consists of (1) characterizing receiving water quality, (2) identifying harmful constituents, (3) targeting potential sources of pollutants,

[99] California Department of Water Resources, *California's Groundwater Bulletin 118*. South Coast Hydrologic Region, San Fernando Valley Groundwater Basin (February 27, 2004), http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/4-12.pdf.
[100] Metropolitan Water District of Southern California, *Groundwater Assessment Study*, Report Number 1308 (September 2007), Chapter 4.
[101] The River Project, *Tujunga/Pacoima Watershed Plan* (April 2008).

and (4) implementing a Comprehensive Stormwater Management Program. The City of Los Angeles implements the NPDES program through its own regulations and standards. Additional information as it relates to the proposed plan is presented in the "Local" regulations summary, below.

Clean Water Act Section 303: Total Maximum Daily Loads (TMDLs)

CWA Section 303(d) bridges the technology-based and water quality-based approaches for managing water quality. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put in place. For waters on this list (and where the USEPA administrator deems they are appropriate), the states are to develop Total Maximum Daily Loads (TMDLs). TMDLs are established at the level necessary to implement applicable water quality standards. A TMDL must account for all sources of pollutants that cause the water to be listed. Federal regulations require that TMDLs, at a minimum, account for contributions from point sources and non-point sources (NPSs).

National Flood Insurance Program

In response to Executive Order 11988 (Flood Plain Management), Congress acted to reduce the costs of disaster relief by passing two acts that resulted in the National Flood Insurance Program (NFIP), which is administered by FEMA. FEMA issues Federal Insurance Rate Maps (FIRMs), which delineate flood hazard zones in communities participating in the NFIP. Although there is very little property in the CPA where a flood hazard zone has been delineated, because the City of Los Angeles is a participating member of the NFIP, flood insurance is available to an affected property owner in the CPAs.

State

Porter-Cologne Water Quality Protection Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) establishes the SWRCB and each RWQCB as the principal state agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwaters) and directs the RWQCBs to develop regional Basin Plans. The Water Quality Control Plan Los Angeles Region Basin Plan (1995, and as amended in 2010), which is administered by the LARWQCB and implemented at the City level through various programs (see below), is the adopted plan that would apply to the proposed plans.

Statewide NPDES General Construction Activity Stormwater Permit (Construction General NPDES Permit)

Pursuant to the CWA Section 402(p) and as related to the goals of the Porter-Cologne Act, the SWRCB has issued a statewide NPDES General Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAR000002), adopted September 2, 2009, hereinafter referred to as the Construction General NDPES Permit. Every construction project that disturbs 1 acre or more of land surface or that are part of a common plan of development or sale that disturbs more than 1 acre of land surface would require coverage under the Construction General NPDES Permit. Construction activities subject to the Construction General NPDES Permit include clearing, grading, and disturbances to the ground, such as stockpiling or

excavation, that result in soil disturbances of at least 1 acre of total land area. Among other permit requirements, implementing a site-specific Stormwater Pollution Prevention Plan (SWPPP) is the primary mechanism that is relied upon for controlling erosion and pollutants in runoff from a construction site. Any project that disturbs more than 1 acre as a result of implementing the proposed plans would be subject to the Construction General NPDES Permit requirements. In addition, there are other requirements that are imposed by the City (see below).

Regional Dewatering General Waste Discharge Requirements (WDR)

The RWQCB has issued a general permit for construction dewatering (Waste Discharge Requirements for Discharges of Groundwater from Construction Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties Order No. R4-2008-0032, and NPDES No. CAG994004).[102] Discharges covered by this permit include but are not limited to, treated or untreated groundwater generated from permanent or temporary dewatering operations. Wastewater discharge from permanent or temporary dewatering activities include, but are not limited to, the following: treated or untreated wastewater from permanent or temporary construction dewatering operations; subterranean seepage dewatering; and incidental collected stormwater from basements. If dewatering is required for construction or operation of projects that could be developed in the CPA as a result of implementing the proposed plans, the projects would have to obtain coverage under this general permit.

Cobey-Alquist Flood Plain Management Act

California Water Code Sections 8400 et seq. documents the state's intent to support local governments in their use of land use regulations to accomplish floodplain management and to provide assistance and guidance as appropriate.

Division of Safety of Dams

Dam safety in the state is regulated by the Department of Water Resources (DWR) under Division 3 of the California Water Code.[103] DSOD inspects each dam under its jurisdiction on an annual basis to ensure the dam is safe, performing as intended, and is not developing problems.

Regional

Water Quality Control Plan Los Angeles Region (Basin Plan)

The Water Quality Control Plan Los Angeles Region Basin Plan (Basin Plan) identifies beneficial uses for major surface water bodies within the CPAs and receiving waters (e.g., Los Angeles River). Table 4.8-1 (Beneficial Uses of Coastal/Inland Surface Waters, as Defined by LARWQCB Basin Plan) lists these uses.

[102] Los Angeles Regional Water Quality Control Board, *The Water Quality Control Plan, Los Angeles Region Basin Plan* (1995, amended 2010).
[103] DSOD's jurisdiction applies to dams 25 feet or more in height or impounding more than 25 acre-feet of water.

The Basin Plan also establishes the following beneficial uses for groundwater resources that underlie the CPA: municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

Table 4.8-1 Beneficial Uses of Major Surface Waters in Planning Area (Los Angeles River Watershed)

	Los Angeles River	*Pacoima Wash*	*Wilson Canyon Creek*	*Bull Creek*	*Aliso Canyon Wash/Creek*
Municipal/Domestic Supply	P	P	P	I	P
Industrial Process Supply	P				
Ground Water Recharge	E	E	I	I	I
Water Contact Recreation	E	P	E	I	I
Noncontact Water Recreation	E	E	E	I	I
Warm Freshwater Habitat	E	E	I	I	I
Wildlife Habitat	E	E	E	E	E
Rare Threatened Endangered Sp.	E	E			
Wetlands Habitat	E*				

SOURCE: Los Angeles Regional Water Quality Control Board, *The Water Quality Control Plan Los Angeles Region Basin Plan* (1995, as amended 2010).

Not all creeks/channels in planning area are listed in the Basin Plan.

E = existing beneficial; P = potential beneficial uses; I = intermittent beneficial uses

* May have wetlands habitat associated with only a portion of the waterbody.

Los Angeles County Stormwater Quality Management Plan (SQMP)

Discharges of urban runoff into municipally owned separate storm sewer systems (MS4s) are regulated under the general NPDES stormwater permit that has been issued by the RWQCB for Los Angeles County ("MS4 Permit"). Development that could occur under the proposed plan would be subject, as applicable, to the waste discharge requirements issued by the RWQCB for the MS4 Permit.

The City of Los Angeles is a co-permittee under the MS4 Permit, and therefore has joint/concurrent legal authority to enforce the terms of the permit within its jurisdiction, including the CPA. The MS4 Permit is intended to ensure that combinations of site planning, source control, and treatment control practices are implemented to protect the quality of receiving waters. The permit requires that new development employ best management practices (BMPs) designed to control pollutants in stormwater runoff to the maximum extent practicable (MEP), details specific sizing criteria for BMPs, and specifies flow control requirements. These BMPs include structural practices, source control and treatment techniques and systems, and site design planning principles addressing water quality.

Among other things, the MS4 Permit requires the co-permittees to prepare a Stormwater Quality Management Plan (SQMP) specifying the BMPs that will be implemented to reduce the discharge of pollutants in stormwater to the MEP. For development within the City of Los Angeles (which would include the CPA), the SQMP is implemented through the City's Standard Urban Stormwater Mitigation Plan (SUSMP), which is described under the "Local" heading, below.

Integrated Regional Water Management Plan

Proposition 50, approved by California voters in 2002, set aside $380 million for Integrated Regional Water Management Plan (IRWMP) related grants. Integrated planning involves local agencies and interest groups working together to coordinate planning activities across jurisdictional boundaries. In this regional approach, individual agencies' efforts are combined in order to leverage resources and meet multiple water resource needs at the same time. The result is a multi-objective approach that multiplies the benefits of any individual agency's single project. The Greater Los Angeles County Region, comprised of five sub-regions (Upper Los Angeles River, North Santa Monica Bay, South Bay, Upper San Gabriel River and Rio Hondo River and Lower San Gabriel and Los Angeles River), are collaborating to develop an IRWMP for the region that would describe regional objectives and priorities, water management strategies, implementation, impacts and benefits, data management, financing, stakeholder involvement, relationship to local planning, and state and federal coordination.

A critical component of the planning effort is identifying projects that would help achieve the goals and objectives of the IRWMP. The Greater Los Angeles County Region, through the Los Angeles County department of Public Works, has identified an extensive list of proposed projects that are seeking funding through the IRWMP process. There are no established policies or standards that would apply to the proposed plans, and the proposed plans would not require implementation of those projects, but IRWMP projects may benefit the CPAs by enhancing water quality and flood protection efforts. Those projects could include a trash capture BMP for the Aliso and Bull creek subwatersheds and construction of Bull Creek storm drainage facilities and potable water pipeline improvements to comply with water quality regulations at the Los Angeles Reservoir.[104]

Flood Protection

Flood protection in the region is managed by three agencies: (1) the USACE oversees construction of projects associated with navigable bodies of water, including the Los Angeles River-related flood control systems and ocean harbors; (2) the Los Angeles County Department of Public Works (LADPW) oversees construction of ancillary LA County Flood Control District (LACFCD) facilities and designs and/or maintains the flood control drainage facilities, including the Los Angeles River system (under the guidance of the USACE) to reduce the impacts of 100- and 500-year storms; and (3) the City of Los Angeles Bureau of Engineering oversees construction and maintenance of the City's storm drainage system, which is designed to reduce the impacts of 50-year magnitude storms. Various City agencies implement development permit, slope stability, and watershed protection regulations.

Local

City of Los Angeles General Plan

Policies related to hazards and disasters are found in the Safety Element of the City's General Plan. Policies related to the protection and restoration of oceans and fisheries are found in the Conservation

[104] Leadership Committee of the Greater Los Angeles County Integrated Regional Water Management, *Greater Los Angeles County Regions Integrated Regional Water Management Plan* (December 13, 2006), http://www.ladpw.org/wmd/irwmp/.

Element. Polices related to groundwater recharge, runoff, and pollution are found in the General Plan Framework (Framework).

Policies from the Safety and Conservation Elements and the Framework related to hydrology/water quality are listed in Table 4.8-2 (Relevant General Plan Safety and Conservation Elements and Framework Policies).

Table 4.8-2 General Plan Policies Relevant to Hydrology and Water Quality

Policy No.	*Policy*
	SAFETY ELEMENT
Hazard Mitigation	
Policy 1.1.2	Disruption reduction. Reduce, to the greatest extent feasible and within the resources available, potential critical facility, governmental functions, infrastructure and information resource disruption due to natural disaster.
Policy 1.1.3	Facility/systems maintenance. Provide redundancy (back-up) systems and strategies for continuation of adequate critical infrastructure systems and services so as to assure adequate circulation, communications, power, transportation, water and other services for emergency response in the event of disaster related systems disruptions.
Policy 1.1.5	Risk reduction. Reduce potential risk hazards due to natural disaster to the greatest extent feasible within the resources available, including provision of information and training.
Policy 1.1.6	State and federal regulations. Assure compliance with applicable state and federal planning and development regulations, e.g., Alquist-Priolo Earthquake Fault Zoning Act, State Mapping Act, and Cobey-Alquist Flood Plain Management Act.
Emergency Response (Multi-Hazard)	
Policy 2.1.2	Health and environmental protection. Develop and implement procedures to protect the environment and public, including animal control and care, to the greatest extent feasible within the resources available, from potential health and safety hazards associated with hazard mitigation and disaster recovery efforts.
Policy 2.1.4	Interim procedures. Develop and implement pre-disaster plans for interim evacuation, sheltering and public aid for disaster victims displaced from homes and for disrupted businesses, within the resources available. Plans should include provisions to assist businesses which provide significant services to the public and plans for reestablishment of the financial viability of the City.
Policy 2.1.5	Response. Develop, implement, and continue to improve the City's ability to respond to emergency events.
Policy 2.1.7	Volunteers. Develop and implement, within the resources available, strategies for involving volunteers and civic organizations in emergency response activities.
Disaster Recovery (Multi-Hazard)	
Policy 3.1.2	Health/safety/environment. Develop and establish procedures for identification and abatement of physical and health hazards which may result from a disaster. Provisions shall include measures for protecting workers, the public, and the environment from contamination or other health and safety hazards associated with abatement, repair, and reconstruction programs.
Policy 3.1.3	Historic/cultural. Develop procedures which will encourage the protection and preservation of City-designated historic and cultural resources to the greatest extent feasible within the resources available during disaster recovery.
Policy 3.1.4	Interim services/systems. Develop and establish procedures prior to a disaster for immediate reestablishment and maintenance of damaged or interrupted essential infrastructure systems and services so as to provide communications, circulation, power, transportation, water and other necessities for movement of goods, provision of services and restoration of the economic and social life of the City and its environs pending permanent restoration of the damaged systems.

Table 4.8-2 General Plan Policies Relevant to Hydrology and Water Quality	
Policy No.	***Policy***
Policy 3.1.5	Restoration. Develop and establish prior to a disaster short- and long-term procedures for securing financial and other assistance, expediting assistance and permit processing and coordinating inspection and permitting activities so as to facilitate the rapid demolition of hazards and the repair, restoration and rebuilding, to a comparable or a better condition, those parts of the private and public sectors which were damaged or disrupted as a result of the disaster.
CONSERVATION ELEMENT	
Erosion	
Policy 2	Continue to prevent or reduce erosion that will damage the watershed or beaches or will result in harmful sedimentation that might damage beaches or natural areas.
Ocean	
Policy 1	Continue to reduce pollutant discharge into the bays from both natural and human sources.
Policy 3	Continue to support and/or participate in programs to clean bay sediments and/or reduce the potentially harmful effects of contaminants in the sediments and waters of the bays.
Fisheries	
Policy 2	Continue to consider and implement measures that will reduce the potential damage to and will encourage maintenance or restoration of fisheries.
GENERAL PLAN FRAMEWORK	
Wastewater	
Policy 9.3.2	Consider the use of treated wastewater for irrigation, groundwater recharge, and other beneficial purposes.
Stormwater	
Objective 9.5	Ensure that all properties are protected from flood hazards in accordance with applicable standards and that existing drainage systems are adequately maintained.
Policy 9.5.1	Develop a stormwater management system that has adequate capacity to protect its citizens and property from flooding which results from a 10-year storm (or a 50-year storm in sump areas).
Policy 9.5.2	Assign the cost of stormwater system improvements proportionately to reflect the level of runoff generated and benefits.
Policy 9.5.3	Implement programs to correct any existing deficiencies in the stormwater collection system.
Policy 9.5.4	Ensure that the City's drainage system is adequately maintained.
Objective 9.6	Pursue effective and efficient approaches to reducing stormwater runoff and protecting water quality.
Policy 9.6.1	Pursue funding strategies which link the sources of revenues for stormwater system improvement to relevant factors including sources of runoff and project beneficiaries.
Policy 9.6.2	Establish standards and/or incentives for the use of structural and non-structural techniques which reduce the impact of flood-hazards and manage stormwater pollution.

Table 4.8-2 General Plan Policies Relevant to Hydrology and Water Quality

Policy No.	*Policy*
Policy 9.6.3	The City's watershed-based approach to stormwater management will consider a range of strategies designed to reduce flood hazards and manage stormwater pollution. The strategies considered will include, but not necessarily be limited to: a. Support regional and City programs which intercept runoff for beneficial uses including groundwater recharge; b. Protect and enhance the environmental quality of natural drainage features; c. Create stormwater detention and/or retention facilities which incorporate multiple-uses such as recreation and/or habitat; d. On-site detention/retention and reuse of runoff; e. Reduce the impact of existing flood hazards through structural modifications (floodproofing) or property by-out; f. Incorporate site design features which enhance the quality of offsite runoff; and g. Use land use authority and redevelopment to free floodways and sumps of inappropriate structures which are threatened by flooding and establish appropriate land uses which benefit or experience minimal damages from flooding.
Policy 9.6.4	Proactively participate in inter-agency efforts to manage regional water resources, such as the Santa Monica Bay Restoration Project, the Los Angeles River Master Plan, the Los Angeles River Parkway Project and the Los Angeles County Drainage Area Water Conservation and Supply Feasibility Study.
Objective 9.7	Continue to develop and implement a management practices based stormwater program which maintains and improves water quality.
Policy 9.7.1	Continue the City's active involvement in the regional NPDES municipal stormwater permit.
Policy 9.7.2	Continue to aggressively develop and implement educational outreach programs designed to foster an environmentally aware citizenry.
Policy 9.7.3	Investigate management practices which reduce stormwater pollution to identify technically feasible and cost effective-approaches, through: a. Investigation of sources of pollution using monitoring, modeling and special studies; b. Prioritization of pollutants and sources; c. Conducting research and pilot projects to study specific management practices for the development of standards; and d. Developing requirements which establish implementation standards for effective management practices.
Objective 9.9	Manage and expand the City's water resources, storage facilities, and water lines to accommodate projected population increases and new or expanded industries and businesses.
Policy 9.9.3	Protect existing water supplies from contamination, and clean up groundwater supplies so those resources can be more fully utilized.
Policy 9.9.4	Work to improve water quality and reliability of supply from the State Water Project and other sources.
Policy 9.9.5	Maintain existing rights to groundwater and ensure continued groundwater pumping availability.
Objective 9.11	Ensure, to the extent possible, the continued provision of water capacity, quality, and delivery after an earthquake or other emergency.
Policy 9.11.1	Provide for the prompt resumption of water service with adequate quantity and quality of water after an emergency.

SOURCE: Los Angeles Department of City Planning, *The Citywide General Plan Framework: An Element of the City of Los Angeles General Plan* (adopted August 8, 2001), CPC 94-0354 GPF CF 95-2259 CF 01-1162, http://cityplanning.lacity.org; Los Angeles Department of City Planning, *General Plan of the City of Los Angeles*, Conservation Element (adopted September 26, 2001). Los Angeles Department of City Planning, *General Plan of the City of Los Angeles*, Safety Element (adopted November 26, 1996);

City of Los Angeles Standard Urban Stormwater Mitigation Plan (SUSMP)

The City's Standard Urban Stormwater Mitigation Plan (SUSMP) requirements are a LARWQCB-approved component of the county's MS4 Permit to address stormwater pollution from new construction and redevelopment projects. The SUSMP requirements contain a list of minimum BMPs that must be employed to infiltrate or treat stormwater runoff, control peak flow discharge, and reduce the post-project discharge of pollutants from stormwater conveyance systems. The SUSMP requirements define, based upon land use type, the types of practices that must be included and issues that must be addressed as appropriate to the development type and size. The SUSMP requirements apply to all development and redevelopment projects that fall into one of the following categories:

- Single-family hillside residences
- One acre or more of impervious surface area for industrial/commercial developments
- Automotive service facilities
- Retail gasoline outlets
- Restaurants
- Ten or more residential units
- Parking lots of 5,000 square feet or greater or with 25 or more spaces
- Projects located in or directly discharging to an Ecologically Sensitive Area

City of Los Angeles Municipal Code

Section 17.05(M) of the Los Angeles Municipal Code (LAMC) prescribes performance standards for storm drain systems. Storm drains must be designed in conformance with standards approved by the City Engineer. Storm drain facilities that intercept and convey all runoff to a suitable point of disposal are required when runoff exceeds the limiting depth of street flow as determined by the City Engineer. Storm drains must be of sufficient capacity in all cases to prevent flooding of building sites from a storm of a 50-year frequency.

LAMC Chapter 64.72 lists the City's requirements for stormwater and urban runoff pollution control. Provisions include prohibitions of illicit discharges, illicit connections, and spills, dumping and disposals to the MS4; pollutant control requirements from sites of industrial activities; and requirements for construction activity stormwater measures. The Los Angeles Municipal Code also promulgates requirements for stormwater BMPs, which include the following:

- For parking lots with more than 25 spaces, BMPs must be implemented to reduce the discharge of pollutants to the MEP.
- For other premises exposed to stormwater, BMPs, if they exist, or other steps shall be used to reduce the discharge of pollutants to the MEP. This includes the removal and lawful disposal from all parts of the premises exposed to stormwater of any solid waste or any other substance, which if discharged to the MS4, would be a pollutant.

Floodplain Development

The City of Los Angeles has an ordinance governing permit review and mitigation procedures for issuance of development permits in areas prone to flooding, mudflow, or coastal inundation. The City's Specific Plan for the Management of Flood Hazards (Specific Plan) was originally established by Ordinance No. 154,405, and amended most recently in July 1998 by Ordinance No. 172,081. The

Ordinance No. 172,081 designates the City Engineer as the Flood Hazard Mitigation Coordinator for the City. The "Flood Hazard Management Specific Plan" (also referred to as the City of LA Floodplain Management Program) also specifies the responsibilities of City agencies that process the permits to ensure consistency with applicable FEMA requirements for NFIP coverage. Mitigation measures include relocation of structures within a property, increased base elevation, additional structural reinforcement, anchoring, and installation of protective barriers. A permit can be denied if mitigation is deemed insufficient to protect human life.

City of Los Angeles Local Hazard Mitigation Plan (LHMP)

The City approved its Local Hazard Mitigation Plan in 2005. The plan identifies potential natural and human-caused hazards, and potential scenarios and estimated losses, addresses existing and proposed mitigation policies, programs and projects, and response programs.[105]

Proposed Plan Policies

Table 4.8-3 (Proposed Granada Hill-Knollwood Community Plan Policies) and Table 4.8-4 (Proposed Sylmar Community Plan Policies) list the Granada Hills–Knollwood and Sylmar Community Plan Policies that are applicable to issues of hydrology and water quality.

Table 4.8-3 Proposed Granada Hills–Knollwood Community Plan Policies

Policy No.	*Policy*
Policy LU5.2	Permeable Surfaces. Increase areas of permeability by minimizing driveway and curb cut widths, limiting driveway paving to the width required to access a garage, and utilizing permeable surfaces on driveways, walkways, trails, and outdoor spaces in order to capture, infiltrate, and store water underground.
Policy CF6.4	Natural Drainage. Minimize the alteration of natural drainage patterns, canyons, and water courses, except where improvements are necessary to protect life and property.
Policy CF7.6	Surplus Properties. Prior to the disposition or sale of any City-owned property located within the watershed, the department with jurisdiction over said property should consider transferring jurisdiction and control to another City agency, such as Department of Recreation and Parks, that would prioritize the land for multi-benefit projects to include best management practices for the capture and infiltration of stormwater that will aide in recharging the underground water basin, thereby retaining the land for public use and enjoyment.
Policy CF10.1	Watershed Revitalization. Promote watershed management policies that integrate flood protection with water conservation, improve the quality of stormwater runoff and groundwater, and reduce the pollution of water resources while preserving and creating recreation and habitat areas.
Policy CF10.2	Local Water Resources. Optimize local water resources to reduce water dependence on imported water by improving groundwater infiltration, facilitating on-site collection systems for stormwater and graywater, maximizing the capture and reuse of stormwater runoff, and integrating groundwater infiltration with other public and/or beneficial uses.
Policy CF10.3	Groundwater Infiltration. Encourage the incorporation of bio-retention facilities and the use of permeable materials for the paving of sidewalks, driveways, and parking areas, when feasible, and the day lighting of buried streams and other policies which promote stormwater infiltration.
Policy CF10.4	Railroad Rights-of-Way. Enhance railroad rights-of-way to increase flood protection, provide trails, create swales for stormwater capture, and improve water quality.
Policy CF10.5	Interdepartmental Coordination. Support the development of a new comprehensive flood management plan for the watershed through coordination among City departments.

[105] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Executive Summary.

Table 4.8-3 Proposed Granada Hills–Knollwood Community Plan Policies	
Policy No.	***Policy***
Policy CF12.2	Runoff Capture. Encourage the capture and infiltration of stormwater along existing power line easements for groundwater recharge, water quality benefits, and habitat restoration opportunities.

Table 4.8-4 Proposed Sylmar Community Plan Policies	
No.	***Policy***
Policy LU7.2	Permeable Surfaces. Increase areas of permeability by minimizing driveway and curb cut widths, limiting driveway paving to the width required to access a garage, and utilizing permeable surfaces on driveways, walkways, trails, and outdoor spaces in order to capture, infiltrate, and store water underground.
Policy CF7.6	Surplus Properties. Prior to the public sale of any City-owned property located within the watershed, the department with jurisdiction over said property should transfer jurisdiction and control for fair market value to another City agency, such as RAP, that would prioritize the land for multi-benefit projects to include best management practices for the capture and infiltration of stormwater that will aide in recharging the underground water basin, thereby retaining the land for public use and enjoyment.
Policy CF10.1	Watershed Revitalization. Promote watershed management policies that integrate flood protection with water conservation, improve the quality of stormwater runoff and groundwater, and reduce the pollution of water resources while preserving and creating recreation and habitat areas.
Policy CF10.2	Local Water Resources. Optimize local water resources to reduce water dependence on imported water by improving groundwater infiltration, facilitating on-site collection systems for stormwater and graywater, maximizing the capture and reuse of stormwater runoff, and integrating groundwater infiltration with other public and/or beneficial uses.
Policy CF10.3	Groundwater Infiltration. Encourage the incorporation of bio-retention facilities and the use of permeable materials for the paving of sidewalks, driveways, and parking areas, when feasible, and the day lighting of buried streams and other policies which promote stormwater infiltration.
Policy CF10.4	Flood Protection. Enhance railroad rights-of-way to increase flood protection, provide a trail, create swales for stormwater capture, and improve water quality.
Policy CF10.5	Interdepartmental Coordination. Support the development of a new comprehensive flood management plan for the watershed through coordination among City departments.

Consistency Analysis

The proposed plans do not propose any alteration of natural water bodies or direct discharges to rivers, streams, or creeks in the watersheds that would conflict with policies concerning watershed erosion or quality. Stormwater flows from individual project sites would be conveyed to the storm drain system operated by the City, which has specific requirements for controlling urban pollutants in runoff during construction and occupancy of projects. These requirements would apply to projects facilitated by implementing the proposed plans. The City would also ensure, through building permit application review and approvals, that sufficient drainage capacity is available. There are existing flood risk hazards in portions of the CPAs. The City has standard procedures governing permit review and mitigation procedures for areas prone to flooding. The implementation of all requirements applicable to the construction and operation of projects that could be developed in the CPAs would be the responsibility of the City in order to ensure that those projects are consistent with the applicable General Plan policies listed above.

4.8.3 Project Impacts and Mitigation

Analytic Method

The proposed project is the adoption of the Granada Hills–Knollwood and Sylmar Community Plans and implementing ordinances. Such actions would not have a direct effect related to hydrology and water quality, but the indirect effect of development that is likely to occur as a result of the proposed plans could result in hydrologic effects such as changes in stormwater flows and quality and potential exposure of people and structures to flood hazards. Baseline information for the analysis was compiled from a review of data and reports published by state agencies, environmental documents for projects in the vicinity, as well as information compiled and evaluated by the City of Los Angeles in conjunction with its stormwater management and hazard mitigation programs. The result of that effort is a general and qualitative analysis of the types of hydrologic and water quality changes that could be expected relative to the proposed types and locations of land use changes and related zoning.

Independent of the CEQA process, there is a comprehensive regulatory framework implemented at the state and City level to reduce the impacts of effects related to storm drainage, urban pollutants, and flood hazards. Compliance with these regulations is required, not optional. Compliance must be demonstrated by the project proponent to have been incorporated in the project's design before permits for project construction would be issued. The analysis presented herein assumes compliance with all applicable laws, regulations, and standards.

The Los Angeles CEQA Thresholds Guide (2006) sets forth guidance for the determination of significance of hydrology and water quality impacts. This guidance is based on CEQA Guidelines Appendix G and provides specific criteria to be considered when making a significance determination. For purposes of this analysis, Thresholds Guide criteria are used, supplemented by the thresholds identified in Appendix G, where appropriate.

Thresholds of Significance

The following thresholds of significance are based on CEQA Guidelines Appendix G. For purposes of this EIR, implementation of the proposed plans may have a significant adverse impact on hazards and hazardous materials if it would:

- Substantially reduce or increase the amount of surface water in a water body
- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow in a manner that would result in flooding on or off site
- Cause flooding during the projected 50-year developed storm event which would have the potential to harm people or damage property or sensitive biological resources
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- 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, or place within a 100-year flood hazard area structures that would impede or redirect flood flows

- 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, or sea level rise
- Expose people or structures to inundation by seiche, tsunami, or mudflow
- Create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable National Pollution Discharge Elimination System storm water permit or Water Quality Control Plan for the receiving water body
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site

Effects Not Found to Be Significant

The proposed plans are not in an area subject to flooding from tsunami or climate change-related sea level rise; therefore, there would be no impact.

There are no enclosed bodies of water within the Sylmar CPA that would pose a seiche hazard. The Los Angeles Reservoir, located in the Granada Hills–Knollwood CPA, is approximately 0.25 mile at its closest to Sylmar and is separated from the CPA by the I-5 and I-405, which would impede any water from seiches from reaching the Sylmar CPA; therefore, there would be *no impact* for the Sylmar CPA with respect to seiche hazard.

Less-Than-Significant Impacts

Impacts associated with the thresholds are grouped by the following topics: drainage and flooding and water quality.

Drainage and Flooding

Impact 4.8-1 **Implementation of the proposed plans would minimally change stormwater flows and volumes but would not contribute to off-site flooding potential or changes in the amount of surface water or surface water flow direction or current. This impact is *less than significant*.**

The amount and rate of stormwater runoff from an area is a function of the amount of impermeable surfaces (e.g., buildings, roadways, parking lots, and hardscaping), topography, vegetative cover, and, where native soil is exposed, the soil characteristics. Land use changes in runoff from developed areas, as well as undeveloped hilly areas, can affect flooding potential in waterways. This can occur through an increase in water surface elevations upstream of the discharge points if the channel or drainage is already full, and/or it can add additional flows downstream that have not yet been conveyed out of the system.

Generally, the proposed plans seek to protect existing residential neighborhoods, conserve open space and hillsides, and retain community character by redirecting mixed-use and commercial growth to established areas. Neither proposed plan introduces major changes to land use in the CPAs. The proposed plans primarily consist of General Plan Amendments to create consistency with the General Plan Framework Land Use designations, create consistency between existing land uses on parcels or

within existing surrounding uses, restrict incompatible uses, and correct minor errors. However, the proposed plans could indirectly result in the construction of some new development on vacant or undeveloped land, as well as redevelopment of existing occupied parcels. Such development would not result in substantial changes to building density, bulk, or decrease in setbacks constructed in the two CPAs that would result in large areas of impermeable surfaces. Since zoning and implementing ordinances would limit development in order to preserve the existing community characters and protect open space in both CPAs, there would be a negligible increase in impermeable surfaces compared to existing conditions, and the runoff characteristics of open space would remain unchanged. Little change in stormwater runoff to local waterways is anticipated.

More specifically, in the Granada Hills–Knollwood Community Plan, the policies are geared toward promoting the preservation of low-density, single-family residential areas, the conservation of open space, and the preservation and strengthening of the Granada Hills commercial areas. Granada Hills–Knollwood will remain a predominantly semi-rural suburban residential community. Most of the residential neighborhoods are well-established and not expected to change significantly, while growth will be directed to major corridors with public transit, a mix of uses, and existing neighborhoods that are in transition to higher density. In addition to land use policies aimed at limiting development, the Granada Hills–Knollwood Community Plan includes Policies LU5.2, CF6.4, CF7.6, CF10.1 through CF10.5, and CF12.2, which encourage increase in areas of permeability, minimize alteration of natural drainage patterns, improve the quality of stormwater, encourage the use of bioretention facilities and use of permeable paving materials, and encourage capture and infiltration of stormwater along existing power line easements for groundwater recharge and water quality.

Similarly, the Sylmar Community Plan seeks to protect existing stable single- and multi-family residential neighborhoods by redirecting growth near the Sylmar/San Fernando Metrolink Station and mixed-use corridors, and other specific major streets supported by public transit. Many of Sylmar's residential neighborhoods are well established and are not expected to change significantly as the area matures. Transitional areas, such as the area along Ralston and Bradley Avenue between Astoria and Sayre Street and Roxford Street will support an increase in residential activity. Sylmar Community Plan Policies LU7.2, CF7.6, and CF10.1 through CF10.5 would encourage the same water quality benefits as identified above for the Granada Hills–Knollwood Community Plan, improving overall water quality.

Additionally, policies in the General Plan Framework and Safety Elements would help minimize this potential impact. Framework Policies 9.5.1, 9.5.3, and 9.5.4 require the City ensure sufficient storm drainage capacity, correct deficiencies in the stormwater collection system, and adequately maintain the City's drainage system. Policy 9.5.2 requires the City to assign the cost of stormwater system improvements to reflect the level of runoff generated and benefits. Similarly, Policy 9.6.1 requires the City to link the sources of revenue for stormwater system improvements with sources of runoff and project beneficiaries.

As a result, the proposed plans would not cause a substantial increase in the peak flow rates or volumes of stormwater runoff that could lead to increase in the amount of surface water in a water body that would alter flow direction or current in a manner that would cause on-site or off-site flooding. Therefore, impacts related to flooding and water flow are ***less than significant***, and no mitigation measures are required.

Impact 4.8-2 **Implementation of the proposed plans could change stormwater flows and volumes but would not have the potential to harm people or damage property from flooding during a 50-year storm event or create or contribute runoff water that would exceed the capacity of the existing or planned stormwater drainage system. This impact is *less than significant*.**

The proposed plans do not substantially change land use patterns in the CPAs (see Impact 4.8-1). As a result, there would not be new large areas of impermeable surfaces that would generate large amounts of stormwater runoff or peak flows because the zoning and implementing ordinances would limit such development in order to preserve the existing community character and protect open space in both plan areas. Some changes in runoff are expected, however, because the proposed plans could result in the construction of some new development on vacant or undeveloped land. This would represent a negligible increase in impermeable surfaces compared to existing conditions, and the runoff characteristics of open space would remain unchanged. Therefore, little change in stormwater runoff to the City's storm drain system is expected.

To minimize potential effects on drainage system capacity, the proposed plans seeks to ensure effective stormwater runoff management through capture and infiltration practices, as identified in the policies identified under Impact 4.8-1, above. Further, on-site improvements incorporated into individual project design would be implemented on a project-by-project basis to help maintain system capacity.

The City's network of natural and constructed channels that convey stormwater flows, debris basins, pump plants, underground pipelines and catch basins are designed to handle an excess of water during localized street flooding or heavy rainfall. The system provides sufficient capacity to manage up to at least a 50-year storm. LAMC Section 17.05(M) prescribes performance standards for storm drain systems. Storm drains must be designed in conformance with standards approved by the City Engineer. Storm drain facilities that intercept and convey all runoff to a suitable point of disposal are required when runoff exceeds the limiting depth of street flow as determined by the City Engineer. Storm drains must be of sufficient capacity in all cases to prevent flooding of building sites from a storm of a 50-year frequency. Projects facilitated by approval of the proposed plans would be required to demonstrate to the satisfaction of the City that appropriate capacity is available and to incorporate proper drainage design.

Additionally, policies in the General Plan Framework and Safety Elements would help minimize this potential impact. Framework Policies 9.5.1, 9.5.3, and 9.5.4 require the City ensure sufficient storm drainage capacity, correct deficiencies in the stormwater collection system, and adequately maintain the City's drainage system. Policy 9.5.2 requires the City to assign the cost of stormwater system improvements to reflect the level of runoff generated and benefits. Similarly, Policy 9.6.1 requires the City to link the sources of revenue for stormwater system improvements with sources of runoff and project beneficiaries.

As a result, the proposed plans would not cause a substantial increase in the peak flow rates or volumes of stormwater runoff in a manner that would cause on-site or off-site flooding during a 50-year storm event or exceed the drainage capacity of existing or planned drainage systems. Impacts would be *less than significant*, and no mitigation measures are required.

Impact 4.8-3 **Implementation of the proposed plans would not expose people or structures to a 100-year flood hazard or place structures in locations that could impede or redirect flood flows. This impact is *less than significant*.**

As shown in Figure 4.8-4, there is a FEMA-designated 100-year special flood hazard zone in the Granada Hills–Knollwood CPA along the Los Angeles River channel, where it forms the western boundary of the Granada Hills–Knollwood CPA. The flood hazard zone expands beyond the channel in the northwest portion of the CPA, northwest of Mission Road. Within the Sylmar CPA, the 100-year special flood hazard zone is located along the Pacoima Wash and the Wilson Canyon Channel. There is also a small area of flood hazard zone in the vicinity of San Fernando Road and Hubbard Street.

None of the changes in the proposed plans would permit new development within these flood zones. Proposed Granada Hills–Knollwood Community Plan Policy CF6.4 minimizes alteration of natural drainages, and Policy CF10.3 encourages groundwater infiltration through the use of bioretention facilities and use of permeable paving materials. Similarly, Sylmar Community Plan Policies CF10.1 through CF10.5 would encourage groundwater infiltration. Implementation of the existing City of Los Angeles policies and regulatory requirements would ensure the adoption and implementation of the proposed plans would not place housing or structures within a flood hazard zone or in an area that would impede or redirect flood flows. Therefore, these impacts are *less than significant*, and no mitigation measures are required.

Impact 4.8-4GHK **Portions of the Granada Hills–Knollwood CPA could be exposed to inundation by seiche at the Los Angeles Reservoir, but little or no development in those locations is planned. Compliance with existing hazard mitigation programs that address emergency notification and evacuation would ensure this impact remains *less than significant*.**

The Los Angeles Reservoir, located in the Granada Hill-Knollwood CPA west of I-5, is potentially susceptible to seiche events during strong earthquakes is a potential source of inundation for the area to the south. Mitigation of potential seiche action has been implemented by the Department of Water and Power through regulation of the level of water in its storage facilities and providing walls of extra height to contain seiches and prevent overflow. The proposed plans do not propose any activities that would alter the reservoir capacity or water levels. The potential for portions of either CPA to be affected by potential inundation is an existing condition that could occur regardless of whether the proposed plans are adopted. Both proposed community plans contain policies to maintain adequate emergency preparedness.

However, to the extent implementation of the proposed plan could promote future development in already-developed areas, there could be additional structures and people that could be exposed to seiche hazard. The potential for risk of loss, injury, or death would be minimized through existing City permitting processes to ensure buildings are designed to withstand hydrostatic forces that could be associated with flooding, and through implementation of adopted emergency warning and response programs. Impacts are *less than significant*, and no mitigation measures are required.

Impact 4.8-5 **Implementation of the proposed plans could expose people or structures to flood inundation from dam failure. Compliance with existing hazard mitigation programs that address emergency notification and evacuation would ensure this impact remains *less than significant*.**

Much of the Granada Hills–Knollwood CPA is within a potential flood inundation area associated with the Los Angeles Reservoir, and the Sylmar CPA is within the inundation area for Pacoima Dam.[106] The proposed plans do not propose any activities that would alter the reservoir capacity or dam function. The potential for portions of either CPA to be affected by potential inundation is an existing condition that could occur regardless of whether the proposed plans are adopted. Both proposed community plans contain policies to maintain adequate emergency preparedness.

However, to the extent implementation of the proposed plans could promote future development in already-developed areas, there could be additional structures and people that could be exposed to potential flood hazards from dam failure. Both dams are inspected by the Division of Safely of Dams (DSOD) for safety features, and water levels in the dams during storms are monitored by the City and County. The potential for risk of loss, injury, or death would be minimized through existing City permitting processes to ensure buildings are designed to withstand hydrostatic forces that could be associated with flooding, and through implementation of adopted emergency warning and response programs. Impacts would be ***less than significant***, and no mitigation measures are required.

Impact 4.8-6 **Implementation of the proposed plans could expose people or structures to risk from mudflow/mudslides. Compliance with existing hazard mitigation programs that address emergency notification and response would ensure this impact remains *less than significant*.**

Mudflows/mudslides originating from hilly terrain in or near the proposed plans have historically affected locations in both CPAs and would be expected to pose a hazard in the future. The potential for portions of either CPA to be affected by potential inundation is an existing condition that could occur regardless of whether the proposed plans are adopted. Both proposed community plans contain policies to maintain adequate emergency preparedness as well as policies to minimize hillside grading and preserve slopes.

However, to the extent implementation of the proposed plans could promote future development in already developed areas, there could be additional structures and people that could be exposed to mudslides/mudflow hazards. The potential for risk of loss, injury, or death would be minimized through existing City permitting processes to ensure new projects are properly sited and that buildings are designed to withstand dynamic forces from mudflows, and through implementation of adopted emergency warning and response programs. Impacts are ***less than significant***, and no mitigation measures are required.

[106] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005), Section 3K (Dam/Reservoir Failure).

Water Quality

Impact 4.8-7 **Implementation of the proposed plans would minimally contribute additional stormwater runoff containing urban pollutants to local water bodies, but would not result in violation of regulatory standards. This impact is *less than significant*.**

Surface Water Quality

As described in Impacts 4.8-1 and 4.8-2, the rate and volume of stormwater runoff as an indirect result of the proposed plans would not contribute a substantial addition in stormwater flows to the City's system that discharges to the Los Angeles River (the applicable receiving water body). In addition, because the existing character of the two CPAs would remain relatively unchanged, this would tend to limit potential changes in the types of pollutants in stormwater runoff, compared to existing conditions.

The City of Los Angeles has comprehensive standard requirements for development to ensure that violations of water quality standards do not occur. For example, the City enforces its SUSMP, a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable. The goals and objectives of the SUSMP are achieved through the use of BMPs that attempt to manage runoff water quality. Site design or planning management BMPs are used to minimize runoff from new development and to discourage development in environmentally sensitive areas that are critical to maintaining water quality. Source control BMPs are usually the most effective and economical in preventing pollutants from entering storm and non-storm runoff. Treatment Control (or structural) BMPs involve physical treatment of the runoff, usually through structural means.

The SUSMP identifies the types and size of private development projects that are subject to these requirements. Required elements of the SUSMP include provisions for:

- Peak stormwater runoff discharge rates (post-development peak stormwater runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak stormwater discharge rate will result in increased potential for downstream erosion)
- Conservation of natural areas
- Minimization of stormwater pollutants of concern
- Protection of slopes and channels
- Storm drain system stenciling and signage
- Properly designed outdoor material storage areas
- Properly designed trash storage areas
- Proof of ongoing BMP Maintenance
- Design standards for structural or treatment control BMPs
- Provisions for individual priority project categories
- Limitations on use of infiltration BMPs

Requirements of the SUSMP are enforced through the City's plan approval and permit process and all new development projects are subject to City inspection. Furthermore, all applicable projects must

comply with LAMC Article 4.4, Section 64.72, which governs pollutant control requirements and construction activity requirements. Compliance with the LAMC would ensure that construction does not violate any water quality standards or discharge requirements or otherwise substantially degrade water quality.

In addition, implementation of the proposed Granada Hills–Knollwood and Sylmar Community Plan Policies described above that encourage a watershed approach and the use of infiltration system technology, bio-retention, and stormwater capture, which would be reviewed during project design, would comprise effective stormwater quality BMPs. Impacts are ***less than significant***, and no mitigation measures are required.

Groundwater

Implementation of the proposed plans would not involve direct groundwater withdrawal or injection. Recharge is negligible. The stormwater quality BMPs described above would effectively manage surface water quality so that stormwater infiltration, if any, would not represent a substantial risk to groundwater quality degradation. Therefore, impacts with respect to violations of water quality standards, discharge, and rate or movement of existing contaminants are ***less than significant*** and no mitigation is required.

Impact 4.8-8 **Implementation of the proposed plans would cause negligible changes in surface drainage patterns and surface water bodies in a manner that could cause erosion or siltation. This impact is *less than significant*.**

It is not anticipated any of the projects that could be developed under the proposed plans would result substantial alteration to existing major surface water drainages that flow through and drain the CPAs. Therefore, there would be no direct effect on surface water bodies.

The proposed plans would primarily result in General Plan Amendments and zone changes to create consistency between Framework land use designations, zone changes to set development standards, design standards and guidelines, and ordinances to protect historic resources and single-family residential uses. Because it would otherwise continue to allow the development of the two CPAs as envisioned by the existing Community Plans, such development could require grading on individual parcels, which could result in small, localized changes in surface drainage patterns that could cause increased erosion potential when soils are exposed during construction. Grading for most structures that would be a reasonably foreseeable effect of implementing the proposed plans is expected to be minimal, consisting of grading for foundations, building pads, access roads, and utility trenches in areas that are already developed. Hillside development, where erosion poses a greater problem, would continue to be limited to individual parcels, thus limiting the potential for erosion, and open space areas would be protected.

Policies related to surface drainage and erosion potential described above would minimize the potential for changes in surface drainage patterns in a manner that would cause erosion or siltation. Similarly, land use policies in the proposed Sylmar Community Plan would preserve slopes and topography and protect hillside areas from erosion. Because one of the major effects associated with grading is sedimentation in receiving waters, erosion control standards are set by the Regional Water Quality Control Board (RWQCB) through administration of the National Pollution Discharge Elimination System (NPDES) permit process for storm drainage discharge. The NPDES permit requires implementation of nonpoint

source control of stormwater runoff through the application of a number of Best Management Practices (BMPs). These BMPs are meant to reduce the amount of constituents, including eroded sediment, that enter streams and other water bodies. A Storm Water Pollution Prevention Plan (SWPPP), as required by the RWQCB, is required to describe the stormwater BMPs (structural and operational measures) that would control the quality (and quantity) of stormwater runoff.

As explained, all new development projects are subject to the SUSMP and City inspection. Further, all earthwork and grading activities require grading permits from the Department of Building and Safety that include requirements and standards designed to limit potential impacts to acceptable levels. All on-site grading and site preparation must comply with applicable provisions of LAMC Chapter IX, Division 70, that address grading, excavations, and fills, and the recommendations of a site-specific geotechnical report. The City requires the preparation of a site-specific geotechnical report to evaluate soils issues for discretionary projects. In addition, all applicable projects must comply with LAMC Article 4.4, Section 664.72, which governs pollutant control requirements and construction activity.

Implementation of standard City mitigation measures and compliance with state NPDES permit, City Codes, and applicable regulatory requirements, in combination with the City's standard grading and building permit requirements and the application of Best Management Practices, would ensure that potential water quality impacts from erosion are *less than significant*, and not mitigation measures are required.

Significant and Unavoidable Impacts

There are no significant and unavoidable impacts of the proposed plans with regard to hydrology and water quality.

Mitigation Measures

The proposed plans include policies and programs that would reduce any potential hydrology and water quality impacts. In addition, the City of Los Angeles provides additional environmental review for discretionary development on a project-by-project basis. Compliance with applicable water quality and stormwater regulations would ensure that impacts would remain *less than significant*. No additional mitigation measures are required.

Level of Significance After Mitigation

Compliance with applicable regulations would ensure that impacts to hydrology and water quality are *less than significant*.

4.8.4 Cumulative Impacts

The analysis of hydrology/water quality impacts resulting from the adoption and implementation of the proposed plans considers the effects of future growth and development throughout the geographic extent of the proposed plans. The cumulative context for the analysis of hydrology and water quality impacts is a function of the type of impact and geographic considerations. Some cumulative impacts may have a broad, regional context, while others may be limited by site-specific conditions or location. The

cumulative context regarding flooding and drainage and water quality is described at the beginning of each analysis, below.

Drainage and Flooding

The cumulative context for storm drainage impacts is the extensive storm drain system operated by the City of Los Angeles, which is described in the Environmental Setting in this section. Stormwater flows from the CPAs currently combine with those from surrounding development in the greater Los Angeles area and are discharged into the storm drain system that conveys flows to the Los Angeles River. City Municipal Code Section 17.05(M) prescribes performance standards for storm drain systems, which would apply to cumulative development contributing flows to the system. Open space areas in both CPAs would be preserved, and future development would be concentrated in areas of the CPAs containing impervious surfaces; therefore, flows from areas of future development are already accounted for in system capacity. Potential projects that could be implemented under the proposed plans would not result in substantial increases in impervious surfaces due to the type of project (square feet or massing). Therefore, the rate and volume of stormwater flows from the proposed plans would represent a negligible contribution to system flows and potential cumulative effects on capacity. The proposed plans' contributions would not be cumulatively considerable, and cumulative impacts related to drainage and potential indirect effects on localized flooding would be *less than significant*.

The cumulative context for flood hazards is the corporate boundary of City of Los Angeles, which participates in the NFIP and provides emergency response services for flood events. Within the city, 100-year and 500-year flood hazard zones generally correspond to natural river, stream, and/or creek channels. There are only a few small areas designated Zone A (100-year event) in either of the CPAs. The 100-year flood hazard zones in Sylmar are located along the Pacoima Wash and Wilson Canyon Channel with s small area already built out and along the Los Angeles River channel in Granada Hills–Knollwood. New projects could change building footprints and result in changes in the number of people who could be exposed to flood hazard. Like other locations throughout Los Angeles that could be exposed to 100-year flood risk, projects would be required to comply with the City's Floodplain Management requirements, and insurance would be available to affected property owners under the NFIP. The proposed plan's contribution would not be cumulatively considerable, and cumulative impacts are *less than significant*.

Cumulative impacts would not occur for tsunami or sea level rise. Because of the physical location of the two CPAs, the proposed plans would not expose people or structures to those hazards or create them, so there would be no cumulative effect.

Cumulative development in the greater Los Angeles area, including the proposed plans, could be at risk of dam failure inundation or mudflow/mudslide, depending on location. The proposed plans would not result in physical changes that would alter or redirect dam flooding or flow directions for mudslides/mudflows, so physical effects would not combine to create a cumulative impact. The locations of specific projects and their potential to be affected by dam failure or mudflow/mudslide would be evaluated on a case-by-case basis during the permitting process to ensure proper siting of facilities and project design. While cumulative population growth, including the proposed plans, could result in an increase in the number of people and structures exposed to those hazards, the City's hazard

mitigation planning and emergency response programs would continue to be implemented to reduce potential losses. Cumulative impacts are ***less than significant***.

Seiches at dams and reservoirs are considered by the Los Angeles Local Hazard Mitigation Program (LHMP) to be a low-threat risk.[107] If a seiche were to occur at one of the reservoirs, it would be a localized phenomenon and would not combine with other seiche events to pose a risk to cumulative development, including the proposed plans. The City's ongoing monitoring program and hazard response programs would help minimize potential risks. The proposed plans do not involve modifications to Los Angeles Reservoir that would alter water levels or dam operations. There would be no cumulative contribution, and the impact is ***less than significant***.

Water Quality

The cumulative context for water quality is existing and reasonably foreseeable development in the Los Angeles River watershed. With respect to construction, all development within the Los Angeles River watershed is required to conform to applicable Waste Discharge Requirements (WDRs). Cumulative development projects in incorporated cities and unincorporated areas would be required to implement construction BMPs, as would projects facilitated by adoption and implementation of the proposed Granada Hills–Knollwood and Sylmar Community Plans. Both the City of Los Angeles and Los Angeles County are required to impose these requirements. Stormwater runoff from cumulative development in the watershed, including development that could be facilitated by the proposed plans, could contribute to water quality impairments if measures are not implemented to minimize pollutant levels in runoff.

As required by the SUSMP, all foreseeable development projects, including projects that could be constructed in the CPAs (as applicable) would be required to implement operational BMPs to control release of pollutants in stormwater runoff. Requirements of the SUSMP are enforced through the City's plan approval and permit process, and all new development projects are subject to City inspection. Furthermore, all applicable projects must comply with LAMC Article 4.4, Section 64.72, which governs pollutant control requirements and construction activity requirements. Redevelopment typically would be limited to small infill projects, the nature of which would not significantly change the types or amounts of pollutants in stormwater runoff. Therefore, the proposed plans' contribution to known water quality impairments would not be cumulatively considerable and cumulative water quality impacts would be ***less than significant***.

4.8.5 References

California Department of Water Resources. *California's Groundwater Bulletin 118*. South Coast Hydrologic Region, San Fernando Valley Groundwater Basin, February 27, 2004. http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/4-12.pdf.

California Department of Water Resources, Division of Safety of Dams. Dams Within the Jurisdiction of the State of California. http://www.water.ca.gov/damsafety/docs/Jurisdictional2010.pdf.

Leadership Committee of the Greater Los Angeles County Integrated Regional Water Management Plan. *The Greater Los Angeles County Integrated Regional Water Management Plan*, December 13, 2006.

[107] Los Angeles Department of City Planning, *City of Los Angeles Hazard Mitigation Plan* (2005).

http://www.ladpw.org/wmd/irwmp/index.cfm?fuseaction=TopDocListing&directory=Adopted IRWMP, December 13, 2006 Lowres&ttl=Adopted IRWMP, December 13, 2006.

Los Angeles, City of. *Draft Granada Hills–Knollwood Community Plan*, 2012.

———. *Draft Sylmar Community Plan*, 2012.

Los Angeles Department of City Planning. *City of Los Angeles Hazard Mitigation Plan*, 2005.

———. *General Plan of the City of Los Angeles*. Conservation Element, adopted September 26, 2001.

———. *General Plan of the City of Los Angeles*. Safety Element, adopted November 26, 1996.

———. *The Citywide General Plan Framework*, adopted August 8, 2001.

Los Angeles Department of Public Works, Bureau of Sanitation. About the Los Angeles Storm Drain System. http://www.lastormwater.org/Siteorg/general/lastrmdrn.htm.

Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division. *Water Quality Compliance Master Plan for Urban Runoff*, May 2009.

Los Angeles Regional Water Quality Control Board. *The Water Quality Control Plan, Los Angeles Region Basin Plan*, 1995, amended 2010.

Metropolitan Water District of Southern California. *Groundwater Assessment Study*, Report Number 1308, September 2007.

The River Project. *Tujunga/Pacoima Watershed Plan*, April 2008.