4.8 Hydrology and Water Quality

This section discusses the hydrology and water quality issues related to the proposed development within the planning area. This section provides an overview of the regulatory setting that is applicable to hydrology and water quality within the planning area and potential impacts and appropriate mitigation measures, as necessary.

4.8.1 Environmental Setting

The Plan area is located in San Mateo County, California in a region characterized by intermittent and perennial drainages that generally flow eastward from the Santa Cruz Mountains towards the sloughs and tidal flats of south San Francisco Bay. The drainages in the region include both unlined daylighted segments where surface water flows similar to how it did prior to any development, concrete lined segments, and culverted segments that were engineered for the purpose of accommodating urban development.

Surface Water Features

Regional Drainage Patterns

The Plan area lies within the San Francisco Bay hydrologic region. The San Francisco Bay hydrologic region extends from southern Santa Clara County north to Tomales Bay in Marin County, and inland to the confluence of the Sacramento and San Joaquin rivers. The eastern boundary of the hydrologic region follows the crest of the Coast Range Mountains. Creeks and streams in the region flow to the San Francisco Bay estuary or directly to the Pacific Ocean. Along the peninsula, watershed boundaries are formed by natural topographic divides, or engineered structures that alter natural drainage patterns (such as dams, engineered channels or major roadways). The planning area is located on the San Mateo Plain, an alluvial plain just north of the Santa Clara Valley. In this area, surface drainage generally flows from southwest to northeast, conveying water from the Santa Cruz Mountains to the southern San Francisco Bay.

Local Drainage Patterns

The Plan area is bounded on the northwest by Atherton Channel (also known as Atherton Creek) and the southeast by San Francisquito Creek. Both of these creeks run perpendicular to El Camino Real and eventually drain into the southern San Francisco Bay. The project area is characterized by medium density urban development, including a mix of commercial uses, residential developments, parking lots, and streets and railroad tracks. The topography of the site is generally flat to gently sloping, and stormwater is collected via the street network and conveyed to two storm drains along El Camino Real. A drainage divide runs parallel between both creeks, crossing the middle of the Plan area. Thus, one of the storm drains conveys surface runoff from the northwestern half of the Plan area to Atherton Channel, and the other conveys water from the southeastern half of the Plan area to San Francisquito Creek.[1]

[1] Sowers, J.M., Givler, R.W., et al., *Creek and Watershed Map of the San Francisco Peninsula: a Digital Database, version 1.0*, William Lettis and Associates, Inc., Walnut Creek, CA, 1:24,000 scale, 2007.

Existing deficiencies exist within the stormwater collection system in the Plan area, which is owned and operated by the City. The City published a citywide storm drainage study in May 2003 that identified existing areas of concern and developed priorities for system repairs and upgrades. According to the Specific Plan, the study found that "existing storm drain lines, with very few exceptions, do not convey the ten year storm flow per the City's design policies." The study recommended that most storm drains in the Plan area be replaced or augmented to increase system capacity. The study assigned a high priority to installation of a new storm drain and inlet at the northeast end of Spruce Avenue—in the far north of the Plan area—and also identified the need to replace some 1,700 feet of storm drain with a larger box culvert to reduce the risk of flooding on El Camino Real.

Surface Water

The major surface water bodies in the project vicinity are the southern portion of San Francisco Bay, San Francisquito Creek, Atherton Channel, and Searsville Lake. **Table 4.8-1** describes the two primary creeks that border the Plan area, their watershed area, length, and character. Atherton Channel begins in Woodside, south of Interstate 280 and exists mostly as engineered channels and storm drains as it passes through Atherton, and then along Marsh Road and Haven Avenue in Menlo Park. Only small reaches of its headwaters exist as natural open channels.

TABLE 4.8-1
CREEKS IN THE PLAN AREA

Creek Name	Watershed Area (sq miles)	Channel Length (miles)[a]	Location Relative to Project Area	Surface Water Character
San Francisquito Creek	45.6	118.3 (90.6)	Southwestern border crossing perpendicular to El Camino Real	Open Creek
Atherton Channel	8.9	30.7 (3.6)	Northeastern border crossing perpendicular to El Camino Real	Concrete Channel west of El Camino Real, Storm Drain and Concrete Channel east of El Camino Real. Opens at reach for part of Holbrook Palmer Park and along some of Marsh Road.

[a] Channel length represents total length of main stem stream plus all tributaries. Parentheses indicate the length of the creek that has been unmodified. The rest of the creek exists as engineered channels, culverts or storm drains.

SOURCES: Sowers, J.M., Givler, R.W., et al., *Creek and Watershed Map of the San Francisco Peninsula: a Digital Database, version 1.0*, William Lettis and Associates, Inc., Walnut Creek, CA, 1:24,000 scale, 2007.;
San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), July 2007. San *Mateo County Watershed Data in a GIS.* http://www.flowstobay.org/cs_watershed_studies.php, accessed January 16, 2009.

San Francisquito Creek begins at the outlet of the Searsville Reservoir, and exists largely as an unmodified, open creek. Only its lower-most reach near the San Francisco Bay exists as an engineered channel for about one mile. San Francisquito Creek is a perennial[2] stream, but it

[2] Perennial streams flow year-round.

sustains very low summer flows, and its headwaters and tributaries are intermittent drainages that flow only during the rainy season.[3] The creek is known to support a small run of steelhead trout.

Water Quality

Beneficial Uses

The beneficial uses of the surface water bodies in the Plan area have been designated by the San Francisco Bay Regional Water Quality Control Board (RWQCB) in the *Water Quality Control Plan for the San Francisco Bay Region* (Basin Plan). The beneficial uses provide the basis for determining appropriate water quality objectives that are needed to maintain the beneficial uses of these waters. The beneficial uses for water bodies in the project vicinity are shown in **Table 4.8-2**.

TABLE 4.8-2
DESIGNATED BENEFICIAL USES OF WATER BODIES IN THE PLAN AREA VICINITY

Water Body	Designated Beneficial Uses
Surface Water	
San Francisco Bay, South	COMM, EST, IND, MIGR, NAV, RARE, REC-1, REC-2, SHELL, SPWN (potential), WILD
San Francisquito Creek[a]	COLD, MIGR, SPWN, WARM, WILD, REC-1 (potential), REC-2 (potential)
Groundwater Basins[b]	
Searsville Lake	AGR, COLD, SPWN, WARM, WILD, REC-1, REC-2
Santa Clara Valley (San Mateo Plain Sub-Basin)	MUN, PROC, IND, AGR (potential)
Santa Clara Valley (Santa Clara Sub-Basin)	MUN, PROC, IND, AGR

NOTES:

[a] San Francisquito Creek forms the southeast boundary of the Menlo Park Downtown/El Camino Real Specific Plan Area.
[b] These two basins are separated by San Francisquito Creek. The Santa Clara Sub-Basin is also known as Coyote Valley.

Beneficial Uses Key:
MUN (Municipal and Domestic Supply); AGR (Agricultural Water Supply); REC-1 (Body Contact Recreation); REC-2 (Noncontact Recreation); WARM (Warm Freshwater Habitat); COLD (Cold Freshwater Habitat); MIGR (Fish Migration); SPWN (Fish Spawning); WILD (Wildlife Habitat); NAV (Navigation); GWR (Groundwater Recharge); FRSH (Freshwater Replenishment); RARE (Preservation of Rare and Endangered Species); SHELL (Shellfish Harvesting); COMM (Ocean, Commercial, and Sport Fishing); EST (Estuarine Habitat); IND (Industrial Service Supply); PROC (Industrial process water supply).

SOURCE: RWQCB, 2007.

[3] Harris, R.R. and S.D. Kocher, *Local Agency Policies and Procedures for Protecting Steelhead Habitat: San Francisquito Watershed, Santa Clara and San Mateo Counties, Californi*a. University of California, Berkeley, Center for Forestry, 58 pp. + app, 2006

Clean Water Act Section 303(d) List of Impaired Water Bodies and Total Maximum Daily Load

In accordance with Section 303(d) of the Clean Water Act, state governments must present the U.S. Environmental Protection Agency (EPA) with a list of impaired water bodies, defined as those water bodies that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology (see also discussion of impaired water bodies in Regulatory Setting below).[4] Listed impaired water bodies in the vicinity of the Plan area are presented in **Table 4.8-3**, including the planned date for the Total Maximum Daily Load (TMDL) completion. The process might take four to six years from the beginning of a TMDL project to a water quality control plan (Basin Plan) amendment (see also discussion of Basin Plan in Regulatory Setting below).

TABLE 4.8-3
SECTION 303(D) LIST OF IMPAIRED WATER BODIES

Water Body	Pollutant	Potential Source	Status of TMDL Preparation and Approval[b]
San Francisquito Creek	Diazinon	Urban runoff/storm sewers	Approved (2007)
	Sedimentation, Siltation[a]	Nonpoint Source	Planned (2013)
San Francisco Bay (Lower and South)	Chlordane	Nonpoint source	Planned (2013)
	DDT	Nonpoint source	Planned (2013)
	Dieldrin	Nonpoint source	Planned (2013)
	Dioxin compounds	Atmospheric deposition	Planned (2019)
	Invasive species	Ballast water	Planned (2019)
	Furan compounds	Atmospheric deposition	Planned (2019)
	Mercury	Industrial point sources	Approved (2008)
		Municipal point sources	
		Resource extraction	
		Atmospheric deposition	
		Natural sources	
		Nonpoint source	
	PCBs	Unknown nonpoint source	Planned (2008)
	PCBs (dioxin-like)	Unknown nonpoint source	Planned (2008)
	Selenium (south bay only)	Agriculture	Planned (2019)
		Domestic use of groundwater	

NOTES:

[a] Impairment to steelhead habitat

[b] The date of planned TMDL completion is provided in the 303(d) lists from the State Water Resources Control Board. Although the planned date of completion has been passed for many of the TMDL projects, approved TMDLs have not been completed as of January 2011.

SOURCE: State Water Resources Control Board (SWRCB), *2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report.* http://www.swrcb.ca.gov/water_issues/programs/tmdl/integrated2010.shtml, approved by the SWRCB on August 4, 2010; Accessed January 11, 2011.

[4] State Water Resources Control Board (SWRCB), *2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report*, approved by the SWRCB on August 4, 2010.

San Francisquito Creek has been recognized by the State Water Resources Control Board (SWRCB) as being impaired with Diazinon and Sediment/Silt. Diazinon is an insecticide that has been used on lawns, gardens, agricultural crops, and livestock. The use of this pesticide, however, has declined rapidly since 1999; and in 2004, the EPA phased out most urban applications of diazinon. It is important to note that the TMDL and related strategy approved for diazinon would apply to all urban creeks in the Bay Area, regardless of whether they are formally designated as impaired [5]; thus, Atherton Channel should be considered as impaired with diazinon as well. This is because all Bay Area urban creeks can reasonably be assumed to receive pesticide discharges, and because implementation actions will be most efficient if applied region-wide.

Sedimentation and siltation is the primary threat to steelhead trout, which is known to inhabit San Francisquito Creek. A TMDL strategy from sedimentation/siltation is planned for 2013. Both the Santa Clara Valley Water District and the San Mateo Countywide Water Pollution Prevention Program have jurisdiction over parts of the San Francisquito Creek Watershed, and have watershed, restoration and stormwater management programs that are addressing these issues. The San Francisquito Creek TMDL project is currently focused on gaining an understanding of the sources and impacts of excess sediment in this watershed, one of the most promising steelhead habitats in the South Bay.

Understanding water quality problems in the watershed will allow the many engaged stakeholders to work together to preserve, protect, and restore this vaulable fishery. The San Francisquito Creek Joint Powers Authority (JPA) is responsible for the San Francisquito Creek Watershed Analysis and Sediment Reduction Plan which partially fulfills National Pollution Discharge Elimination System (NPDES) permit provisions that require the co-permittees of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) and the San Mateo Countywide Stormwater Pollution Prevention Program (SM-STOPPP) within the San Francisquito Creek watershed to assess and implement sediment management measures in the watershed.

All Bay Area urban creeks were placed on the State Water Resources Control Board 2002 "Monitoring List[6]" due to the potential of trash to impair water quality.[7] While trash is not a pollutant in the Section 303(d) list, trash can threaten aquatic life and recreational beneficial uses designated by the Basin Plan. Trash and litter in creeks vary greatly depending on nearby land uses and proximity to road over-crossings. This indicated that trash is a water quality concern for both San Francisquito Creek and Atherton Channel.

5 California Regional Water Quality Control Board, San Francisco Bay Region (SF Bay RWQCB). *Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks Water Quality Attainment Strategy and Total Maximum Daily Load (TMDL) - Proposed Basin Plan Amendment and Staff Report*, Prepared by Bill Johnson. November 2005.

6 The SWRBC "Monitoring List" contains the list of water bodies where minimal, contradictory, or anecdotal information suggests that water quality standards are not being achieved but the available data or information is inadequate to draw a conclusion.

7 State Water Resources Control Board (SWRCB), *Revision of the Clean Water Act Section 303(d) List of Water Quality Limited Segments, Staff Report*, February 2003.

Groundwater Hydrology

The Plan area is within the Santa Clara Valley Groundwater Basin. The basin is composed primarily of geologically young fluvial, alluvial fan, and basin deposits of clay, silt, sand and gravel. Businesses located within the Plan area with documented releases to soil or groundwater have reported groundwater levels ranging from 29 to 45 feet below the ground surface, as discussed in the Hazardous Materials section. Groundwater along El Camino Real is likely to be shallowest closer to Atherton Channel and San Francisquito Creek, and deepest along the drainage divide, in the middle of the Plan area. Groundwater flow direction is primarily in the direction of the San Francisco Bay, but may be locally influenced by the creeks or groundwater wells.

The Santa Clara Groundwater Basin is further divided into subbasins based on topographic divides and the location of various groundwater aquifers. The Plan area is part of the San Mateo Plain Groundwater Subbasin, and its southeastern boundary is marked by San Francisquito Creek. The southeastern side of the creek is part of the Santa Clara Groundwater Subbasin. The designated beneficial uses of groundwater basins, as defined in the Basin Plan, are presented in Table 4.8-2.

San Mateo Plain Subbasin

The San Mateo subbasin occupies a structural trough, sub-parallel to the northwest trending Coast Ranges, at the southwest end of San Francisco Bay. San Francisco Bay constitutes its eastern boundary. The Santa Cruz Mountains form the western margin of the San Mateo subbasin. The Westside basin bounds it on the north and its southern limit is defined by San Francisquito Creek. The basin is composed of alluvial fan deposits formed by tributaries to San Francisco Bay that drain the basin.[8] The water bearing formations of the San Mateo subbasin are comprised of two groups: the Santa Clara Formation of Plio-Pleistocene age and the Quaternary age alluvial deposits. The Quaternary alluvium constitutes the most important water bearing formation of this basin and basically all larger yielding wells acquire their water from it (Department of Water Resources, 2004). Groundwater from the basin is known to have high concentrations of saline, and some wells have reported concentrations of nitrate-nitrogen that exceed EPA maximum contaminant levels.[9]

Groundwater extracted during construction within the plan area is likely to have contamination issues due to the numerous Regional Water Quality Control Board (RWQCB) and Department of Toxic Substances Control hazardous waste cleanup sites in the area (see Section 4.7, Hazardous Materials and Hazards).

[8] Department of Water Resources (DWR), *California's Groundwater, Bulletin 118, San Francisco Bay Hydrologic Region, Individual Basin Description for the Santa Clara Valley Groundwater Basin: San Mateo Plain Subbasin.* February 2004.

[9] Department of Water Resources (DWR), *California's Groundwater, Bulletin 118, San Francisco Bay Hydrologic Region, Individual Basin Description for the Santa Clara Valley Groundwater Basin: San Mateo Plain Subbasin.* February 2004.

Flood Hazards

Flooding is inundation of normally dry land as a result of rise in the level of surface waters or rapid accumulation of stormwater runoff. Flooding can also occur due to tsunamis, seiches, or failure of dams.

Flooding

The only area in the vicinity of the Specific Plan that is mapped by the Federal Emergency Management Agency (FEMA) within the 100-year flood event is associated with the San Francisquito Creek channel.[10] The FEMA mapped flood zone reflects the areas adopted for insurance purposes and are also the zones that appear in the San Mateo County General Plan. An excerpt of the FEMA map for this area is included as **Figure 4.8-1**. Generally, the portion of San Francisquito Creek upstream of El Camino Real is considered to have adequate capacity to convey a 100-year storm event, however, some shallow inundation (about 1 feet or less) is anticipated along the creek between El Camino Real and Highway 101 (San Francisco Creek Coordinated Resource Management and Planning).11 Such an event could potentially affect the extreme southeastern portion of the study area.

Dam Failure

Several reservoirs in the region present the remote risk of downstream inundation in the event of a dam failure. The California Office of Emergency Management (now the California Emergency Management Agency) has directed dam operators to delineate areas likely to be inundated in the event of a catastrophic dam failure.[12] Dam inundation zones have been mapped for the Felt Lake Dam and the Searsville Dam (upstream of San Francisquito Creek). Dam inundation mapping indicates that failure of the Felt Lake Dam would flood areas upstream of El Camino Real, just outside the boundaries of the Plan area. However, failure of the Searsville Dam could inundate portions of the planning area along El Camino Real from College Avenue east to San Francisquito Creek. A generalized dam failure inundation map is included as **Figure 4.8-2**.

4.8.2 Regulatory Setting

Water Quality Regulations

The federal Clean Water Act (1972) and subsequent amendments, under the enforcement authority of the EPA, were enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The Clean Water Act gave the EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The act also set water quality standards for surface waters and established the National Pollutant

[10] Federal Emergency Management Agency (FEMA), *Flood Insurance Rate Map Panel No. 060321 0011D*, Prepared by FEMA, available online at http://msc.fema.gov, April 21, 1999.

[11] San Francisquito Creek Coordinated Resource Management and Planning (CRMP), *Reconnaissance Investigation Report of San Francisquito Creek*, December 1997.

[12] Office of Emergency Services (OEM), *Dam Inundation – Registered Images and Boundary Files in ArcView Format*, November 2007.

SOURCE: FEMA, 1999

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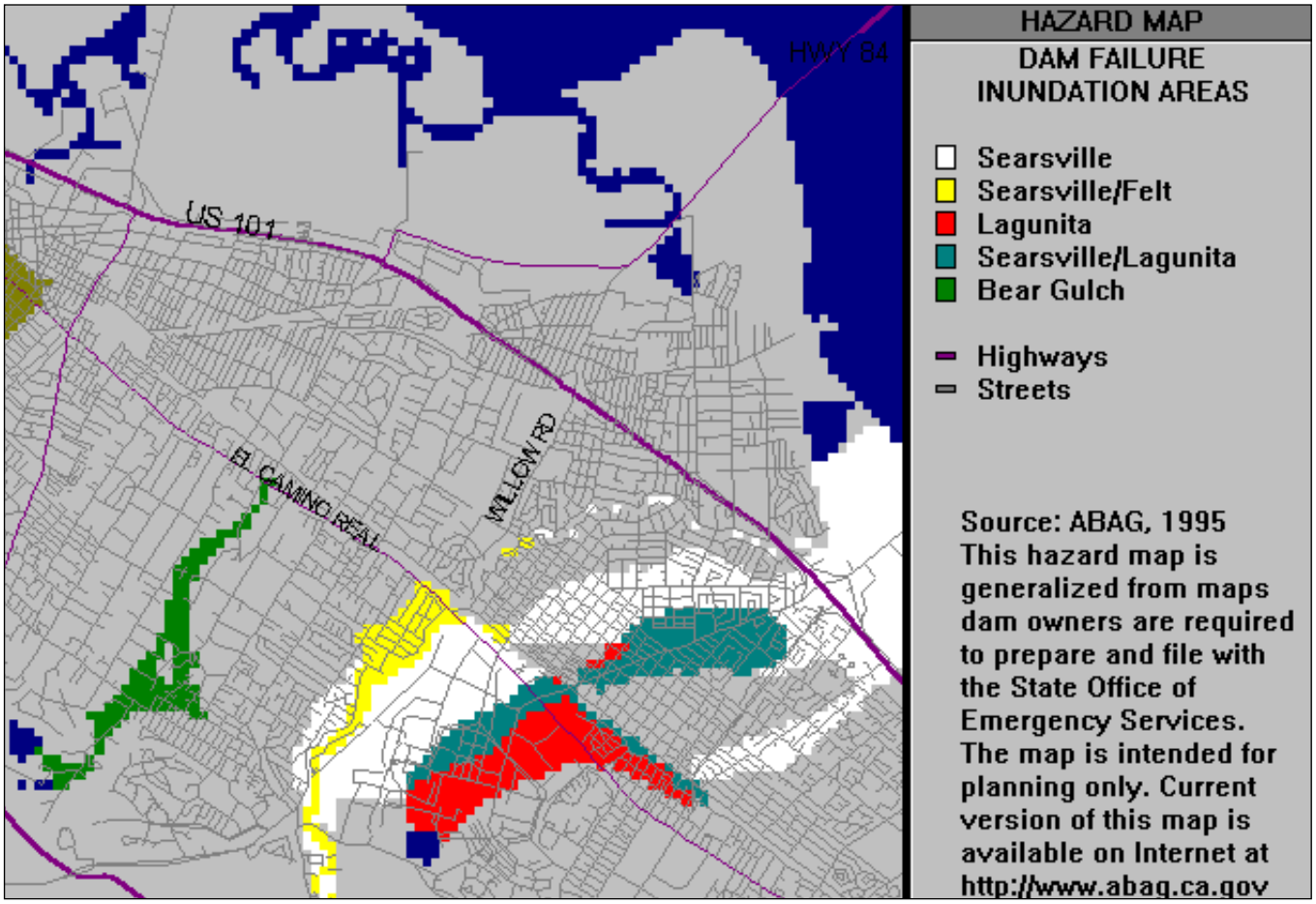
Figure 4.8-1

Flood Zone in the Specific Plan Area



SOURCE: ABAG, 1995

Menlo Park El Camino Real/Downtown Specific Plan EIR . 208581

Figure 4.8-2
Dam Failure Inundation Areas

Discharge Elimination System (NPDES) program to protect water quality. Under Section 402 of the act, discharge of pollutants to navigable waters is prohibited unless the discharge is in compliance with an NPDES permit. The EPA determined that California's water pollution control program has sufficient authority to manage the NPDES program under state law in a manner consistent with the Clean Water Act. Therefore, implementation and enforcement of the NPDES program is conducted through the California State Water Resources Control Board and the nine Regional Water Quality Control Boards. These agencies also implement the Waste Discharge Requirements Program, which regulates discharges of waste to land under the California Water Code as well as discharges of waste into waters of the state that are outside federal jurisdiction, as defined under the Clean Water Act.

The San Francisco Bay Regional Water Quality Control Board, Region No. 2, regulates water quality in the Plan area under the State of California's Porter-Cologne Water Quality Control Act through the regulatory standards and objectives set forth in the water quality control plan (referred to as the Basin Plan) prepared for the region. The Basin Plan identifies existing and potential beneficial uses and provides numerical and narrative water quality objectives to protect those uses. The current Basin Plan was adopted on January 18, 2007 and is periodically updated and amended.[13]

Impaired Water Bodies and Total Maximum Daily Loads

In accordance with Section 303(d) of the Clean Water Act, state governments must present the EPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires the development of actions, known as total maximum daily loads (TMDLs), to improve water quality of impaired water bodies. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. The TMDL serves as the means to attain and maintain water quality standards for the impaired water body to support designated and potential beneficial uses identified in the Basin Plan, prepared by the Regional Water Quality Control Board. The listing of a water body as impaired does not necessarily suggest that the water body cannot support the beneficial uses; rather, the intent is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for future water quality degradation. NPDES permits for water discharges must take into account the pollutant from which a water body is listed as impaired. Specific requirements for the permits would be specified in the TMDL for that pollutant.

The Basin Plan amendment incorporating a TMDL and water quality attainment strategy for diazinon and pesticide-related toxicity in the Bay Area's urban creeks has been incorporated into the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan). The amendment was adopted by the Regional Water Quality Control Board on November 16, 2005, and approved by the State Water Resources Control Board on November 15, 2006.

[13] California Regional Water Quality Control Board, San Francisco Bay Region (SF Bay RWQCB), *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*, January 18, 2007.

Construction in Waters of the State and of the United States

The Regional Water Quality Control Board has regulatory authority over construction in waters of the United States and waters of the state, including activities in wetlands, under both the federal Clean Water Act and the State of California's Porter-Cologne Water Quality Control Act (California Water Code, Division 7). Under the Clean Water Act, the Regional Water Quality Control Board has regulatory authority over actions in waters of the United States through the issuance of water quality certifications under Section 401 of the Clean Water Act, which are issued in conjunction with permits issued by the Army Corps of Engineers under Section 404 of the Clean Water Act. When the Regional Water Quality Control Board issues a Section 401 certification for a project, the project is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of the water quality certification. Activities in areas that are outside the jurisdiction of the Army Corps of Engineers (e.g., isolated wetlands, vernal pools, or stream banks above the ordinary high water mark) are regulated by the Regional Water Quality Control Board under the authority of the Porter-Cologne Act. Activities that lie outside of the Army Corps of Engineers jurisdiction may require the issuance of either individual or general waste discharge permits.

Section 401 of the Clean Water Act provides the State Water Resources Control Board and the Regional Water Quality Control Boards with the regulatory authority to waive, certify, or deny any proposed federally permitted activity that could result in a discharge to surface waters of the state. To waive or certify an activity, these agencies must find that the proposed discharge will comply with state water quality standards, including protection of beneficial uses and water quality objectives. If these agencies deny the proposed activity, the federal permit cannot be issued. This water quality certification is generally required for projects involving the discharge of dredged or fill material to wetlands or other water bodies, as described in Section 4.3, Biological Resources.

Under the California Fish and Game Code, the California Department of Fish and Game has jurisdiction over any activity that could affect the bank or bed of any stream that has value to fish and wildlife. If any changes are proposed along a creek or waterway within its jurisdiction, a streambed alteration agreement would be required under California Fish and Game Code Sections 1601 and 1603. Refer to Section 4.3, Biological Resources, for additional information.

National Pollutant Discharge Elimination System (NPDES) Waste Discharge Regulations

The NPDES program requires all facilities that discharge pollutants into waters of the United States follow a permitting process. The discharge permit provides two levels of control for the protection of water quality: technology-based limits and water-quality-based limits. Technology-based limits are based on the ability of dischargers in the same category to treat wastewater, while water-quality-based limits are required if technology-based limits are not sufficient to provide protection of the water body. Water-quality-based effluent limitations required to meet water

quality criteria in the receiving water are based on criteria specified in the National Toxics Rule, the California Toxics Rule, and the Basin Plan. NPDES permits must also incorporate Total Maximum Daily Load (TMDL) waste load allocations when they are developed.

The NPDES regulations initially focused on municipal and industrial wastewater discharges and then addressed stormwater discharge regulations, which became effective in November 1990. NPDES permits for wastewater and industrial discharges specify discharge prohibitions and effluent limitations and also include other provisions (such as monitoring and reporting programs) deemed necessary to protect water quality. In California, the State Water Resources Control Board and the Regional Water Quality Control Boards implement and enforce the NPDES program.

Municipal Stormwater Permits

Stormwater in San Mateo County is managed in accordance with a municipal stormwater NPDES permit from the San Francisco Bay Regional Water Quality Control Board (permit no. R2-2009-0074). This permit contains a comprehensive plan to reduce the discharge of pollutants to the "maximum extent practicable" and mandates that participating municipalities implement an approved stormwater management plan. The stormwater program incorporates best management practices (BMPs) that include construction controls (such as a model grading ordinance), legal and regulatory approaches (such as stormwater ordinances), public education and industrial outreach (to encourage the reduction of pollutants at various sources), inspection activities, wet-weather monitoring, and special studies.

The Regional Water Quality Control Board added provision C.3 to the San Mateo County municipal stormwater permit in 2003 and is included in the 2009 NPDES permit. In accordance with these C.3 requirements, new development and redevelopment projects are required to incorporate treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and manage runoff flows. New and redevelopment projects that involve the creation or replacement of 10,000 square feet or more of impervious surfaces must comply with the C.3 requirements. Reconstruction projects located within a public street or right-of-way, such as pipeline projects, are exempt from the C.3 requirements where both sides of the right-of-way are developed.

Construction Stormwater NPDES Permit

The federal Clean Water Act prohibits discharges of stormwater from construction projects unless the discharge is in compliance with an NPDES permit. The State Water Board is the permitting authority in California and has adopted a Statewide General Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit, Order No. 99-08) that encompasses one or more acres of soil disturbance. Effective July 1, 2010 all dischargers are required to obtain coverage under the updated Construction General Permit Order 2009-0009-DWQ, adopted on September 2, 2009. Construction activities include clearing, grading, excavation, stockpiling, and reconstruction of existing facilities (removal or replacement).

In general, the Construction General Permit requires that the landowner and/or contractor submit a notice of intent (NOI) and develop and implement a storm water pollution prevention plan (SWPPP). It is the responsibility of the landowner to obtain coverage under this General Permit prior to commencement of construction activities. To obtain coverage, the landowner must file an NOI with a vicinity map and the appropriate fee to the State Water Board. The NOI requirements of the General Permit are intended to establish a mechanism which can be used to clearly identify the responsible parties, locations, and scope of operations of dischargers covered by the General Permit and to document the discharger's knowledge of the requirements for a SWPPP. The new permit requires a risk-based permitting approach, dependent upon the likely level of risk imparted by a project. The new permit also contains several additional compliance items, including: (1) additional mandatory Best Management Practices (BMPs) to reduce erosion and sedimentation, which may include incorporation of vegetated swales, setbacks and buffers, rooftop and impervious surface disconnection, bioretention cells, rain gardens, rain cisterns, implementation of pollution/sediment/spill control plans, training, and other structural and non-structural actions; (2) sampling and monitoring for non-visible pollutants; (3) effluent monitoring and annual compliance reports; (4) development and adherence to a Rain Event Action Plan; (5) requirements for the post-construction period; (6) numeric action levels and effluent limits for pH and turbidity; (7) monitoring of soil characteristics on site; and (8) mandatory training under a specific curriculum. Under the updated permit, BMPs will be incorporated into the compliance action and monitoring requirements for each development site, as compared to the existing permit, where specific BMPs are implemented via a SWPPP. Under the updated permit, a SWPPP would be reviewed by the State Water Board. The City verifies that developments have met all State Water Board permitting requirements prior to issuance of City approval of a grading and drainage plan.

Local Plans and Policies

San Mateo Countywide Water Pollution Prevention Program

The San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) was established in 1990 to reduce the pollution carried by stormwater into local creeks, the San Francisco Bay, and the Pacific Ocean. The program is a partnership of the City/County Association of Governments (C/CAG), each incorporated city and town in the county, and the County of San Mateo, which share a common National Pollutant Discharge Elimination System (NPDES) permit. The Federal Clean Water Act and the California Porter-Cologne Water Quality Control Act require that large urban areas discharging stormwater into the San Francisco Bay or the Pacific Ocean have an NPDES permit to prevent harmful pollutants from being dumped or washed by stormwater runoff, into the stormwater system, then discharged into local waterbodies. San Mateo, Santa Clara, Alameda, Marin, Sonoma, Solano, San Francisco, Fairfield/Suisun, Vallejo and Contra Costa Counties have each obtained these permits. Certain types of businesses must also apply for individual coverage, by filing a Notice of Intent (NOI) with the State Water Resources Control Board.

As part of the SMCWPPP program, permitted facilities are required to establish and implement a Stormwater Management Plan (SWMP) which details how potential pollutant sources are being managed to prevent any commingling with stormwater. The Stormwater Management Plan

outlines the priorities, key elements, strategies, and evaluation methods for the San Mateo Countywide Water Pollution Prevention Program. The comprehensive Program includes pollution reduction activities for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations. The program also includes a public education effort, target pollutant reduction strategy, and monitoring program.

Menlo Park General Plan

The City of Menlo Park has established goals, policies and programs in regards to hydrology and water quality issues within the *Menlo Park General Plan*. The following policies pertaining to hydrology and water quality would pertain to the Specific Plan:

- **Land Use Element**

  Policy I-H-3: Plant material selection and landscape and irrigation design for City parks and other public facilities and in private developments shall adhere to the City's Water Efficient Landscaping Policy.

  Policy I-H-7: The use of reclaimed water for landscaping and other feasible uses shall be encouraged.

  Policy I-H-9: Urban development in areas with geological and earthquake hazards, flood hazards, and fire hazards shall be regulated in an attempt to prevent loss of life, injury, and property damage.

  Policy I-H-10: The City shall continue to participate in the National Flood Insurance Program. To this end, the City shall work to keep its regulations is full compliance with standards established by the Federal Emergency Management Agency.

4.8.3 Impacts and Mitigation Measures

Significance Criteria

Implementation of the Plan would be considered to have a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map;
- 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; and/or
- Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche,[14] tsunami, or mudflow.

Based on the proposed Specific Plan and its physical setting, the Plan would not result in impacts related to the following criterion. No impact discussion is provided for this topic for the reasons listed below.

- *Seiche, Tsunami and Mudflows*. The project area is not located near an enclosed body of water capable of producing seiche waves and is too far inland to be at risk for tsunami hazards. The relatively flat topography of the project area is also not in an area susceptible to mudflows. Therefore, there is no impact related to seiche, tsunami, or mudflow.

Specific Plan Guidelines D.2.46, D.4.09, D.5.21, D.6.03, D.6.04, and E.3.8.4.06 – E.3.8.4.08 (see Table 3-2, Specific Plan Guidelines) require the use of permeable materials for sidewalks and other paved surfaces and use of bioswales, green roofs, and rain gardens where possible and, as discussed further, would help to mitigate hydrology impacts in the Plan Area.

Impacts

Impact HYD-1: Construction associated with the proposed Specific Plan projects could adversely affect water quality and drainage patterns in the short term due to erosion and sedimentation. (Less than Significant)

Construction activities undertaken to implement transportation improvements and subsequent development projects in the Specific Plan could include excavation, soil stockpiling, boring, and/or grading activities that create bare slopes as existing vegetation is stripped prior to the installation of impervious surfaces. Soil erosion is probable during construction and resulting water quality problems could include turbidity, increased algal growth, oxygen depletion, or sediment buildup thereby degrading aquatic habitats. Sediment from project-induced erosion could also accumulate in downstream drainage facilities and interfere with stream flow, thereby aggravating downstream flooding conditions.

[14] A seiche is a free or standing wave oscillation(s) of the surface of water in an enclosed or semi-enclosed basin, such as San Pablo Bay, that may be initiated by an earthquake.

Depending on the project location, impacts from construction could affect local storm drain catch basins, culverts, flood control channels, streams, and San Francisco Bay. Most runoff in urban areas is eventually directed to either a storm drain or water body, unless allowed to stand in a detention area and filter into the ground. For this reason, even projects not directly adjacent to or crossing a sensitive area could have an impact. However, all projects that would disturb one acre or more are required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), in accordance with the State Water Resources Control Board's General Construction Permit. The SWPPP would include erosion control measures such as those listed below:

- Limiting excavation and grading activities during the dry season only (April 15 to October 15), to the extent possible. This would reduce the chance of severe erosion from intense rainfall and surface runoff, as well as the potential for soil saturation in swale areas.

- If excavation does occur during the rainy season, storm runoff from the construction area can be regulated through a stormwater management/erosion control plan that may include temporary on-site silt traps and/or basins with multiple discharge points to natural drainages and energy dissipaters. Stockpiles of loose material are generally covered and runoff diverted away from exposed soil material. Sediment basin/traps would be located and operated to minimize the amount of offsite sediment transport. Any trapped sediment would be removed from the basin or trap and placed at a suitable location on-site, away from concentrated flows, or removed to an approved disposal site.

- Temporary erosion control measures would be provided until perennial revegetation or landscaping is established and can minimize discharge of sediment into nearby waterways. For construction within approximately 500 feet of a water body, fiber rolls and/or gravel bags would be placed upstream adjacent to the water body.

- After completion of grading, erosion protection would be provided on all cut-and-fill slopes. Revegetation would be facilitated by mulching, hydroseeding, or other methods and initiated as soon as possible after completion of grading and prior to the onset of the rainy season (by October 15).

- Permanent revegetation/landscaping shall emphasize drought-tolerant perennial ground coverings, shrubs, and trees to improve the probability of slope and soil stabilization without adverse impacts to slope stability due to irrigation infiltration and long-term root development.

- Best Management Practices (BMPs) selected and implemented for the project shall be in place and operational prior to the onset of major earthwork on the site. The construction phase facilities shall be maintained regularly and cleared of accumulated sediment as necessary.

- Hazardous materials such as fuels and solvents used on the construction sites shall be stored in covered containers and protected from rainfall, runoff, and vandalism. A stockpile of spill cleanup materials shall be readily available at all construction sites. Employees shall be trained in spill prevention and cleanup, and individuals should be designated as responsible for prevention and cleanup activities.

SWPPP(s) for projects immediately adjacent to or within drainages would also incorporate the following additional erosion control minimum criteria:

- Construction equipment would not be operated in flowing water, except as may be necessary to construct crossings or barriers.

- Stream diversion structures would be designed to preclude accumulation of sediment. If this is not feasible, an operation plan should be developed to prevent adverse downstream effects from sediment discharges.

- Where working areas are adjacent to or encroach on live streams, barriers would be constructed that are adequate to prevent the discharge of turbid water in excess of specified limits. The discharged water would not exceed 110 percent of the ambient stream turbidity of the receiving water, if the receiving water is a flowing stream with turbidity greater than 50 nephelometric turbidity unit (NTU), or 5 NTU above ambient turbidity for ambient turbidities that are less than or equal to 40 NTU. If the water is discharged to a dry streambed, the discharged water shall not exceed 50 NTU.

- Material from construction work shall not be deposited where it could be eroded and carried to the stream by surface runoff or high stream flows.

- Riparian vegetation shall be removed only when absolutely necessary.

In addition, the City of Menlo Park Public Works Department has requirements for development or redevelopment projects that replace or introduce more than 10,000 square feet of impervious surfaces as well as simplified requirements for smaller projects. These requirements include preparation of a Hydrology Report containing minimum design criteria. Incorporation of these requirements or equivalent practices would be expected to reduce this impact on water resources to a less-than-significant level.

Mitigation: None required.

Impact HYD-2: Implementation of the Specific Plan could adversely affect water resources in the long term by reducing permeable surfaces, which could degrade water quality in receiving waters, increase runoff volume and associated downstream flood potential, decrease groundwater recharge, or alter drainage patterns. (Less than Significant)

Subsequent development projects in the Plan area could result in the expansion or reconfiguration of existing development which might increase the overall amount of impervious surface areas. The plan area is currently largely developed; however, redevelopment could result in a net increase of impervious surfaces. Increasing the total area of impervious surfaces can result in a number of potential impacts associated with increased volume of runoff and a greater potential to introduce pollutants to receiving waters. Urban runoff can carry a variety of pollutants, such as oil and grease, metals, sediment, and pesticide residues from roadways, parking lots, rooftops, landscaped areas, and other surfaces, and deposit them in adjacent waterways. Pollutant concentrations in urban runoff are extremely variable and are dependent on storm intensity, land use, elapsed time between storms, and the volume of runoff generated in a given area that reaches receiving waters. The most critical time for urban runoff effects is in autumn under low flow

conditions. Pollutant concentrations are typically highest during the first major rainfall event after the dry season, known as the "first flush."

Water quality in stormwater runoff is regulated locally by the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), the municipal storm water requirements set by the Regional Water Quality Control Board which includes the C.3 provisions. Adherence to these updated requirements causes new development and redevelopment projects to incorporate treatment measures and other appropriate source control and site design features that reduce pollutants in runoff to the maximum extent practical. Many of these requirements result in the construction of Low Impact Development techniques such as use of onsite infiltration through landscaping or vegetated swales that reduce pollutant loading in offsite discharges. Incorporation of these types of source control design measures can even potentially improve upon existing conditions.

As stated above, the Plan area is already largely developed and widely covered by impervious surfaces. The underlying shallow aquifer is not currently used for groundwater supply; however, it is considered by the Regional Water Quality Control Board as a potential source for groundwater. A net increase in impervious surfaces might affect the amount of precipitation that is recharged to the shallow aquifer. However, implementation of drainage control design features required by SMCWPPP and the City of Menlo Park such as vegetated swales and landscaping would assist in balancing this effect. Therefore, the likely result of implementation of the Plan would be a less than significant impact to groundwater supplies.

The Plan recommends that new buildings incorporate green roofs (Specific Plan Guideline E.3.8.4.06) that harvest rain water that can then be recycled for plant irrigation or for some domestic uses, and that also can reduce peak stormwater volumes and/or flow rates to relieve both existing and future system capacity limitations. The Specific Plan also recommends the use of porous paving material on driveways and parking areas (Specific Plan Guideline E.3.8.4.07) to minimize stormwater runoff from paved surfaces, as well as stormwater management techniques such as the use of bioswales on surface parking lots, and rain gardens in landscaped areas (Specific Plan Guideline E.3.8.4.08). Existing pervious surfaces are typically preserved to the maximum extent possible to minimize increases in stormwater runoff volumes and rates.

The current regulatory framework that governs the drainage control of stormwater in new development and redevelopment is designed to meet regional water quality objectives. The C.3 provisions ensure that new development and redevelopment projects that create or replace 10,000 square feet of impervious surface incorporate treatment system designs.[15] Adherence to these stringent requirements would result in a less than significant impact related to water quality in stormwater runoff, runoff volume and associated flooding potential, groundwater recharge, and generally altering drainage patterns.

[15] Note that this threshold will drop to 5,000 square feet for auto service, gas stations, restaurants and parking lots as of December 1, 2011. By December 1, 2012, projects between 2,500 and 10,000 square feet will be required to include at least one low impact development feature.

Mitigation: None required.

Impact HYD-3: Implementation of the Specific Plan would not place housing or other structures that would impede or redirect floodflows within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map (Less than Significant)

As shown in Figure 4.8-1, only a small portion of the Plan area is located within a FEMA-designated flood zone, and this area is contained entirely within the channel of San Francisquito Creek. This area is designated Zone A, which is a special flood hazard area without water surface elevations determined. While FEMA regulations do not outright prohibit development within Zone A, development requires detailed site-specific calculations, and the associated standards would be difficult if not impossible to meet in an active and relatively narrow creek channel. The creek channel is also within the jurisdiction of the San Francisquito Creek Joint Powers Authority (JPA), a multi-jurisdictional agency comprised of the cities of Palo Alto, Menlo Park and East Palo Alto, the Santa Clara Valley Water District, and San Mateo County Flood Control District. The JPA would also likely not allow construction within the creekbed due to the high potential for conflicts with regard to water flow and biological resources.

In addition to the regulatory barriers to construction within the creek channel, only one privately-owned parcel, 100 El Camino Real, extends into the creekbed itself. This particular site is occupied by a hotel that appears to be an income-generating property in good condition and as such currently represents an unlikely redevelopment location. The parcels on the opposite side of El Camino Real (addressed 15 through 99 El Camino Real) are separated from the creek by a public street (Creek Drive) and are likewise occupied by buildings that do not appear to be immediate development sites.

As a result of the regulatory and practical barriers to construction within the creek, this impact would be less than significant.

Mitigation: None required.

Impact HYD-4: Implementation of the Specific Plan would not 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 (Less than Significant)

According to mapping compiled by the Association of Bay Area Governments, a portion of the Plan area, from the intersection of College Avenue and El Camino Real southwards, is located within the potential dam inundation area for the Searsville dam (ABAG, 1995). However, the dam is regulated by the Division of Safety of Dams which requires dams to meet stringent seismic criteria and receive routine maintenance and inspection. Therefore, the potential for a catastrophic release of the

dam is considered a low probability resulting in a less-than-significant impact with implementation of the proposed Specific Plan.

Mitigation: None required.

Cumulative Impacts

Impact HYD-5: Concurrent implementation of the proposed Specific Plan and projected regional development could contribute to degradation of regional water quality, reduction of groundwater recharge, or result in increased flooding hazards. (Less than Significant)

Implementation of projects in the Specific Plan could result in indirect cumulative impacts on water resources by accommodating future planned urban development that would have the potential to alter drainage patterns and impact water quality. In addition, any increases in impervious surfaces could create higher erosion rates as well as reduce groundwater recharge. The Specific Plan and other future projects in the region would be required to comply with drainage and grading ordinances intended to control runoff and regulate water quality at each development site. New projects would be required to demonstrate adequate capacities of stormwater volumes that would be managed by downstream conveyance facilities. The City of Menlo Park ordinances regarding water quality and National Pollution Discharge Elimination System (NPDES) permitting requirements apply throughout the plan area. All construction work would require permits from the Regional Water Quality Control Board which requires all activities to incorporate Best Management Practices that minimize adverse effects to water quality. Therefore, the effect of the Specific Plan on water quality and hydrology, in combination with other foreseeable projects would not be significant.

Mitigation: None required.
