3.12 HYDROLOGY AND WATER QUALITY

Introduction

This section describes local and regional hydrology, including existing drainage facilities, flood hazards, water quality, and groundwater issues such as quantity, quality, availability, and recharge.

Information in this section is based on the Facebook @ Menlo Park West Campus Hydrology Report1 (Appendix 3.12), and additional references as noted in the text.

Issues identified in response to the Notice of Preparation (NOP) (Appendix 1) were considered in preparing this analysis. Applicable issues that were identified pertain to the impacts of sea level rise on the Project.

The increase in employees at the East Campus could result in impacts related to the exposure of people to adverse effects. The increase in employees at the East Campus would not result in any other impacts associated with hydrology and water quality; therefore, those Project impacts at the East Campus are not discussed further in this section.

Applicable Plans and Regulations

Water resources are regulated by a variety of statutes at the local, State, and federal levels. Agencies with regulatory and enforcement jurisdiction in the City include the City, the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), the San Mateo County Flood Control District (SMCFCD), the State Water Resources Control Board (SWRCB), the San Francisco Bay Regional Water Quality Control Board (RWQCB), the California Department of Fish and Game (DFG), Federal Emergency Management Agency (FEMA), the US Army Corps of Engineers (Corps), Bay Conservation and Development Commission (BCDC), and the US Environmental Protection Agency (EPA). Plans, policies, and regulations pertaining to hydrology and water quality in the Project area are outlined below.

Federal

Clean Water Act (CWA). The CWA was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the Nation’s waters. The 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 EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the SWRCB and the RWQCB for water quality control planning and control programs, such as the NPDES Program.

1 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
Responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The San Francisco Bay RWQCB (Region 2) implements a number of federal and state laws, the most important of which are the state Porter-Cologne Water Quality Control Act and the federal CWA.

Section 303(d) and Total Maximum Daily Loads (TMDLs). The CWA contains two strategies for managing water quality. One is a technology-based approach that includes requirements to maintain a minimum level of pollutant management using the best available technology. The other is a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies. Section 303(d) requires that the states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the EPA administrator deems they are appropriate), the states are to develop TMDLs. TMDLs are established at the level necessary to implement the applicable water quality standards. The CWA does not expressly require the implementation of TMDLs. However, federal regulations require that an implementation plan be developed along with the TMDL and Section 303(d), 303(e), and their implementing regulations require that approved TMDLs be incorporated into water quality control plans. The EPA has established regulations (40 CFR 122) requiring that NPDES permits be revised to be consistent with any approved TMDL. All discharges associated with the Project would be subject to the Urban Pesticide TMDL, Mercury TMDL, and any other approved TMDLs at the time of development. A Mercury TMDL has been established for the San Francisco Bay (Bay) and approved by the SWRCB (Resolution 2007-0045). TMDLs for the other constituents contributing to impairment are scheduled to be completed by 2019.

Floodplain Development. FEMA is responsible for determining flood elevations and floodplain boundaries based on Corps studies. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year floodplain.

FEMA allows non-residential development in the floodplain; however, construction activities are restricted within the flood hazard areas depending upon the potential for flooding within each area. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR), which enables FEMA to require municipalities that participate in the NFIP to adopt certain flood hazard reduction standards for construction and development in 100-year floodplains. Because the City participates in the NFIP, the Project would be subject to FEMA regulations for development within a floodplain.
State

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act establishes the SWRCB and each RWQCB as the principal State agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the State (including both surface water and groundwater) and directs the RWQCBs to develop regional Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative.

The San Francisco Bay RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. Water quality objectives for the Bay and its tributaries are specified in the San Francisco Bay Basin Water Quality Control Plan (Basin Plan) prepared by the RWQCB in compliance with the federal CWA and the State Porter-Cologne Water Quality Control Act. The water quality objectives are achieved primarily through the establishment and enforcement of Waste Discharge Requirements (WDRs). WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Because the City is located within the San Francisco Bay RWQCB’s jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements. The Project is located within Region 2 and is subject to CWA and RWQCB requirements.

California Water Code. All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state, other than into a community sewer system, shall file a Report of Waste Discharge (WDR) containing information that may be required by the appropriate RWQCB. The projects are then required to obtain approval of WDRs from the appropriate RWQCB. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and process and wash-down wastewater. WDRs for discharges to surface waters also serve as NPDES permits, which are further described below.

National Pollutant Discharge Elimination System Program (NPDES). The NPDES permit system was established in the CWA to regulate point source discharges. Point sources include a municipal or industrial discharge at a specific location or pipe. Nonpoint pollution sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements. Construction site runoff and urban development stormwater runoff are diffuse sources regulated under the NPDES permit program because they are conveyed in a discrete system and discharge at a specific location(s). For stormwater 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, and (4) implementing a comprehensive Stormwater Management Program. The goal of the NPDES diffuse source (stormwater) regulations is to improve the quality of stormwater discharged to receiving waters to the “maximum extent practicable” (MEP) through the use of best management practices (BMPs). ²

**NPDES General Construction Activity Stormwater Permit (Construction General Permit).** Pursuant to the CWA Section 402(p) and as related to the goals of the Porter-Cologne Water Quality Control Act, described below, the SWRCB has issued a statewide NPDES General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAR000002), adopted September 2, 2009.

Construction activities, subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least one acre of total land area, which would apply to construction at the West Campus.

To obtain coverage under the Construction General Permit, the landowner or other applicable entity must file Permit Registration Documents (PRDs) prior to the commencement of construction activity, which include a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other documents required by the Construction General Permit. The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater, as well as non-stormwater discharges. BMPs are intended to reduce impacts to the MEP, a standard created by Congress to allow regulators the flexibility necessary to tailor programs to the site-specific nature of municipal stormwater discharges. Reducing impacts to the MEP generally relies on BMPs that emphasize pollution prevention and source control, with additional structural controls as needed. There are several elements of the General Permit.

The Construction General Permit requires specific minimum BMPs, depending upon the project sediment risk (Risk Level 1 through 3). Risk Level 1 projects are subject to minimum BMP and visual monitoring requirements; Risk Level 2 projects are subject to numeric actions levels (NALs) and some additional monitoring requirements; and Risk Level 3 projects are subject to numeric effluent limitations (NELs) and more rigorous monitoring requirements, such as receiving water monitoring and, in some cases, bioassessment. The risk is a calculated value that is determined when the SWPPP is prepared. The SWPPP will identify the appropriate risk level and related BMPs and other requirements. The results of monitoring and corrective actions, if any, must be reported annually to the SWRCB. This permit also specifies minimum qualifications for SWPPP developers and construction site inspectors.

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² BMPs are intended to reduce impacts to the Maximum Extent Practicable (MEP), a general standard created by Congress to allow regulators the flexibility necessary to tailor programs to the site-specific nature of municipal stormwater discharges. Regulations do not define a single MEP standard, but reducing impacts to the MEP generally relies on BMPs that emphasize pollution prevention and source control, with additional structural controls as needed.
**Regional Stormwater NPDES Permit (Post-Construction).** The Project would be subject to the NPDES permit system through the California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Regional Stormwater NPDES Permit). The County of San Mateo and its incorporated cities form the SMCWPPP and are permitted under Phase I for municipal stormwater and urban runoff discharges under NPDES Permit No. CAS612008, Order No. R2-2009-0074. One of the primary objectives of the regulations for pollutant dischargers is the reduction of pollutants in urban stormwater discharge through the use of structural and nonstructural BMPs. The Regional Stormwater NPDES Permit requires the permittees, including the City, to address eight general control measures associated with construction and operational activities, including (1) public education and outreach; (2) public participation/involvement; (3) illicit discharge detection and elimination; (4) construction site stormwater runoff control for sites greater than 1 acre; (5) post-construction stormwater management in new development and redevelopment; (6) pollution prevention.good housekeeping for municipal operations, (7) water quality monitoring; and (8) implementation of controls to meet TMDLs. These control measures are implemented through the use of BMPs.

Regulated Projects, as defined in the Construction General Permit (Provision C.3.b.), are required to implement certain construction and post-construction stormwater quality BMPs. Regulated Projects include redevelopment projects that create or replace 10,000 square feet or more of impervious surfaces. Regulated Projects must provide permanent/post-construction treatment controls for stormwater according to specific calculations. If the redevelopment results in an alteration of more than 50 percent of the existing impervious surfaces, permanent BMPs must be implemented to treat runoff from the entire Project site. The West Campus component of the Project is a Regulated Project that alters more than 50 percent of the existing impervious surfaces. Inclusion of the applicable required elements of the Regional Permit would be the responsibility of the City to monitor and enforce in conjunction with issuance of grading and building permits. Those elements are described below.

- **Low Impact Development (LID) (C.3.c).** The goal of LID is to reduce runoff and mimic a site’s predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. All Regulated Projects must comply with minimum LID requirements by the implementation date (December 1, 2011).

- **Numeric Sizing Criteria for Stormwater Treatment Systems (C.3.d).** Stormwater treatment measures must be numerically sized in accordance with criteria identified under Provision C.3.d. The permittees must also verify that infiltration devices are designed and installed such that they would not cause or contribute to the degradation of groundwater quality at project sites. An infiltration device is any structure that is deeper than wide and designed to infiltrate stormwater into the subsurface and, as designed, bypass the natural groundwater protection afforded by surface soil. Specific requirements are specified in Provision C.3.d.iv.(2).
- Hydromodification Management (C.3.g). A Hydromodification Management (HM) Project is a Regulated Project that creates and/or replaces one acre or more of impervious surface and is not specifically excluded within the requirements of Attachments B–F of the Construction General Permit. A project that does not increase impervious surface area over the pre-project condition is not an HM Project.\(^3\)

- Industrial and Commercial Site Controls (C.4.). Each Permittee is required to implement an industrial and commercial site control program at all sites which could reasonably be considered to cause or contribute to pollution of stormwater runoff, with inspections and effective follow-up and enforcement to abate actual or potential pollution sources consistent with each Permittee’s respective Enforcement Response Plan (ERP), to prevent discharge of pollutants and impacts on beneficial uses of receiving waters. Inspections shall confirm implementation of appropriate and effective BMPs and other pollutant controls by industrial and commercial site operators.

- Construction Site Control (C.6). Each Permittee is required to implement a construction site inspection and control program at all construction sites, with follow-up and enforcement consistent with each Permittee’s respective ERP, to prevent construction site discharges of pollutants and impacts on beneficial uses of receiving waters. Inspections shall confirm implementation of appropriate and effective erosion and other construction pollutant controls by construction site operators/developers; and reporting shall demonstrate the effectiveness of this inspection and problem solution activity by the Permittees.

Permittees shall review erosion control plans for consistency with local requirements, appropriateness and adequacy of proposed BMPs for each site before issuance of grading permits for projects. Permittees shall also verify that sites disturbing one acre or more of land have filed a NOI for coverage under the Construction General Permit.

Before approval and issuance of local grading permits, each Permittee shall perform the following:

- Review the site operator’s/developer’s erosion/pollution control plan or SWPPP to verify compliance with the Permittee’s grading ordinance and other local requirements. Also review the site operator’s/developer’s erosion/pollution control plan or SWPPP to verify that seasonally appropriate and effective BMPs for the six categories listed in C.6.c.i. are planned;

- For sites disturbing one acre or more of soil, verify that the site operators/developers have filed a NOI for permit coverage under the Construction General Permit; and

- Provide construction stormwater management educational materials to site operators/developers, as appropriate.

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\(^3\) Changes in the timing, flow rate, and/or volume of runoff from a site are known as “hydrograph modification” or “hydromodification” (HM). The project site is located within an HM exempt area on the San Mateo County HM map. The Project would not increase impervious area over the pre-project condition. Therefore, it would not be subject to HM controls.
• TMDLs. Additional BMPs required for compliance with existing and proposed TMDLs within the Bay Region including: Pesticides Toxicity Control (C.9.), Trash Load Reduction (C.10.), Mercury Controls (C.11.), Polychlorinated Biphenyls (PCBs) Controls (C.12.), Copper Controls (C.13.), Polybrominated Diphenyl Ethers (PBDE), Legacy Pesticides and Selenium (C.14.).

*Individual NPDES Permit.* An individual permit is tailored for a specific discharge that does not fall under one of the General Permit categories (e.g., substantial amounts of construction or post-construction dewatering). The SWRCB or RWQCB issues a permit for that particular discharge based on information (type of activity, nature of discharge, receiving water quality, etc.) contained in the application. If discharge is not directly related to surface water, a State WDR is used instead of an NPDES permit to regulate the discharge (discussed below under State regulation). The Project may need an individual NPDES permit/WDR to address discharge of extracted groundwater containing contaminants from historic uses at the West Campus.

**Climate Change and Sea Level Rise.** California Executive Order S 13 08 (November 14, 2008) states that all state agencies planning construction projects in areas vulnerable to future sea level rise must consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability, and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. The Governor of California’s Delta Vision Blue Ribbon Task Force has adopted a sea level rise of 55 inches by 2100 for planning purposes, until issuance of an Executive Order determining otherwise.

The BCDC is a California State agency that was established to accomplish two primary goals: to prevent the unnecessary filling of the Bay, and to increase public access to and along the Bay shoreline. It is responsible for the regulation of construction activities in close proximity to the Bay, including, but not limited to: regulating all filling and dredging in the Bay, regulating all new development within the first 100 feet inland for the Bay shoreline, ensuring that public access to the shoreline is provided, and protecting the Bay for water-related industries, water-oriented sports, airports, and wildlife refuges. Approval from BCDC would be required for any activities within the 100-foot shoreline band along the East Campus.

BCDC completed and adopted the San Francisco Bay Plan (Bay Plan) in 1968. The McAteer-Petris Act and the Bay Plan and subsequent amendments to these documents, prescribes a set of rules for non-maritime shoreline development along the Bay Waterfront. The latest amendment to the Bay Plan was adopted in October 2011 (Resolution 11-08). This amendment added new climate change findings and policies and encourages jurisdictions to develop regional adaptive management strategies. It also revised findings and policies pertaining to tidal marsh and tidal flats, safety of fills, protection of shoreline, and public access. Specifically with regard to climate change, the BCDC revised the Bay Plan to revise the upper end year 2100 sea level rise from 55 inches to up to 69 inches.\(^4\)

\(^4\) San Francisco Bay Conservation and Development Commission, “Resolution No. 11-08: Adoption of Bay Plan Amendment No. 1-08 Adding New Climate Change Findings and Policies to the Bay Plan; And Revising the Bay Plan Tidal Marsh and Tidal Flats; Safety of Fills; Protection of the Shoreline; and Public Access Findings and Policies,” website: http://www.bcdc.ca.gov/proposed_bay_plan/10-01Resolution.pdf, accessed October 31, 2011.
Local

City of Menlo Park General Plan. The General Plan guides development and use of land within the City. Several policies and actions of the General Plan apply broadly to hydrology and water quality. The following policies from the Land Use Element\(^5\) of the General Plan pertain to the Project.

\textit{Policy I-G-10:} Extensive landscaping should be included in public and private development, including greater landscaping in large parking areas. Where appropriate, the City shall encourage placement of a portion of the required parking in landscape reserve until such time as the parking is needed. Plant material selection and landscape and irrigation design shall adhere to the City’s Water Efficient Landscaping Ordinance.

\textit{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 Ordinance.

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

\textit{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.

The following policies and actions from the Seismic Safety and Safety Element\(^6\) of the City’s General Plan pertain to the Project.

\textit{Policy 13:} Require that all new development incorporate adequate hazard mitigation measures to reduce risks from natural hazards.

\textit{Policy 48:} Consider the threat of tsunamis in the planning and management of bayland areas.

\textit{Implementation Policy 51:} Require that new structures in potential inundation areas either be elevated above the inundation level, or utilize waterproof hardware.

\textit{Policy 52:} Consider potential risks from inundation in the development approval process.

Municipal Code, Chapter 7.38. Chapter 7.38\(^7\) discusses general water conservation principals and adopts water conservation as a Citywide goal. The City should conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection. This

\footnotesize\(^5\) City of Menlo Park, Menlo Park General Plan, adopted December 1, 1994 with amendments through December 7, 2010.

\footnotesize\(^6\) City of Menlo Park, Menlo Park General Plan, Seismic Safety and Safety Element, adopted June 22, 1976.

chapter includes regulations and restrictions on water use and mandates that the wasteful use of water should be eliminated.

**Municipal Code, Chapter 7.42.** Chapter 7.42\(^8\) officially adopts the SMCWPPP Stormwater Management Plan and its provisions as City policy. The purpose and intent of this chapter is to ensure the future health, safety, and general welfare of City citizens by eliminating non-storm water discharges to the municipal separate storm sewer; controlling the discharge to municipal separate storm sewers from spills, dumping or disposal of materials other than storm water; reducing pollutants in storm water discharges to the maximum extent practicable. The intent of this chapter is also to protect and enhance the water quality of the watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Clean Water Act.

**Municipal Code, Chapter 12.42.** Chapter 12.42\(^9\) contains methods and provisions designed to prevent flood damage. Under Section 12.42.41, a development permit is required before construction or development activities in a flood hazards area can begin. The standards of construction listed in Section 12.42.51 include anchoring, the use of flood damage-resistant construction materials and methods, and elevation and floodproofing standards.

**Municipal Code, Chapter 12.44.** Chapter 12.44\(^10\) defines water-efficient landscaping standards that must be employed by new developments. All property owners of regulated projects shall complete and submit the landscape project application, comply with the landscape and irrigation maintenance schedule, and maintain landscape irrigation facilities to prevent water waste and runoff. In addition, the ordinance requires a landscape audit report be submitted after installation of landscaping to certify compliance with the ordinance.

**Existing Conditions**

**Regional**

**Climate and Physiography.** The City has a Mediterranean climate characterized by dry, relatively cool summers and wet, mild winters. The City receives an average annual rainfall of approximately 15.5 inches per year, with most of the rainfall (89 percent) occurring from November through April.\(^11\)

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The City is within a narrow alluvial plain defined by the Santa Cruz Mountains (to the west) and the Bay (to the east). Drainage is from west to east through natural creeks and streams and channelized waterways. In the City, major watersheds include Flood Slough, Ravenswood Slough, and San Francisquito Creek (Figure 3.12-1).

**Regional Groundwater.** The City is situated above the Santa Clara Valley groundwater basin and San Mateo subbasin (ID 2-9.03). The San Mateo subbasin is bound by the Santa Cruz Mountains to the west, the Bay to the east, San Francisquito Creek to the south, and the Westside basin to the north. A relatively shallow water table aquifer overlies confined and semi-confined aquifers near the margins of the Bay, with most wells drawing from the deeper deposits. Recharge of the subbasin occurs through infiltration into stream beds and through infiltration of precipitation on the valley floor.

**Sea Level Rise.** Measurements taken in the Bay indicate that the current rate of sea level rise is about 3.5 inches per century at Alameda and 8.4 inches per century at San Francisco. Climate change effects on sea levels could lead to even higher rates of sea level rise (accelerated sea level rise).

Different scenarios and models used to predict sea level rise result in different estimates of the magnitude of sea level rise. For example, the California Climate Change Center predicts that accelerated sea level rise could result in a sea level rise in California of 4.3 to 27.6 inches above the existing mean sea level (msl) by 2099. The California Climate Action Team projects that sea levels could rise between 20 and 55 inches by the year 2099.

In April 2009, a BCDC report was released summarizing the latest scientific research on climate change. While exact future increases in sea level rise are uncertain, scientists believe it is likely that the Bay will rise 10 to 17 inches by 2050, 17 to 32 inches by 2070, and 31 to 69 inches by the end of the century. BCDC recently adopted amendments to the Bay Plan to address climate change and sea level rise and development-related considerations.

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Local

Topography. Project site elevations range from approximately 5 feet (West Campus) to 9 feet (East Campus) above msl. The Project site slopes gently to the north, and is underlain by artificial fill material and young alluvial sediments. The current topography of the East Campus and West Campus reflects filling of the tidal marshland associated with the Bay. Section 3.11, Geology and Soils, includes additional information regarding how the ground surface at the East Campus and West Campus has been altered.

Hydrology and Runoff. There are no natural surface water features that pass through the Project site. There is an off-site drainage swale parallel to and north of the Union Pacific Railroad (UPRR) tracks south of the West Campus. Major surface waters in the Project vicinity include Atherton Channel to the north, San Francisquito Creek to the south, and the Bay. As illustrated in Figure 3.12-1, the Project site is within the Ravenswood Slough watershed. This slough is one of many that run through the salt ponds and salt marsh flats north of Bayfront Expressway and that interact with flow from the Bay.

The 56.9-acre East Campus is covered by pavement (roads and parking lots) and structures (office and commercial buildings) and landscaping/hardscaping. Impervious surfaces (concrete and asphalt) comprise 39.6 acres, and there is 15.6 acres of pervious area. The West Campus is 22 acres. The developed western portion consists of approximately 13.5 acres, which includes two office buildings, a surface parking lot, landscape features, a basketball court, and a guard house. The eastern portion of the site is approximately 8.5 acres and is vacant with minimal vegetation. Because of the flat terrain and developed nature of both the East Campus and West Campus, rainfall flows across impervious surfaces or as overland flow across vacant areas, leading into storm drains.

Drainage. Drainage from the East Campus and West Campus is conveyed to the City’s storm drain system. The specifics for the East Campus and West Campus are discussed below.

East Campus. The East Campus contains existing storm drain lines ranging in diameter from 12 to 24 inches, which discharge to a 24-inch line south of the East Campus on Willow Road.

West Campus. There is an existing storm drain system at the West Campus. Stormwater from the West Campus flows to the City’s Willow Road storm drain system. The eastern portion of the adjacent TE Connectivity site (approximately 7 acres) drains through the West Campus to the Willow Road storm drain. The off-site drainage swale along the UPRR tracks also drains to Willow Road through a portion of the West Campus on-site drainage system. Because the on-site storm drain system was not designed with adequate capacity for the 100-year storm, localized ponding occurs on the site.

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16 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
FIGURE 3.12-2

Areas Contributing Flows to Willow Road Storm Drain System

Source: BKF, 2011.

Menlo Park Facebook Campus Project
FIGURE 3.12-3
Willow Road and Hamilton Avenue Storm Drain System

Source: BKF, 2011.
Areas south of the West Campus and southeast of West Campus (on the east side of Willow Road) are part of a larger drainage shed (Hamilton Avenue drainage system), which also contributes to Willow Road storm drain flows (Figure 3.12-2). Figure 3.12-3 shows the layout of the storm drain system that serves the West Campus and areas that drain to the Willow Road system. There is a storm drain line in Hamilton Avenue that increases in diameter from 30 inches in the west to 54 inches, where it intersects a 66-inch line in Willow Road, which joins a 78-inch line that ultimately conveys flows to the Caltrans Bayfront pump station.

Under existing conditions, there are no storm flow capacity problems in either the Hamilton Avenue or Willow Road storm drains for a 10-year event. However, in a 100-year storm event, the storm drain system in Hamilton Avenue experiences increased flows. When the Willow Road storm drain system is also at capacity, this causes stormwater to back up into Hamilton Avenue drains. This is referred to as a “reverse flow” condition.

**Flood Hazards.** The entire Project site is subject to tidal flooding from the Bay. Levees were constructed around the East Campus, beginning in the 1940s, when the first salt evaporation pond was constructed. The levees were raised in 1965 to an elevation of approximately 5 feet msl. In 1968, the sloughs and ditches in the East Campus were filled with recompacted Bay Mud and varying amounts of compacted fill, estimated to be approximately 4 to 8 feet thick. Following a combination of heavy rains, winds, and high tides that caused flooding when water from the Bay breached the levees in 1983, the perimeter levees were raised to an elevation of 10 feet msl, but subsequent settlement lowered the levee elevations to approximately 8.5 feet. The Sun Microsystems Supplemental EIR concluded that the levees met their Army Corps of Engineers requirements. However, mitigation measures for that project noted that “the occupant of the site will periodically maintain and improve the levees in order to ensure that the condition of the levees remains adequate. Improvements to the levees will be implemented on an as-needed basis.” It is unknown what improvements, if any, have been completed since the 1990s.

There are no levees around the West Campus. However, the West Campus is topographically isolated from nearby salt ponds and the Bay by the Bayfront Expressway.

**Coastal Flooding.** High water levels in the Bay in combination with wind-generated waves can result in erosion and overtopping of barriers. High water elevations in the Bay correspond with the high astronomical tides, storm surge, and climatic conditions. Flooding in the area of the City that includes the Project is tidally induced from the Bay because of the incomplete system of levees built along the bayfront, which includes numerous low points and openings that allow tides to overtop or bypass the levees.

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17 BKF, *Facebook @ Menlo Park West Campus Hydrology Report*, November 21, 2011.
18 BKF, *Facebook @ Menlo Park West Campus Hydrology Report*, November 21, 2011.
20 BKF, *Facebook @ Menlo Park West Campus Hydrology Report*, November 21, 2011.
Flood Hazards

High Risk Areas
Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.

Zone AE - The base floodplain where base flood elevations are provided.

High Risk Coastal Areas
Zone VE - Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

Moderate to Low Risk Areas

Zone 0.2 Percent Annual Change Flood/Zone X - Areas with a 0.2% annual chance of flooding or areas protected by levees from 100-year flood.

Zone X - Areas outside the 0.2% Annual Chance Flood and the Areas Protected by Levees from Flood

Special Flood Hazard Area. Both the East Campus and West Campus are located within a FEMA Special Flood Hazard Area (SFHA) AE (Figure 3.12-4). As illustrated in Figure 3.12-4, the AE zone encompasses a large area of flooding that extends along a significant portion of the Peninsula shoreline. Zone AE is a 100-year floodplain with base flood elevations (BFE) determined. The BFE at Willow Road is 7.5 feet. The BFE is a maximum still water elevation in the Bay. Because the 100-year flood associated with the Zone AE and BFE is related to tidal flows only, there is no regulatory floodway and associated floodplain.

Under existing conditions, the West Campus does not provide floodplain storage for stormwater runoff because there is no regulatory floodway. In addition, there are no upstream hydrologic or hydraulic contributions to potential flooding conditions at the West Campus (“run-on”). This is because the site is topographically isolated by the Bayfront Expressway, the UPRR berm, and Willow Road, which are at higher elevations than the site.

Tidal floodwaters can only flow to areas that are lower than the BFE. In the 100-year tidal flood event, flooding is exclusively and directly related to the elevation of the Bay water. Tidal flooding can only occur if a barrier is overtopped during high tides or when water flows through low points in the barriers where the elevation is lower than the BFE.

The Bayfront Expressway, which is at a higher elevation than the BFE, is a substantial barrier to 100-year event tidal inflow and outflow both at the West Campus and areas to the south, west, and north. Floodwaters can only enter and leave the West Campus and adjacent off-site locations along low spots along Willow Road and to some extent along the drainage swale south of the site. These low-area flow paths (in green) and locations where elevations that are higher than the BFE and act as barriers to flow (in blue) are shown in Figure 3.12-5. Areas below the BFE (not blue or green) provide flood storage. As shown by the small and isolated green areas in Figure 3.12-5, there are only a few existing low-area flow paths at the West Campus.

Sea Level Rise. According to maps available from BCDC, all or most of the East Campus, and a substantial part of the West Campus, are within or very near to areas that would potentially be subject to inundation with an expected 16-inch mid-century sea level increase. The BCDC maps show additional areas, including SR84/Bayfront Expressway east and west of the site, as being impacted by a potential 55-inch sea level increase by the year 2100 (Figure 3.12-6). BCDC maps are generalized to illustrate possible sea levels at mid-century and the beginning of the 22nd century. The maps do not take into account wind and waves that would increase the extent of inundation, and they do not show existing levees or other barriers that might provide protection from flooding. As noted above, the BCDC recently amended the Bay Plan to increase the year 2100 projected sea level rise to 69 inches.

21 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
22 The floodway is defined as the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1 percent annual chance flood (100-year event) can be carried without substantial increases in flood heights.
23 Bay Conservation and Development Commission, Resolution 11-08, Adoption of Bay Plan Amendment No.1-08, October 2011, p.4.
FIGURE 3.12-5
Existing Locations of Base Flood Elevation (BFE) 7.5 Feet and Higher

Source: Gensler, 2011.
FIGURE 3.12-6
Sea Level Rise

Source: USGS, Atkins, 2011.
Tsunami and Seiche. Tsunamis\(^{24}\) and seiches\(^{25}\) can result in wave damage and flooding of low-lying coastal areas along the shores of oceans, lakes, reservoirs, or bays. The amount of damage caused by tsunamis and seiches in the Bay Area historically has been small. According to California Emergency Management Agency (Cal EMA) mapping, the potential for tsunami or seiche inundation is low.\(^\text{26}\) A portion of Ravenswood Slough along the eastern boundary of the East Campus is mapped as vulnerable to tsunami hazard, but the hazard area does not extend into the developed portion of the East Campus.\(^\text{27}\) The West Campus is separated from the Bay by the Bayfront Expressway and is not vulnerable to these hazards.

Dam Failure Inundation. The Project site is not subject to dam failure inundation.\(^\text{28}\)

Surface Water Quality. The quality of the stormwater runoff from the Project site and surrounding development is typical of urban watersheds with similar land uses and is expected to contain constituents, such as landscaping chemicals (e.g., nitrates, phosphates, herbicides, and pesticides), automobile and traffic pollutants (e.g., oil, grease, metal brake dust, metal wear), trash and debris, pathogens (e.g., wildlife and pet waste), sediment with associated attached pollutants from soil erosion or aerial deposition of dust, and chemicals leaching from structures (e.g., metals from metal roofs and architectural features, calcium from limestone).

Stormwater from the City’s storm drain system, including that from the Hamilton Avenue and Willow Road systems, discharges to the Bay. The Central Bay is listed by the EPA as impaired by pollutants from the following three sources: (1) chlordane, DDT, dieldrin, and mercury from nonpoint sources; (2) dioxin compounds, furan compounds, and mercury from atmospheric deposition; and (3) exotic species from ballast water. In addition, the Bay is impaired by PCBs and dioxin-like PCBs from unknown nonpoint sources.\(^\text{29}\) Industrial and municipal point sources, resource extraction, and natural sources also contribute to mercury and selenium degradation of the Central Bay. Runoff from the Project site is subject to comprehensive regulations and standards, which are described in the Applicable Plans and Regulations subsection, above.

\(^{24}\) A tsunami is a series of several long sea waves generated by a sudden displacement of a large volume of water. A tsunami can be triggered by earthquake activity that affects ocean waves, but also can be triggered by other large-scale, short-duration phenomena, such as submarine landslides.

\(^{25}\) A seiche is a similarly generated oscillation wave occurring in a confined or mostly confined body of water, such as a lake, reservoir, or bay.

\(^{26}\) Cornerstone Earth Group, Geotechnical Feasibility Evaluation 22-Acre Property at Highway 84 and Willow Road Menlo Park, California, November 18, 2010.


\(^{29}\) San Francisco Regional Water Quality Control Board (SFRWQCB), 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs, approved by the USEPA June 28, 2007.
**Hydrogeology and Groundwater.** Geologic materials underlying the site consist of up to several feet of artificial fill (sandy gravels, clayey gravels, and sandy clay) underlain by native materials (older alluvial fan deposits, basin deposits, estuarine and channel deposits) consisting of materials ranging from high-plasticity silty clay to granular deposits of sands or sandy gravels. The predominance of the low-permeability clayey estuarine deposits has generally restricted the subsurface migration of the chemicals released at the site.

First groundwater beneath the site is found at relatively shallow depths, generally within 10 to 14 feet of the ground surface and it rises (due to semi-confined conditions) to within a few feet to eight to ten feet below the ground surface (bgs). The upper water-bearing zone is divided into an “upper Alpha unit” (up to depths of 25 feet), and “lower Alpha unit” (25 to 37 feet deep). A “Beta water-bearing zone” is present starting below 37 to 43 feet bgs and extends to approximately 100 feet bgs. The Beta zone and the next (deeper) water-bearing zone are separated by low-permeability clayey materials that are tens of feet thick and extensive in area. The direction of groundwater flow is generally to the north.30

The Alpha water-bearing zone is characterized by hyper-saline water (more saline than sea water) for most of the site due to its close proximity to the commercial saltwater evaporation ponds that border the Bay. The San Francisco Bay RWQCB in a letter dated August 13, 2002, stated: “…that the quality of the shallow groundwater underlying the Tyco site is such that it is not considered as a potential source of drinking water, based on the high Total Dissolved Solids (TDS) in the shallow aquifer zone.” The Alpha water-bearing zone beneath the site is therefore not considered a source of drinking water by the San Francisco Bay RWQCB because of the elevated salinity in groundwater.

**Impacts and Mitigation Measures**

**Standards of Significance**

The Project would result in a significant impact 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 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 the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

30 The descriptions of water-bearing zones maintains the nomenclature established in the site investigation and remediation reports for soil and groundwater contamination at the West Campus. The reader is referred to Section 3.13, Hazards and Hazardous Materials, for additional information about the investigation and cleanup of the West Campus.
• Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate of amount of surface runoff in a manner which would result in flooding on- or off-site.

• Create or contribute runoff water which would exceed pre-project levels or provide substantial additional sources of polluted runoff.

• Otherwise substantially degrade water quality.

• Place within a 100-year flood hazard area structures which 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.

• Expose people or structures to increased risk of flooding due to climate change-induced sea level rise.

Impacts Not Evaluated In Detail

The following impacts are not evaluated in detail because there would be no impact as a result of implementing the Project.

There are no natural drainage features on site, and the Project does not propose alteration of any off-site natural surface drainage features. The Project does not drain to an area where hydrograph modification controls are required. Therefore, drainage from the Project is not expected to cause or contribute to off-site erosion or siltation in channels or creeks, and there would be no impacts requiring detailed analysis.

The East Campus is surrounded by levees at an elevation of approximately 9 to 13 feet, which is equal to or higher than the reported finished elevation of the East Campus of approximately nine feet. It is not expected that failure of the levees would result in significant changes to the flooding potential at the East Campus since the levees are not consistently higher than the Project site. The West Campus is not protected by a levee system, but the Bayfront Expressway provides a barrier to tidal flows from the Bay. Therefore, levee failure impacts do not require further detailed analysis.

The potential for tsunami or seiche inundation is low, and the Project site is not subject to dam failure inundation. No detailed analysis of these impacts is required.

Environmental Analysis

HY-1 Changes in Stormwater Runoff. The Project at the West Campus would result in less-than-significant impacts with regard to stormwater runoff. (LTS)

The 22-acre West Campus currently includes two office buildings, a surface parking lot, landscape features, a basketball court, and a guard house. The eastern portion of the site is vacant and underlain by compacted gravel. Stormwater runoff is generated from impervious surfaces such as building rooftops, the parking lot, roadways, and hardscaping. Stormwater
runoff also occurs as overland flow over the vacant portion. The existing structures would be removed in their entirety, and the Project would construct new buildings, new parking areas, roadway access, and hardscaping throughout the entire 22-acre site, as shown in Figure 2-5, Project Description. The amount of rooftops and paving (impervious surfaces) would decrease from 14.6 acres to 10.9 acres, and there would be an increase in landscape areas (pervious surfaces) from 7.6 acres to 11.2 acres.

The net effect of these changes in impervious surfaces is that there would be a slight decrease in stormwater peak flow rates compared to existing conditions. Table 3.12-1 shows a comparison of pre-Project (existing) stormwater peak flow rates compared to flows that would occur with the Project for the 10-year and 100-year storm events.

<table>
<thead>
<tr>
<th>Stormwater Drainage System Location</th>
<th>10-Year Storm (cfs)</th>
<th>100-Year Storm (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Project (Existing)</td>
<td>With Project</td>
</tr>
<tr>
<td>CB-1</td>
<td>7.6</td>
<td>7.6</td>
</tr>
<tr>
<td>CB-2</td>
<td>13.4</td>
<td>13.2</td>
</tr>
<tr>
<td>CB-3</td>
<td>16.5</td>
<td>16.1</td>
</tr>
<tr>
<td>CB-4</td>
<td>9.7</td>
<td>9.7</td>
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<tr>
<td>CB-5</td>
<td>29.3</td>
<td>28.8</td>
</tr>
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<td>29.1</td>
<td>28.5</td>
</tr>
<tr>
<td>HT-03</td>
<td>287.7</td>
<td>287.3</td>
</tr>
<tr>
<td>HT-02</td>
<td>286.7</td>
<td>286.3</td>
</tr>
<tr>
<td>HT-OUT</td>
<td>282.9</td>
<td>282.6</td>
</tr>
</tbody>
</table>

Source: BKF, November 2011.

Note:

a Refer to Figure 3.12-3 for locations. Locations CB-1 through CB-5 are on-site. MH-15 and the HT locations are off-site.

For the 10-year storm, there would be a slight decrease in flows to the Willow Road storm drain system and there would be capacity in the system to accommodate West Campus flows.

For the 100-year storm, the Project would result in a decrease in stormwater peak flows to the Willow Road storm drain system. This is expected to provide some improvement to the Hamilton Avenue system, because that system experiences flow reversals when the Willow Road system is at capacity.

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31 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
32 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
33 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
However, because the on-site storm drain system has capacity limitations, ponding at the West Campus and at the adjacent TE Connectivity site would continue to occur. The drainage swale would continue to provide overflow storage because the Project proposes no changes to the swale. The flow reversals currently experienced in the Hamilton Avenue system would also occur, but not to a greater extent than existing conditions. That is, the Project would not cause or exacerbate City drainage system capacities to be exceeded or cause or exacerbate off-site flooding in local neighborhoods.\footnote{BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.} For those reasons, the impact is considered less than significant.

Some additional reduction in Project-generated flows is also to be expected with the incorporation of planned stormwater quality features, such as rain gardens and treatment areas (see Impact HY-4 for more information). These features are designed to temporarily store stormwater runoff so that pollutants can settle out. This has the effect of delaying (or “metering”) the peak flows into the storm drainage system where other flows are being conveyed.\footnote{BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.}

**HY-2 100-Year Floodplain.** The Project at the West Campus would place structures in a SFHA. This is considered a potentially significant impact. (PS)

New structures at the West Campus would be placed in a SFHA, indicating development could be vulnerable to 100-year flood hazard risk. Because the City participates in the federal NFIP, it must ensure the Project meets federal standards for flood protection. Chapter 12.42 of the City’s Municipal Code contains methods and provisions designed to prevent flood damage. Under Section 12.42.41, a development permit is required before grading activities in a flood hazard area can begin.

Construction within SFHAs is governed by the City’s Municipal Code Chapter 12, Section 12.42.51, Standards of Construction, which sets forth the standards for development within SFHAs that would minimize flood hazard risks, including anchoring and flood-proofing; limitations on use for structures below the base flood elevation; use of materials and utility equipment resistant to flood damage; the requirement that electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities are designed and/or located to prevent water from entering or accumulating within the components during flood conditions; and the requirement that all new and replacement water supply and sanitary sewage systems be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from systems into floodwaters.

The Project would involve placement of fill to elevate finished floor elevations above the 100-year flood hazard elevation. According to the Project Sponsor and as illustrated in site grading plans and cross-sections, the thickness of fill placed at the site would raise the site elevation such that finished floor elevations of habitable structures would provide protection for the 100-
year tidally-induced flooding, consistent with requirements for development in the SFHA, plus 16 inches of sea level rise by 2050. This impact is considered potentially significant.

MITIGATION MEASURE. Implementation of Mitigation Measure HY-2.1 would reduce the potentially significant flood risk impacts at the West Campus to less than significant. (LTS)

HY-2.1 Prepare and Obtain a Conditional Letter of Map Revision – Fill (CLOMR-F) from FEMA Prior to Issuance of a Grading or Building Permit. Concurrent with the first building permit submittal for the West Campus, the Project Sponsor shall submit a FEMA CLOMR-F application to the Public Works Department for review and approval. In accordance with the National Flood Insurance Program (NFIP) (Code of Federal Regulations (CFR) 44 Part 65), Section 65.6 (Revision of base flood elevation determinations), the Project Sponsor shall prepare supporting data, including relevant hydraulic and hydrologic analyses, delineation of floodplain boundaries and all other information required by FEMA to review and evaluate the request for a CLOMR-F. The analyses shall clearly show revised and new floodplain boundaries, for the Project area and adjacent areas not affected by the revision. Upon receiving City approval, the Project Sponsor shall submit the CLOMR-F application to FEMA. Prior to issuance of any grading or building permit on each site, the applicant shall obtain a CLOMR-F from FEMA. The applicant shall submit an elevation certificate prior to final signoff of the foundation inspection for each structure.

HY-3 Impeding or Redirecting Flood Flows. The Project at the West Campus would place fill and structures in a 100-year floodplain. However, this would not impede or redirect flood flows. (LTS)

The placement of fill and structures at the West Campus would not result in increases in water surface elevations that could cause or exacerbate on- or off-site 100-year flood hazards, as described below.

Under existing conditions for the 100-year tidal flooding event, the West Campus would experience flooding, but it does not provide floodplain storage because there is no upstream hydrologic or hydraulic stormwater contribution. Therefore, with the Project, there would be no encroachment on a regulatory floodway that would remove floodplain storage capacity. The Project would not increase water elevations because the displaced water would be dispersed over the entire acreage of the Bay.

The placement of fill and structures would not cause a measurable increase in still water elevation (BFE) in the Bay. This is because the water surface elevation is tidally influenced, and because displaced water would be dispersed over the entire acreage of the Bay. Because the Project cannot physically cause an increase in a tidally influenced BFE at levels that would be

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36 BKF, Facebook @ Menlo Park West Campus Hydrology Report, November 21, 2011.
substantial enough to cause flooding, it would not cause an increase in water surface elevations anywhere in the AE 7 zone along the Bay margin that could result in or exacerbate flood risk.

Under existing and proposed conditions, some tidally induced floodwater under a 100-year event will remain on the West Campus at locations that are not required to be elevated for floodproofing because features, such as the Bayfront Expressway, will act as a barrier to return flow to the Bay. When tidal flooding recedes, the water can only flow back to the Bay through the locations that are lower than the BFE (e.g., toward Willow Road and east-west directions in the drainage swale, as in Figure 3.12-5) or through the storm drain system. Based on the grading plan and site plan, the proposed locations for placement of on-site fill and structures would provide sufficient space around each filled area, such that tidal floodwater drainage from the West Campus would not be impeded or redirected to off-site locations where it could cause or exacerbate flooding. For the same reasons, run-on from the adjacent TE Connectivity site, which drains through the on-site storm drain system to Willow Road, would not be impeded or restricted, such that water surface elevations would increase and result in flooding on the adjacent TE Connectivity property. Some ponding on-site would still occur, as under existing conditions, because there is insufficient capacity in the storm drain system for the 100-year event.

The capacity of the drainage swale to convey receding floodwaters and any upstream stormwater contributions would remain unaffected by the Project because no changes to these features are proposed. That is, the Project would not place fill in any portion of the swale, and no additional flows from the Project would be directed to the swale, so the capacity of the swale to convey receding floodwaters would not be reduced. While the swale and Willow Road could be overtopped with a 100-year event, this is an existing condition that would remain unaffected by the Project.

The placement of fill would raise the elevation of the site above the BFE and will remove the site from the SFHA, as explained in Impact HY-2. This would physically reduce the area on-site that could experience tidal flooding because tidally induced flooding cannot flow uphill. That means that less flood water from the West Campus would need to flow back to the Bay through existing drainages (low spots and storm drain system), compared to existing conditions, which would also reduce the demand on the storm drain system for the 100-year event. This is illustrated in Figure 3.12-7.

In addition, because the Project would result in a slight decrease in stormwater runoff compared to existing conditions (see Impact HY-1), this would further reduce the demand on the storm drain system for the 100-year event, in which capacity is already exceeded under existing conditions. For those reasons, the Project would not increase water surface elevations at off-site locations that could cause or exacerbate off-site 100-year flood risk. In fact, with the Project, there would be a slight improvement in drainage conditions compared to existing conditions.
FIGURE 3.12-7
Future Locations of Base Flood Elevation (BFE) 7.5 Feet and Higher

Source: Gensler, 2011.
In summary, the placement of fill and structures would not remove floodplain storage or increase flows to the drainage features that convey both stormwater and receding flood waters for the 100-year event for on-site and off-site properties. As a result, the Project would not result in an increase in surface water elevations that could cause or exacerbate flood hazards on- or off-site. Therefore, impacts would be less than significant.

**HY-4 Sea Level Rise. Implementation of the Project could expose people to flooding from climate change-induced sea level rise:**

- The Project at the East Campus would have a less-than-significant potential to expose people to flooding from climate change-induced sea level rise. (LTS)

- The Project at the West Campus could expose people to flooding from climate change-induced sea level rise, resulting in a potentially significant impact. (PS)

As it relates to the Project, sea level rise could result in higher flood elevations, alterations in the frequency of flood events, higher shallow groundwater tables, reduced storm drain system water surface elevation gradients, and overtopping or failure of levees.

Different scenarios and models used to predict sea level rise result in different estimates of the magnitude of sea level rise; regardless, an increase in mean sea level would have a substantial effect on flooding at the Project site. When combined with astronomical tides, even a 1-foot increase in msl might result in the 100-year event high tide peak occurring at the 10-year event frequency. In other words, the frequency of a current 100-year high tide could occur more often when sea levels increase to 1 foot above current msl.

As shown in Figure 3.12-6, the Project site, like much of the City east of El Camino Real, could be inundated with a sea level rise of 16 inches, which might be expected to occur by mid-century, depending upon the sea level rise scenario, and up to 55 inches to 69 inches by the end of the century.38

The Bayfront Expressway currently provides sole access to East Campus and primary access to West Campus. According to the BCDC maps, the Bayfront Expressway would not be inundated as a result of a 16-inch sea level rise but would be impacted by a 55-inch rise projected for the end of the century. Such inundation of Bayfront Expressway could not only affect access to the Project site, it could also impact regional traffic patterns. Because the Bayfront Expressway is a Caltrans-operated major transportation route that connects the East

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Bay to the Peninsula by way of the Dumbarton Bridge, the Bayfront Expressway will require protective measures from sea level rise whether or not the Project is implemented. Consequently, it is anticipated that State and local transportation agencies will have to analyze and solve for the potential sea level rise effects on the Bayfront Expressway and implement protective measures, on a regional basis, in order to keep the Bayfront Expressway operational with an increase of 55 inches or beyond.

**East Campus**

At the East Campus, the site is already developed with structures that could be vulnerable to sea level rise flooding. The levees that were constructed in the 1940s are reportedly equal to or at most four feet higher than the finished grade at the East Campus. A 16-inch rise in sea level could result in overtopping or damage to the levees, which could result in flooding at the East Campus. When appropriate, the City will comply with BCDC’s Climate Change policies as presented in the October 2011 Bay Plan amendments and take action to protect existing developments. As discussed in Policy 6 of the Bay Plan amendments, BCDC will collaborate with the Joint Policy Committee (JPC); other regional, state, and federal agencies; local governments; and the general public to formulate a regional sea level rise adaptation strategy. Among other things, the regional strategy will determine where and how existing development should be protected. Adaptation actions that protect existing development and infrastructure include protecting shorelines. The City will participate in the planning efforts by BCDC and the JPC. Because the City will take action when appropriate to protect existing development, impacts related to flooding on the East Campus that could result from sea level rise are considered *less than significant*.

**West Campus**

At the West Campus, in order to comply with flood hazard area development regulations and to address 16-inch sea level rise at mid-century (Impact HY-2), the site would be elevated by placing fill, and by having finished floor elevations of buildings that would have first-floor occupancy (Buildings 1, 2, and 3) at 10 feet. Buildings 4 and 5, T2, and the parking structure would not have occupied first floors, but occupied floors would be at an elevation greater than 10 feet. Figures 2-6 and 2-7 in Section 2, Project Description, show cross-sections illustrating final grades and finished floor elevations.

The proposed design of the West Campus is consistent with literature/agency recommendations that support use of a 2050 scenario (16-inch rise). With regard to 2099 sea level rise projections, the City, along with other jurisdictions in the Bay Area, will continue to monitor

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39 The JPC coordinates the regional planning efforts of Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), BCDC, and the Metropolitan Transportation Commission (MTC). Among the JPC’s current initiatives are focused growth, climate protection, and development of a sustainable communities strategy pursuant to SB 375.

40 Elevation developed as follows: BFE (7.5 ft) + 1 ft freeboard + construction tolerances + 1.3 ft (16 inches).
scientific findings and recommendations set forth by the State and BCDC, which will dictate what adaptive management strategies, if any, may be necessary.

In the future, precipitation events are predicted to vary in terms of timing, intensity and volume according to many climate change models. Extreme storm events may occur with greater frequency. The effect of climate change on peak runoff is not known because most climate change models have not used a temporal (or spatial) scale necessary to identify effects on peak flows, and existing precipitation/runoff models for assessing the effects of climate change do not yet adequately predict rainfall/runoff scenarios.41

As noted in Impact HY-1, stormwater flows from the West Campus would be reduced compared to existing conditions and would not adversely affect storm drain capacity. However, sea level rise could inundate the West Campus. If the on-site drainage system is not designed to account for sea level rise inundation, this could cause on-site ponding, and it would contribute additional flows to the off-site storm drain system. This is a potentially significant impact that can be reduced to a less-than-significant level through implementation of Mitigation Measures HY-4.1 and HY-4.2.

Water surface elevation gradients (slopes) are primary drivers of flow conveyance within streams and storm drains. The higher the gradient, the faster water can flow. If the downstream outlet of a storm drain is controlled by the water surface elevation of the Bay, rising sea levels can affect the flow within those drainages. A higher water surface elevation at the outlet reduces the gradient and slows down flow. This could result in reduced storm flow conveyance capacity and cause or contribute to backwater flooding effects. Because drainage from the West Campus, as well as other off-site locations, ultimately is through the Caltrans pump station by way of the Willow Road system, it is unlikely that higher Bay water surface elevations would affect storm drain system flow gradients, because the system is not entirely gravity driven. If increased sea level were to alter the flow gradient, this could cause additional backups and exacerbate flooding. Such effects would not be directly related to the Project, however, because the potential for the City’s storm drain system to experience capacity problems due to sea level rise would occur regardless of whether the Project is implemented.

Another potential impact of sea level rise is that it can cause shallow groundwater to rise. Groundwater beneath the West Campus is at relatively shallow depths, generally within 10 to 14 feet below ground surface but can be within a few feet of the ground surface in some locations. Grading and fill placement to remove portions of the site from the SFHA would result in certain areas of the West Campus about 5.3 feet above shallow groundwater for non-occupied structures and at least 7.3 feet above shallow groundwater for occupied floors. Paths and driveways would be about 2.6 feet above shallow groundwater at their lowest points. While these are approximations because the final design details have not been developed, the

calculations show the potential surface flooding effects by shallow groundwater would not be expected to be substantial in the event of a 16-inch sea level rise. However, utility trenches and low points for stormwater treatment, detention, or retention may still be subject to shallow groundwater table effects, depending upon the structure depth. Additionally, the effectiveness of any stormwater quality/quantity BMPs designed for infiltration, biofiltration, or belowground-surface treatment could be compromised if sea level rise-induced increases in shallow groundwater cause groundwater to intercept the BMPs. This is a potentially significant impact.

MITIGATION MEASURES. Implementation of Mitigation Measures HY-4.1 and HY-4.2 would reduce the potentially significant sea level rise impacts at the West Campus to less than significant. (LTS)

HY-4.1 Floodproofing of West Campus Underground Infrastructure. Prior to, or at a minimum concurrent with, the issuance of the first construction activity permit at the West Campus and in connection with applicable FEMA requirements, the City shall ensure that the Project incorporates design features to flood-proof belowground infrastructure, including storm drains, sewers, equipment facilities, to withstand hydrostatic forces and buoyancy from sea level rise changes in groundwater levels.

HY-4.2 Provide Adequate Storm Flow Conveyance Capacity For Sea Level Rise Conditions at the West Campus. Prior to, or at a minimum concurrent with, the issuance of the first construction activity permit at the West Campus, the City shall ensure that the Project incorporates design features to ensure that the storm drain system conveyance capacity is not constricted by sea level rise at the outlets, including the Caltrans pump station.

HY-5 Construction and Operational Stormwater Pollutants. Stormwater runoff from the Project at the West Campus would contain urban pollutants. Compliance with applicable federal, State, and local regulations would ensure the Project would not violate water quality standards or permits, contribute additional sources of polluted runoff, or otherwise cause water quality degradation. As a result, this impact would be less than significant. (LTS)

Construction Site Stormwater Runoff. Construction at the West Campus would include demolition, clearing and grubbing, pavement removal and replacement, excavation and trenching for foundations and utilities, soil compaction, cut and fill activities, and grading, all of which would temporarily disturb soils. Disturbed soils are susceptible to high rates of erosion from wind and rain, resulting in sediment transport from the Project area. Erosion and sedimentation affect water quality through interference with photosynthesis, oxygen exchange, and the respiration, growth, and reproduction of aquatic species. Other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported with sediment to downstream locations. Sediment-associated pollutants could also cause or contribute to degradation of water quality. The delivery, handling, and storage of construction materials and wastes, as well as the use of construction equipment, could also introduce a risk
for stormwater contamination that could impact water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination, and some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Impacts associated with metals in stormwater include toxicity to aquatic organisms, such as bioaccumulation, and the potential contamination of drinking supplies. Pesticide use (including herbicides, fungicides) associated with site preparation work (as opposed to pesticide use for landscaping) is another potential construction activities source of stormwater contamination. Pesticide impacts to water quality include toxicity to aquatic species and bioaccumulation in larger species. Larger pollutants, such as trash, debris, and organic matter, are additional pollutants that could be associated with construction activities. Impacts include health hazards and aquatic ecosystem damage associated with bacteria, viruses, and vectors and physical changes to the aquatic ecosystem. Construction impacts on water quality are potentially significant and could lead to exceedance of water quality objectives or criteria.

All construction activities, including installation and realignment of utilities, would be subject to existing regulatory requirements, previously described in the Applicable Plans and Regulations subsection, above. This includes the Construction General Permit. The SWRCB has identified compliance with the Construction General Permit requirements as protective of water quality during construction activities. Therefore, the Project would not violate applicable permits or standards. Prior to issuance of the first permit that would involve ground disturbance at the West Campus, the City’s Municipal Code and permit review process would require preparation and approval of a SWPPP and Grading and Drainage Plan.

Construction Dewatering. There is the potential that dewatering may be required to install foundations and utility trenches. If substantial construction dewatering is required and disposal would be to land or surface water, an individual WDR may be necessary. The WDR will specify the specific treatment (e.g., desedimentation, filtration, flocculation, and others) and discharge (e.g., maximum rate and volume of discharge) requirements, if any, necessary to ensure discharges do not cause or contribute to water quality degradation. The WDR would require testing to make sure that discharged waters do not pose a substantial risk to water quality. Minor construction dewatering would be covered under the Construction General Permit. Additionally, approval from the San Francisco Bay RWQCB is required for all discharges of water from construction dewatering activities. As explained in Impact HM-2 in Section 3.13, Hazards and Hazardous Materials, groundwater at the West Campus is contaminated, and extraction and disposal may require special handling to ensure protection of people and the environment. Mitigation Measure HM-2.4 requires preparation and implementation of a groundwater management plan for dewatering. Implementation of this mitigation measure would reduce potential impacts on water quality to less-than-significant levels, and no additional mitigation is recommended.
Operation. The constituents in stormwater runoff from the West Campus are limited under existing conditions because the site is not actively used. Even though there would be a reduction in stormwater peak flow runoff associated with a decrease in impervious surfaces at the West Campus, the change in land use from a primarily vacant and underutilized area to an area with roadways, parking areas, rooftops, and landscaping would change the types and amounts of urban pollutants in stormwater runoff, compared to existing conditions. Urban pollutants likely to be present in stormwater runoff from the site would include oil, grease, and metals accumulated in roadways, driveways, parking lots, and on rooftops (from atmospheric dispersion), as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-demanding substances from landscaped areas. Increased pollutant loads in stormwater could cause receiving water quality degradation, which has the potential to violate water quality standards, if measures are not in place to minimize the types and amounts of pollutants in the runoff. Sedimentation and erosion would not be a substantial component of post-construction runoff because soils exposed during construction would be covered with impervious surfaces (buildings, parking areas, hardscaping) or landscaped. Additionally, all runoff would be routed through new and existing on-site storm drainage systems to existing off-site storm drains/channels, so that off-site overland erosion would not occur.

Hydrograph modification (HM), and its potential to result in erosion or siltation, would not be an impact of development of the West Campus because it does not drain to a natural creek or channel and it is not in an area for which the San Francisco Bay RWQCB requires HM controls, as noted in the Environmental Setting.

The Project would be required to comply with the Municipal Regional Permit SMCWPPP Provision C.3 Stormwater Technical Guidance, which was designed to help developers include post-construction stormwater controls to help reduce long term impacts on stormwater quality and receiving waters. The SMCWPPP requires the use of Stormwater BMPs. Structural BMPs would remove targeted substances from runoff, while non-structural BMPs, such as integrated pesticide management practices, would assist with source reduction. The San Francisco Bay RWQCB has incorporated requirements in the Municipal Stormwater NPDES Permit to be protective of water quality and approved the SMCWPPP as being in compliance with the Municipal Stormwater NPDES Permit.

The Project includes several design elements that would ensure both the amount and types of urban pollutants would not have an adverse effect on water quality or violate applicable permits and standards. The primary structural BMP that has been incorporated into the West Campus design is a stormwater garden, which is a soil and plant-based filtration device to remove pollutants through a variety of physical, biological, and chemical treatment processes, along with providing temporary detention of stormwater runoff flows to the storm drain system. Each stormwater garden would consist of 18 inches of plant soil over a layer of permeable material with a subdrain. The entire feature would be enclosed within an impermeable liner to minimize the potential for stormwater runoff to interact with shallow contaminated groundwater. As shown in Figure 3.12-8, four stormwater gardens are proposed: one along the Bayfront Expressway between Buildings 2 and 3, one on the north side of Building 1 by the Bayfront
FIGURE 3.12-8
West Campus Proposed Stormwater Quality Plan

Source: Gensler, 2011.
Expressway, one on the east side of Building 4, and one in the Entry Court by the parking structure. These stormwater retention and treatment areas would also serve as landscape amenities (see Figure 2-5 in Chapter 2, Project Description). Other potential BMPs would include flow-through planters and tree well filters.\textsuperscript{42} As the Project design is refined, the specific sizing and placement of each facility along with any additional BMPs, as necessary, will be incorporated into the Project to ensure compliance with Regional Permit Provision 3c, particularly with respect to LID requirements.

With the use of BMPs incorporated into the Project design and compliance with requirements of the SMCWPPP, which would be the responsibility of the City to enforce and monitor, operation of the West Campus would be in compliance with applicable permits. The reductions in stormwater pollutants that would be achieved through decreased stormwater runoff and use of BMPs would ensure the Project does not contribute additional sources of polluted runoff or otherwise degrade surface water quality. As explained in Impact HM-2 in Section 3.13, Hazards and Hazardous Materials, the lined stormwater treatment basins would also minimize the potential for groundwater contaminants to enter the stormwater quality facilities and vice versa. Thus, the BMPs would also provide the necessary level of groundwater protection. As a result, operational water quality impacts would be \textit{less than significant}.

\textbf{HY-6 Effects on Groundwater Supplies and Recharge.} The Project, at both the East Campus and West Campus, would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge because it would not increase groundwater demand or decrease recharge areas. This impact would be \textit{less than significant}. (LTS)

\textbf{East Campus}

Increased water demand at the East Campus to serve additional population would be obtained from the City sources (see Section 3.16, Utilities). All water supplied to the Project site is from surface water sources through agreements with San Francisco Public Utility Commission (SFPUC), as described in Section 3.16, Utilities. Because no new groundwater wells would be needed to serve East Campus demands, there would be no substantial change in groundwater supplies. The East Campus is almost entirely covered with impervious surfaces; there is no substantial source of recharge. Therefore, impacts would be \textit{less than significant}.

\textbf{West Campus}

As described in the Setting, natural groundwater recharge of the San Mateo Subbasin occurs primarily by infiltration of water from streams. Additional recharge occurs by percolation of precipitation that falls directly on the ground surface. There is little recharge under existing conditions, and implementation of the Project would not reduce recharge potential. No on-site groundwater wells would be installed to serve Project water demands because the Land Use Covenant for cleanup of the former Raychem/Tyco facility prohibits such use (see Section 3.13, Hazards and Hazardous Materials). Water supplied to the Project site, as well as

\textsuperscript{42} BKF, \textit{Facebook @ Menlo Park West Campus Hydrology Report}, November 21, 2011.
the rest of the City, is from SFPUC surface water sources. Consequently, there would be no new or increased demand on groundwater that could affect supplies.

It is anticipated that some dewatering activities would be necessary during construction at the West Campus. This could locally and temporarily affect shallow groundwater elevations and flow. However, dewatering would not continue after construction, so that long-term effects on the groundwater depth or volume would not occur. The elevation of the West Campus would be raised for flood protection by placing fill. This would increase the distance between the bottom of utility trenches and lined stormwater quality features, such that permanent underground features are not expected to displace groundwater volumes or alter flows. Groundwater table levels would remain primarily controlled by upland recharge and interaction with the Bay. Therefore, direct impacts on the local aquifer, if any, would be temporary and less than significant.

Existing groundwater recharge potential within the Project area is minimal because portions of the site contain impervious surfaces, fill has been placed in other locations in conjunction with site remediation, and compacted gravel overlies other areas. Development of the West Campus would result in a decrease in the amount of impervious surface area compared to existing conditions. The net effect of these changes in surface conditions is that post-construction groundwater recharge potential would be similar to existing conditions, and indirect impacts on the local groundwater table would not be substantial. Therefore, impacts would be less than significant.

**Cumulative Impacts**

The cumulative projects considered in this Draft EIR consist of two categories, as shown in Table 3.1-1 and Table 3.1-2, Introduction to Environmental Analysis. The first category of projects, identified as Tier 1, consist of reasonably foreseeable development projects identified by the City and largely within City limits. Where appropriate, the cumulative effect of the Tier 1 projects is quantified and discussed in details that are specific to the projects listed. The second category, identified as Tier 2, encompasses a larger geographic area and consist of projects that are in the early stages of planning or whose development could be considered somewhat speculative. The cumulative analysis in this Draft EIR considers the Tier 2 projects to the extent feasible, in combination with other current projects, probable future projects, and projected future growth within the City in the next 20 years.

The context for cumulative hydrology and water quality impacts is geographic and is a function of whether Project impacts would affect surface water features/watersheds, the City’s storm drainage system, or groundwater, each of which has its own physical boundary. The context for each analysis is provided in the impact.

Those issues for which the Project would have no impact are not analyzed, because the Project would have no potential to contribute to cumulative impacts.
C-HY-1  **Cumulative Storm Drain Impacts.** Development of the Project and other cumulative development could increase the rate and volume of stormwater runoff, which could cause or exacerbate localized flooding or cause the City’s storm drainage capacity to be exceeded in some locations. However, the Project’s contribution to cumulative impacts would not be cumulative considerable. (LTS)

Cumulative development could increase the rate and volume of stormwater runoff. Increases in the rate or volume of stormwater runoff can cause localized flooding if the storm drain capacity is exceeded, or if flows exceed channel capacities and are conveyed to overbank areas where flood storage may not be available. For the most part, the cumulative projects would occur in areas that are already highly developed with impervious surfaces, so changes in flows that could increase localized flood risk would not be expected to be substantial. Nonetheless, all cumulative projects within the City would be required to include design features to reduce flows to pre-project conditions. If improvements to storm drainage capacity or storage are needed, the City would work with project applicants to ensure the appropriate conditions of approval for storm drainage improvements are identified.

As explained in Impact HY-1, the Project would result in an overall net decrease in stormwater flows. While there are existing capacity problems with the 100-year storm, the Project would not exacerbate those problems. Therefore, the Project’s contribution to citywide stormwater runoff impacts would not be cumulative considerable, and the cumulative impact would be **less than significant**.

C-HY-2  **Cumulative Flooding and Sea Level Rise.** Development of the Project and other cumulative development could expose people and structures to risk of 100-year flooding, including sea level rise. However, the Project’s contribution to cumulative impacts would not be cumulatively considerable. (LTS)

The area east of El Camino Real is subject to tidal flooding related to water levels in the Bay. For areas that convey upstream stormwater flows through natural creeks or channels (e.g., Atherton Creek/Channel and San Francisquito Creek) to tidally influenced flood-prone areas, cumulative development has the potential to increase flood hazard risk by reducing available floodplain storage and/or increasing stormwater volumes that could increase surface water elevations. For areas to the east of El Camino Real, sea level rise of 16 inches by 2050 could inundate areas beyond those that are currently identified as existing flood hazard areas and to greater depths than currently identified. For these locations subject to sea level rise, the City would review development proposals in order to ensure they address any impacts relative to a 16-inch rise by mid-century. Beyond that timeframe, the City would be implementing an adaptive management strategy as more information becomes available, as explained in Impact HY-3.

Global climate change could alter the local hydrology and change the seasonal and annual rainfall and runoff patterns in the Bay Area; rainfall and runoff could increase, decrease,
change in pattern and frequency, or not change at all. This would be a regional
phenomenon, not just limited to the City. Sea level rise-induced flooding, in combination
with existing 100-year flood hazard risk and increased stormwater runoff, could affect the
upstream flow gradients within creeks and channels, causing greater upstream flooding and
groundwater-surface interactions such that storm drainage system capacity could be
compromised. It is beyond the scope of this analysis to predict how cumulative conditions
could be affected, given the current model constraints to accurately predict end-of-century
conditions as it relates to cumulative development. However, the Project’s contribution to
effects related to sea level rise (e.g., storm drain system capacity problems) can be
mitigated to less-than-significant levels.

Development of any cumulative project within a SFHA would be subject to FEMA and the
City’s floodplain development requirements. These regulations include requirements for
maintenance of flood flow conveyance and floodplain storage, as well as flood protection
for public health and safety and risk to properties. In addition, if fill or structures are
placed in SFHAs where there would be a cumulative increase of 1 foot in water surface
elevations, regulations require that the project causing that effect demonstrate how flood
risk would be managed. As explained in Impacts HY-2 and HY-3, the Project would not
cause or exacerbate off-site flood hazard risk for the 100-year event because it would not
remove floodplain storage, it would not impede or redirect flood flows as a result of
placing fill or structures in a floodplain, and it would not increase the potential for off-site
flooding when 100-year tide events are combined with 100-year storm flows. For those
reasons, the Project’s contribution to flood hazard risk would not be cumulatively
considerable, and the cumulative impact would be less than significant.

Cumulative Water Quality. Development of the Project and other development would
contribute pollutants to stormwater during construction and occupancy of the various
projects, but this would not substantially degrade water quality. The Project’s contribution
would not be cumulatively considerable. This cumulative impact would be less than
significant. (LTS)

Water quality of stormwater runoff varies with surrounding land uses, topography, and
amount of impervious cover, as well as the intensity (energy) and frequency of irrigation or
rainfall. Runoff may contain oil, grease, and metals accumulated in streets and driveways,
as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other
oxygen-demanding substances from landscaped areas. The highest pollutant concentrations
are generally in stormwater runoff generated at the beginning of the wet season and during
the so-called “first-flush.” Approximately 80 percent of total accumulated pollutants are
washed off surfaces with the first 0.5 inch of rainfall, with street surfaces as the primary
source of pollutants in urban areas.

Cumulative development could affect water quality if the land use changes, the intensity of
land use changes, and/or drainage conditions are altered to facilitate the introduction of
pollutants to surface or groundwater resources. Changes in land use would alter the

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associated type and amount of pollutants in stormwater runoff (e.g., higher fecal coliform concentrations in runoff from residential lands compared to commercial lands). Increased intensity of land use would increase the potential pollutant loads. Alterations in drainage patterns could increase pollutant loads by increasing the amount of stormwater runoff transporting pollutants in stormwater runoff; could cause or contribute to erosion if the rate of runoff is increased; or could expose vulnerable areas to infiltration or runoff.

The most common sources of stormwater pollution in urban areas are from construction sites, streets, parking lots, large landscaped areas, and household and industrial materials dumped into storm drains. In some areas, rooftops can also contribute a significant amount of stormwater pollution in urban areas. Grading and earthmoving activities associated with new construction can accelerate soil erosion, even in flat areas. Grease, oil, hydrocarbons, and heavy metals deposited by vehicles and heavy equipment can accumulate on streets and paved parking lots and are carried into storm drains by runoff. Pesticides, herbicides, and fertilizers used for landscape maintenance are washed into storm drains by over-watering (irrigation in excess of soil infiltration rates and plant uptake). Paints, solvents, soap products, and other toxic materials may be inadvertently or deliberately deposited in storm drains in residential and industrial areas. Deposition of particulate matter and dissolution of roofing material and other exposed materials can also contribute pollutants to urban stormwater. The federal CWA requires local municipalities to implement measures to control these types of pollutants from entering their storm drainage systems. Further discussion of federal and local regulations and compliance is presented above in the Regulatory Setting.

New and re-development within the City is subject to requirements of the SMCWPPP and the associated Municipal NPDES Permit and, where applicable and required by the SFRWQCB, Hydromodification Management Plan (HMP), the statewide Construction General Permit, and the City’s development codes. If substantial dewatering is required, an individual WDR permit would be required. These WDRs have been developed to protect water quality standards and require implementation of stormwater quality BMPs. The HMP ensures that potential increases in stormwater discharge do not adversely affect the habitat, form, or function of susceptible creek systems; where discharges are to a susceptible stream or creek, hydromodification controls are required if there would be an increase in impervious area and/or flow rate or flow volume.

Additionally, development projects would have to go through the environmental review process, which would identify any site- or project-specific potential impacts. All of these programs have been designed and implemented to be protective of water quality. Implementation of TMDLs for pollutants listed as contributing to impairment of water resources would further protect water resources from water quality degradation. Continued monitoring of receiving waters by the SFRWQCB and SMCWPPP ensure that these programs remain effective and protective of water quality for cumulative development.
As described in Impact HY-6, the Project would involve ground disturbance during construction at the West Campus and would be required to implement a construction SWPPP, which would be within the jurisdiction of the City to monitor and enforce. At the West Campus, stormwater runoff peak flows would be reduced compared to existing conditions. This is the result of decreased impervious surfaces in combination with stormwater quality BMPs that have been included in Project design. In addition, the stormwater BMPs would provide the necessary level of stormwater treatment prior to discharge to the City’s storm drain system, which drains to the Bay, to ensure compliance with the SMCWPPP and Basin Plan objectives, including TMDLs.

Therefore, the Project’s contribution to water quality effects would not be cumulatively considerable, cumulative impacts would be less than significant.

C-HY-4  
Cumulative Groundwater Supplies and Recharge. Development of the Project and other cumulative development within the San Mateo subbasin would not substantially degrade groundwater supplies. As a result, cumulative impacts on the subbasin would be less than significant. (LTS)

Groundwater recharge in the area where cumulative projects are located, particularly those west of El Camino Real in the lower elevations of the mountains, occurs primarily through streambeds with some direct recharge from percolating precipitation. Most of the cumulative projects would be redevelopment or infill projects in highly urbanized areas where recharge does not occur. Cumulative development would not be expected to substantially increase the amount of impervious surfaces, so groundwater recharge from percolating rainfall potential would not be adversely affected and indirect lowering of the local groundwater table is not likely to occur. As explained in Impact HY-6, the Project site contributes minimally to groundwater recharge under existing conditions. Development of the Project would not increase impervious surfaces. As a result, groundwater recharge would not be adversely affected. The Project’s contribution to cumulative groundwater recharge impacts would not be cumulatively considerable, and the cumulative impact would be less than significant.

Cumulative development could require increases in water supplies; however, water supplies in the area are primarily surface water obtained through City contracts and SFPUC. Cumulative development would also be subject to the applicable urban water management plan for water supplies, and if a cumulative project meets the necessary criteria, it would require a water supply assessment in accordance with SB 610 (see Section 3.16, Utilities) to ensure that adequate water supplies are available without depleting water resources, including groundwater.

The environmental review process and water supply assessment (for major developments) would identify where and when new groundwater wells could be required or implemented. Because the San Mateo subbasin is not actively managed to control groundwater levels, cumulative development could result in greater groundwater use, resulting in a potential
cumulative impact. However, the Project’s contribution to this impact would not be cumulatively considerable because it would not result in greater groundwater use, and as explained in Impact HY-6, no wells would be installed to serve the Project. Therefore, the cumulative impact would be *less than significant*. 