3.10 Hydrology and Water Quality

This section describes the regulatory and environmental setting for hydrology and water quality. It also describes potential impacts on hydrology and water quality that would result from implementation of the Facebook Campus Expansion Project (Project) and mitigation measures to reduce these impacts.

Additional information on the Project’s potential impacts related to stormwater is provided in the WRECO hydrologic and hydraulic study report. The Project’s potential impacts on water supply are discussed in Section 3.14, Utilities and Service Systems.

Issues identified in response to the Notice of Preparation (NOP) (Appendix 1) were considered in preparing this analysis. The applicable issues that were identified pertain to the impacts of sea level rise (SLR) on the Project; the need for improvements to existing levees and flood protection to mitigate the potential threat of tidal flooding; a request for a Project hydraulic report and drainage plans, including information regarding runoff and downstream flow; and ownership of maintenance for the underground drainage system.

Existing Conditions

Regulatory Setting

Federal

Clean Water Act

Several sections of the Clean Water Act (CWA) pertain to regulating impacts on waters of the United States. The CWA sections below pertain to the Project.

The term waters of the United States essentially refers to all surface waters, such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. The U.S. Environmental Protection Agency (EPA) is the overarching authority with respect to protecting the quality of waters of the United States. However, the State Water Resources Control Board (SWRCB) regulates waters of the United States and state under CWA Sections 303, 401 and 402, and the U.S. Army Corps of Engineers (USACE) has jurisdiction over waters of the United States under CWA Section 404.

CWA Sections 303 and 402 apply to the Project because of potential effects on water quality. CWA Sections 404 and 401 apply to wetlands and other waters of the United States and are not discussed further because the Project would not involve work within these water features.

Section 303—Impaired Waters

The state of California adopts water quality standards to protect beneficial uses of waters of the state as required by Section 303(d) of the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), described below. Section 303(d) of the CWA established the total maximum daily load

(TMDL) process to guide the application of state water quality standards (refer to the discussion of state regulations below). To identify candidate water bodies for TMDL analysis, a list of water quality–limited segments was generated by the SWRCB. These stream or river segments are impaired by the presence of pollutants such as sediment and are more sensitive to disturbance because of this impairment.

In addition to the impaired water body list required by CWA Section 303(d), CWA Section 305(b) requires states to develop a report that assesses statewide surface water quality. Both CWA requirements are addressed through the development of a 303(d)/305(b) Integrated Report. The SWRCB developed the statewide 2010 California Integrated Report, which was based on the Integrated Reports from each of the nine Regional Water Quality Control Boards (RWQCBs). The 2010 California Integrated Report was approved by the SWRCB on August 4, 2010, and approved by EPA on November 12, 2010.

Drainage from the Project area ultimately discharges into the Lower San Francisco Bay. The 303(d)-listed impairments for the Lower San Francisco Bay are shown in Table 3.10-2, later in this section.

Section 402—National Pollutant Discharge Elimination System

The 1972 amendments to the federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point-source discharges or discharges that one can point to as a known source of pollutants. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

The 1987 amendments to the CWA created a new section that is devoted to stormwater permitting (Section 402). EPA has granted the state of California primacy in administering and enforcing the provisions of the CWA and NPDES within state boundaries. NPDES permits are issued by one of the nine RWQCBs. Section 402(p) requires permits for discharges of stormwater from industrial construction and municipal separate storm sewer systems (MS4s).

Below are the NPDES permits that are relevant to the Project:

- San Francisco Bay Municipal Regional Permit
- Construction General Permit

More information about these permits is provided in the State Regulations section, below.

National Flood Insurance Program

In response to the increasing cost of disaster relief, Congress passed the National Flood Insurance Act (NFIA) of 1968 and the Flood Disaster Protection Act of 1973. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains.

A Flood Insurance Rate Map (FIRM) is the official map of a community. The FIRM is prepared by FEMA to delineate both the special flood-hazard areas and the flood-risk premium zones that are applicable to the community.
The Project is located within FEMA-designated Flood Zone AE. More information is provided in the Environmental Setting section.²

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act is implemented by the SWRCB and the nine RWQCBs. The SWRCB is the primary state agency with responsibility for protecting the quality of the state's surface and groundwater supplies, or waters of the state. Waters of the state are defined more broadly than waters of the United States. Waters of the state are any surface water or groundwater, including saline waters, within the boundaries of the state. This includes waters in both natural and artificial channels. It also includes all surface waters that are not waters of the United States or non-jurisdictional wetlands, which are essentially distinguished by whether they are navigable. If waters are not navigable, then they are considered to be isolated and, therefore, fall under the jurisdiction of only the Porter-Cologne Act and not the CWA.

The Porter-Cologne Act authorizes the SWRCB to draft state policies regarding water quality. The act requires projects that are discharging, or proposing to discharge, wastes that could affect the quality of the state's water to file a Report of Waste Discharge (RWD) with the appropriate RWQCB. The Porter-Cologne Act also requires that the SWRCB or a RWQCB adopt water quality control plans (basin plans) for the protection of water quality. Basin plans are updated and reviewed every 3 years and provide the technical basis for determining Waste Discharge Requirements (WDRs), taking enforcement actions, and evaluating clean water grant proposals. A basin plan must include (1) a statement of beneficial water uses that the RWQCB will protect, (2) the water quality objectives needed to protect the designated beneficial water uses, and (3) strategies to be implemented, with time schedules for achieving the water quality objectives.³

In basin plans, the RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set the criteria necessary to protect these uses. Consequently, the water quality objectives developed for particular water segments are based on the designated use and vary, depending on such use. The San Francisco Bay RWQCB has authority regarding region-wide and water body-specific beneficial uses and has set numeric and narrative water quality objectives for several substances and parameters in numerous surface waters in its region. For those waters (typically streams) that do not have specific beneficial uses or water quality objectives, the tributary rule⁴ applies. Specific objectives for concentrations of chemical constituents are applied to bodies of water, based on their designated beneficial uses.⁵

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⁴ The “tributary rule” refers to any streams not specifically listed in the basin plan that are deemed to have the same beneficial uses and water quality objectives of the listed stream, river, or lake to which they are a tributary.

The SWRCB identifies waters that fail to meet standards for specific pollutants, which are then state listed in accordance with CWA Section 303(d). If it is determined that waters are impaired for one or more constituents and the standards cannot be met through point-source or nonpoint-source controls (NPDES permits or WDRs), then CWA requires the establishment of TMDLs. TMDLs may establish daily load limits of the pollutant or, in some cases, require other regulatory measures, with the ultimate goal of reducing the amount of the pollutant entering the water body to meet water quality objectives. The latest 303(d) impairments are listed in the 2010 Clean Water Act Section 303(d) and 305(b) Integrated Report.6

The Project lies within the jurisdiction of the San Francisco Bay RWQCB, which is responsible for the protection of beneficial uses of water resources in the San Francisco Bay Area, from Tomales Bay south to Pescadero Creek, including Alameda, Contra Costa, San Francisco, Santa Clara (north of Morgan Hill), San Mateo, Marin, Sonoma, Napa, and Solano Counties. The 2011 San Francisco Bay Basin Plan was last updated in 2015.7 More information on beneficial uses, water quality objectives, and 303(d) impairments that apply to the Project are provided in the surface water quality discussions in the Environmental Setting section.

**NPDES General Construction Stormwater Permit**

The General NPDES Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ) (Construction General Permit) regulates stormwater discharges for construction activities under CWA Section 402. Dischargers whose projects disturb 1 acre or more of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 acre or more, are required to obtain coverage under the Construction General Permit. The Construction General Permit requires development and implementation of a stormwater pollution prevention plan (SWPPP). The SWPPP must list best management practices (BMPs) that the discharger will use to address stormwater runoff and document the placement and maintenance of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for “non-visible” pollutants, to be implemented in case of a BMP failure; and a monitoring plan for turbidity and pH for projects that meet defined risk criteria.8 The requirements of the SWPPP are based on the construction design specifications detailed in the final design plans of a project and the hydrology and geology of the site that are expected to be encountered during construction. The local or lead agency requires proof of coverage under the Construction General Permit prior to building permit issuance. The SWPPP is submitted to the SWRCB; a copy is kept at the jobsite where it is updated during different phases of construction. The SWPPP must be available for inspection and review upon request.

Because land disturbance from Project construction would be greater than 1 acre, a Construction General Permit would be required for Project activities.

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NPDES General Municipal Stormwater Permit

CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for MS4 permits. Phase I MS4 regulations cover municipalities with populations greater than 100,000, certain industrial processes, and construction activities that disturb an area of 5 acres or more. Phase II (small MS4) regulations require that stormwater management plans be developed by municipalities with populations smaller than 100,000 and construction activities that disturb 1 or more acres of land area. The SWRCB adopted a Statewide Phase II Small MS4 General Permit in 2013 to regulate discharges from numerous qualifying small MS4s under a single permit. Small MS4s were categorized as either “Traditional” or “Non-Traditional.” Traditional MS4s operate throughout a community. Non-Traditional MS4s are similar to Traditional MS4s but operate at a separate facility. Most Non-Traditional MS4s in California were not designated as having to comply with the statewide Phase II Small MS4 General Permit, although the SWRCB reserved the right to allow the RWQCBs to designate, through due process, any single Non-Traditional MS4 if it deemed necessary.

MS4 permits require that cities and counties develop and implement programs and measures to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including best management practices, control techniques, system design and engineering methods, and other measures as appropriate. As part of permit compliance, these permit holders have created stormwater management plans (SWMPs) for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. The requirements may include multiple measures to control pollutants in stormwater discharges. During implementation of specific projects under the program, project applicants will be required to follow the guidance contained in the SWMPs, as defined by the permit holder in that location.

The SWRCB is advancing Low-Impact Development (LID) in California as a means of complying with municipal stormwater permits. LID incorporates site design, including, among other things, the use of vegetated swales and retention basins and minimizing impermeable surfaces, to manage stormwater and maintain a site’s predevelopment runoff rates and volumes.

The Project is located within the jurisdiction of the MS4 Phase I San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (San Francisco Bay MS4 Permit). More information on this permit is provided in the Local Regulations section, below.

San Francisco Bay Municipal Regional Permit

As previously described, the Project is located within the jurisdiction of the San Francisco Bay MS4 Permit. The San Francisco Bay RWQCB issued San Francisco Bay MS4 Permit No. CAS029718 (Order No. R2-2015-0049-DWQ) on November 19, 2015, and it became effective on January 1, 2016. Provision C.3 of the San Francisco Bay MS4 Permit is for new development and redevelopment projects. It requires authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects.
The following requirements apply to certain projects and are based on project size and/or location:

- Post-construction stormwater treatment measures are required for most projects with 10,000 square feet or more of impervious surface.
- Post-construction stormwater quantity or hydromodification (flow-peak, volume, and duration) controls are required for projects in certain locations with 1 acre or more of impervious surface, in accordance with local Hydromodification Management Plans.
- Provision C.3 of the San Francisco Bay MS4 Permit requires new development and redevelopment to incorporate source control, site design, and stormwater treatment measures to address pollutant discharges in stormwater runoff. This goal is accomplished through LID techniques, including infiltration and biotreatment. The current MS4 regulates stormwater treatment for new development but recognizes that certain urban infill and higher-density and transit-oriented developments have some inherent environmental benefits and challenges. These types of projects, known as "Special Projects," are allowed to use specific types of non-LID treatment measures to treat a certain percentage of the site’s runoff.
- The Project would be considered a Regulated Project under the Municipal Regional Permit because it falls within the "Other Redevelopment Projects" category of Provision C.3, which is defined as "any land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface on a site on which some past development has occurred." These projects include those that create or replace 10,000 square feet or more of impervious surface, which applies to the Project. To meet the Provision C.3 requirements, projects must include appropriate site design measures, pollutant source controls, and treatment control measures.

Provision C.3 also specifies hydromodification control requirements, which require that post-project runoff shall exceed estimated pre-project rates and/or durations where the increased stormwater discharge rates and/or durations will result in increased potential for erosion and other effects. Hydromodification is a change in the runoff hydrograph (flow patterns) from an area due to land management. This could result in increased peak flows, volumes, and durations from increased impervious area, decreased vegetation, grading/compaction of soils, or construction of drainage facilities. The effects of hydromodification include increased bed and bank erosion in the receiving water, loss of habitat, increased sediment transport and deposition, and increased flooding. The San Mateo Countywide Water Pollution Prevention Program (SMCWRPPP) developed its C.3 Stormwater Technical Guidance document with use of a countywide Hydromodification Management Control Area Map that delineates areas where increases in runoff are most likely to affect channel health and water quality and provides management options to maintain pre-project runoff patterns. It is designed to prevent erosion in watersheds where new projects as well as redevelopment projects are located. Stormwater treatment and site design measures may include non-mechanical water quality improvement techniques (e.g., grassy swales, bio-retention, detention in landscaping) or stormwater

9 More information on hydromodification is provided below in the San Mateo Countywide Water Pollution Prevention Program (SMCWRPPP) section.

detention systems. Non-mechanical water quality improvement techniques are generally preferred to promote "natural" water quality improvements. The SMCWPPP C.3 Stormwater Technical Guidance complies with the San Francisco Bay Region MS4 permit. The Project is exempt from hydromodification requirements because the site is outside the limits of hydromodification areas.\textsuperscript{11}

\textbf{San Mateo Countywide Water Pollution Prevention Program}

SMCWPPP is a partnership of the City/County Association of Governments (C/CAG), which consists of the County of San Mateo and each incorporated city and town in the county. The municipalities that are part of C/CAG share a common MS4 permit. Each municipality in San Mateo County is responsible for implementing a stormwater program in compliance with MS4 permit requirements to prevent discharges of polluted stormwater runoff from its streets into the local storm drain system and nearby surface waters. The permit prescribes how each local municipality will regulate new and redevelopment projects, conduct its municipal maintenance activities, eliminate non-stormwater discharges, inspect businesses to control stormwater pollutants, and encourage the public’s help in preventing pollution.

In order to meet local municipal requirements and requirements of the San Francisco Bay MS4 Permit described above, the County of San Mateo developed its \textit{C.3 Stormwater Technical Guidance Handbook}\textsuperscript{12} to help developers, builders, and project sponsors include post-construction stormwater controls in their projects. The municipalities must require post-construction stormwater controls as part of their obligations under Provision C.3 of the MS4 permit. The countywide program has also prepared a \textit{Sustainable Green Streets and Parking Lots Design Guidebook} to assist municipalities and project applicants with designing street and parking lot projects that treat stormwater runoff in landscape-based treatment measures.

\textbf{Waste Discharge Requirements for Dewatering and Other Low-Threat Discharges to Surface Waters}

CWA Section 402 also includes WDRs for dewatering activities. Although small amounts of construction-related dewatering are covered under the Construction General Permit, the San Francisco Bay RWQCB has regulations specific to dewatering activities that typically involve reporting and monitoring requirements.

If dewatering is required as part of the Project, then the contractor is required to comply with the San Francisco Bay RWQCB dewatering requirements.

\textbf{California Department of Pesticides Regulation}

California Department of Pesticides Regulation (DPR) is the lead agency for regulating the registration, sale, and use of pesticides in California. It is required by law to protect the environment, including surface waters, from adverse effects of pesticides by prohibiting, regulating, or controlling the uses of such pesticides. DPR has both a Surface Water and Groundwater Protection Program that address sources of pesticide residue in surface waters as well as preventive and response components that reduce the presence of pesticides in surface and groundwater. The preventive component includes local


outreach and the promotion of management practices to reduce pesticide runoff and prevent continued movement to groundwater in contaminated areas. In order to promote cooperation with respect to protecting water quality from the adverse effects of pesticides, DPR and the SWRCB signed a Management Agency Agreement (MAA). The MAA, and its companion document, The California Pesticide Management Plan for Water Quality, are intended to coordinate interaction, facilitate communication, promote problem solving, and ultimately ensure the protection of water quality.

Project operation and maintenance in landscaped areas may require the use of pesticides. The storage and use of pesticides would be in compliance with DPR regulations.

Coastal and Ocean Working Group of the California Climate Action Team

The Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) developed the State of California Sea-Level Rise Guidance Document for state agencies to incorporate SLR into planning and decision-making for projects in California. The document was developed in response to Governor Schwarzenegger's Executive Order S-13-08, issued on November 14, 2008, which directed state agencies to plan for SLR and coastal impacts. That executive order also requested the National Research Council (NRC) to issue a report on SLR to advise California on planning efforts. The final report from the NRC, Sea-Level Rise for the Coasts of California, Oregon, and Washington, was released in June 2012. The State of California Sea-Level Rise Guidance Document was last updated in March 2013 with the scientific findings of the 2012 NRC report.

In the CO-CAT SLR guidance document, thirteen SLR projections, based on the time periods 2030, 2050, and 2100, were selected for areas south of Cape Mendocino using 2000 as the baseline. SLR projections based on the State of California Sea-Level Rise Guidance Document are described later in this section.

Local

San Mateo County Sea-Level Rise Vulnerability Assessment

The County of San Mateo initiated a Sea-Level Rise Vulnerability Assessment (Assessment) in spring 2015. The Assessment is part of a long-term resiliency strategy to ensure that communities, ecosystems, and the economy are prepared for climate change. The effort is funded by the California State Coastal Conservancy and conducted through a collaborative multi-stakeholder effort. The Assessment will identify vulnerable assets on the San Francisco Bay (Bay) and coast side of the San Mateo County peninsula, determine the types of impacts, issue initial recommendations on adaptation measures, and improve flooding and SLR mapping. The Assessment is planned for completion in 2016.


The County of San Mateo filed a Grand Jury report, “Flooding Ahead: Planning for Sea-Level Rise,” on June 4, 2015. The report discusses ways for the county to plan for SLR as well as alternative sources of funding for SLR-related projects. The report focuses on addressing SLR through land use planning, SLR-related policies in local general plans, and SLR adaptation measures. The adaptation measures include, but are not limited to, constructing or modifying levees, elevating structures, restoring wetlands, or abandoning low-lying areas. The Grand Jury recommends that a single organization undertake SLR planning on a countywide basis and urges action now to undertake countywide planning for SLR.

In response to the Grand Jury report, the City of Menlo Park (City) stated its general agreement with the report’s findings regarding the risks associated with SLR. The City agrees that a countywide coordinated approach is needed to address the potential impact on people, infrastructure, and property. Addressing SLR should be undertaken by an organization that represents all jurisdictions in the county. Its focus should include storm-related flooding, tidal action, and SLR. The City is in the process of updating its general plan Land Use Element as part of ConnectMenlo, which is anticipated to address SLR and complement existing policies in the Safety Element. The Safety Element includes a map of areas that are vulnerable to SLR. The City is also participating in the San Francisquito Creek Joint Power Authority’s SAFER Bay project, which will evaluate infrastructure alternatives to protect Menlo Park, East Palo Alto, and Palo Alto against extreme tides and SLR.

**City of Menlo Park Municipal Code**

The City of Menlo Park Municipal Code contains the following requirements related to protection of water resources:

*Title 7: Health and Sanitation, Chapter 7.38.* Title 7, Chapter 7.38, discusses general water conservation principals and adopts water conservation as a citywide goal. Further, it provides that the City should conserve the water supply for the greatest public benefit, with particular regard to domestic use, sanitation, and fire protection. Chapter 7.38 includes regulations and restrictions on water use and mandates that the wasteful use of water should be eliminated.

*Title 7: Health and Sanitation, Chapter 7.42.* Title 7, Chapter 7.42, officially adopts the San Mateo Countywide Pollution Prevention Program Stormwater Management Plan and its provisions as City policy. The purpose and intent of Chapter 7.42 is to ensure the future health, safety, and general welfare of city citizens by eliminating non-stormwater discharges to the municipal separate storm sewer; controlling the discharge to municipal separate storm sewers from spills, dumping, or disposal of materials other than stormwater; and reducing pollutants in stormwater discharges to the maximum extent practicable. The intent of Chapter 7.42 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 CWA.

To meet the requirements of Stormwater Ordinance 859 (Chapter 7.42), the City requires a Grading and Drainage (G&D) Plan whenever more than 500 square feet of the surface of a lot is to be affected by a building project. The goal of the G&D Plan is to manage possible sources of water pollution (source control), make sure site drainage does not affect neighboring properties (site design), and remove contaminants from the stormwater before it drains into the City street or storm drain system (treatment measures).

*Title 12: Buildings and Construction, Chapter 12.42.* Title 12, Chapter 42, contains methods and provisions to prevent flood damage. Under Section 12.42.41, a development permit is required before construction or development activities in a flood-hazard area can begin. The standards of construction listed in Section 12.42.51 include anchoring, the use of flood-resistant construction materials and methods, and elevation and flood-proofing standards.

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City of Menlo Park General Plan

The following goal within the Open Space/Conservation Element of the City's General Plan is relevant to the Project.

Goal OSC5: Ensure Healthy Air Quality and Water Quality. Enhance and preserve air quality in accord with state and regional standards, and encourage the coordination of total water quality management, including both supply and wastewater treatment.

The following goal and policies from the Safety Element\(^{15}\) of the City's General Plan pertain to the Project.

Goal S1: Minimize risk to life and damage to the environment and property from natural and human-caused hazards and ensure community emergency preparedness and a high level of public safety services and facilities. The following safety goals are related to Flood Control, Tsunami, and Dam Safety Policies:

Policy S1.21, Flood and Tsunami Hazard Planning and Mapping. Consider the threat of flooding and tsunamis in planning and management practices to minimize risk to life, the environment, and property and maintain up-to-date tsunami hazard zone maps and flood maps as new information is provided by FEMA and other regional agencies. Modify land use plans in areas where tsunamis and flooding are hazards, and permit only uses that will sustain acceptable levels of damage and not endanger human lives in the event of inundation.

Policy S1.22, Flood Damage Prevention. Continue to apply standards for any construction projects (new structures and existing structures proposed for substantial improvement) in areas of special flood hazard in accordance with FEMA and the Flood Damage Prevention Ordinance, including the use of flood-resistant construction materials and construction methods that minimize flood damage. Locate new essential public facilities outside of flood zones, such as City operations facilities, police and fire stations, and hospitals, to the extent feasible.

Policy S1.26, Erosion and Sediment Control. Continue to require the use of best management practices for erosion and sediment control measures with proposed development in compliance with applicable regional regulations.

Policy S1.27, Regional Water Quality Control Board (RWQCB) Requirements. Enforce stormwater pollution prevention practices and appropriate watershed management plans in the RWQCB general National Pollutant Discharge Elimination System requirements, the San Mateo County Water Pollution Prevention Program, and the City’s Stormwater Management Program. Revise, as necessary, City plans so they integrate water quality and watershed protection with water supply, flood control, habitat protection, groundwater recharge, and other sustainable development principles and policies.

Policy S1.28, Sea-Level Rise. Consider sea-level rise in siting new facilities or residences within potentially affected areas.

The following policy from the Land Use Element of the City's General Plan pertains to the Project.

Policy LU-7.7, Hazards. Avoid development in areas with seismic, flood, fire, and other hazards to life or property when potential impacts cannot be mitigated.

ConnectMenlo General Plan Update. The City’s General Plan (Land Use and Circulation Elements) and M-2 Area Zoning Update, also known as ConnectMenlo, is under way. Although not yet adopted, the following draft goals and policies in ConnectMenlo pertain to the Project and are identified for informational purposes.

Program LU-6.H, SAFER Bay Process. Coordinate with the SAFER Bay process so that the Menlo Park community’s objectives for sea-level rise/flood protection, ecosystem protection, and recreation are adequately taken into consideration.

Program LU-6.I, Sea-Level Rise. Establish requirements based on state sea-level rise policy guidance for development projects of a certain minimum scale in areas potentially affected by sea-level rise to ensure protection of occupants and property from flood and other potential effects. Prior to establishment of a suite of program measures, require that new development construct buildings with a base flood elevation that takes into account sea-level rise.

Environmental Setting

Climate and Topography

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 15.4 inches per year, with most of the rainfall occurring from November through April.\textsuperscript{16}

The Project covers a total area of approximately 58 acres (approximately 2,526,500 square feet). The Project area is relatively flat, and elevations on the site range from 7 to 10.5 feet North American Vertical Datum (NAVD). Some portions of the site have been graded to accommodate storm drain facilities. Structures on the site are surrounded by paved parking lots, driving lanes, and landscaped areas. There are no adjacent hillsides.

Surface Water Hydrology

Regional

The Project site is located within the alluvial fan of the lower San Francisquito Creek watershed. Tidal mudflats and marshes in the San Francisco Bay (Bay), the Don Edwards Bay National Wildlife Refuge (Refuge), Ravenswood Slough, and the former salt ponds\textsuperscript{17} (some of which are within the Refuge) are located across Bayfront Expressway/State Route 84 (Bayfront Expressway) and to the north. The Project site is located approximately 250 feet inland from the Refuge and approximately 1 mile inland from Lower San Francisco Bay. Major surface waters in the Project vicinity include the Atherton Channel (also known as Atherton Creek) to the west, Flood Slough to the northwest, Ravenswood Slough to the north, San Francisquito Creek to the southeast, and Lower San Francisco Bay to the east. The Atherton Channel is less than one mile west of the Project site. It is an alternating earth- and concrete-lined channel that carries flow from the upper reaches of Atherton Creek to Flood Slough. Flood Slough is one of several sloughs that run through the salt ponds and salt marshes north of the Bayfront Expressway. It drains into the Lower San Francisco Bay. Levees are located throughout the salt ponds. San Francisquito

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\textsuperscript{17} The former salt ponds are the subject of a forthcoming restoration project.
Creek is approximately 1.7 miles south of the Project area. It is a natural channel that flows into the Bay and serves as a boundary between San Mateo and Santa Clara Counties. Ravenswood Slough is a wetland feature located less than one mile northeast of the Project site that flows into the Bay.

Local

The Project site is underlain by Bay fill and historic saltwater or brackish water marshes that were filled in the 1960s to create more land for development. The site is paved, landscaped, or otherwise graded and therefore considered to be developed or urbanized.

For purposes of the Project Hydrologic and Hydraulic Study Report prepared by WRECO in March 2016, the Project site was divided into 18 sub-watersheds that contribute to the existing drainage system (see Figure 3.10-1), with sub-watershed areas varying from less than 1 acre to 10 acres in size. These sub-watersheds are located in urbanized districts that are approximately 86 percent impervious cover. Generally, the slopes of watersheds are mild (0.4 percent), with the maximum elevation of the proposed surface grading being 12.75 feet near the ridge shown in Figure 3.10-1.

The existing drainage system for the Project area receives overland flows from the site and includes pipes, drainage inlets, and other storm drain facilities, as shown in Figure 3.10-1. The existing, along with the proposed, private storm drains are also shown in Figure 3.10-2. The existing storm drain system also receives offsite stormwater through drainage pipes at the various storm drain locations along the existing conduit lines shown in Figure 3.10-1. The portion of the Project site with the highest elevation is located along a ridge located in the eastern portion of the Project site, as shown by a dotted red line and labeled “ridge” in Figure 3.10-1. This ridge and surrounding topography help define existing drainage patterns within the Project site. In the portion of the sub-watersheds near the ridge, stormwater runoff is conveyed primarily as overland flow for a short period until it enters the storm drain system. Stormwater on the west side of the ridge would be collected in the proposed storm drain network and eventually flow to the Chrysler pump station. Stormwater on the east side of the ridge would be collected in existing or proposed storm drainage systems that discharge to connecting drainage systems. The Chrysler pump station discharges into a large concrete drainage ditch. The ditch is owned by the California Department of Transportation and located outside of the Project boundary on the south side of Bayfront Expressway. Flow from this drainage ditch empties into Flood Slough, one of many sloughs that run through the salt ponds and salt marsh flats north of the Bayfront Expressway and interact with flow from the Bay. After passing through the salt marsh flats for approximately three miles (including channel meanders), Flood Slough drains into the Bay.

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Figure 3.10-1
Subwatersheds Delineated for the Project Area
Facebook Campus Expansion Project Draft EIR

Source: WRECO 2016.
Figure 3.10-2
Existing and Proposed Storm Drain System
Facebook Campus Expansion Project Draft EIR
Water Quality

Surface Water

The Basin Plan specifies the following beneficial uses that apply to the Lower San Francisco Bay.\textsuperscript{21}

- Industrial service water supply (IND)
- Commercial and sport fishing (COMM)
- Shellfish harvesting (SHELL)
- Estuarine habitat (EST)
- Fish migration (MIGR)
- Preservation of rare and endangered species (RARE)
- Fish spawning (SPWN)
- Wildlife habitat (WILD)
- Water-contact recreation (REC1)
- Noncontact water-contact recreation (REC2)
- Navigation (NAV)

Water quality objectives for the Lower San Francisco Bay are shown in Table 3.10-1. The water quality objectives are general objectives established for the region. Table 3.10-2 shows 303(d) listed impairments for the Lower San Francisco Bay region, based on the 2010 California Integrated Report.\textsuperscript{22}

Table 3.10-1. Water Quality Objectives for Surface Waters in the Project Area

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Water Quality Objective</th>
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<tr>
<td>Bacteria</td>
<td>Various concentrations, based on designated beneficial use.</td>
</tr>
<tr>
<td>Bioaccumulation</td>
<td>Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life.</td>
</tr>
<tr>
<td>Biostimulatory</td>
<td>Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.</td>
</tr>
<tr>
<td>substances</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>For nontidal waters, coldwater habitat: 7.0 mg/l minimum. The median dissolved oxygen concentration for any 3 consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.</td>
</tr>
<tr>
<td>Floating material</td>
<td>Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.</td>
</tr>
</tbody>
</table>


### Water Quality Objective

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population and community ecology</td>
<td>Waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alterations in population or community ecology or receiving water biota. In addition, the health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.</td>
</tr>
<tr>
<td>pH</td>
<td>Must be maintained between 6.5 and 8.5 and shall not cause changes greater than 0.5 units in normal ambient pH levels.</td>
</tr>
<tr>
<td>Radioactivity</td>
<td>Radionuclides shall not be present in concentrations that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.</td>
</tr>
<tr>
<td>Salinity</td>
<td>Controllable water quality factors shall not increase the total dissolved solids or salinity of waters of the state so as to adversely affect beneficial uses, particularly fish migration and estuarine habitat.</td>
</tr>
<tr>
<td>Sediment</td>
<td>Suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. Controllable water quality factors shall not cause a detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life.</td>
</tr>
<tr>
<td>Settleable material</td>
<td>Waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses.</td>
</tr>
<tr>
<td>Suspended material</td>
<td>Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.</td>
</tr>
<tr>
<td>Sulfide</td>
<td>All water shall be free from dissolved sulfide concentrations above natural background levels.</td>
</tr>
<tr>
<td>Tastes and odors</td>
<td>Waters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance, or that adversely affect beneficial uses.</td>
</tr>
<tr>
<td>Temperature</td>
<td>Enclosed bays and estuaries: Objectives are specified in the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California. Surface waters: The natural receiving water temperature of inland surface waters shall not be altered unless it can be demonstrated to the satisfaction of the RWQCB that such alteration in temperature does not adversely affect beneficial uses. The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8°C) above natural receiving water temperature.</td>
</tr>
<tr>
<td>Toxicity</td>
<td>All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.</td>
</tr>
<tr>
<td>Turbidity</td>
<td>Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.</td>
</tr>
<tr>
<td>Unionized ammonia</td>
<td>Lower San Francisco Bay: The discharge of wastes shall not cause receiving waters to contain concentrations of un-ionized ammonia in excess of 0.4 mg/l as nitrogen.</td>
</tr>
<tr>
<td>Chemical constituents</td>
<td>Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use. Objectives for specific chemical constituents are listed in the San Francisco Bay RWQCB Basin Plan.</td>
</tr>
</tbody>
</table>

Source: San Francisco Bay Regional Water Quality Control Board, 2015.

mg/L = milligrams per liter

NTU = nephelometric turbidity unit
Table 3.10-2. Overview of Water Quality Impairments for the Lower San Francisco Bay

<table>
<thead>
<tr>
<th>Listed Impairments Per 2010 303(d) List</th>
<th>Potential Sources</th>
<th>EPA TMDL Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlordane</td>
<td>Nonpoint source</td>
<td>Est. 2013</td>
</tr>
<tr>
<td>DDT (dichlorodiphenyltrichloroethane)</td>
<td>Nonpoint source</td>
<td>Est. 2013</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>Nonpoint source</td>
<td>Est. 2013</td>
</tr>
<tr>
<td>Dioxin compounds (including 2,3,7,8-TCDD)</td>
<td>Atmospheric deposition</td>
<td>Est. 2019</td>
</tr>
<tr>
<td>Furan compounds</td>
<td>Atmospheric deposition</td>
<td>Est. 2019</td>
</tr>
<tr>
<td>Invasive species</td>
<td>Ballast water</td>
<td>Est. 2019</td>
</tr>
<tr>
<td>Mercury</td>
<td>Atmospheric deposition, industrial point sources, municipal point sources, natural sources, nonpoint sources, resource extraction</td>
<td>2008</td>
</tr>
<tr>
<td>PCBs (polychlorinated biphenyls) and dioxin-like PCBs</td>
<td>Unknown nonpoint source</td>
<td>Est. 2008</td>
</tr>
<tr>
<td>Trash</td>
<td>Illegal dumping and urban runoff/storm sewers</td>
<td>Est. 2021</td>
</tr>
</tbody>
</table>

TCDD = tetrachlorodibenzo-p-dioxin
EPA = U.S. Environmental Protection Agency
TMDL = total maximum daily load

Water quality in a typical surface water body is influenced by processes and activities that take place within the watershed. The quality of the stormwater runoff from the Project site and surrounding development is typical of urban watersheds. Water quality is affected primarily by discharges from both point and nonpoint sources. Point and nonpoint sources include winter storms, overland flow, exposed soil, roofs, parking lots, and streets. Water quality in the Project vicinity is directly affected by stormwater runoff from adjacent streets and properties that deliver fertilizers, pesticides, automobile and traffic pollutants (e.g., oil, grease, metals), sediment with associated attached pollutants from soil erosion, trash, and other pollutants.

Common sources of stormwater pollution in urban areas include construction sites, parking lots, large landscaped areas, and household and industrial sites. Grading and earthmoving activities associated with new construction can accelerate soil erosion. Grease, oil, hydrocarbons, and metals deposited by vehicles and heavy equipment can accumulate on streets and paved parking lots and be carried into storm drains by runoff. Polychlorinated biphenyls (PCBs) are also listed as 303(d) impairments in the...
Lower San Francisco Bay. PCBs can be found in automobile engines and other sources common in urban areas. Pesticides, herbicides, fungicides, and fertilizers used for landscape maintenance are washed into storm drains when irrigation exceeds the rate of soil infiltration and plant uptake or when these chemicals are applied in excess. As shown in Table 3.10-2, the pesticides of chlordane, DDT (no longer permitted for use), and dieldrin are listed as 303(d) impairments in the Lower San Francisco Bay. Paints, solvents, soap products, and other toxic materials may be inadvertently or deliberately deposited in storm drains in residential and industrial areas. Trash is also listed as a 303(d) impairment in Table 3.10-2. Trash can threaten aquatic life and recreational beneficial uses designated by the Basin Plan. Trash and litter can collect in storm drain inlets and ultimately be discharged into nearby waterways.

**Groundwater**

**Groundwater Hydrology**

*Hydrogeology.* The Project area is located within the San Mateo subbasin of the larger Santa Clara Valley groundwater basin (Department of Water Resources [DWR] Basin Number 2-9.03). The San Mateo subbasin is bound by the Santa Cruz Mountains to the west, the Bay to the north and east, San Francisquito Creek to the south, and the Westside groundwater basin to the north. The subbasin’s underlying water-bearing formations include Quaternary and Plio-Pleistocene alluvial deposits, which are composed of gravel, sand, silt, and clay. A relatively shallow water table aquifer overlies confined and semi-confined aquifers near the margins of the Bay, with most wells drawing from deeper deposits. The direction of groundwater flow is generally to the east and north. The basin is composed of alluvial fan deposits formed by tributaries to the Bay, which drain the basin. A relatively shallow water table aquifer overlies confined and semi-confined aquifers.

Recharge of the subbasin occurs through infiltration into streambeds and through infiltration of precipitation on the valley floor. Little is known about the actual storage capacity of the subbasin or existing groundwater levels, but it is estimated that groundwater levels have rebounded somewhat since the early twentieth century when groundwater was used as the primary source for drinking and irrigation water. Groundwater at the Project site was measured from borings, as described in the Project Geotechnical Report. Groundwater within and around the Project site was found at relatively shallow depths, ranging from 6 to 9 feet below ground surface (bgs). Other recent studies at nearby sites have encountered a similar depth to groundwater of 8 feet bgs and somewhat less-shallow depths of 9.5 to 15.5 feet bgs. Fluctuations in groundwater level depend on season, tidal fluctuation, regional fluctuation, and other factors.23,24 The direction of groundwater flow is generally to the east and north.25

**Groundwater Quality.** In general, groundwater quality in the Santa Clara Valley groundwater basin is good. Throughout most of the basin, groundwater quality is suitable for most urban and agricultural uses, with the exception of a few local impairments. The primary constituents of concern are high Total


Dissolved Solids (TDS), nitrate, boron, and organic compounds. Water from public supply wells meets state and federal drinking water standards without treatment. However, there are some known concerns. Near the Bay margin, historic groundwater overdraft has created areas of saltwater intrusion where groundwater salinity is elevated by contact with seawater that infiltrates subsurface aquifers. The high level of salt in the native soils is also indicative of high concentrations of salts in groundwater. The high level of salt in the native soils has deteriorated the metal components of the irrigation system over time, resulting in leaks that cause loss of water. Also, when used for irrigation, some wells are impaired with soil problems because of high concentrations of sodium. The groundwater tends to be quite hard (high mineral content) and have high concentrations of iron and manganese.

Designated beneficial uses identified for the Santa Clara Valley groundwater basin are as follows:

- Municipal and domestic supply (MUN)
- Industrial process supply (PROC)
- Industrial service supply (IND)
- Agricultural supply (AGR)

Although MUN is a beneficial use of the Santa Clara Valley groundwater basin, groundwater beneath the Project site itself is not considered to be a source of drinking water, according to the San Francisco RWQCB, because of the elevated salinity in the groundwater. Groundwater objectives consist primarily of narrative objectives combined with a limited number of numerical objectives. The primary groundwater objective is the maintenance of existing high-quality groundwater. At a minimum, groundwater shall not contain concentrations of bacteria, chemical constituents, radioactivity, or substances that produce taste and odor in excess of the objectives unless naturally occurring background concentrations are greater.

Groundwater contamination can be the result of historical industrial activities and soil contamination or can originate from underground storage tank releases of hazardous materials. Raychem (now part of TE Connectivity [TE]) purchased the Project site during the mid-1960s and began development of the existing office and manufacturing buildings. A former pilot plant operated onsite and contained manufacturing facilities for polymers, antioxidants, paints, adhesives, epoxies, mastics, PCBs, coatings,

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and gels. According to GeoTracker, there are no leaking underground storage tank (LUST) cleanup sites, but there is a history of soil contamination. Therefore, in 1996, Raychem entered into a Corrective Action Consent Agreement with the California Department of Toxic Substances Control (DTSC) to perform Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) activities on the Raychem site. Prior operations at the Project site resulted in significant releases of hazardous substances, including elevated levels of volatile organic compounds (VOCs), semi-volatile organic compounds, metals, petroleum hydrocarbons, PCBs, and polychlorinated dioxins and dibenzofurans. The investigation determined that the groundwater contamination was limited to the Raychem site and VOC concentrations would naturally attenuate (i.e., reduce) over time. Subsequent groundwater modeling also predicted minimal movement of PCB concentrations in groundwater over time. DTSC determined in November 2006 that the West Campus had been remediated to a level that is acceptable for commercial and industrial use. Because hazardous materials remain in the soil and groundwater, DTSC determined that the recordation of a land use covenant (LUC) to restrict property uses was necessary for the protection of human health and the environment. See Section 3.11, Hazards and Hazardous Materials, for more information.

**Flooding**

As shown in Figure 3.10-3, the majority of the Project site is within the FEMA 100-year floodplain and subject to tidal flooding from the Bay (Zone AE). The southwest corner of the Project site is mapped as being within Flood Zone X, which is outside the 500-year floodplain. Areas within the 100-year flood-hazard area are subject to a 100-year flood, which means that, in any given year, the risk of flooding in the designated area is one percent. Areas within the 500-year flood-hazard area are subject to a 500-year flood, which means that, in any given year, the risk of flooding is 0.2 percent.

**Sea-Level Rise**

Projected SLR, as an effect of climate change, is expected to increase the number of areas that experience coastal flooding along the Bay in the future. Coastal and low-lying areas, such as the Project site, are particularly vulnerable to future SLR. More specifically, SLR is a concern for the future, particularly in combination with future storm events and coastal flooding. A scenario with 100-year high tides, taking into account SLR over a 50- or 100-year horizon, would dramatically increase the risk of flooding in the Project vicinity.


33 A Corrective Action Consent Agreement is a voluntary agreement between a lead agency and responsible party in which the company commits to investigate the nature and extent of contamination at and surrounding a site governed by the RCRA and implement corrective actions (i.e., cleanup) as necessary.

34 The Facebook West Campus was formerly owned Tyco Electronics (TE Connectivity), which purchased it from Raychem in the late 1990s. Raychem Corporation (Raychem) operated a facility that manufactured high-tech plastic and electrical insulation products and engaged in the management of hazardous waste pursuant to a hazardous waste permit. The Facebook Menlo Park West Campus (now known as Building 20) is the site designation for the east side of the former Raychem/Tyco facility that was purchased by Facebook in 2011.


Figure 3.10-3
FEMA Flood Zones within the Project Vicinity
Facebook Campus Expansion Project Draft EIR
Table 3.10-3 provides a summary of SLR projections, as provided by state guidance.

### Table 3.10-3. Sea-Level Rise Projections for Areas South of Cape Mendocino

<table>
<thead>
<tr>
<th>Time Period</th>
<th>CO-CAT SLR Guidance Document (South of Cape Mendocino)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feet⁺</td>
</tr>
<tr>
<td>2000–2030</td>
<td>0.13</td>
</tr>
<tr>
<td>2000–2050 (mid-century)</td>
<td>0.39</td>
</tr>
<tr>
<td>2000–2100 (end of century)</td>
<td>1.38</td>
</tr>
</tbody>
</table>

Sources: CO-CAT 2013 for South of Cape Mendocino; San Francisco Bay Conservation and Development Commission, 2011.

⁺ Official projections reported in these units.

According to the U.S. Geological Survey (USGS) National Elevation dataset, the Project site is located in an area that is subject to future SLR inundation. SLR could range from 1.38 to 5.48 feet by 2100 (compared to 2000 levels). SLR, in combination with daily tides, could result in more substantial inundation at the upper end of the SLR ranges and in the latter part of the century (see Table 3.10-4). High-tide events, combined with the effects of SLR, would produce the greatest inundation and potential damage from flooding. Table 3.10-5 provides elevations for potential future inundation at the Project site, combining the FEMA 100-year flood event and projected SLR elevations.

### Table 3.10-4. Elevations of Potential Future Inundation during Daily Tides with Sea-Level Rise

<table>
<thead>
<tr>
<th>Time Period</th>
<th>CO-CAT SLR Projection (feet)⁺</th>
<th>Mean Higher High Water + SLR (feet; NAVD 88)ᵇ</th>
<th>Amount of Potential Daily Inundation at Project Site w/SLR (feet)ᶜ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower End</td>
<td>Lower End</td>
<td>Upper End</td>
</tr>
<tr>
<td>2000–2030</td>
<td>+0.13</td>
<td>7.33</td>
<td>8.18</td>
</tr>
<tr>
<td>2000–2050 (mid-century)</td>
<td>+0.39</td>
<td>7.59</td>
<td>9.20</td>
</tr>
<tr>
<td>2000–2100 (end of century)</td>
<td>+1.38</td>
<td>8.58</td>
<td>12.68</td>
</tr>
</tbody>
</table>

⁺ CO-CAT 2013.


ᶜ Elevations on the site range from 7 to 10.5 feet (NAVD 88). For these calculations, the lower site elevation of 7 feet was used to provide a conservative estimate.

ᵈ The upper end of the SLR projections represents the most conservative estimate of SLR inundation levels.

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### Table 3.10-5. Elevations of Potential Future Inundation during 100-year Flood Event with Sea-Level Rise

<table>
<thead>
<tr>
<th>Time Period</th>
<th>CO-CAT SLR Projection (feet)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>SLR Projection + 100-year Flood Zone AE BFE (feet; NAVD 88)&lt;sup&gt;b,c&lt;/sup&gt;</th>
<th>Amount of Potential Inundation at Project Site w/100-year Flood Event w/SLR (feet)&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000–2030</td>
<td>+0.13</td>
<td>10.93 11.78</td>
<td>3.93 4.78</td>
</tr>
<tr>
<td>2000–2050 (mid-century)</td>
<td>+0.39</td>
<td>11.19 12.80</td>
<td>4.19 5.80</td>
</tr>
<tr>
<td>2000–2100 (end of century)</td>
<td>+1.38</td>
<td>12.18 16.28</td>
<td>5.18 9.28</td>
</tr>
</tbody>
</table>

<sup>a</sup> CO-CAT 2013.
<sup>b</sup> FEMA 2015.
<sup>c</sup> Static base flood elevation (BFE) for Zone AE = 10.8 feet (according to FEMA 2015 flood study).
<sup>d</sup> Elevations on the site range from 7 to 10.5 feet NAVD 88. For these calculations, the lower site elevation of 7 feet was used to provide a conservative estimate.
<sup>e</sup> The upper end of the SLR projections represents the most conservative estimate of SLR inundation levels.

### Potential for Tsunami, Seiche, Mudflows

The Project site is not subject to flooding from tsunami or seiche or risks from mudflows or landslides. According to the State of California Tsunami Inundation Map for Emergency Planning (Redwood Point Quadrangle/Palo Alto Quadrangle), the Project site is not located within a tsunami inundation area.<sup>38</sup> However, the South Bay salt ponds adjacent to the Bay and portions of Flood and Ravenswood Sloughs, located approximately 0.6 mile to the northeast of the Project site, are located within designated tsunami inundation areas. Seiches occur in an enclosed or partially enclosed body of water, such as a lake or reservoir. There are no large bodies of freshwater, such as reservoirs or lakes, within the Project vicinity. In addition, the Bay is a large and open body of water with no immediate risk of seiches. Large waves generated in the Pacific Ocean, both sea and swell, undergo considerable refraction and diffraction upon passing through the Golden Gate, resulting in greatly reduced heights when they reach the Project site. Therefore, there is no risk of seiches affecting the Project site, and no further analysis is required. Because the Project site, as well as the majority of the city, is relatively flat, and the city is outside of the affected zones for earthquake-induced landslides or rainfall-induced landslides,<sup>39</sup> no mudflows or debris slides are expected to occur within the Project site. More information on landslide potential is provided in Section 3.9 Geology and Soils.

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Dam and Levee Failures

According to the ABAG online dam failure inundation maps, although portions of the city are within the Searsville and Searsville/Felt dam inundation zones, the Project site is not located within a dam inundation zone. There are no major reservoirs upstream of the Project site. There are no levees within or around the Project site because it is topographically isolated from nearby salt ponds and the Bay by the Bayfront Expressway.40

Environmental Impacts

This section describes the environmental impacts analysis related to hydrology and water quality resources for the Project. It describes the methods used to determine the impacts of the Project and lists the thresholds used to conclude whether an impact would be significant. Impacts are determined to be no impact (NI), less than significant (LTS), less than significant with mitigation (LTS/M), or significant and unavoidable (SU). Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, as needed.

Thresholds of Significance

In accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines, the Project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that 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 that would result in substantial erosion or siltation onsite or offsite.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood-hazard area, as mapped on a federal Flood-Hazard Boundary or FIRM or other flood-hazard delineation map.
- Place within a 100-year flood-hazard area structures that would impede or redirect floodflows.

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- 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.
- Inundation by seiche, tsunami, or mudflow.

**Methods for Analysis**

All Project elements were analyzed by comparing baseline conditions, as described in the *Environmental Setting*, to conditions during construction and/or operations of the Project. Analysis focused on issues related to surface hydrology, flood hazards, groundwater supply, and surface and groundwater quality. The key construction-related impacts were identified and evaluated qualitatively based on the physical characteristics of the Project site and the magnitude, intensity, location, and duration of activities.

- **Surface Water Hydrology.** The surface water hydrology impact analysis considered changes in water bodies, impervious surfaces, and drainage patterns. Information on the change in impervious surface, runoff quantities, and drainage patterns was provided by the Project Sponsor. The analysis of changes in onsite water bodies involved a comparison of existing onsite hydrological conditions and new/modified conditions proposed as part of the Project, which were provided in the hydrology and hydraulics report prepared for the Project.

- **Flood Hazards.** The impact analysis for flood risk was conducted using FEMA mapping to determine the existing flood zone and information from the Project Sponsor regarding changes in the drainage system and layout that may affect flood risk.

- **Groundwater Supply.** Impacts on groundwater supply were analyzed using information from DWR Groundwater Bulletin 118, v4.1, and comparing existing sources of recharge versus Project-modified recharge capabilities. Recharge is determined by the ability of water to infiltrate into the soil. Although the extent of the groundwater aquifer is unknown within the Project site because of a lack of data from DWR, this analysis assumes that groundwater exists below the Project site.

- **Surface and Groundwater Quality.** Impacts of the Project on surface water and groundwater quality were analyzed using existing information on potential existing sources of pollution generated by activities such as vehicle use, building maintenance, pesticide use, trash disposal, and hazardous materials storage. These impacts were then compared to potential Project-related sources of pollution during Project construction, such as sediments and other construction materials, and during Project operation, such as vehicle use, building maintenance, pesticide use, trash disposal, and hazardous materials storage.

**Impacts Not Evaluated in Detail**

**Housing within a 100-Year Flood-Hazard Area.** As shown in Figure 3.10-3, the Project is within a 100-year floodplain and subject to tidal flooding (Flood Zone AE). However, the Project does not include a housing component. As such, implementation of the Project would not place housing within a 100-year flood-hazard area. There would be no impact related to placing housing within a 100-year flood-hazard area. This impact is not evaluated further.

**Substantially Degrade Water Quality.** As noted in Section 3.8 (*Biological Resources, Environmental Setting*), there are no ponds or wetlands on the Project site. There is a large concrete drainage ditch on the south side of the Bayfront Expressway adjacent to, but outside of, the Project site; it would not be affected by the Project. Because surface water features do not exist onsite, construction would not involve work within water features, and dredged and fill activities would not be necessary. No impact would result.
Seiche, Tsunami, or Mudflow Impacts. As previously described, the Project site is not subject to flooding from tsunami, seiche, or dam failure inundation. The Project area is not within a planned tsunami inundation area, as depicted on the Tsunami Inundation Map for Emergency Planning prepared by the California Emergency Management Agency and California Geological Survey. The potential for tsunami or seiche inundation or mudflow is low. South San Francisco Bay is located approximately 1 mile north of the Project site, and the Pacific Ocean is located approximately 16 miles to the west. There are no reservoirs adjacent to the Project area, and because of the shape and amount of open water in the Bay, the Project would not be prone to inundation by seiche. The Project area is not within a designated landslide area. Thus, the risk of slope failure, including seismically induced landslides and/or mudslides, at the Project site is judged to be low. Therefore, the Project would not be subject to mudflows, and no detailed analysis of these impacts is required. Therefore, there would be no impacts related to flooding by seiche, tsunami, or mudflow. This impact is not evaluated further.

Levees and Dams. Several levees are located along the Bay shoreline to protect facilities such as high-tech businesses and schools. However, there are no levees within the Project site. It is topographically isolated from nearby salt ponds and the Bay by the Bayfront Expressway. There are no major reservoirs immediately upstream of the Project site; therefore, the Project site is not subject to inundation from dam failure. People or structures would not be exposed to flood impacts as a result of dam or levee failure.

Topics Provided for Informational Purposes

Recent court cases have concluded that an environmental impact report (EIR) need not evaluate the environment’s effect on a project. In one case that discussed the SLR issue directly, the California Second District Court of Appeals held that, although an EIR must analyze the environmental effects that may result from a project, an EIR is not required to examine the effects of the environment, such as SLR, on a project (see Ballona Wetlands Land Trust v. City of Los Angeles, 201 Cal. App. 4th 455). In its decision, the court called into question the validity of portions of the State CEQA Guidelines that require consideration of impacts of the environment on a project. The Ballona decision potentially eliminates the need for lead agencies to consider the impacts of climate change on proposed projects. The Ballona decision did not, however, call into question the State CEQA Guidelines amendments enacted in 2010 that establish how greenhouse gas emissions are to be analyzed and mitigated under CEQA.

Although the California Supreme Court denied review of the Ballona decision, the issue of the environment’s effect on a project was raised once again in California Building Industry Association v. Bay Area Air Quality Management District (CBIA v. BAAQMD), Supreme Court Case No. S213478.44

43 On March 21, 2012, the California Supreme Court denied case review and depublication requests submitted by several environmental organizations.
44 Review granted by the California Supreme Court on November 26, 2013. The issue to be resolved: “Under what circumstances, if any, does the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) require an analysis of how existing environmental conditions will impact future residents or users (receptors) of a proposed project?”
Alameda County Superior Court stated that “the purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project” and found that BAAQMD’s June 2010 (updated in May 2011) air quality impact guidelines (Section 15126.2) were, in part, unauthorized by the CEQA statute and therefore invalid. The court, however, did not exclude all consideration of existing conditions from CEQA. An agency must “evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present.” Although this is a large project, considering the cumulative and global nature of SLR, it is assumed that the Project would not exacerbate risks associated with SLR. Therefore, the following paragraph is presented for informational purposes only, and no significance determination is made from the analysis.

According to USGS, the Project site could be subject to SLR full inundation by 2100 (1.38 to 5.48 feet by 2100). As previously described, all newly constructed buildings would be elevated, which would help to prevent the potential flooding effects of SLR on the buildings themselves. The Project would involve the placement of podiums to elevate finished floor elevations and provide protection from the 100-year base flood elevation (BFE) plus 16 inches (or 1.33 feet)\(^45\) of SLR and 12 inches (1 foot) for freeboard\(^46\) by 2050.\(^47\) The 16 inches would provide some protection from SLR inundation at the site, but this elevation is at the lower end of the projected end-of-century (2100) SLR elevation and is lower than the upper end of the mid-century (2050) SLR projection (see Table 3.10-3).

**Impacts and Mitigation Measures**

**Impact WQ-1: Violation of Water Quality Standards or Waste Discharge Requirements. The Project could violate water quality standards or waste discharge requirements. (LTS/M)**

**Construction**

Implementation of the Project would include construction activities such as site clearing and grading, new building construction, paving and repaving for parking lots, cut-and-fill activities, excavation, and the installation of landscaping. The Project would also include the demolition of seven existing onsite buildings and the construction of two new office buildings (Buildings 21 and 22) as well as the construction of a new hotel. These land-disturbing activities and the placement of stockpiles within proximity to storm drain inlets could result a temporary increase in sediment loads to the Lower San Francisco Bay. Sediment transport to local drainage facilities such as drainage inlets, culverts, and storm drains could also result in reduced stormflow capacity, resulting in localized ponding or flooding during storm events. Sediment can affect surface 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 and degrade water quality. Land disturbance would occur across the Project site. The Project would remove approximately 25,548 cubic yards (cy) of recycled material and 1,022 cy of other material (e.g., soil, concrete, asphalt concrete, construction and demolition (C&D) debris [wood, metal roofing, steel work, etc.]) that would be disposed of at an offsite landfill.

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\(^45\) The hydrologic and hydraulic study report analyzed SLR impacts based on San Francisco Bay Conservation and Development Commission projections.

\(^46\) Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

\(^47\) Facebook. August 3, 2015—communication or memo from the applicant in response to ICF data request.
The delivery, handling, and storage of construction materials and wastes (e.g., concrete debris), as well as the use of heavy construction equipment, could also result in stormwater contamination, and thereby affect water quality. Construction activities could involve the use of chemicals and the operation of heavy equipment, which could result in accidental spills of hazardous materials (e.g., fuel and oil) that could enter the groundwater aquifer or nearby surface water bodies from runoff or storm drains. Constituents in fuel, oil, and grease can be acutely toxic to aquatic organisms and/or bioaccumulate in the environment. All construction equipment and import material would be staged onsite. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Staging areas would be located on the southern, western, and northernmost portions of the Project site where several storm drains that lead to the Lower San Francisco Bay are located.

All Project construction activities would be subject to existing regulatory requirements. Permittees also must comply with the appropriate water quality objectives for the region. Because the land disturbance for the Project would be more than one acre, coverage under the Construction General Permit would be required. The Construction General Permit, as described above, contains standards to ensure that water quality is not degraded. As part of compliance with the Construction General Permit, standard erosion control measures and other BMPs would be identified in a SWPPP. These measures would be implemented during construction to reduce contamination and sedimentation in waterways. As a performance standard, BMPs for inclusion in the SWPPP would be required to represent the best available technology that is economically achievable and the best conventional pollutant control technology to reduce pollutants. Commonly practiced BMPs consist of a wide variety of measures, which are implemented to reduce pollutants in stormwater and other nonpoint-source runoff. These measures would include installing erosion control devices, such as silt fences, staked straw wattles, and geofabric to prevent silt runoff to storm drains or waterways. Topsoil and backfill would be stockpiled, protected, and replaced at the conclusion of construction activities. Disturbed soil would be revegetated as soon as possible with the appropriate selection and schedule for turf, plants, and other landscaping vegetation. No disturbed surfaces would be left without erosion control measures in place during the wet season, which generally occurs between October 1 and April 30.

Project construction is expected to occur in two phases over a period of 6 years (2016–2020). Therefore, some activities would occur during the wet season. Specific erosion and sediment control BMPs would be implemented for Project construction occurring during the wet season. Efforts would be made by the Project Sponsor to minimize the potential for large rain events to mobilize loose sediment during construction.

The SWPPP would include the following erosion- and sediment-control BMPs:

- Keep disturbed areas (areas of grading and related activities) to the minimum necessary for demolition or construction of the project.
- Keep runoff away from disturbed areas during grading and related activities.
- Stabilize disturbed areas as quickly as possible by vegetative, mechanical, and/or physical methods.
- Trap sediment before it leaves the site with such techniques as check dams, sediment ponds, or straw wattles, including perimeter protection.
- Use dirt and sediment tracking BMPs, including stabilized construction entrances and wheel washers.
- Implement routine street sweeping.
- Cover exposed soils and material stockpiles to prevent wind erosion.
- Use interceptor ditches, drainage swales, or detention basins to prevent storm runoff from transporting sediment into drainage ways and sediment-laden runoff from leaving any disturbed areas.
- Use landscaping and grading methods that lower the potential for downstream sedimentation (e.g., modified drainage patterns, longer flow paths, encouraging infiltration into the ground, and slower stormwater conveyance velocities).
- During the installation of the erosion and sediment transport control structures, the erosion control professional must be on the site to supervise the implementation of the designs and the maintenance of the facilities throughout the grading and construction period.
- Perform routine monitoring of erosion control facilities during construction and during/after rain events.

Furthermore, during the installation of the erosion and sediment transport control structures, the erosion control professional must be on the site to supervise implementation of the designs and maintenance of the facilities throughout the grading and construction period.

As part of the SWPPP, the Project Sponsor would implement the following construction BMPs, as necessary, to protect stormwater quality:

- Store, handle, and dispose of construction materials and wastes.
- Control and prevent the discharge of all potential pollutants, including pavement-cutting wastes, paints, concrete, petroleum products, chemicals, washwater, and non-stormwater discharges, to storm drains and watercourses.
- Avoid cleaning, fueling, or maintaining vehicles onsite, except in a designated area where washwater is contained and treated.
- Perform clearing and earthmoving activities only during dry weather.
- Limit and time applications of pesticides and fertilizers to prevent polluted runoff. Delineate with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
- Train and provide instruction to all employees and subcontractors regarding construction BMPs.

Construction dewatering in areas with shallow groundwater could be required during excavation and trenching for building foundation and utility improvements. Because the Project site is a DTSC cleanup site and has historical soil contamination, groundwater may be contaminated. As discussed in Section 3.11, Hazards and Hazardous Materials, impacts related to groundwater contamination are considered potentially significant and require mitigation to protect human health and the environment. Coverage under the Construction General Permit typically includes dewatering activities as authorized non-stormwater discharges, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. Because groundwater at the site may be contaminated, the San Francisco Bay RWQCB would need to be notified if dewatering would occur. In addition, the contractor may be subject to dewatering requirements in addition to what is outlined in the Construction General Permit, including discharge sampling and reporting.
Because the Project would disturb more than 1 acre, coverage under the Construction General Permit would be required. In addition to compliance with the Construction General Permit, the City’s Municipal Code (Title 7, Chapter 7.42) and the permit review process, the Project Sponsor would also be required to prepare and implement a G&D Plan. BMPs implemented as part of the G&D Plan would reduce the amount of stormwater runoff and prevent the entry of Project-related sediment and pollutants into the City’s storm drain system and other surface waters. In addition, the Project parking lot grading plan includes stormwater treatment areas, such as bio-retention treatment areas.

LID features, source control, and BMPs to protect stormwater quality that would be implemented as part of the G&D Plan include the following:

- Site drainage shall be designed so that stormwater flows through vegetated or grassed swales or other pervious landscaped areas prior to entering the public drainage system.
- Site drainage shall be designed to utilize onsite infiltration.
- Drainage systems shall be designed to prevent erosion and vector control problems (e.g., mosquito spawning grounds).
- Site drainage shall include onsite retention systems (or detention systems where retention is impracticable) so that the post-project runoff rate will not exceed pre-project levels.
- Stormwater runoff generated by the project shall not drain onto adjacent properties. However, any existing storm drainage from adjacent properties shall not be blocked by the Project.
- To reduce the amount of directly connected impervious area, roof downspouts should connect to splash blocks (minimum 2 feet long) that allow water to be deflected away from the building to onsite landscaping or other pervious areas (including vegetated/grassy swales) that provide detention/retention.
- Adjacent properties and undisturbed areas shall be protected from construction impacts. Sediment-laden water shall not leave the site. The storage, handling, and disposal of construction materials shall be accomplished using methods that prevent them, as well as site wastes, from coming into contact with stormwater.
- The groundwater table is relatively shallow at the Project site, and pollutants associated with construction activities (e.g., fuel, petroleum products) could migrate or percolate into the groundwater and contribute to degradation of the local groundwater aquifer. Implementation of construction BMPs, such as spill prevention and good-housekeeping BMPs (e.g., proper storage, handling, and disposal of construction-related materials) would be included in the SWPPP and would minimize the potential for impacts on groundwater quality during construction.

Construction activities could result in short-term surface and groundwater quality impacts, such as input of sediment loads that exceed water quality objectives or chemical spills into storm drains or groundwater aquifers if proper minimization measures are not implemented. However, a Project SWPPP will be developed and implemented that would be in compliance with the Construction General Permit, local stormwater ordinances, and other related requirements. With the exception of dewatering of potentially contaminated groundwater, which would be mitigated with the implementation of Mitigation Measure WQ-1.1, construction-related impacts on water quality would be less than significant.

MITIGATION MEASURE. Mitigation Measure WQ-1.1 would be implemented during construction dewatering to ensure that potential impacts related to water quality would be reduced to a less-than-significant level.
WQ-1.1: Implement Construction Dewatering Treatment (if necessary). Dewatering treatment would be necessary if groundwater is encountered during excavation activities, dewatering is necessary to complete the Project, or the dewatered water is discharged to any storm drain or surface water body. Because there is potential for groundwater to be contaminated with VOCs or fuel products at the Project site, the Project Sponsor would be required to comply with the San Francisco Bay RWQCB's VOC and Fuel General Permit (Order No. R2-2012-0012).

If dewatering activities require discharges into the storm drain system or other water bodies, the water shall be pumped to a tank and tested for water quality using grab samples and sent to a certified laboratory for analysis. If it is found that the water does not meet water quality standards, it should either be treated as necessary prior to discharge so that all applicable water quality objectives (as noted in Tables 3.10-1 and 3.10-2) are met or hauled offsite instead for treatment and disposal at an appropriate waste treatment facility that is permitted to receive such water. Water treatment methods shall be selected that achieve maximum removal of contaminants found in the groundwater and represent the best available technology that is economically achievable. Implemented methods may include the retention of dewatering effluent until particulate matter has settled before it is discharged, the use of infiltration areas, filtration, or other means. The contractor shall perform routine inspections of the construction area to verify that the water quality control measures are properly implemented and maintained, conduct visual observations of the water (i.e., check for odors, discoloration, or an oily sheen on groundwater), and perform other sampling and reporting activities prior to discharge. The final selection of water quality control measures shall be submitted in a report to the San Francisco Bay RWQCB for approval prior to construction. If the results from the groundwater laboratory do not meet water quality standards and the identified water treatment measures cannot ensure that treatment meets all standards for receiving water quality, then the water shall be hauled offsite instead for treatment and disposal at an appropriate waste treatment facility that is permitted to receive such water.

Operation and Maintenance

The Project would construct two office buildings (Buildings 21 and 22) and surface parking lots; landscaped and pervious areas (i.e., bio-retention and pervious roof landscape areas) would also be provided, as illustrated in Figures 2-3 and 3.10-3. In addition, the Project would include a 200-room limited-service hotel. Operation of new facilities could increase existing levels of pollutants (e.g., trash, oil, grease, pesticides) and introduce additional quantities of those pollutants into storm drains. Operation and maintenance (O&M) activities of the Project would be similar to existing O&M activities, such as landscape maintenance, building maintenance, storage of materials and substances, and vehicle use. Good-housekeeping practices, such as regular litter and trash collection and sweeping, would continue to be implemented onsite.

Approximately 41.4 acres of the 58.3-acre Project site would be impervious area. Table 3.10-6 provides a summary of changes to existing and proposed impervious and pervious areas by facility. Runoff from impervious surfaces could contain nonpoint pollution sources, which are typical of urban settings and

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48 A limited-service hotel generally offers fewer services (e.g., in-house drinking and dining options) than a full-service hotel.
associated with automobiles, trash, cleaning solutions, and landscaped areas. Stormwater would be drained by a combination of new and existing pipes, drainage inlets, and other storm drain facilities. All flows from the Project site would continue to be conveyed to storm drain systems that discharge to the Lower San Francisco Bay.

The Project would include stormwater treatment areas, such as bio-retention areas, and buildings on the Project site would contain LID measures to allow for infiltration and minimize stormwater contamination. The pervious and landscaped areas are shown in Figure 3.10-4. Several of the landscaped areas would function as biotreatment areas, which would provide water quality treatment for stormwater runoff in addition to soil infiltration. Also, large seasonal wetland areas/biotreatment basins would be incorporated into the landscape to provide both stormwater treatment and habitat functions. In addition, the parking lot would include landscaped areas.

Both proposed Buildings 21 and 22 would include green roofs and terraces. According to Project plans and supporting documents, the Building 21 roof would be 26 percent pervious and 74 percent impervious and the Building 22 roof would be 15 percent pervious and 85 percent impervious, respectively. Green roofs would include gardens and raised planters, with plants that would require little water, as well as native and adaptive shrubs, perennials, and groundcover that would be suitable for highly efficient green roof applications. Plant selection would be based on a number of criteria, including local and state water-efficient landscaping requirements (i.e., Chapter 12.44 of the City's Municipal Code and the DWR Model Water-Efficient Landscape Ordinance [WELO]) and other ecological and environmental considerations.

Table 3.10-6. Total New Impervious Area

<table>
<thead>
<tr>
<th>Project Site Area (gsf)</th>
<th>Impervious Area (gsf)</th>
<th>Pervious Area (gsf)</th>
<th>% of Project Site (Impervious)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing(^b) 2,172,624</td>
<td>1,869,228</td>
<td>303,396</td>
<td>86</td>
</tr>
<tr>
<td>Proposed(^c) 2,172,624</td>
<td>619,210</td>
<td>1,553,414</td>
<td>71</td>
</tr>
<tr>
<td>Change</td>
<td>-315,814</td>
<td>+315,814</td>
<td>-15</td>
</tr>
</tbody>
</table>

Source: Gehry Partners, LLP. Landscape Narrative for the Facebook Campus Expansion, Buildings 21, 22, and Hotel Site. March 4, 2016.

Notes:
\(^a\) Building 23 is located on the Project site but is not part of the Project. Although the Project site is 58.3 acres (2.54 million gross square feet [gsf]), for the purposes of the impervious calculations, Building 23 is not included, resulting in a total site area of 49.9 acres (2.17 million gsf).
\(^b\) Existing conditions represent conservative estimates, based on existing features at the Project site.
\(^c\) The proposed design assumes a range of 90 percent impervious and 10 percent pervious landscape areas (planters, etc.) on the roof and terrace level.

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The Project would be required to comply with the Municipal Regional Permit SMCWPPP C.3 Stormwater Technical Guidance because it would involve new or replaced impervious area greater than 10,000 square feet. However, the Project would ultimately reduce the overall area of impervious surface area by 15 percent compared with existing impervious surface area (see Table 3.10-5). The Project would reduce total runoff rates and implement biotreatment measures and, therefore, would be in compliance with Provision C.3. The stormwater management measures proposed for the Project would reduce pollutant discharges from stormwater through filtration, infiltration, and sedimentation. The provision also states, however, that “all projects, regardless of size, should consider incorporating appropriate source control and site design measures that minimize stormwater pollutant discharges to the maximum extent practicable [MEP].” Regardless of a project’s need to comply with Provision C.3, municipalities apply the MEP standard, including standard stormwater conditions of approval for projects that receive development permits.

The Project would be designed and maintained in accordance with City, County, and San Francisco Bay RWQCB water quality requirements, such as the San Francisco Bay MS4 Permit and SMCWPPP, as well as flood control requirements from the City Municipal Code (Chapter 7.42) (see separate discussion of flooding under Impact WQ-3). The Project would comply with the General Construction Permit; San Francisco Bay MS4 Permit, Provision C.3; and SMCWPPP C.3 Stormwater Technical Guidance and implement a SWPPP and other erosion control measures that incorporate stormwater treatment areas such as bio-retention areas. Therefore, potential surface water quality impacts from Project operation would be less than significant.

Impact WQ-2: Effects on Groundwater Supplies and Recharge. The Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that a net deficit in aquifer volume or a lowering of the local groundwater table level would result. (LTS)

Construction

Although dewatering may be necessary during project construction, the groundwater beneath the Project site is not used for municipal water supply purposes. Should dewatering occur, it would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of quantities of water that would deplete groundwater supplies. In addition, water supply for construction activities (e.g., dust control, concrete mixing, material washing) would come from nearby hydrants or existing surface supplies to the site and/or be trucked to the site. Therefore, there would be no potential for reducing the volume of water in the local aquifer table, and impacts on groundwater supplies from construction activities would be less than significant.

Operation

The Project would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge because it would not increase groundwater demand or decrease groundwater recharge areas. 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. Because implementation of the Project would result in a 15 percent decrease in impervious surface area, there would be an increase in groundwater recharge potential at the Project.

Figure 3.10-4
Proposed Pervious and Impervious Areas Plan for the Project
Facebook Campus Expansion Project Draft EIR
site. The Project design includes pervious areas in the parking lots, stormwater treatment areas such as bio-retention areas, and pervious roof landscape areas. These landscape and hydromodification features would allow for increased groundwater infiltration. Native grasses would stabilize native soils, and new vegetation zones would slow water flow, allowing it to percolate into the ground and thus provide increased benefits for groundwater recharge. Therefore, the Project’s operations-related impact on groundwater supplies and recharge would be less than significant.

**Impact WQ-3: Changes to the Existing Drainage Patterns.** The Project would not substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion, siltation, or flooding onsite or offsite. (LTS)

**Construction**

Project construction activities would temporarily alter existing drainage patterns and could result in local (onsite) and temporary erosion and siltation during the removal or modification of existing storm drains. However, if a storm drain is closed during construction, existing flows would be temporarily rerouted to another nearby storm drain. The temporary facilities would be designed to mimic existing drainage patterns. As previously described, the Project would implement a SWPPP to minimize the potential for erosion and sedimentation in nearby storm drains during construction.

Preparation and implementation of the G&D Plan and the SWPPP would reduce the potential for substantial erosion or siltation onsite or offsite, flooding onsite or offsite as a result of altering existing drainage patterns, or substantially increasing the rate or amount of runoff that would result in substantial erosion, siltation, or flooding onsite or offsite. The Project would be in compliance with existing NPDES permits and the City’s Municipal Code for construction and stormwater management (Chapter 7.42). Additionally, construction of the Project would not involve work within surface waters and thus would not alter the course of an existing stream or river because these features do not exist onsite. The impact would be less than significant.

**Operation**

Although drainage patterns on the Project site would be altered, drainage would ultimately be improved because Project implementation would result in an increased pervious area that would further minimize runoff volumes and the potential for ponding and other drainage issues. The Project site is located within a FEMA-designated 100-year Flood Zone, with the exception of the southwest corner of the Project site, which is outside the 500-year floodplain. The 100-year flood event, in combination with SLR and high-tide events, could result in a greater risk of flooding in the future. Stormwater modeling prepared for the Project showed that, in a 100-year storm event, there would be flooding at some points in the Project area. There would be no flooding at Building 21, but noticeable flooding at sites near Buildings 22 and 24. Buildings 21 and 22 would be built on podiums that would raise finished floor elevations. Finished floor elevations would be 12.75 feet (NAVD 88), based on the BFE of 10.8 feet plus 16 inches (1.3 feet) and 12 inches (1 foot) for freeboard. The Project would be designed to ensure that flooding off-site would not increase. Renovation and occupancy of Building 23 is not included as part of the Project; however, for informational purposes, it is noted that Building 23 is also located within an area that is prone to minor flooding or ponding.
Following Project implementation, there would be a decrease in impervious surface area relative to existing conditions due to additional landscaped areas and drainage improvements, which would ultimately reduce the potential for moderate localized flooding and ponding in areas throughout the Project site. The Project would result in an approximately 15 percent reduction in impervious surfaces relative to existing conditions (Table 3.10-5).

According to the hydrology and hydraulics report prepared for the Project, development of the Project site may cause or increase onsite or offsite flooding, which could be avoided with modified conditions, such as increasing the size of onsite stormwater pipes. The hydrology and hydraulics report prepared for the Project states that, at the conceptual stage, the existing drainage system is not adequate for conveying the 100-year stormflow under existing conditions. Under existing conditions, stormwater flows to several pipes overwhelm the system, resulting in backwater. Increasing the size of the pipes at some locations is needed to prevent flooding during the 100-year event. As a result, the Project Sponsor has proposed as part of the Project to upsize the existing pipes and include new onsite pipes that would be larger to ensure that the onsite system would be adequate with respect to conveying stormwater in the event of a 100-year storm. The locations for new stormwater pipes are shown in Figure 3.10-1, and the proposed private stormwater drain system is shown in Figure 3.10-2.

Stormflows across the site could cause soil deposition in nearby storm drains, thereby degrading water quality in receiving waters. Operation of the Project would require soil stabilization (e.g., vegetation, other protective cover, and stabilized slopes and fills) in accordance with Construction General Permit post-construction requirements and MS4 stormwater design requirements to reduce erosion and sediment transport. Because of the decrease in impervious surface area under the Project relative to existing conditions, there would be a reduced potential for erosion and siltation in the drainage systems at the Project site. Additionally, the Project would not alter the course of an existing stream or river because these features do not exist onsite.

Because the Project would ultimately reduce the risk of flooding through the incorporation of pervious landscaping, bio-retention areas, and stormwater infrastructure improvements, the Project would not result in flooding onsite or offsite. The Project would also not result in substantial erosion or siltation. In addition, the Project would not alter the course of an existing stream or river because these features do not exist onsite. The impact would be less than significant.

Impact WQ-4: Changes to Stormwater Runoff. The Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (LTS)

The Project would incorporate an improved drainage system, consisting of a combination of existing, new, and modified storm drains. As stated in Impact WQ-3, improvements to the existing storm drain system would prevent onsite flooding in the event of a 100-year storm. The Project would increase overall pervious surface area relative to existing conditions with additional landscaped areas and drainage improvements that would ultimately reduce the volume of stormwater runoff into the storm drain system.

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The final design for the stormwater management and storm drainage system would be required to meet several criteria (e.g., SMCWPPP Provision C.3 post-construction stormwater criteria and 100-year flood criteria) to ensure adequate storm drain capacity for the Project. The Project would be designed to prevent potential additional runoff from the Project to be discharged to the storm drain system and therefore would not create or contribute runoff water that would exceed the capacity of the existing stormwater drainage systems.

The perimeter of the Project site would have a landscaped buffer. Landscaped areas would include bio-retention areas that would allow stormwater drainage and infiltration from surface runoff from the new facilities. In addition, emergency vehicle access and pedestrian paths would be pervious concrete, and parking lot and entry drives outside the building footprint would be pervious asphalt paving, allowing precipitation and runoff to infiltrate. Thus, stormwater runoff volumes due to the Project would not exceed the capacity of existing or planned stormwater drainage systems, and this impact would be less than significant.

**Impact WQ-5: Impacts from Flooding.** The Project could 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, but would not place structures within a 100-year flood hazard area. (LTS/M)

**Special Flood-Hazard Area.** As shown in Figure 3.10-3, the Project is within a Special Flood-Hazard Area (SFHA), Flood Zone AE, which is a 100-year floodplain that is subject to tidal flooding.

The Project includes construction of two new office buildings (Buildings 21 and 22) and a hotel that would be placed in a SFHA. Because the City participates in the NFIP, it must ensure that the Project meets federal standards for flood protection. Chapter 12.42 of the City's Municipal Code contains methods and provisions for preventing 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 standards for development within SFHAs to minimize flood-hazard risks. The standards include anchoring and flood-proofing; limiting uses for structures below the BFE; using materials and utility equipment that resist flood damage; requiring electrical, heating, ventilation, plumbing, and air-conditioning equipment and service facilities to be designed and/or located so as to prevent water from entering or accumulating within the components during flood conditions; and requiring that all new and replacement water supply and sanitary sewage systems be designed to minimize or eliminate infiltration of floodwaters into the systems (as well as discharges from systems into floodwaters).

The Project proposes drainage improvements that would increase the capacity of the drainage system, reduce impervious areas to increase onsite soil infiltration, add additional landscaped areas, and add a new LID feature that would minimize the potential for additional overland floodflows.

Existing grades on the site range from 7.0 to 10.5 feet (NAVD 88). The Project would involve the placement of podiums to raise finished floor elevations and provide protection from the 100-year BFE plus 16 inches. Finished floor elevations would be 12.75 feet (NAVD 88), based on the BFE of 10.8 feet plus 16 inches (1.3 feet) and 12 inches (1 foot) for freeboard. Buildings 21 and 22 would be raised with parking under the buildings to allow for site drainage. This would also allow floodwaters to pass under the building, if necessary. Similarly, the hotel would be designed to minimize flooding impacts both onsite and offsite. FEMA provides a process for the public to request a change in the flood-zone conditions. 

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**Facebook Campus Expansion Project**
**Draft Environmental Impact Report**

May 2016
ICF 00296.15
designated for the property. This request is known as a Letter of Map Change. Once the Project is complete, Facebook will apply for a Letter of Map Change for areas within the Project site with elevations above FEMA flood zone BFEs, which would qualify as being outside of FEMA Flood Zone AE.

Although buildings would not be flooded with SLR of 16 inches or less, the site parking areas and roadways, including underground parking areas, would be inundated under certain flood conditions, resulting in a potentially significant impact.

MITIGATION MEASURE. The following measures would minimize the effects of flooding, resulting in a less-than-significant impact.

WQ-5.1: **Flood-proofing of Project Underground Infrastructure.** Prior to or, at a minimum, concurrent with the issuance of the first construction activity permit at the Project site, and in connection with applicable FEMA requirements, the Project Sponsor shall ensure that the Project incorporates design features, including storm drains, sewers, and equipment facilities, that would flood-proof underground infrastructure, thereby allowing it to withstand hydrostatic forces and buoyancy from SLR changes in groundwater levels. Onsite recycled-water wetland treatment areas shall be located at grade, with underground tanks placed in elevated areas to provide protection from the 100-year BFE plus 16 inches.

WQ-5.2: **Provide Adequate Stormflow Conveyance Capacity for Sea-Level Rise Conditions at the Project Site.** Prior to or, at a minimum, concurrent with the issuance of the first construction activity permit at the Project site, the Project Sponsor shall provide current documentation in the form of a technical report to ensure that, as a result of Project design features, the storm drain system’s existing conveyance capacity is not constricted by SLR at the outlets, including the offsite Chrysler pump station, as a result of the Project design.

**Cumulative Impacts**

The geographic context for the analysis of cumulative impacts associated with surface hydrology and water quality is the San Francisquito Creek watershed of the Lower San Francisco Bay watershed. The context for groundwater hydrology is the San Mateo subbasin of the Santa Clara Valley groundwater basin in the larger San Francisco Bay Hydrologic Region. The context for cumulative hydrology and water quality impacts is geographic and a function of whether impacts could affect surface water features/watersheds, the City’s storm drainage system, or groundwater, each of which has its own physical boundary. This analysis accounts for anticipated cumulative growth within the potentially affected geographic area, as represented by full implementation of the County and City General Plans, including the projects identified in Chapter 3, *Environmental Impact Analysis.*

Cumulative impacts are addressed for only those thresholds that would result in a Project-related impact, whether it be less than significant, significant, or significant and unavoidable. If the Project would result in no impact with respect to a particular threshold, it would not contribute to a cumulative impact. Therefore, no analysis would be required for the following thresholds:

- Place housing within a 100-year flood-hazard area, as mapped on a federal Flood-Hazard Boundary or FIRM or other flood-hazard delineation map.
- Inundation by seiche, tsunami, or mudflow.
- Degradation of Water Quality.

This cumulative analysis examines the effects of the Project in the potentially affected geographic area in combination with other current projects, probable future projects, and projected future growth.
Impact C-WQ-1: Cumulative Hydrology and Water Quality Impacts. The Project, in combination with other foreseeable development in the vicinity, could contribute considerably to cumulative impacts on water quality, groundwater recharge and supplies, storm drain capacity, or current flooding. (LTS/M)

Water Quality

Development of the Project, combined with other past and future development within the potentially affected geographic area, could degrade stormwater quality through an increase in impervious surface area and an increase in contaminated runoff, which could ultimately violate water quality standards, affect beneficial uses, and/or further impair 303(d)-listed waters within the San Francisquito Creek subwatershed, Lower San Francisco Bay watershed, and the San Mateo groundwater subbasin. As shown in Table 3.0-1, other projects include the construction of manufacturing and research-and-development facilities, hotels, offices, restaurants, health clubs, schools, and residences. Examples of construction and demolition projects close to the Project site are 100–155 Constitution Drive and Menlo Gateway, Facebook Building 23, demolition of Facebook Buildings 307–309, and the Commonwealth Corporate Center. All of these projects would have impacts on water quality similar to those of the Project. The quality of stormwater runoff varies with surrounding land uses, topography, and the amount of impervious cover as well as the intensity and frequency of landscape irrigation or rainfall. During construction, runoff may contain sediments and other construction materials and wastes (e.g., concrete debris), resulting from activities such as site clearing and grubbing, demolition and the removal of existing structures and pavement, cut-and-fill activities, grading and excavation, paving, building construction, tree removal, and landscaping. Construction dewatering in areas of shallow groundwater could be required during excavation and trenching for building foundation and utility improvements. Because the Project is a DTSC cleanup site and has historical soil contamination, groundwater may be contaminated. In the event contaminated groundwater is encountered during construction, dewatering would be conducted locally according to methods described in Mitigation Measure WQ-1.1. During operation, runoff may contain oil, grease, and metals that have accumulated in streets and driveways as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-depriving substances from landscaped areas. The highest pollutant concentrations are generally in stormwater runoff generated at the beginning of the wet season and during the “first-flush,” when approximately 80 percent of total accumulated pollutants are washed off surfaces with the first 0.5 inch of rainfall. Street surfaces are the primary source of pollutants in urban areas.

Other development, including development under ConnectMenlo, could affect water quality if the land use changes, the intensity changes, and/or drainage conditions are altered so as to facilitate the introduction of pollutants to surface or groundwater resources. Changes in land use would alter the associated type and amount of pollutants in stormwater runoff (e.g., higher fecal coliform concentrations in runoff from residential lands compared with commercial lands). An increased intensity in land use would increase potential pollutant loads. Alterations in drainage patterns could increase pollutant loads by increasing the amount of stormwater runoff and downstream flow, thereby transporting pollutants in stormwater runoff; cause or contribute to erosion if the rate of runoff is increased; or expose vulnerable areas to infiltration or runoff.

To prevent short-term (construction) impacts on water quality, the Project Sponsor would comply with the requirements of the Construction NPDES General Permit and the City’s stormwater requirements (e.g., the Santa Mateo County Grading Ordinance). In addition, Project operations would be subject to the requirements of the SMCWPPP and the associated San Francisco Bay MS4 Permit, SMCWPPP C.3 Stormwater Technical Guidance, Construction General Permit post-construction requirements, as well as
other related stormwater requirements from the City or County. Through compliance with these regulations and implementation of Mitigation Measure WQ-1, cumulative impacts on water quality would be less than significant.

**Groundwater Recharge and Supplies**

Groundwater recharge in the San Mateo subbasin, where other projects would be located, occurs primarily through infiltration from nearby streams and the Bay as well as direct recharge through infiltration of precipitation. The Project would ultimately reduce the total area of impervious surfaces within the Project site and thus increase groundwater recharge at the Project site. Most of the other projects would be redevelopment or infill projects in highly urbanized areas where recharge does not currently occur because of existing impervious surfaces. Therefore, cumulative development in highly urbanized areas may result in the replacement of impervious area but would not be expected to substantially increase the amount of new impervious surfaces. Therefore, groundwater recharge from percolating rainfall would not be adversely affected, and an indirect lowering of the local groundwater table is not likely to occur. However, development outside of areas with prior impervious surfaces would affect groundwater recharge, and the effects may be cumulatively significant. In addition, the Project would not contribute to cumulative impacts related to groundwater supply. Groundwater within the Project vicinity is not used for municipal water supply purposes. Should dewatering occur, it would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of quantities of water that would deplete the groundwater volume.

The Project would reduce the amount of impervious surface in the vicinity, which would increase groundwater recharge. Shallow groundwater supply impacts due to temporary construction dewatering would be minimal. Impacts related to development of the Project would be less significant with respect to any potential cumulative loss of groundwater recharge and volume.

**Storm Drain Capacity**

Development could increase the rate and volume of stormwater runoff because of increased amounts of impervious surfaces. Increases in the rate or volume of stormwater runoff can cause localized flooding if storm drain capacity is exceeded or if flows exceed channel capacities and are conveyed to overbank areas where flood storage may not be available. The Project would ultimately reduce the total area of impervious surfaces within the Project site. Although development in highly urbanized areas may result in the replacement of impervious area, it would not be expected to increase the amount of new impervious surfaces substantially. Therefore, the volume of stormwater runoff in the City’s storm drain system is not expected to increase substantially as a result of development in the Project vicinity. With implementation of the proposed revisions, the Project site would not experience flooding from storm drainage flows during the 100-year storm event. All projects would be required to include design features to reduce flows to pre-project conditions, according to San Francisco Bay MS4 Permit Provision C.3, associated SMCPPPP requirements, and the City of Menlo Park Municipal Code 100-year peak-flood requirements for drainage system capacity. Further analysis and review are needed for the proposed pipes, taking into consideration the final hydrologic conditions of the Project site. Cumulative impacts on storm drainage capacity would be less than significant.

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56 Groundwater beneath the Project site is not considered a source of drinking water by the San Francisco Bay Water Board because of the elevated salinity in groundwater.
Flooding

As explained in Impact WQ-6, parts of the Project area are presently subject to tidal flooding, which would worsen with additional SLR. Other projects may also be proposed in areas that are prone to current tidal flooding and/or future tidal flooding with accelerated SLR. Existing regulations and requirements, in general, require site-specific actions to protect against increasing flood levels and placing people or structures at risk of floodflows, up to the current 100-year event condition, which would apply to other projects as well as the Project. It is possible that some other projects and planning efforts will also provide improved coastal flood protection, such as the SAFER Bay project. The Project’s buildings would not be vulnerable to tidal flooding during a 100-year flood event (or a flood event 16 inches higher due to SLR) because they would be raised above the 100-year flood zone BFE plus 16 inches and 12 inches for freeboard. Cumulative impacts could be significant.

Regarding flooding caused by the Project, if all buildings are elevated and built on podiums, the Project would not contribute to increased flood levels because it would not divert flows. It would, however, reduce the amount of impervious area, with modified conditions (e.g., by upsizing existing pipes and incorporating LID measures, such as bio-retention areas). Although other developments may divert flows or increase impervious areas, which may result in an increased flood risk, the Project would not contribute adversely to increased flood risks for other developments and the Project's contribution would be less than cumulatively considerable.