G. Hydrology and Water Quality

This section describes existing hydrologic conditions in the Kaiser Permanente OMC Project vicinity and presents applicable regulations that pertain to hydrology, surface water, flooding, and water quality. This section also discusses the changes in hydrology and water quality that could result from construction and operation of the project and identifies potential impacts and appropriate standard conditions of approval and/or mitigation measures, as necessary.

Setting

Hydrology

Regional Drainage Patterns

The project area lies in the South Basin within the San Francisco Bay hydrologic region. San Francisco Bay marks a natural topographic separation between the northern and southern coastal mountain ranges. The San Francisco Bay estuarine system conveys the waters of the Sacramento and San Joaquin rivers into the Pacific Ocean. The rivers enter San Francisco Bay through the Delta at the eastern end of Suisun Bay (RWQCB, 1995). Within the San Francisco Bay hydrologic region, the project area is a part of the Central Metropolitan Planning Unit in Alameda County. This unit is divided into a number of small watersheds that are defined by the natural topographic features of the region. Linear drainage basins trending northeast to southwest extend from the ridges of the Oakland hills across the alluvial plain to San Francisco Bay (Alameda County, 1994).

Local Drainage Patterns

The drainage courses in the project area flow generally from east to west, originating in the undeveloped foothills as natural streams, passing through developed urban areas via improved channels, and discharging into sloughs that eventually flow into San Francisco Bay.

The project site lies in the Glen Echo Creek watershed at an elevation ranging between 80 and 100 feet above mean sea level (amsl), and all portions of the project site drain into the creek. Glen Echo Creek has alternating daylighted and culverted sections along its length from its origin above the Mountain View Cemetery at the northern terminus of Piedmont Avenue, to 1.25 miles southwest to its outlet in Lake Merritt. Portions of the Glen Echo Creek culvert on the project site lie beneath existing buildings located adjacent to the Site 7 of the project (Phase 1).

Surface Water

The major surface water bodies in the project area are Glen Echo Creek, Lake Merritt, the Oakland, Estuary, and San Francisco Bay. As stated above, the project site drains into Glen Echo Creek, which flows into Lake Merritt. A number of other creeks in Oakland also drain into Lake Merritt, which subsequently drains into San Francisco Bay via Lake Merritt Channel and the Oakland Estuary. Lake Merritt is a natural receiving body with a surface area of approximately

160 acres and has been somewhat modified for flood control and recreation purposes (Alameda County, 1994). Additional water quality and flood control improvements to Lake Merritt and its channel to the Oakland Estuary are included in the Measure DD bond[1] approved by voters in 2002, with initial projects related to Lake Merritt and flood control infrastructure currently underway.

A segment of Glen Echo Creek flows through the project site. This segment is the Broadway branch of Glen Echo Creek, downstream of Broadway and Rockridge creeks. The entire segment of Glen Echo Creek on the project site flows southward toward Mosswood Park and is culverted except for the 145-foot daylighted section midblock, between 38th Street and north of the motel building on MacArthur Boulevard at Manila Avenue. Portions of the culvert on the project site run beneath existing buildings. The culvert in the project area ranges in size and can be up to approximately 69 inches in diameter.

The buildings on the project site are immediately adjacent to the top of bank of the creek. One existing structure was constructed over the creek flow line. In general, the existing building line is approximately 17 feet from the centerline of the creek (at the closest point where the daylighted creek reenters the culvert). Rain water from the existing structures drains directly onto the creek bank. A portion of the creek bank is stabilized by concrete (BKF, 2005a).

Water Quality

The project site lies in the Glen Echo Creek watershed, which is an urbanized area containing both residential and commercial development. Surface water within the watershed reaches Glen Echo Creek and its tributaries and then flows through a combination of open creek (daylighted) and culverted underground sections. The proposed project site, particularly Site 7 (Phase 1), is located on a tributary to Glen Echo Creek.

Available data regarding the water quality of the Glen Echo watershed system was contained within a single 2002 Glen Echo Creek sediment study conducted by the Alameda County Clean Water Program (ACCWP). The water quality report prepared for this study presented results of water quality sampling conducted in 2000 and 2001 in Glen Echo Creek to generate baseline information on particulate-associated contaminants (ACCWP, 2002a). The 2002 ACCWP water quality study identified concentrations of polychlorinated biphenyls (PCBs) and mercury from two sampling sites within a daylighted section of the mainstem Glen Echo Creek (north and east of Piedmont Avenue)(ACCWP, 2002a). The detected PCB and mercury levels are relatively low but are above the background levels typically expected for such an urban stream system. The study concluded that the PCB and mercury concentrations are attributable to a source within the sampled daylighted section of Glen Echo Creek more than 2,000 feet north and east of the project site.

[1] Measure DD Bond for Oakland Clean Water, Safe Waterfront Parks and Recreation Trust Fund, approved November 2002.

The review conducted for this EIR determined that the findings of the 2002 ACCWP were inconclusive and inadequate to characterize the water quality conditions in the tributary of Glen Echo Creek that is adjacent to the project site. While the study does suggest that PCBs and mercury are present in the sediments along certain reaches of Glen Echo Creek, it does not provide conclusive evidence that the sediments at the project site have similar distributions of contaminants. The sampling sites used in the study do not represent the watershed conditions as a whole.

Contaminated creek sediments could be a human health hazard if high chemical concentrations were to be exposed to the environment by disturbance or removal during excavation activities such as those associated with a construction project. No elements of the proposed project include activities that would disturb, remove, or displace the sediments *within* the Glen Echo Creek creekbed.[2] The "relatively low" concentrations of PCB and mercury present in some sections of the Glen Echo watershed system nearly one-half mile from the project site are not at levels considered to be a human health hazard or an impact associated with the proposed project, and therefore are not discussed further in this EIR.

Stormwater Runoff and Drainage Facilities

As discussed in Section IV.M, Utilities, Service Systems and Energy, of this EIR, stormwater runoff in Oakland is collected from the southwesterly flows from the Oakland-Berkeley Hills to the developed flatlands where it then flows primarily through underground storm drains and culverts to the San Francisco Bay via the Oakland Estuary (directly or by way of Lake Merritt) or through the city of Emeryville. The Alameda County Flood Control and Water Conservation District (ACFCWCD) constructs, operates, and maintains major trunk lines and flood-control facilities in Oakland, and the Oakland Public Works Agency (PWA) is responsible for construction and maintenance of the local storm drainage system within Oakland's public areas and roads.

Stormwater runoff from nonpoint sources[3] is conveyed from the project site through onsite pavement gutters, surface drains, parking lots, and roof drains. Existing infrastructure around and serving the project site includes a 12-inch diameter storm drain main under MacArthur Boulevard and one catch basin at the northeast corner of Manila Avenue and West MacArthur Boulevard. These main facilities and catchbasins lead to a system of storm drain pipes ranging from 69 inches diameter to box culverts as small as 6.0 by 5.5 inches. The impacts in this chapter address the effects of the project on the entire storm drain system affected by the project. The areas of the

[2] The project may involve temporary dewatering, will involve placement of a temporary bypass culvert to address water quality during creekside demolition and construction activities. The project will involve repair, recontouring stabilization, and revegetation of the eastern creek bank, however these activities would not disturb existing sediments *within* the creek. (For further discussion, see Chapter III, Project Description, and *Construction Impacts on Water Quality*, in this section.)

[3] Nonpoint pollutant sources are sources that do not have a single, identifiable discharge point but are rather a combination of many sources. For example, a nonpoint source can be stormwater runoff from land that contains petroleum from parking lots, pesticides from farming operations, or sediment from soil erosion.

project site where construction would occur are entirely covered with impervious surfaces and do not have detention facilities.

Flooding

Flooding is inundation of normally dry land as a result of rise in the level of surface waters or rapid accumulation of stormwater runoff (City of Oakland, 2004a). Flooding can also occur due to tsunamis, seiches, or failure of dams. Tsunamis are waves caused by an underwater earthquake, landslide, or volcanic eruption, while seiches are waves in an enclosed or semi-enclosed body of water such as a lake, reservoir, or harbor. Oakland is not a particularly flood-prone city, nor does it have large rivers or open coastline that can result in devastating storm-induced flooding. Flooding from tsunamis would affect low-lying areas along San Francisco Bay and the Oakland Estuary, but the island of Alameda would shelter inland areas such as the project site. The likelihood of large-scale devastation in Oakland resulting from seiches appears to be minuscule (City of Oakland, 2004a).

The Federal Emergency Management Agency (FEMA), through its Flood Insurance Rate Mapping program, designates areas where urban flooding could occur during 100-year and 500-year flood events (i.e., storms with a likelihood of occurring every 100 or 500 years). The project site is located in an area designated as Flood Hazard Area C (areas of minimal flooding) and is not within the 100-year or 500-year floodplain (FEMA, 1982). The project site would contribute runoff to secondary facilities, defined as those facilities that have a drainage area of fewer than 50 acres and that are conduits or small channels maintained by the City of Oakland. These facilities are designed to accommodate and convey large storm flows to the storm drains to avoid localized flooding.

Flooding could also occur due to dam failure. The California Department of Water Resources, Division of Safety of Dams (DSOD) oversees the construction of dams that are over 25 feet high and impound over 15 acre-feet of water, or those that are over 6 feet high and impound over 50 acre-feet of water. Due to DSOD regulatory oversight, monitoring, and design review, the potential for the catastrophic failure of a properly designed and constructed dam is minimal, whether caused by a seismic event, flood event, unstable slope conditions, or damage from corrosive or expansive soils. The northwest portion of the project site, Site 7, lies in the Piedmont Dam inundation area (Association of Bay Area Governments, 1995).

Groundwater

The project site lies in the East Bay Plain (Department of Water Resources [DWR] Groundwater Basin[4] No. 2-9.01), a northwest-trending alluvial plain bounded on the north by San Pablo Bay, on the east by Franciscan Basement rock, on the south by the Niles Cone Groundwater Basin, and on the west by San Francisco Bay (DWR, 2004). The East Bay Plain extends from Richmond to Hayward. The alluvial materials that extend westward from the East Bay hills to the edge of San

[4] A groundwater basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers (Regional Water Quality Control Board, 1995).

Francisco Bay constitute the deep water-bearing strata for this groundwater basin, which is identified as a potential water source for municipal, industrial, and agricultural use (RWQCB, 1995). Since the early 1950s, historic groundwater levels in the deep aquifer in the basin have varied between -10 and -140 feet mean sea level (DWR, 2004). Groundwater in the project area occurs at approximately 20 feet below ground surface (DWR, 2005). However, there are no water supply wells on the project site.

Regulatory Framework

Several federal, state, and local agencies regulate activities that could affect hydrological and water quality features in the project area. This section describes the regulatory framework that would apply to the proposed project.

Federal Regulations

Under the federal Clean Water Act (CWA) of 1977, the U.S. Environmental Protection Agency (USEPA) seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The statute employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA authorizes the USEPA to implement water quality regulations. The National Pollutant Discharge Elimination System (NPDES) permit program under the CWA controls water pollution by regulating point and nonpoint sources that discharge pollutants into "waters of the U.S." California has an approved state NPDES program. The USEPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates water quality in the project area.

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., not meeting one or more of the water quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant causing the conditions of impairment. TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. Typically, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The intent of the Section 303(d) list is to identify water bodies that require future development of a TMDL to maintain water quality.

In accordance with Section 303(d), the San Francisco Bay RWQCB has identified impaired water bodies within its jurisdiction, along with the pollutant or stressor responsible for impairing the water quality. In the San Francisco Bay region, the RWQCB has designated the South Basin of San Francisco Bay, which includes the project site, as an impaired water body. Pollutants that contribute to this impairment are chlordane, DDT, diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, polychlorinated biphenyls, and selenium. Lake Merritt is also

listed as an impaired water body for organic enrichment/low dissolved oxygen and trash (RWQCB, 2003).

State Regulations

The Porter-Cologne Water Quality Control Act allows the SWRCB to adopt statewide water quality control plans. The purpose of the plans is to establish water quality objectives for specific water bodies. The act also authorizes the NPDES program under the CWA, which establishes water quality requirements for discharges to waters of the state. Most of the implementation of SWRCB's responsibilities is delegated to nine regional boards. Under the NPDES program, the San Francisco Bay RWQCB has established permit requirements for stormwater runoff for the project area (see "Regional Regulations" below).

Under the California Toxic Rule, the EPA has proposed water quality criteria for priority toxic pollutants for inland surface waters, enclosed bays, and estuaries. These federally promulgated criteria create water quality standards for California waters. The California Toxic Rule satisfies CWA requirements and protects public health and the environment. The USEPA and the SWRCB have the authority to enforce these standards. However, the project would not discharge toxic pollutants directly into the inland surface waters, such as Lake Merritt, or San Francisco Bay, therefore the California Toxic Rule would not apply to the project.

Regional Regulations

The San Francisco Bay RWQCB is responsible for the protection of beneficial uses and the water quality of water resources within the San Francisco Bay region. The San Francisco Bay RWQCB administers the NPDES stormwater permitting program and regulates stormwater in the San Francisco Bay region, which includes the project area. Project applicants are required to apply for a NPDES general permit for discharges associated with project construction activities. The City of Oakland is a permittee under the NPDES Municipal Stormwater Permit for the Alameda Countywide Clean Water Program (see below for detailed discussion). The proposed project would be required to comply with the permit requirements.

Construction Permitting

Construction activities on one acre or more are regulated by the RWQCB and are subject to the permitting requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The RWQCB established the General Construction Permit program to reduce surface water impacts from construction activities. The proposed project would be required to comply with the current NPDES permit requirements to control stormwater discharges from the construction site. (See *Alameda County Regulations* below). The General Construction Permit requires the preparation and implementation of a stormwater pollution prevention plan (SWPPP) for construction activities. The SWPPP must be prepared before the construction begins, and in certain case, before demolition begins. The SWPPP must include specifications for best management practices (BMPs) that would need to be implemented during project construction. BMPs are measures that are undertaken to control degradation of surface water by preventing soil erosion or the discharge

of pollutants from the construction area. Additionally, the SWPPP must describe measures to prevent or control runoff after construction is complete and identify procedures for inspecting and maintaining facilities or other project elements. Required elements of a SWPPP include:

1. Site description addressing the elements and characteristics specific to the site
2. Descriptions of BMPs for erosion and sediment controls;
3. BMPs for construction waste handling and disposal;
4. Implementation of approved local plans;
5. Proposed post-construction controls; and
6. Non-stormwater management.

Examples of typical construction BMPs include scheduling or limiting activities to certain times of year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. The RWQCB has identified BMPs in the *California Storm Water Best Management Practice Handbook* (2003) to effectively reduce degradation of surface waters to an acceptable level.

Dewatering

Excavation and trenching activities in areas with shallow groundwater require dewatering (the removal of groundwater by pumping), which is subject to the RWQCB construction dewatering permit requirements. Dewatering operations are regulated under state requirements for stormwater pollution prevention and control. Discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants to sanitary sewer, storm drain systems, creek beds (even if dry), or receiving waters is prohibited. Discharge of uncontaminated groundwater from dewatering is a conditionally exempted discharge by the RWQCB. However, the removed water could potentially be contaminated with chemicals released from construction equipment or sediments from excavation. Therefore, disposal of dewatering discharge would require permits either from the RWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers.

The RWQCB lists non-stormwater discharge controls specifically for dewatering operations (RWQCB, 2003a) to be implemented by the project sponsor during construction activities at the project site, *if dewatering is required*. The discharge of water resulting from dewatering operations would require an NPDES Permit, or a waiver (exemption) from the RWQCB, which would establish discharge limitations for any specific chemicals known to existing in the dewatering flows.

Basin Plan

The San Francisco Bay RWQCB prepared the *San Francisco Bay Basin Water Quality Control Plan* (Basin Plan) (1995) for San Francisco Bay. The Basin Plan contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the region and describes beneficial uses of major surface waters and their tributaries. The Basin Plan lists following beneficial uses for the South Basin of San Francisco Bay:

- Ocean, Commercial, and Sport Fishing
- Estuarine Habitat
- Industrial Service Supply
- Fish Migration
- Navigation
- Preservation of Rare and Endangered Species
- Water Contact Recreation
- Noncontact Recreation
- Shellfish Harvesting
- Wildlife Habitat

The Basin Plan identifies the following beneficial uses for Lake Merritt:

- Water Contact Recreation
- Noncontact Recreation
- Fish Spawning
- Wildlife Habitat

For this project, the RWQCB is responsible for regulating construction activities to ensure the protection of the above beneficial uses.

Alameda County Regulations

The ACFCWCD and the City of Oakland Public Works Agency share responsibility for maintaining drainage facilities in Oakland. The project site lies within the jurisdiction of Zone 12 of the ACFCWCD. The project sponsor would comply with the drainage-related requirements of these agencies during construction and operation of the project.

Alameda Countywide Clean Water Program

The Alameda Countywide Clean Water Program (ACCWP) consists of 17 participating agencies, including the City of Oakland, that cooperatively comply with RWQCB requirements to prevent stormwater pollution and to protect and restore creek and wetland habitat. The member agencies have developed performance standards to clarify the requirements of the stormwater pollution prevention program, adopted stormwater management ordinances, conducted extensive education and training programs, and reduced stormwater pollutants from industrial areas and construction sites (ACCWP, 2002b). In the project area, the ACCWP administers the stormwater program to meet CWA requirements by controlling pollution in the local storm drain sewer systems.

In 2001, the ACCWP prepared the *Stormwater Quality Management Plan* (SQMP), which is valid through June 2008 (ACCWP, 2001). The SQMP describes the ACCWP's approach to reducing stormwater pollution. In conjunction with the stormwater discharge permit issued by the RWQCB (discussed below), the SQMP is designed to enable the ACCWP member agencies to meet CWA requirements. The SQMP provides a framework for protection and restoration of creeks and watersheds in Alameda County in part through effective and efficient implementation of appropriate control measures for pollutants. The SQMP addresses the following major program areas: regulatory compliance, focused watershed management, public information/participation, municipal maintenance activities, new development and construction controls, illicit discharge controls, industrial and commercial discharge controls, monitoring and special studies, control of specific pollutants of concern, and performance standards (ACCWP, 2001). The SQMP also includes performance standards for new development and construction activities that include the proposed project. The performance standards are applicable for all construction activities including clearing, grading, and excavation that result in the cumulative disturbance of 10,000 or greater square feet of land that would discharge stormwater to the municipally-owned storm drain system. Measures and policies to control stormwater quality include (ACCWP, 2001):

- documenting permanent erosion and stormwater control during construction, operation, and maintenance of projects in the conditions of approval of the projects,
- selecting BMPs from appropriate guidance materials, ensuring that the stormwater quality requirements are included in plans and contract specifications for municipal construction projects, and
- implementing design guidelines and practices that incorporate water quality protection measures for both public and private projects.

The SQMP also recommends tasks to implement source, site design, post-construction stormwater treatment, and hydromodification[5] controls. The process on how to clearly incorporate source, design, treatment and hydromodification controls as part of the maximum extent practicable control of pollutants from stormwater is still in progress. This process includes assisting the member agencies, in this case the City of Oakland, to implement the agreed upon more specific pollutant and hydromodification controls (ACCWP, 2001).

Applicable NPDES Permit Requirements

On February 19, 1997, the San Francisco Bay RWQCB issued a NPDES permit for waste discharge requirements (Permit No. CAS0029831) to the ACCWP, which includes the city of Oakland by Order 97-030. This permit was modified by Order No. 99-049 on July 21, 1999, and adopted on February 19, 2003. [6] Oakland has jurisdiction over and/or maintenance responsibility for its municipal separate storm drain systems and/or watercourses in the city.

Construction activities associated with the proposed project would be subject to the NPDES permit requirements for stormwater management and discharges. The permit also incorporates

5 Hydromodification is alteration of the natural flow of water through a landscape.
6 The current Order is R2-2003-021.

updated state and federal requirements related to the quantity and quality of post-construction stormwater discharges from new development and redevelopment projects. The SQMP (discussed above) contains performance standards to address these requirements. The SQMP serves as a framework for identification, assignment, and implementation of practices of control measures or BMPs.

The NPDES permit includes Provision C.3 that governs storm drain systems and regulates post construction stormwater runoff. The provision requires new development and redevelopment projects to incorporate post-construction treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and to manage runoff flows. "Redevelopment" is defined as a project on a previously developed site that results in the addition or replacement of impervious surface. According to the C.3 provision in the ACCWP NPDES permit, the proposed project falls under the "significant redevelopment projects" category under Group 1 Projects. A significant redevelopment project is defined as a project on a previously developed site that results in addition or replacement of total of 43,560 square feet (one acre) or more of impervious surface. The permit requires that in the case of a significant redevelopment project that would result in an increase of, or replacement of, more than 50 percent of the impervious surface of a previously existing development, and the existing development was not subject to stormwater treatment measures, the entire project be included in the treatment measure design.

The C.3 provision also requires preparation of a hydrograph modification management plan (HMP) in cases where the changes in the amount and timing of runoff would increase stormwater discharge rates and/or duration and increase the potential for erosion or other significant adverse impacts to beneficial uses.

City of Oakland Regulations

Oakland Ordinances and Municipal Code

The City of Oakland implements the following regulations to protect water quality and water resources:

Creek Protection, Stormwater Management, and Discharge Control Ordinance (part of Chapter 13.16 of the Oakland Municipal Code)

This ordinance prohibits activities that would result in the discharge of pollutants to Oakland's waterways or in damage to creeks, creek functions, or habitat. The ordinance requires the use of standard BMPs to prevent pollution or erosion to creeks and/or storm drains. Additionally, a creek protection permit is required for any construction work on creekside properties (City of Oakland, 2004b). The ordinance establishes comprehensive guidelines for the regulation of discharges to the city's storm drain system and the protection of surface water quality. The ordinance identifies BMPs and other protective measures for development projects. Under the ordinance, the City of Oakland Public Works Agency issues permits for storm drainage facilities that would be connected to existing city drainage facilities. In 1997, the ordinance was amended

to include the requirement for a creek protection permit for any construction or related activity on creekside property. The ordinance includes enforcement provisions to provide more effective methods to deter and reduce the discharge of pollutants to the storm drain system, local creeks, and San Francisco Bay. The provisions also list clear guidelines for creekside residents to protect the creek and habitat.

The ordinance also defines the following four categories of projects that would require creek protection permits depending upon the type and location of the activity:

1. Category 1 projects that include interior construction and alterations/remodeling;

2. Category 2 project that include exterior work that does not include earthwork and is located more than 100 feet from the centerline of the creek;

3. Category 3 projects that include exterior work that is located between 20 feet from the top of the creek bank and 100 feet from the centerline of the creek; or exterior work that includes earthwork involving more than 3 cubic yards of material beyond 20 feet from the top of the creek bank;

4. Category 4 project that include exterior work conducted from the centerline of the creek to within 20 feet from the top of the creek bank.

The proposed project includes activities that would fall within each of the above categories.

- The permit application requires the following documents (City of Oakland, 2003): A site plan that illustrates the relationship and distance of the project to the creek centerline and top of the creek bank.

- Posting of public notices within a 300 foot-radius of the project location.

- Environmental documents as required under CEQA,

- A Creek Protection Plan that describes how the project sponsor would protect the creek, its banks, riparian vegetation, wildlife, surrounding habitat, and the creek's natural appearance during and after construction. The plan may be prepared by the owner of the property, an architect, engineer, or contractor. The project shall be obligated to implement the approved provisions of the plan. The plan shall be reviewed and approved by the City prior to issuance of the Creek Protection Permit. The plan may include but is not limited to the following elements:

  – Education on creek protection provided to workers on the site;
  – Litter prevention measures, (for example, how is debris, loose dirt. etc. stored);
  – Dust control measures;
  – Methods of cleaning tools and equipment;
  – Construction site fencing;
  – Future and ongoing sediment and erosion control measures;

  - Wet weather protection;
  - Special circumstances/additional information; or
  - Emergency preparations for construction related spills.

- A hydrology report: A Hydrology report shall be prepared by a licensed engineer with creek hydrology expertise. The report shall be reviewed and approved by the City prior to issuance of a Creek Protection Permit. A hydrology report may include, but is not limited to the following elements:

  - Flows and water surface levels;
  - Address how future development in the area (unrelated to the proposed work) may impact flows;
  - Creek bank stability, before and after the project;
  - Impact of proposed work with regard to direction, as well as quantity of flow in the Creek;
  - Upstream and downstream conditions, before and after project construction;
  - Location of major drainage facilities (e.g. trash racks, culverts, discharge points, etc.);
  - Profiles of the stream;
  - Cross sections;
  - Proposed improvements to the creek; including any vegetative or other natural screening enhancements utilized;
  - Impacts of project on existing vegetation or wildlife within the affected riparian corridor;
  - Required permits or approvals from regulatory agencies such as the California Department of Fish and Game, Army Corps of Engineers, and the State Regional Water Quality Control Board; and
  - Any additional information deemed reasonable by the Director of Building Services.

Grading Ordinance (Section 3304.2 in Title 15 of the Oakland Municipal Code)]

The Grading Ordinance requires a permit for grading activities on private or public property for projects that exceed certain criteria, such as amount of proposed excavation and degree of site slope. During project construction, the volume of the excavated fill material could exceed 50 cubic yards and could result in a 20 percent slope onsite, or the depth of excavation could exceed five feet at any location. Therefore, the project sponsor would be required to apply for the permit and prepare a grading plan, erosion and sedimentation control plan, and drainage plan (City of Oakland, 2004c).

Impacts and Mitigation Measures

Significance Criteria

A hydrology or water quality impact would be considered significant if it would meet any of the following criteria: (For clarity, the significance criteria are listed within the general categories used to organize the impact discussion that follows.)

Water Quality

The project would have a significant hydrology or water quality impact if it would:

- Violate any water quality standards or waste discharge requirements;
- Result in substantial erosion or siltation onsite or offsite that would affect the quality of receiving waters;
- Create or contribute substantial runoff that would be an additional source of polluted runoff;
- Otherwise substantially degrade water quality;
- Substantially alter the existing drainage pattern of the site or area (including through the alteration of the course or by increasing the rate or amount of flow of a creek, river, or stream) in a manner that would result in substantial erosion, siltation, or flooding, both on or off the site; or
- Fundamentally conflict with elements of the City of Oakland creek protection ordinance (Oakland Municipal Code Chapter 13.16). Although there are no quantitative criteria to assess impacts, factors to be considered in determining significance include whether there is substantial degradation of water quality through (a) discharging a substantial amount of pollutants into a creek; (b) significantly modifying the natural flow of the water or the creek's capacity; (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or (d) substantially endangering public or private property or threatening public health or safety.

Groundwater Resources

The project would have a significant hydrology or water quality impact if it would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or proposed uses for which permits have been granted).

Flooding

The project would have a significant hydrology or water quality impact if it would:

- Result in substantial flooding onsite or offsite;

- Create or contribute substantial runoff that would exceed the capacity of existing or planned stormwater drainage systems;
- Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, that would impede or redirect flood flows;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a substantial risk of loss, injury, or death involving flooding; or
- Result in inundation by seiche, tsunami, or mudflow.

Local Plans and Policies

Discussion of the project's overall consistency with the Oakland General Plan and the specific Oakland policies listed above is provided in Section IV.A, Land Use, Plans and Policies, of this EIR. The impact analysis provided below evaluates the project's consistency with General Plan policies that entail regulatory requirements with which the project must comply.

Hydrology and Water Quality Impacts

Construction Impacts on Water Quality

Impact G.1: Project construction would involve activities (excavation, soil stockpiling, pier drilling, grading, and dredging, etc.) that would generate loose, erodable soils that, if not properly managed, could violate any water quality standards or waste discharge requirements; result in substantial erosion or siltation; create or constitute substantial polluted runoff; or otherwise substantially degrade water quality. (Potentially Significant)

Project construction would occur in three phases from approximately 2006 through 2020. Each phase pertains to a specific area of the project site, and therefore each area of the project site (e.g., Site 7, Site 4, Site 2) would be developed in a single phase of work. Construction activities would occur as follows:

During Phase 1 (Site 7), existing commercial structures would be demolished and the new West Broadway Medical Services Building (MSB) and Cancer Care Center, and its adjacent West Broadway Parking Structure would be constructed. Phase 1 would also include work along the daylighted portion of Glen Echo Creek that runs adjacent to and east of Site 7 . This work would involve creek bank repair and stabilization, and creek bank shoring to prevent bank failure during construction. During

Phase 2 (Site 4) the existing MacArthur-Broadway Center (M/B Center) and adjacent residential and commercial buildings would be demolished and the new hospital, central utility plant, and parking structure would be constructed.

Phase 3 (Site 2) would demolish the existing hospital and adjacent outpatient buildings and construct the new Central Administration Building/Medical Office Building (MOB) and related parking. Overhead pedestrian skybridges across Broadway and MacArthur Boulevard would be implemented in Phase 2 and 3 as development on Site 4 and Site 2 are complete.

Construction during each phase of the project would involve some extent of excavation, soil stockpiling, pier drilling, and grading. These activities could result in temporary erosion and transportation of sediments into the storm drainage system during all construction phases. Additionally, use of hazardous chemicals, such as petroleum and oil, during construction could generate chemical wastes that, if not properly managed, could flow into the storm drain system. Overall project construction activities could induce construction-related onsite soil erosion, causing increased sediment in surface water runoff that could accumulate in downstream drainage facilities and interfere with flow and aggravating downstream flooding conditions that may exist and potentially increase sediment in Glen Echo Creek and ultimately Lake Merritt and San Francisco Bay. The project would therefore result in a potentially significant impact.

As would be required for all development projects in Oakland, the project is required to comply with the following uniformly-applied standard conditions of approval of the City, consistent with General Plan Policies, and regarding preparation of a Grading Plan, Erosion and Sedimentation Control Plan, and Drainage Plan; and NPDES Permit and Construction Stormwater Pollution Prevention Plan (SWPPP), that would reduce Impact G.1:

Standard Condition G.1a: Prior to and during project demolition, grading and construction activities, the project shall comply with all City of Oakland Grading Permit requirements and all NPDES Permit requirements as follows:

Grading Plan, Erosion and Sedimentation Control Plan, and Drainage Plan

City of Oakland Municipal Code Chapter 13.16 and Section 15.04.780 require that the project applicant prepare a grading plan for the proposed project. Because during project construction the volume of the excavated fill material would exceed 50 cubic yards (estimated maximum 107,600[7] cu.yds. proposed) and involve depths of excavation that exceed five feet (approximately 30 feet proposed) and involve pier drilling to a maximum dept of 70 feet, the project sponsor must prepare a grading plan, erosion and sedimentation control plan, and drainage plan.

- The required grading plan shall include drainage, erosion, and sediment control measures and incorporate construction BMPs to prevent pollutants from entering the storm sewer to the maximum extent practicable.

- The grading plan shall discuss existing, temporary, and final drainage facilities. Erosion and sediment control must combine interim and permanent measures to minimize erosion, stormwater runoff, and sedimentation. Such measures, at a minimum, shall include provision of filter materials at the catch basin to prevent

[7] Total estimated excavation includes 69,000 cu.yds. for Phase 1 and 38,600 cu.yds. for Phase 2. No excavation is proposed for Phase 3.

debris or dirt from flowing into the storm drain system. According to the City Public Works Agency, such filter materials shall be applied to catch basins within private areas. As proposed by the project, filter protection at catch basins and inlets will include filter fabric covering the grates, straw bales or wattles circling the inlet, or some combination of these and/or other measures.

- The plan shall specify that, after construction is complete, the sponsor shall ensure that the storm drain system shall be inspected and that the sponsor shall clear the system of any debris or sediment.

- Preparation and implementation of the grading plan would include preparation of the construction stormwater pollution prevention plan (SWPPP) (discussed below).

NPDES Permit and Construction Stormwater Pollution Prevention Plan (SWPPP)

The project sponsor shall apply for and comply with all requirements of the ACCWP NPDES General Construction Permit. As required by the permit:

- The sponsor shall prepare a SWPPP in coordination with a project's grading plan. The SWPPP shall describe erosion and sedimentation control measures as recommended in the *California Stormwater Best Management Practice Handbook* (Stormwater Quality Task Force, 2003).

- The project sponsor shall prepare the SWPPP and submit a notice of intent to the RWQCB prior to construction activities, as required by the RWQCB. Implementation of the SWPPP shall start with the commencement of construction and continue though the completion of the project.

- At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; best management practices (BMPs), and inspection and monitoring program.

- After construction is completed, the project sponsor shall submit a notice of termination to the RWQCB.

Standard Condition G.1b: Prior to and during project demolition, grading and construction activities, the project shall comply with all Creek Protection Permit requirements and practices as follows:

Creek Protection Permit

Project construction would occur within approximately 17 feet of the Glen Echo Creek centerline (at the closest point) and would involve construction activities in proximity to Glen Echo Creek, including creek bank repair and stabilization, and creek bank shoring to prevent bank failure (discussed also under Biological Resources Impact I.1, impacts on jurisdictional waters of the U.S.). Therefore, the project sponsor is required to obtain and comply with all requirements of a City of Oakland Category 4 Creek Protection Permit.

- Consistent with the Category 4 Creek Protection Permit requirements outlined in the City's *Guide to Oakland's Creek Ordinance*, the project sponsor is preparing to submit for review and approval by the City:

    1. Creek Protection Plan prepared by the project owner, an architect, engineer, or contractor, that describes proposed protection measure for the creek, creek banks, riparian vegetation, wildlife, surrounding habitat, and the creek's natural appearance during and after construction;

    2. Hydrology Report prepared by a licensed engineer with creek hydrology expertise, that shall at a minimum specify the quantity and quality of pre-and post-work creek flows; and

    3. Creek Restoration Plan (see Standard Condition I.1b)

The project sponsor has prepared the Creek Protection Permit application in accordance with City guidelines and consultation with City staff. The draft Creek Protection Plan and Hydrology Report are included as **Appendix I** to this EIR. (The Creek Restoration Plan figures are included in Section IV.I, Biological Resources, as **Figures IV.I-2** through **IV.I-6**, and are also attached to the Hydrology Report in **Appendix I** to this EIR.) The project, as proposed, incorporates many features and improvements to Glen Echo Creek that are would be required as mitigation if otherwise not proposed by the project. The draft Creek Protection Measures are summarized below:

- **Pre-Construction Creek Protection Information.** Measures required that all construction personnel receive about creek protection measures to be implemented onsite during work adjacent to Glen Echo Creek, including best management practices, wet weather protection measures, litter prevention measures, and other requirements of oversight agencies.

- **Litter Prevention Measures and Debris Collection From the Site**. Measures require preparation of a Waste Management Plan and training of construction personnel; included are standards for dumpster size, appearance, location relative to drainage facilities and the creek, security, and removal and disposal.

- **Dust Control Measures.** Measures for onsite and off-site dust control measures related to construction equipment and vehicles; watering during demolition activities, compliance with the dust control measures outlined in the project's Stormwater Pollution Prevention Plan (SWPPP); and monitoring.

- **Cleaning Methods.** Measures for cleaning and repairing of tools and equipment (including refueling and maintenance of vehicles); location requirements relative to the creek; and training of construction personnel.

- **Construction Site Fencing**. Location, maintenance, and access requirements for construction fencing.

- **Erosion Control Measures**. Temporary and permanent sediment and erosion control measures will be implemented to prevent sediment and other debris from entering the storm drain system and the creek, consistent all City of Oakland Grading Permit requirements and NPDES Permit requirements. Specific temporary measures include installation of a

temporary bypass culvert within the 145 foot daylighted portion of the creek, silt fencing and/or straw wattles and catch basins, hydroseeding and, if necessary, Jute netting. Specific permanent measure include the recontouring, regarding, and restoration of the eastern bank using clean earthen fill, to a final elevation of approximately 70 feet, with a slope ratio of 2:1. The eastern bank will be revegetated with native riparian tree, shrub, and herbaceous species. Measures include methods to restore the creek to a native riparian habitat, monitoring and reporting requirements, including those to permitting and oversight agencies (City of Oakland, Corps, RWQCB, CDFG).

- **Wet Weather Protection Measures.** Implement BMPs for wet weather (per the SWPPP prepared for the project), and periodic monitoring.

- **Stockpile Locations.** If stockpiles are required, measure establish the location of soil or debris stockpiles relative to the Creek, protection during wet weather; and perimeter silt fencing.

Other Agency Approvals, Certifications and Agreements

In addition to obtaining and complying with the City of Oakland Creek Protection Permit (discussed above), the project sponsor shall be required to obtain and comply with permits from the Army Corps of Engineers (Section 404 of the federal Clean Water Act), the RWQCB (Section 401 Water Quality Certification), and the California Department of Fish and Game (Section 1602 Lake and Streambed Alternation Agreement). These requirements are included as Standard Condition I.1a that addresses the potential impacts on jurisdictional waters of the U.S. (see Section IV.I, Biological Resource, in of this EIR).Standard Condition G.1c: For demolition and construction activities adjacent to Glen Echo Creek during the wet season (as defined by the City),[8] the project sponsor shall design for City review and approval, and implement a temporary bypass culvert for Glen Echo Creek. The bypass culvert shall involve rerouting rain water leaders to prevent direct drainage to the creek, which would ensure water quality and control erosion and sedimentation, consistent with the General NPDES Permit for Construction Activities (Standard Condition G.1a). The bypass culvert shall be removed immediately after completion of construction activities.

Due to the close proximity of construction activities to Glen Echo Creek, a temporary bypass culvert will be installed within the daylighted portion of the creek to prevent direct runoff into the creek. Specifically, the active channel of Glen Echo Creek would pass through a temporary culvert and rain water leaders to ensure and maintain water quality and maintain flows through the project area during demolition and construction. Implementation of Standard Conditions G.1a through G.1c would reduce water quality Impact G.1 to less than significant.

Summary of Construction-related Impacts

The project would obtain and comply with the City's grading plan and creek protection permit requirements, NPDES Permit requirements (including a SWPPP), and implement construction BMPs and measures. BMP measures would prevent soil erosion and sediments (and thus

8 The "wet season" as generally November to March.

hazardous materials) generated from construction activities from entering the storm drain system, Glen Echo Creek, and ultimately Lake Merritt, and San Francisco Bay (via the Oakland Estuary) to the maximum extent possible. Adherence to these permits and regulations and the specific creek protection measures as listed above would reduce potential construction-related impacts to water quality. With implementation of Standard Conditions G.1a through G.1c, in combination with Standard Condition I.1a, all of which require regulatory compliance with local, regional, state, and federal agencies, the project would not cause degradation of water quality in the Oakland Estuary or other waterways or violate any water quality standards.

Significance after Implementation of Standard Conditions : Less than Significant

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Construction Impacts on Groundwater Resources

Impact G.2: Project excavation activities would not deplete groundwater supplies nor substantially interfere with groundwater recharge or cause contaminated groundwater discharge to contaminate surface water. (Less than Significant)

Excavation and construction of structures with subsurface foundations or open trenches, such as building foundations or pipelines, can often intercept shallow groundwater and require dewatering (removal of groundwater by pumping) to lower groundwater levels and drying the area for construction. Depending on the nature of construction activities and given the shallow subsurface water levels, groundwater could flow into excavations that extend below the groundwater table. Groundwater is located at approximately 20 feet below ground surface in the project area. Depths of excavation would vary with each project component and site. Project construction would involve excavations or trenches at depths of up to approximately 30 feet and pier drilling to depths of 70 feet. There are no groundwater supply wells at the project site. Given that the groundwater beneath the project site is not a source for municipal or agricultural uses (RWQCB, 1995), dewatering would not deplete the groundwater supplies from the deeper aquifer recharge areas and the project would not affect groundwater resources. The SWPPP for construction would include measures to prevent contamination of groundwater that could occur from chemicals associated with construction (e.g., fuels, solvents, etc.)

In the event subsurface groundwater is encountered, common practices employed to facilitate construction include either dewatering the excavation or shoring the sides of the excavation to reduce groundwater inflow. If dewatering methods are used, groundwater would be pumped out of the excavation to the surface and then discharged, typically to either the storm drain or sanitary sewer. Water extracted during dewatering could contain chemical contaminants (either from pre-existing sources or from equipment), or could become sediment-laden from construction activities. If dewatering is required, the project sponsor would comply with the groundwater discharge requirements and regulations of the City and the RWQCB to prevent any discharge of contaminated dewatered groundwater into the sanitary sewer or storm drain system and that would contaminate Glen Echo Creek, Lake Merritt, and ultimately the Oakland Estuary and San

Francisco Bay. If determined necessary, the RWQCB would identify appropriate dewatering collection and disposal methods.

Mitigation: None Required.

Operational Impacts on Drainage Patterns

Impact G.3: The project would result in new development that could substantially alter existing drainage pattern of the project site, the surrounding area, or the drainage course of Glen Echo Creek. (Less than Significant)

As previously described, a segment of Glen Echo Creek flows through the project site, adjacent to Site 7. This segment is the Broadway branch of Glen Echo Creek, downstream of Broadway and Rockridge creeks. The entire segment of Glen Echo Creek is culverted except for the 145-foot daylighted section, between 38th Street and north of West MacArthur Boulevard. In the culverted section, of the creek, the size of the culvert ranges up to approximately 66 inches in diameter.

Phase 1 of the project would involve removal of non-native vegetation and implementation of bank stabilization measures (such as regrading and revegetation) on the eastern bank of the daylighted segment of the creek on the northern portion of Site 7. No changes would occur to the drainage flow pattern of the creek

Development on the remainder of the project site would not substantially affect existing drainage patterns. The new West Broadway MSB and Cancer Care Center and parking structure proposed in Phase 1 (Site 7) would replace existing structures and surface paving. The new hospital and parking structure in Phase 2 (Site 4) would replace the existing M/B Center, a mix of commercial and residential structures, and surface parking that cover the entire site**.** The new Central Administration Building/MOB and related parking in Phase 3 (Site 2) would replace the existing hospital and outpatient buildings. Overall, the resulting new development would replace existing development, and additionally, no new storm drain facilities are proposed. Therefore, the project would not substantially alter the existing drainage pattern of the of the overall project site or the existing drainage course of Glen Echo Creek.

Mitigation: None Required.

"Expanded Campus" Project Variant

The Expanded Campus Variant, which would incorporate the motel and apartment building and residence located at the northeast corner of Manila Avenue and West MacArthur Boulevard in to the project site, would require the project sponsor to relocate the existing Glen Echo Creek culvert, which runs underground through the motel property, to be re-routed from the project site. The culvert would likely be rerouted west to Manila Avenue from its current inlet from the daylighted segment, then traverse within the street right-of-way to West MacArthur Boulevard

and connect to the existing segment that continues south toward Mosswood Park. Similar shoring work would be required, and additional hydro-engineering would be required to ensure appropriate stormwater capacity flows through the rerouted system. Additionally, the project sponsor would be required to obtain and comply with approvals, certifications, and agreements from the permitting agencies as outlined in Standard Conditions G.1a and G.1b (above) and Standard Condition I.1a (obtain regulatory permits and approvals) for creek-related impacts. These would include the City of Oakland, Army Corps of Engineers, the RWQCB, and the California Department of Fish and Game.

Therefore, although the culvert rerouting would alter the existing directional flow along a segment of Glen Echo Creek, it would not result in a "substantial alteration" constituting a significant adverse environmental effect. Standard conditions of approval and mitigation measures already identified in this EIR and that would be required whether or not this project variant scenario was implemented, would continue to reduce potential water quality and hydrologic impacts associated with alterations to the creek to less than significant. No additional mitigation would be required. (See also Section IV.I, Biological Resources.)

Operational Impacts on Flooding Conditions and Water Quality

Impact G.4: The project would not result in a net increase in impervious surfaces and would not cause an increase in the volume of project-related stormwater runoff. The project would not violate any waste discharge requirements that would create substantial runoff and result in substantial flooding onsite or offsite. Nor would the project exceed the capacity of the stormwater drainage system. (Potentially Significant).

The project site is predominantly urban development and covered with structures and pavement, as is its surrounding area, except for Mosswood Park. There are no existing stormwater detention facilities on the site, therefore, stormwater discharge from the site is relatively high (compared to a site that is undeveloped and unpaved) and generally comparable to the surrounding area. Since project development would occur on sites that are currently covered by existing buildings or pavement, it would not increase the amount of impervious surface on any of the individual development sites or the overall project site.

The C.3 Provision of the NPDES permit governs storm drain systems and regulates post-construction stormwater runoff. The Kaiser Permanente OMC Project would involve new development on three sites (Site 7 in Phase 1, Site 4 in Phase 2, and Site 2 in Phase 3), and pursuant to NPDES permitting requirements, it is required to manage runoff flows from individual sites and for the entire campus. To do so, the entire project is required to implement treatment measures and appropriate source control and site design measures and landscape characteristics under the NPDES permit, as feasible (ACCWP, 2003). The project proposes and shall be required to comply with the following uniformly-applied standard conditions of approval of the City, consistent with the C.3 provisions of the NPDES permit, and as would be required for all development projects in Oakland, consistent with General Plan Policies:

Standard Condition G.4a: Implement site design/landscape characteristics as feasible, which maximize infiltration (where appropriate), provide retention or detention, slow runoff, and minimize impervious land coverage, so that post-development pollutant loads from the site have been reduced to maximum extent possible. Where feasible, the project shall introduce measures to help reduce the rate and volume of stormwater runoff.

Measures proposed by the project include, but would not necessarily be limited to, the following:

- Stormwater filtering through permeable pavers;
- A raised paver system on upper level courtyards;
- Landscaped planters and plantings in areas where no pervious surfaces currently exist.

As discussed in the setting, there are no storm drain lines in the street frontages along most of the project site. The residual runoff from the project (with the proposed landscaping, permeable pavements, and planters in place) would be conveyed to the existing storm drain network partially via new storm drain pipes to be installed from the project site. The Oakland Public Works Agency has indicated that the City prefers to keep the introduction of new infrastructure to a minimum. Therefore, the intent of the civil design for the Kaiser OMC Project is to replicate the existing condition to the extent possible. This would include stormwater discharge flowing from landscaping to the street gutters by way of under-sidewalk drains.

Standard Condition G.4b: For the proposed project, which will discharge directly to water bodies listed as impaired (under section 303(d) of CWA), ensure that post-project runoff does not exceed pre-project levels for such pollutants through implementation of the control measures addressed in the C.3 provision, to the maximum extent practicable.

Project Site Stormwater Runoff

BKF Engineers, Inc. (BKF) prepared a stormwater runoff analysis determined that the existing rate of storm runoff (for a 100-year storm) from the entire project site (including sites not proposed for new construction) is approximately 56 cubic feet per second (cfs) (BKF, 2005b). **Table IV.G-1** shows that the project as proposed with the above measures (permeable pavers, raised paver system, and landscaping) and implementation of Standard Conditions G.4a and G.4b would reduce the impervious surface area on the new hospital site (Site 4) from 100 percent (existing) to approximately 85 percent, and would reduce impervious surface area on the new West Broadway MSB and garage site (Site 7) from 95 percent (existing) to approximately 85 percent. Impervious surface on Site 2 would remain at 85 percent, existing conditions.

TABLE IV.G-1
CHANGE IN RUNOFF AND IMPERVIOUS COVERAGE
(BY DEVELOPMENT SITE)[a]

	Existing		Project With 0.25 Runoff Factor			Proposed Project (0.78-0.95 Runoff Factor)		
	Runoff (cfs)	Impervious Coverage	Runoff (cfs)	Impervious Coverage	% Runoff Volume Change	Runoff (cfs)	Impervious Coverage	% Runoff Volume Change
Site 7 (2.2 ac)	6.06	95%	1.65	100%	-73%	5.63	85%	7.0%
Site 4 (7.4 ac.)	20.95	100%	5.51	100%	-74%	18.80	85%	10.0%
Site 2 (5.1 ac.)	12.97	85%	12.97	85%	0%	12.96	85%	0%
Subtotal	**39.98**		**20.13**		**-49.64%**	**37.40**		**-6.0%**
All Other Sites (6.1 ac.)	15.78	75-90%	15.78	75-90%	0%	15.78	75-90%	
TOTAL	**55.76**		**35.91**		**-35.59%**	**53.17**		**-5.0%**

[a] Redevelopment is proposed on Site 7, Site 4, and Site 2 only. All other sites not proposed for new or redevelopment, thus no change in runoff volume would occur.

SOURCE: BKF, 2005.

As a result of the reduced impervious surface area, combined with the introduction of proposed landscape characteristics (permeable pavements, raised paver systems, planters) designed to decrease the rate and volume of stormwater runoff from the site into the storm drain system, the total volume of stormwater runoff from the sites proposed for redevelopment would be reduced to approximately 37.40 cfs, a reduction of approximately 6.0 percent). Total storm runoff from the entire project site, including sites no proposed for redevelopment would decrease to approximately 53.17 cfs, a reduction of approximately 5.0 percent.

The City of Oakland Public Works Agency recommends that, to the extent possible using methods consistent with the City's Storm Drainage Design Guidelines, new commercial and multi-unit (residential) development or redevelopment projects reduce the peak stormwater flow into City's storm drains by a 0.25 runoff factor (or C coefficient, which is a factor that accounts for the overall land use, slope, and rainfall intensity) (City of Oakland, 2004d).[9] The City guidelines do not set a baseline for acceptable reduction levels (i.e., stating "to the extent possible"). The runoff volumes using the recommended 0.25 factor are shown in **Table IV.G-1**.

Applying the 0.25 runoff factor to existing conditions, the project would need to reduce storm runoff from the development sites from 39.98 cfs (existing) to 20.13 cfs, a reduction of approximately 49.64 percent (compared to the proposed reduction of 39.98 cfs to 37.40 cfs or 6.0 percent, which equates to runoff factors of 0.78 to 0.95). Given the existing built-out urban character of the project site and its surroundings (i.e., development to lot lines with minimal

[9] Although the project is an institutional use, not a commercial use, the City has applied the 0.25 runoff factor (C coefficient) guideline to the project.

unpaved areas), it is unlikely that the proposed project could attain the City's recommended level of runoff reduction without providing substantially more impervious area, which would significantly change the proposed building development plan and consequently Kaiser's operational program. Consistent with the C.3 provisions, incorporation of the above measures proposed by the project (permeable pavers, raised paver system, and landscaping) and implementation of Standard Conditions G.4a and G.4b would be considered practicable given the area constraints.

In addition to the recommended 0.25 runoff factor, the City's storm drain design guidelines include a number of design guidelines and standards for retention and detention facilities. In a built-out, urban, such as the project site and its surroundings, such facilities would likely have to involve large vaults below grade with significant pumping systems to drain them. Therefore, the feasibility and appropriateness of the project implementing such facilities, surface of below grade, is low given the area constraints, and the implementation of facilities would also exceed what would be considered practicable per the intent of the C.3 provisions.

Glen Echo Creek/Culvert Flows

The Broadway branch of Glen Echo Creek (which runs adjacent to and east of Site 7) is downstream of Broadway and Rockridge creeks, which drain into Lake Merritt, and ultimately the San Francisco Bay via the Oakland Estuary. This integral system of creeks and stormwater drainage facilities in the city directly affect flooding conditions.

Work within Glen Echo Creek would include removal of non-native vegetation and bank stabilization (such as regrading and revegetation) on the eastern bank and would occur on the daylighted segment of the creek. However, no changes would occur to the drainage flow pattern of this segment that would affect creek flows. During construction, the project shall provide a bench at the top of slope for improved slope stability and, as required by Standard Condition G.1c, reroute rain water leaders to prevent direct drainage to the creek. The project would not alter the Glen Echo Creek culvert flows of downstream flooding.

In addition to adding stormwater best management practices during construction and operation of the West Broadway MSB and parking structure on Site 7, the regrading of the east bank of the creek would provide added benefit by reducing the depth and velocity of creek flows. With the proposed project improvements, the 100-year flood depth would reduce to 4.8 feet (approx. 10.0 percent), and the creek flow velocity would reduce slightly to 7.2 feet per second (approx. 4.0 percent). The 25-year flood depth would reduce to 3.9 feet and the velocity would reduce to 6.3 feet per second (BKF, 2005a). Additionally, with improved creekbank grading and stability, shallower peak flows, and native riparian vegetation, the overall health of the daylighted section of the creek would be improved (BKF, 2005a). (See Glen Echo Creek Hydrology Report in **Appendix I** to this EIR.)

Daylighting Culverted Creek Segment in Mosswood Park

The 145-foot portion of daylighted Glen Echo Creek adjacent to Site 7 flows into a culvert starting north of MacArthur Boulevard, between Manila Avenue and Broadway. This underground culvert continues southwest through Mosswood Park.

The Oakland General Plan includes a number of goals and policies that address the value of creeks throughout the city. The daylighting of existing culverted creeks is often encouraged as daylighted creeks can help provide greater flood control, provide wildlife habitat, and improve neighborhood aesthetics (City of Oakland, 2003). In light of these beneficial effects, the City must also weigh factors of municipal costs, maintenance, public safety, neighborhood interest and support, and many other competing policies and interests when considering daylighting any specific creek.

The concept of daylighting the culverted portion of Glen Echo Creek that traverses Mosswood Park emerged during the City's community urban design review process for the proposed project (which occurred separate from the City's environmental review or project review process.) Kaiser Permanente does not own or control any aspect of Mosswood Park. The park is owned by the City of Oakland and operated and maintained by its Parks and Recreation Department and Public Works Agency. The proposed project does not include any portion of Mosswood Park, except for new landscaping along Broadway, across from the main entrance of the new hospital (Site 2), that is part of the proposed project (see Chapter III, Project Description). However, the project sponsor conducted a preliminary engineering assessment of daylighting the creek across Mosswood Park.

The existing culvert exists approximately 17 feet below grade as it flows downstream to the southwest across the park. Thus, to maintain existing flow, the daylighted creek was assumed to remain at this elevation or lower. As a result, to daylight the creek would require approximately nearly 10 to 20 percent (1.0 to 1.5 acres) of the existing 11-acre park. According to BKF Engineers, the appropriate, minimum creek slope for recreational use is 3:1 or flatter (not including a level pathway and "benches" in the slope that might be required for geotechnical purposes. This cut would result in a minimum 102 foot-wide opening (top-of-bank to top-of-bank) across the park for a length of approximately 650 feet, generally angled to the southwest if aligned with the existing culvert. (The City's minimum allowable slope is 2:1, which would result in cut of at least 68 feet wide.)

Although daylighting Glen Echo Creek could be beneficial to many biological and environmental, and community resources, it is not proposed as part of the project, would not mitigate any identified significant impacts resulting from the project. The City would be required to consider and balance the merits of daylighting the creek with various other and potentially competing City policies and priorities**.**

Summary of Flooding Impacts

Estimated stormwater runoff resulting from the project would not exceed existing stormwater drainage system capacity. The project would reduce the existing amount of impervious surface on the project site by 10 to 15 percent and would implement practicable specific site design/landscape characteristics (permeable pavers, raised paver systems on upper-level courtyards, and landscaped planters) to the greatest extent feasible to reduce the volume (and velocity) of stormwater runoff from the project. Consistent with the C.3 provisions, implementation of Standard Conditions G.4a and G.4b would be considered practicable given the constraints of the urbanized, built out project site and surrounding area.

The project has incorporated the City's Storm Drainage Design Guidelines to the greatest extent possible (as recommended by the guidelines), and would reduce runoff volume by a total of approximately 6 percent on the project development sites (Site 7, Site 4, and Site 2) and approximately 5 percent on the total Kaiser Permanente OMC (including sites not proposed for redevelopment). As such, the project would not result in substantial flooding or contribute to substantial runoff that would cause flooding.

Additionally, improvements to the east creek bank of Glen Echo Creek (re-grading and revegetation) would reduce the volume and velocity of site runoff and soil erosion, thereby reducing sediment in surface water runoff that could otherwise accumulate in downstream drainage facilities, interfering with flow and aggravating downstream flooding.

Significance after Implementation of Standard Conditions: Less than Significant.

Impact G.5: The project would not result in flooding due to its proximity to a 100-year flood hazard area, or expose people or structures to other substantial risk related to flooding, seiche, tsunami, or mudflow. (Less than Significant)

The project site is located in an area designated as Flood Hazard Area C (areas of minimal flooding) and is not within the 100-year or 500-year floodplain (FEMA, 1982). The likelihood of flooding in the project area from tsunamis, seiches, or mudflows is negligible in inland areas such as the project site. In addition, the likelihood of large-scale devastation in Oakland resulting from seiches appears to be minuscule (City of Oakland, 2004a). Therefore, the project would not expose people or structures to the risk of loss due to flooding.

Mitigation: None Required.

Cumulative Impacts

Cumulative Context

The geographic context used for the cumulative assessment of water quality and hydrology impacts is the East Bay Plain of the San Francisco Bay Basin. The East Bay Plain includes the city of Oakland and surrounding areas.

Cumulative Impacts on Hydrology and Water Quality Conditions

Impact G.6: The increased construction activity and new development resulting from the project, in conjunction with other foreseeable development in the city, would not result in cumulatively considerable impacts on hydrology and water quality conditions. (Less than Significant)

Assuming concurrent implementation of the project with other reasonably foreseeable future projects in the vicinity, adverse cumulative effects on hydrology and water quality could include construction impacts related to increases in stormwater runoff and pollutant loading to Glen Echo Creek, Lake Merritt, the Oakland Estuary, and San Francisco Bay. The project and other future projects in the city would be required to comply with drainage and grading ordinances intended to control runoff and regulate water quality at each development site. Furthermore, the city is generally built out with very few and relatively small undeveloped parcels that would convert from pervious to impervious surfaces. New projects would be required to demonstrate that stormwater volumes could be managed by downstream conveyance facilities and would not induce flooding. New development projects in Oakland would also be required to comply with City of Oakland uniformly-applied conditions of approval and ordinances regarding water quality, creek protection, and ACCWP NPDES permitting requirements. Therefore, the effect of the project on water quality and hydrology, in combination with other foreseeable projects, would be less than significant.

Mitigation: None Required.

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