

1 **4.15 SURFACE WATER**

2 The San Francisco Bay is an important resource on which the redevelopment project area is
3 located. The quality of the waters of the Bay is critical to its value.

4 Redevelopment would result in substantial benefits to surface waters, as well as potentially
5 significant and significant impacts to them. With implementation of measures recommended in
6 this section, all potentially significant and significant impacts would be mitigated to a level that is
7 less than significant.

8 **4.15.1 Study Area**

9 The study area for surface water is the approximately 1,800-acre redevelopment project area,
10 plus adjacent receiving waters.

11 **4.15.2 Regulatory Setting**

12 **Federal**

13 **The Federal Water Pollution Control Act, as Amended by the Clean Water Act of 1977 (33**
14 **United States Code § 1251 et seq.).** The objective of the CWA is to restore and maintain the
15 chemical, physical, and biological integrity of the nation's waters. Specific sections of the CWA
16 control discharge of pollutants and wastes into marine and aquatic environments.

17 Under Section 401 of the Act, water quality certification is required from the state for any activity
18 that requires a federal permit or license that may result in discharge into navigable waters. The
19 certification must indicate that the activity will comply with the applicable state water quality
20 standards. Under Section 401, states are required to establish water quality standards for all
21 state waters. To receive certification under Section 401, an application must demonstrate that
22 activities or discharges into waters will not cause concentrations of chemicals to exceed state
23 standards.

24 Section 404 of the CWA addresses permitting for discharge of dredged or fill material into
25 navigable waters. This section of the CWA is administered by the U.S. Army Corps of
26 Engineers. In conjunction with the Corps, the U.S. Environmental Protection Agency developed
27 Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230).

28 Under Section 402 of the CWA, discharges of dredged material into non-navigable waters and
29 upland areas of the state are the responsibility of the EPA under the National Pollutant
30 Discharge Elimination System (NPDES). In California, EPA has delegated responsibility for
31 implementation of the NPDES program to the California State Water Resources Control Board
32 (SWRCB). The SWRCB comprises nine Regional Water Quality Control Boards (RWQCB)
33 responsible for implementation of statewide policy at the local level. The San Francisco
34 RWQCB (Region 2) is responsible for activities occurring in the San Francisco Bay Basin.

1 Stormwater discharges associated with industrial and construction activities are regulated
2 according to Section 402(p) of the CWA under the NPDES. Stormwater NPDES permitting for
3 certain classes of industrial activities is regulated under the Industrial Activities General Permit
4 adopted by the SWRCB April 17, 1997 (WQO 97-03-DWQ NPDES Permit No CAS000001). To
5 comply with conditions of this permit, facility operators must submit a notice of intent (NOI),
6 develop a stormwater pollution prevention plan, conduct stormwater monitoring, and submit
7 annual reports by July 1 of each year.

8 Stormwater discharges associated with construction activities are regulated under the General
9 Construction Activity Stormwater Permit adopted by the SWRCB (WQO 99-08 DWQ, NPDES
10 Permit No. CAS000002). Under this permit, owners of land where a construction activity occurs
11 that disturbs more than 5 acres of land must submit a NOI, develop a SWPPP, conduct
12 monitoring and inspections, retain records of the monitoring, and report incidences of
13 noncompliance.

14 **State and Regional**

15 **Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.;**
16 **California Code of Regulations Title 23, Chapter 3, Subchapter 15).** The Porter-Cologne
17 Water Quality Control Act is the primary state law that addresses water quality. Requirements of
18 the Act are implemented by the SWRCB at the state level and the RWQCBs at the regional and
19 local level. The SWRCB, as authorized by the Act, promulgated regulations in CCR Subchapter
20 15, Title 23 designed to protect water quality from the effects of waste discharges to land (CCR
21 Subchapter 15, Title 23). Under Subchapter 15, wastes that cannot be discharged directly or
22 indirectly to waters of the state (and therefore must be discharged to land for treatment, storage,
23 or disposal) are classified to determine specifically where such wastes may be discharged. This
24 classification requirement would apply to dredged material or fill that would be disposed in an
25 upland environment.

26 **Water Quality Control Plan for the San Francisco Bay Basin.** Under the provisions of the
27 Porter-Cologne Act and CWA, the San Francisco RWQCB regulates water quality in the San
28 Francisco watershed. The *Water Quality Control Plan* for San Francisco Bay Basin (the Basin
29 Plan) describes water quality control measures that contribute to protection of beneficial uses of
30 the San Francisco Bay watershed. The Basin Plan identifies beneficial uses for each segment of
31 the Bay and its tributaries, water quality objectives for the reasonable protection of the uses,
32 and an implementation plan for achieving these objectives. Beneficial uses for the Lower San
33 Francisco Bay include:

- Ocean, commercial, and sport fishing;
- Estuarine habitat;
- Industrial service supply;
- Fish migration;
- Navigation;
- Preservation of rare and endangered species;
- Water contact recreation;
- Non-contact water recreation;
- Shellfish harvesting; and
- Wildlife habitat.

1
2 **State Water Resources Control Board Resolution 68-16: Statement of Policy with Respect**
3 **to Maintaining High Quality of Waters in California.** This policy establishes a non-
4 degradation policy for the protection of water quality. The policy states that whenever the
5 existing quality of water is better than needed to protect all existing and probable future uses of
6 the water, such existing water quality will be maintained. If it is determined that some water
7 quality degradation is in the best interests of the people of California, some increase in pollutant
8 concentrations above background levels would be considered acceptable. However, in no case
9 may such increases cause adverse impacts to existing or probable beneficial uses of
10 groundwater.

11 **Bay Protection and Toxic Hotspots Cleanup Program.** In 1989, the California State
12 legislature established the Bay Protection and Toxic Cleanup Program (BPTCP). The major
13 goals of the program are as follows:

- 14 • Provide protection of present and future beneficial uses of the Bay and estuarine waters of
15 California.
- 16 • Identify and characterize toxic hotspots.
- 17 • Plan for toxic hot spot cleanup or other remedial or mitigation actions.
- 18 • Develop prevention and control strategies for toxic pollutants to prevent creation of new hot
19 spots and perpetuation of existing ones.

20 In 1997, the Proposed Regional Toxic Hot Spot Cleanup Plan was released by the San
21 Francisco RWQCB. This proposed plan identifies and prioritizes toxic hotspots and presents
22 cleanup plans for priority sites. Neither the Inner, Middle nor Outer harbors were identified as
23 candidate or known toxic hotspots.

24 **McAteer-Petris Act.** The McAteer-Petris Act (PRC § 66600 *et seq.*) established the Bay
25 Conservation and Development Commission (BCDC) as the agency responsible for maintaining
26 and carrying out provisions of the Act. The Act directs BCDC to exercise its authority to issue or
27 deny permit applications for placing fill, extracting minerals, or changing the use of any land,
28 water, or structure within the area of its jurisdiction (*i.e.*, the Bay and its shoreline).

29 **4.15.3 Regional Setting**

30 The San Francisco Bay is a large, complex, and dynamic estuary. The Bay receives inputs from
31 the ocean, rivers, and discharges from municipal and industrial sources that vary in their
32 proportions depending on location and the seasonal weather patterns. Conomos (1979) divides
33 the Bay into northern and southern reaches. These two reaches exhibit vastly different
34 circulation and sedimentation patterns as a result of prevailing hydrodynamic conditions.
35 Circulation is generally affected by the tides entering the Bay from the Pacific Ocean, local
36 winds, basin geometry, and the local salinity field (SFEI 1997). The northern reach of the Bay

1 serves as the only drainage outlet for the Central Valley and accounts for 90 percent of the
2 freshwater input to the Bay, while the southern reach receives the remainder. Most of the
3 freshwater inputs occur during the winter and spring as a result of outflow from the Sacramento
4 San Joaquin Delta. The southern reach receives the majority of the discharges to the Bay (more
5 than 75 percent) and during the summer discharge inputs are larger than freshwater inflow from
6 streams.

7 Density-salinity driven currents in the northern reach show an ebb dominance of the surface
8 water (4 centimeters per second [cm/sec]) and a flood dominance of the bottom water (5
9 cm/sec). South Bay waters are influenced by density-driven currents during the winter months
10 when low salinity waters move southward into the southern reach, displacing denser saline
11 water northward. In the summer months, south Bay currents are largely influenced by the
12 prevailing northwesterly winds that move the surface water southeast, causing the bottom water
13 to move northwest. In each reach, narrow shipping channels are surrounded by extensive
14 mudflats and shoals. Currents with the highest velocities are found in the channels. Lower
15 current velocities are found in the shoals, where the majority of the sedimentation occurs
16 (USGS 1984).

17 Tidal currents in the Bay consist of the semidiurnal and diurnal partial tides (USGS 1984). The
18 Bay-wide tidal prism is large, representing 24 percent of the total volume (Conomos 1979;
19 Conomos et al. 1985). The central Bay is often described as a distinct subunit of the northern
20 reach of the Bay and is the most strongly influenced by the exchanging tides due to its close
21 proximity to the Golden Gate and Pacific Ocean. The study area is located on the eastern edge
22 of the interface of the central and south Bay.

23 The U.S. EPA identifies San Francisco Bay as a Clean Water Act Section 303(d) water body,
24 meaning it does not achieve water quality standards (EPA 2001). The EPA lists 12 separate
25 parameters of concern impairing the quality of Bay waters:

- 26 • Metals: copper, mercury, nickel;
- 27 • Polychlorinated biphenyls (PCBs);
- 28 • Dioxin-like PCBs;
- 29 • Pesticides: diazinon, chlordane, dichloro dipheunyl trichloroethane (DDT), dieldrin;
- 30 • Dioxin compounds;
- 31 • Furan compounds; and
- 32 • Exotic species.

33 The EPA identifies sources of these pollutants as atmospheric deposition, industrial and
34 municipal point, non-point, natural, resource extraction, urban runoff/storm sewer, and ballast
35 water (1998 California 303(d) List and TMDL Priority Schedule, San Francisco Regional Water
36 Quality Control Board, approved by the U.S. EPA May 12, 1998). The RWQCB has determined

1 that the San Francisco Estuary does not have a capacity to assimilate exotic organisms. The
2 RWQCB has committed to working with the State Board and the U.S. EPA to promote a national
3 program to effectively address discharges of exotic species (RWQCB 2000).

4 In addition, California's Bay Protection and Toxic Cleanup Program classifies the entire San
5 Francisco Bay as a High Priority Candidate Toxic Hot Spot. The reason for this classification is
6 potential risk to human health from consumption of non-migratory aquatic wildlife, primarily due
7 to elevated levels of PCBs and mercury in fish tissue.

8 **4.15.4 Local Setting**

9 **Oakland Harbor Hydrodynamic Conditions**

10 Oakland Outer Harbor is influenced by the hydrodynamic conditions typical of the central Bay.
11 Current measurements and modeling predictions made by the U.S. Army Corps of Engineers in
12 the central Bay (Corps 1990) indicated that net tidal fluxes in the vicinity of the Outer Harbor
13 were southerly along the east side of the Bay and northerly along the west side of the entrance
14 to the south Bay.

15 In the Inner Harbor, current and wave patterns are largely generated by tides interacting with
16 bottom and shoreline configurations. Field measurements of current speeds at the Inner Harbor
17 entrance indicate velocities between approximately 25 to 50 cm/sec, with peaks up to 107
18 cm/sec.

19 Velocities measured in the Middle Harbor averaged between 3.5 and 4.5 cm/sec, with short
20 duration peaks of 25 cm/sec. Current velocities were higher in the upper meter than at the
21 bottom meter for both Inner and Middle harbors. An average tidal range of 2.5 meters was
22 measured in June 1997 (Hartman 1997).

23 **Oakland Harbor Water Quality**

24 Little direct information is available on water quality in the Oakland Outer, Inner and Middle
25 harbors. Information from regional characterization is used to represent water quality in the
26 vicinity of the study area and to provide information on constituents of potential concern.
27 Because the study area is located at the margins of the Bay and receives drainage from
28 separate storm sewers, water quality near storm drain outfalls likely varies seasonally in a
29 manner not fully reflected by the regional dataset.

30 The Regional Monitoring Program (RMP) administered by San Francisco Estuary Institute
31 (SFEI) for the RWQCB conducts monitoring three times a year along the main spine of San
32 Francisco Bay from the Delta to the South Bay. The RMP measures concentrations of trace
33 constituents in water, sediment, and transplanted bivalves at various locations in the Estuary.
34 Two sampling stations are located in the vicinity of the study area at Yerba Buena Island and
35 Alameda.

1 A summary of relevant water quality parameters measured at these two stations during six
2 sampling events (three sampling events in 1998 and three in 1999) is presented in Table 4.15-1.
3 The table also provides a comparison of the concentrations with applicable water quality
4 objectives in the proposed California Toxics Rule (CTR).

5 In general, trace toxics data from the stations located in the central Bay nearest the study area
6 have lower concentrations and the fewest exceedances of guidelines than those measured at
7 other stations in the Bay. Of the compounds measured by the RMP, only total PCB and total
8 PAH concentrations were found to exceed water quality objectives at Yerba Buena Island and
9 Alameda stations during both 1998 and 1999. It should be noted that PCB concentrations
10 throughout the Bay generally exceed water quality objectives, and concentrations at the two
11 stations were lower than other stations. Central Bay concentrations are probably lower due to
12 the regular tidal flushing and greater water depth, which results in lower suspended sediment
13 concentrations (SFEI 1997, 1998, 1999).

14 The RMP 1998 annual report provided a summary of contaminants of concern in the Bay in
15 general (SFEI 1998). The findings of that report indicate that the contaminants measured by the
16 RMP of the most concern are those shown to be related to bioaccumulation or adverse effects
17 including:

- 18 • diazinon and chlorpyrifos (commercially available insecticides) in water;
- 19 • DDTs, chlordanes, and PAHs in sediments; and
- 20 • PCBs, cadmium, mercury, selenium, PAHs, chlordanes, dieldrin, and DDTs in bivalve and
21 fish tissues.

22 The RMP 1998 annual report indicates that nickel, mercury, and chromium are the trace
23 contaminants that most frequently exceeded water quality objectives, while PCBs, DDTs,
24 chlordanes, and dieldrin also exhibited occasional exceedances.

25 **Runoff and Drainage.** Site topography is nearly flat due to its creation on tidal flats by fill using
26 marine or terrestrial materials. Shorelines are protected in most areas by sheet piling, riprap, or
27 other artificial shoreline protection structures. The site is largely paved with asphalt or concrete.
28 No natural channels or ponds, or natural or channelized creeks are present in the study area.
29 As discussed in Section 4.12: Biological Resources, two small urban wetlands exist in the
30 Desert railyard within the Maritime sub-district.

31 Annual precipitation in the study area averages about 17.5 inches per year, falling mostly
32 between October and April. Drainage from the OARB and Maritime sub-district storm drains into
33 the Middle Harbor will be equipped with treatment systems as part of the 50-Foot Channel
34 Deepening Project. Localized ponding of runoff has occurred in the southern portion of the
35 Berths 55-58 area when storm drainage systems were overloaded or clogged. Although the
36 ponding has been substantial, it has not resulted in flooding of buildings. Other areas in the
37 vicinity of Berths 55-58 have occasionally experienced ponding due to storm drain blockages.

1 These historical drainage problems have been corrected by the Port. In addition, Southern
 2 Pacific has rerouted a portion of its storm drainage to bypass the Berths 55-58 area and
 3 connect directly with the Oakland main storm drainage system.

Table 4.15-1
Concentrations of Trace Substances in Bay Water Located Near the Study Area
1998 and 1999

Parameter ^a	Lowest WQO of Proposed CTR ^{a,b}	Yerba Buena Island ^c		Alameda ^d	
		1998	1999	1998	1999
Temperature (°C)		13.3-17.3	11.4-16.5	13.4-17.5	10.8-19.7
Salinity (ppt)		17.6-25.0	16.7-29.1	21.0-27.9	21.9-28.7
Total Suspended Solids (mg/L)		4-23	3.8-19.2	1-17	11.1-55.7
Dissolved Oxygen (mg/L)		6.8-13.1	7.2-9.2	6.5-11.1	6.8-9.3
PH		7.9-8.3	7.9	7.9-8.3	7.9
Nitrate (µg/L)		200-400	10-400	200-300	190-420
Nitrite (µg/L)		6-38	1-15	6-39	4-19
Ammonia (µg/L)		30-140	20-130	20-160	50-140
Phosphate (µg/L)		20-170	10-180	20-170	40-220
Silicates (mg/L)		2-4	1.05-3.7	1-3	1.03-2.53
Total Metals (µg/L)					
Arsenic	36	1.52-1.98	1.11-2.14	1.44-2.09	1.54-2.64
Cadmium	2.2	0.02-0.07	NA	0.04-0.07	NA
Chromium	11	0.71-3.05	NA	0.50-2.84	NA
Copper	3.7	1.3-2.2	1.6-2.3	1.2-1.9	1.9-3.0
Lead	2.5	0.16-0.67	0.29-0.63	0.13-0.43	0.37-1.29
Mercury	0.012	0.0023- 0.0055	0.0035-0.007	0.001-0.0049	0.0044- 0.0135
Nickel	8	1.6-3.5	2.2-3.7	1.4-2.9	2.6-5.7
Selenium	5	0.12-0.19	0.02-0.11	0.10-0.19	ND-0.07
Silver	1.9	0.0040-0.010	0.005-0.012	0.0030- 0.0090	0.008-0.020
Zinc	81	2.0-4.2	2.3-3.9	1.5-3.1	2.8-6.8
Organics (pg/L)					
Total PAHs	31,000	S-53,000 ^e	17,000- 34,000	S-28,000	47,000- 70,000
Total PCBs	170	250-1000	258-386	150-250	409-941
Total DDT	590	S-190	150-221	S-190	171-347
Total Chlordanes	590	97-140	38-49	S-130	43-96

Source: SFEI 1998 and 1999.

Notes:

- ^a CTR – California Toxics Rule
 DDT – 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane
 mg/L – milligrams per liter
 µg/L – micrograms per liter
 NA – not analyzed
 WQO – Water Quality Objective
- ^b Lowest water quality objective in the proposed California Toxics Rule.
- ^c Sampling Station No. BC10
- ^d Sampling Station No. BB70
- ^e S – Compounds generally comprising a significant portion of sum not quantifiable, sum not calculated.
- ND – not detected
 PAH – polynuclear aromatic hydrocarbons
 PCB – polychlorinated biphenyls
 pg/L – picograms per liter
 ppt – parts per thousand

1 **Flood Hazards.** The OARB sub-district and most of the Maritime sub-district have not been
2 mapped by FEMA for flood hazards. The portions that have been mapped, including the
3 16th/Wood sub-district and a portion of the Maritime sub-district, are not located within either a
4 100- or 500-year flood hazard area (ESRI and FEMA 2002). The project area is not near
5 surface drainage channels, and is therefore not subject to flooding from over-bank spillage.
6 Anecdotal information exists that flooding has historically occurred within the study area in the
7 Burma Road area and near Berths 8 and 9 (old Wharf 6). Also, according to the Land Use and
8 Transportation Element (LUTE) of the Oakland General Plan, the entire area west of Maritime
9 Street in both the OARB and Maritime redevelopment sub-districts is a potential tsunami
10 inundation zone.

11 No known natural surface streams exist in the study area. Additionally, no portion of the project
12 area is below the coastal base flood elevation (6.6 feet above mean sea level [msl]) identified
13 for the Oakland Harbor. The estimated stillwater elevation during a 100-year flood at high tide in
14 the area is 7.0 feet National Geodetic Vertical Datum (NGVD) (FEMA 1982).

15 The storm drain system, installed mostly during World War II, collects surface water runoff using
16 catch basins and approximately 16 miles of underground pipe, and drains into San Francisco
17 Bay. Pipe up to 27 inches in diameter is made of vitrified clay, and larger pipe is made of
18 reinforced concrete. Most of OARB is covered with either buildings or pavement. Roads are
19 crowned and other paved areas are sloped to facilitate stormwater flow to the catch basins and
20 collection pipes. However, soil subsidence has created pipe separations, reverse flows, and
21 shallow ponding areas at some locations. Catch basins and inlets have been added to the
22 system to correct these problems, but some localized flooding still occurs, causing temporary
23 closure of some roadways. The primary cause of flooding appears to be outfalls located below
24 the tide level. While the localized temporary flooding limits use of a few roads for short periods
25 of time, it is not a significant factor in limiting use of the Base. Moreover, problematic portions of
26 the storm drain system in the OARB sub-district will be replaced.

27 **Stormwater Runoff Water Quality**

28 **OARB Sub-District.** According to a Pipeline Investigation conducted in 1999 by the Army (I.T.
29 Corporation 1999), two conditions at the OARB have the potential to affect water quality,
30 potentially exceeding standards:

- 31 • storm drain sediments contain elevated concentrations of metals, pesticides, and PCBs; and
- 32 • elevated concentrations of metals may be present in stormwater.

33 **Maritime Sub-District.** Stormwater runoff quality is managed in the Maritime sub-district
34 through implementation of Best Management Practices (BMPs) at each of the currently
35 occupied facilities, as required under the Industrial Activities Stormwater General Permit. Each
36 tenant is responsible for complying with the requirements of the permit, which include
37 development and implementation of a stormwater pollution prevention plan, monitoring, and
38 quarterly inspections of facilities for non-stormwater discharges. The Port has developed a

1 regional SWPPP, which it uses and supplies to tenants as a model that is to be tailored to each
2 particular facility by each tenant. The regional SWPPP outlines the steps needed to develop a
3 SWPPP, and lists generic BMPs that are to be considered by the tenants when preparing
4 SWPPPs for the individual facilities. The BMPs are designed to reduce the quantities of
5 materials used that may produce pollutants, change the way various products and materials are
6 handled or stored, employ various structural and nonstructural devices to catch and restrict the
7 release of pollutants, set out appropriate responses to spills and leaks, and monitor the
8 effectiveness of the BMPs. They include recommendations to perform vehicle maintenance
9 indoors or under cover, minimize the use of hazardous materials, properly store and dispose of
10 hazardous waste, prepare spill response plans, train employees in spill response and
11 hazardous materials handling, and to practice good housekeeping. Supplementary site-specific
12 information to be supplied by the tenants includes the following:

- 13 • site map;
- 14 • pollution prevention team;
- 15 • description of potential pollutant sources;
- 16 • list of significant materials;
- 17 • summary of industrial activities, pollutant sources, and potential pollutants;
- 18 • records of hazardous material spills;
- 19 • assessment of potential pollutant sources; and
- 20 • site-specific BMPs.

21 Industrial facilities in the Maritime sub-district participate in a Group Stormwater Monitoring
22 Program (GMP). The Port serves as the group leader for this program, arranges sampling and
23 analysis of stormwater discharges as required, and prepares annual group monitoring reports
24 as required. The tenants serve as group members and are responsible for making quarterly
25 periodic non-storm event observations; conducting monthly observations of stormwater
26 discharge during the wet period (October through May); conducting an annual site inspection,
27 maintaining appropriate records, and preparing the facility Annual Comprehensive Site
28 Compliance Evaluation and Annual Report.

29 Surface runoff from representative Port facilities has been sampled as a part of the GMP.
30 Facility activities are assigned to five categories for assessment of potential pollutants: Vehicle
31 and Equipment Maintenance; Vehicle Generator Maintenance; Vehicle Fueling; Container
32 Freight Yards; or Break Bulk Storage. Potential pollutants associated with these activities
33 include petroleum products (gas, diesel, motor oil, hydraulic fluid), solvents (VOCs, aromatics),
34 metals (cadmium, copper, lead, nickel, zinc), antifreeze, and surfactants. In general, runoff
35 samples from the vehicle/generator maintenance areas contained higher concentrations of
36 petroleum and metals than samples from other areas. There are no effluent limitations for

1 industrial stormwater runoff; rather, compliance with the industrial stormwater NPDES permit is
2 achieved through implementation of the SWPPP.

3 **16th/Wood Sub-District.** This sub-district, historically dedicated to industrial uses, is now
4 generally underutilized. The large historic Amtrak station building remains, but is boarded up in
5 a derelict state. Non-smokestack industrial and light industrial uses, such as
6 warehousing/distribution centers, waste recycling facilities, and truck repair businesses are
7 located in or adjacent to this sub-district, as are miscellaneous businesses located in older
8 buildings. Commercial and industrial tenants must comply with the Industrial Activities
9 Stormwater General Permit. The permit requires development and implementation of a SWPPP,
10 monitoring, and quarterly inspections of facilities for non-stormwater discharges.

11 **4.15.5 Impact Analysis Methodology**

12 The analysis of surface water impacts resulting from redevelopment is consistent with the level
13 of information available regarding redevelopment elements and activities, and based on the
14 criteria described below:

15 **Significance Criteria**

16 Redevelopment would have a significant impact on the environment if it would:

- 17 • Violate any water quality standards or waste discharge requirements;
- 18 • Result in substantial erosion or siltation on or off site that would affect the quality of
19 receiving waters;
- 20 • Result in flooding on or off site;
- 21 • Create or contribute runoff which would exceed the capacity of existing or planned
22 stormwater drainage systems;
- 23 • Create or contribute runoff that would be an additional source of polluted runoff;
- 24 • Otherwise substantially degrade water quality;
- 25 • Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard
26 Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- 27 • Place within a 100-year flood hazard area structures that would impede or redirect flood
28 flows;
- 29 • Expose people or structures to a substantial risk of loss, injury, or death involving flooding,
30 inundation by seiche, tsunami, or mudflow; or
- 31 • Fundamentally conflict with elements of the City of Oakland Creek Protection Ordinance
32 intended to protect hydrologic resources. Although there are no specific,
33 numeric/quantitative criteria to assess impacts, factors considered in determining
34 significance include whether there is substantial degradation of water quality through:

- 1 – discharging a substantial amount of pollutants into a creek;
- 2 – significantly modifying the natural flow of the water or capacity;
- 3 – depositing substantial amounts of new material into a creek or causing substantial bank
- 4 erosion or instability; or
- 5 – substantially endangering public or private property or threatening public health or
- 6 safety.

7 Not all criteria above apply. There are no creeks in or near the project area, and conditions do
 8 not exist that could cause a conflict with the City’s Creek Protection Ordinance. The only
 9 residential or quasi-residential (live/work) uses would be located in the 16th/Wood sub-district,
 10 which is not within the 100-year flood hazard zone. Therefore, no housing would be placed
 11 within a 100-year flood hazard area.

12 **4.15.6 Impacts**

13 Impacts related to the risk of introduction of exotic invasive species in Bay water are evaluated
 14 in Section 4.12: Biological Resources.

15 **Benefits**

16 Several redevelopment elements, activities, and design features would result in substantial
 17 benefit to surface water quality. Some existing storm sewers in the OARB sub-district are in
 18 disrepair, allowing contaminated sediment and water to be discharged to the Bay. These storm
 19 sewers would be capped in place or removed during redevelopment, which would improve the
 20 quality of stormwater discharge to the Bay. BMPs implemented in the course of development
 21 would lead to better maintained storm drain systems and ultimately reduce the mass of
 22 pollutants released into stormwater from storm drains. Inclusion of post-construction stormwater
 23 controls in design and operation of redevelopment elements, which are not currently present in
 24 the redevelopment area, would improve the quality of stormwater runoff from the site. Finally,
 25 redevelopment would result in a reduction of routine maintenance dredging of the Outer Harbor
 26 channel and Berths 7 and 9, 10, 20 and 21, due to the creation of New Berth 21. This reduction
 27 in dredging would in turn reduce dredge-associated turbidity.

28 **Impacts**

29 **Impact 4.15-1:** In-water construction or remediation would increase turbidity, and
 30 could release contaminants, affecting water quality.

31 **Significance:** Significant (turbidity); potentially significant (contaminants)

32 **Mitigation 4.15-1:** Prior to in-water construction, the contractor shall prepare a water
 33 quality protection plan acceptable to the RWQCB, including site-
 34 specific best management practices for protection of Bay waters, and
 35 shall implement this plan during construction.

1 **Mitigation 4.15-3:** Prior to ground-disturbing activities, the contractor shall develop and
2 implement a Stormwater Pollution Prevention Plan that is acceptable to the RWQCB, including
3 erosion and sediment control measures.

4 This measure applies to Impact 4.15-2 and Cumulative Impact 5.15-1.

5 All construction activities shall be undertaken in accordance with requirements of the National
6 Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges
7 Associated with Construction Activity (General Permit). The General Permit requires that all
8 dischargers develop and implement a SWPPP that specifies BMPs that would prevent
9 construction pollutants from contacting stormwater with the intent of keeping products of erosion
10 from moving off site into receiving waters.

11 The contractor shall prepare and implement a site-specific SWPPP. The SWPPP shall be
12 reviewed by either the City or Port, and shall be available for review by the RWQCB. While
13 erosion/sediment/pollution control measures included in the plan would be site-specific, they
14 must be effective at prevention of accelerated erosion by the following: minimizing the length of
15 time soils are exposed; reducing total area of exposed soil during the rainy season; protecting
16 critical areas (the Bay); and monitoring before and after each rain storm to assess control
17 measure effectiveness. SWPPP erosion and sediment control measures may include, and are
18 not limited to, the following:

- 19 • Schedule construction to occur during dry season;
- 20 • Avoid run-on (divert run-off from up-slope sites so it does not enter construction zone);
- 21 • Preserve existing vegetation;
- 22 • Seed and mulch, or hydromulch;
- 23 • Dust control;
- 24 • Blankets, geotextiles, fiber rolls; and
- 25 • Tire washers at exits.

26 Additional SWPPP sediment control measures may include, and are not limited to, the following:

- 27 • Stabilize the construction entrance;
- 28 • Silt fencing;
- 29 • Temporary straw bale dike;
- 30 • Sand/gravel bag;
- 31 • Brush/rock filter;
- 32 • Inlet protection;
- 33 • Catch basin inlet filter; and

1 • Sediment basin or trap.
2 SWPPP pollution control measures generally are “good housekeeping” BMPs, and may include,
3 and are not limited to, establishing practices and protocols for the following:

- 4 • Solid and demolition waste management;
- 5 • Hazardous materials and waste management;
- 6 • Spill prevention and control;
- 7 • Vehicle and equipment maintenance;
- 8 • Covered materials storage;
- 9 • Handling and disposal of concrete/cement;
- 10 • Pavement construction management;
- 11 • Contaminated soil and water management; and
- 12 • Sanitary/septic waste management.



14 **Mitigation 4.15-4:** Prior to construction or remediation, the contractor shall develop and
15 implement a Stormwater Pollution Prevention Plan, including protocols for determining the
16 quality and disposition of construction water, which includes shallow groundwater encountered
17 during construction.

18 This measure applies to Impact 4.15-3 and Cumulative Impact 5.15-2.

19 The contractor’s SWPPP shall include a RWQCB-acceptable protocol and BMPs for handling
20 construction water. The SWPPP shall include methods for visual inspection, triggers for
21 laboratory testing, and appropriate use/disposal of the water.



23 **Mitigation 4.15-5:** Post-construction controls of stormwater shall be incorporated into the
24 design of new redevelopment elements to reduce pollutant loads.

25 This measure applies to Impact 4.15-4 and Cumulative Impact 5.15-2.

26 NPDES permitting requires that BMPs to control post-construction stormwater be implemented
27 to the maximum extent practicable. Analysis of anticipated runoff volumes and potential effects
28 to receiving water quality from stormwater shall be made for specific redevelopment elements,
29 and site-specific BMPs shall be incorporated into design. BMPs shall be incorporated such that
30 runoff volume from 85 percent of average annual rainfall at a development site is pre-treated
31 prior to its discharge from that site, or a pre-treated volume in compliance with RWQCB policy in
32 effect at the time of design.

1 Non-structural BMPs may include and are not limited to good housekeeping and other source
2 control measures, such as the following:

- 3 • Stencil catch basins and inlets to inform the public they are connected to the Bay;
- 4 • Sweep streets on a regular schedule;
- 5 • Use and dispose of paints, solvents, pesticides, and other chemicals properly;
- 6 • Keep debris bins covered; and
- 7 • Clean storm drain catch basins and properly dispose of sediment.

8 Structural BMPs may include and are not limited to the following:

- 9 • Minimize impervious areas directly connected to storm sewers;
- 10 • Include drainage system elements in design as appropriate such as:
 - 11 – infiltration basins
 - 12 – detention/retention basins
 - 13 – vegetated swales (biofilters)
 - 14 – curb/drop inlet protection.



16 **Mitigation 4.15-6:** Site-specific design and best management practices shall be implemented to
17 prevent runoff of recycled water to receiving waters.

18 This measure applies to Impact 4.15-5.

19 Design of subsequent redevelopment activities shall ensure recycled water does not leave the
20 site and enter receiving waters. Best management practices shall be implemented to prevent
21 runoff of recycled water. These BMPs may be either structural or non-structural in nature and
22 may include but are not limited to the following:

- 23 • Preventing recycled water from escaping designated use areas through the use of:
 - 24 – berms
 - 25 – detention/retention basins
 - 26 – vegetated swales (biofilters)
- 27 • Not allowing recycled water to be applied to irrigation areas when soils are saturated.
- 28 • Plumbing portions of irrigation systems adjacent to receiving waters with potable water.



