

## 3.7 AIR QUALITY

This section evaluates the impacts related to air quality and health risks and hazards that could result from short-term construction and long-term operation of the proposed project or variant. The analysis identifies both project-level and cumulative environmental impacts, and feasible mitigation measures that could reduce or avoid the identified impacts. Comments regarding air quality were received during the public scoping period in response to the Notice of Preparation. The comments received covered concerns about toxic air contaminants (TACs), criteria air pollutants, and fugitive dust emissions during project construction and operation. These comments are addressed in this section.

Potential vapor intrusion and naturally occurring asbestos related to existing underlying soil conditions at the project site are addressed in Section 3.16, “Hazards and Hazardous Materials.” The analysis in this section is based on the air quality technical report presented in Appendix F.

### 3.7.1 Environmental Setting

#### Regional Air Quality

##### Geography and Climate

The project site and vicinity is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is the regional agency with jurisdiction for regulating air quality within the nine-county San Francisco Bay Area Air Basin (SFBAAB), which includes San Francisco, Alameda, Contra Costa, Marin, San Mateo, Santa Clara, and Napa counties. BAAQMD maintains the regional emission inventory of stationary, mobile, and areawide sources of air pollution. BAAQMD is also responsible for issuing permits to construct and operate stationary sources of pollutants, and for implementing the programs to review the air quality impacts of new stationary sources.

The San Francisco Bay Area (Bay Area) has a Mediterranean climate characterized by mild, dry summers and mild, moderately wet winters; moderate daytime onshore breezes, and moderate humidity. The project site is located in the Peninsula region of the Bay Area, which extends from northwest of San Jose to the Golden Gate Bridge. The Santa Cruz Mountains run up the center of the Peninsula, with elevations exceeding 2,000 feet at the southern end, decreasing to 500 feet in South San Francisco. Coastal towns experience a high incidence of cool, foggy weather in the summer. Cities in the southeastern Peninsula area experience warmer temperatures and fewer foggy days because the marine layer is blocked by the ridgeline to the west. San Francisco lies at the northern end of the Peninsula. Because most of San Francisco’s topography is below 200 feet, marine air is able to flow easily across most of the City, making its climate cool and windy.

The blocking effect of the Santa Cruz Mountains results in variations in summertime maximum temperatures in different parts of the Peninsula. For example, in coastal areas and in San Francisco, the mean maximum summer temperatures are in the mid 60s, while in Redwood City the mean maximum summer temperatures are in the low 80s. Mean minimum temperatures during the winter months are in the high 30s to low 40s on the eastern side of the Peninsula and in the low 40s along the coast.

Two important gaps in the Santa Cruz Mountains occur within the Peninsula. The larger of the two is the San Bruno Gap, extending from Fort Funston on the Pacific Ocean to San Francisco International Airport on San Francisco Bay (Bay). Because the gap is oriented in the same northwest-to-southeast direction as the prevailing winds, and because the elevations along the gap are less than 200 feet, marine air can easily penetrate into the Bay. The other gap is the Crystal Springs Gap, between Half Moon Bay and San Carlos. As the sea breeze strengthens on summer afternoons, the gap permits maritime air to pass across the mountains, and its cooling effect is commonly seen from San Mateo to Redwood City.

Annual average wind speeds range from 5 to 10 miles per hour (mph) throughout the Peninsula, with higher wind speeds usually found along the coast. Winds on the eastern side of the Peninsula are often high in certain areas, such as near the San Bruno Gap and the Crystal Springs Gap.

The prevailing winds along the Peninsula's coast are from the west, although individual sites can show substantial differences. For example, Fort Funston in western San Francisco shows a southwest wind pattern while Pillar Point in San Mateo County shows a northwest wind pattern. On the east side of the mountains, winds are generally from the west, although wind patterns in this area are often influenced greatly by local topographic features.

Air pollution potential along the Peninsula is highest in the southeastern portion. This is the area most protected from the high winds and fog of the marine layer. Pollutant transport from upwind sites is common. In the southeastern portion of the Peninsula, air pollutant emissions are higher than in the rest of the Peninsula because of motor vehicle traffic and stationary sources. At the northern end of the Peninsula in San Francisco, pollutant emissions are high, primarily because of motor vehicle congestion.

### **Project Vicinity**

The primary sources of air pollutants in the project vicinity are vehicle emissions from Innes Avenue and permitted stationary sources, such as emergency generators, a recycling plant, and small refurbishing/manufacturing businesses. Land uses surrounding the project site include residential single-family and multifamily units, schools, the Willie Mays Boys and Girls Club warehouse space, retail, parking, and recreational facility uses (Figure 3.7-1). The closest off-site sensitive receptors are residential land uses located across Innes Avenue from the project site (see the discussion of sensitive receptor locations below, and see Figure 3.7-2).

### **Air Pollutant Standards and Attainment Designations**

Air pollutant standards have been identified by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) for the following six criteria air pollutants that affect ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), lead, and particulate matter (PM), which is subdivided into two classes based on particle size: PM equal to or less than 10 microns in diameter (PM<sub>10</sub>), and PM equal to or less than 2.5 microns in diameter (PM<sub>2.5</sub>). These air pollutants are called "criteria air pollutants" because they are regulated by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. California has also established standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. Table 3.7-1 presents the national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS).

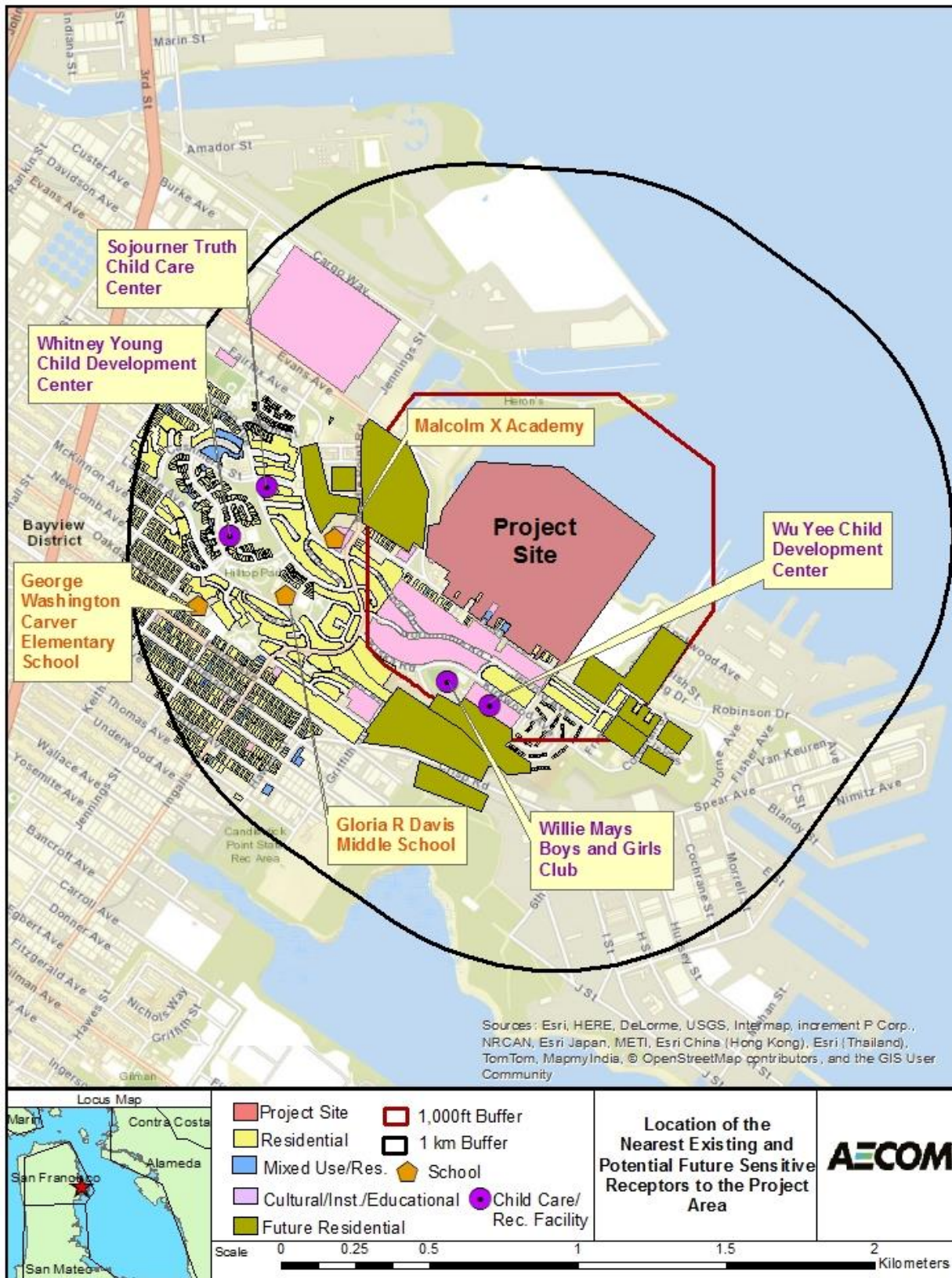


Figure 3.7-1

Sensitive Land Uses in the Project Vicinity

**Table 3.7-1: Federal and State Air Quality Standards in the SFBAAB**

Pollutant	Averaging Time	California Standards	National Standards
Ozone	1 Hour	0.090 ppm (180 µg/m <sup>3</sup> )	–
	8 Hours	0.070 ppm (137 µg/m <sup>3</sup> )	0.070 ppm (137 µg/m <sup>3</sup> )
Respirable Particulate Matter (PM <sub>10</sub> )	24 Hours	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
	AAM	20 µg/m <sup>3</sup>	–
Fine Particulate Matter (PM <sub>2.5</sub> )	24 Hours	–	35 µg/m <sup>3</sup>
	AAM	12 µg/m <sup>3</sup>	12.0 µg/m <sup>3</sup>
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )
	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )
Nitrogen Dioxide (NO <sub>2</sub> )	AAM	0.030 ppm (57 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )
	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )	0.100 ppm
Sulfur Dioxide (SO <sub>2</sub> )	24 Hours	0.04 ppm (105 µg/m <sup>3</sup> )	0.14 ppm (365 µg/m <sup>3</sup> )
	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	0.075 ppm (196 µg/m <sup>3</sup> )
	AAM	–	0.030 ppm (80 µg/m <sup>3</sup> )
Lead (Pb)	30-Day Average	1.5 µg/m <sup>3</sup>	–
	Calendar Quarter	–	1.5 µg/m <sup>3</sup>
	Rolling 3-Month Average <sup>14</sup>	–	0.15 µg/m <sup>3</sup>
Visibility-Reducing Particles	8 Hours	See note 1	No national standards <sup>2</sup>
Sulfates	24 Hours	25 µg/m <sup>3</sup>	
Hydrogen Sulfide (H <sub>2</sub> S)	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	
Vinyl Chloride (C <sub>2</sub> H <sub>3</sub> Cl)	24 Hours	0.010 ppm (26 µg/m <sup>3</sup> )	

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; AAM = annual arithmetic mean; mg/m<sup>3</sup> = milligrams per cubic meter; ppm = parts per million

<sup>1</sup> In 1989, the California Air Resources Board converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

<sup>2</sup> National ambient air quality standards have not been established for visibility-reducing particles, sulfates, hydrogen sulfide, or vinyl chloride.

Source: ARB, 2015a.

Ambient air pollutant concentrations in the SFBAAB are measured at air quality monitoring stations operated by ARB and BAAQMD. In general, the SFBAAB experiences low concentrations of most pollutants compared to federal or State standards. Table 3.7-2 presents a 5-year summary of the highest annual concentrations of criteria air pollutants collected at the air quality monitoring station at 16th and Arkansas Streets in San Francisco’s lower Potrero Hill area. This is the closest monitoring station to the project site (approximately 2.5 miles northwest of the project site) and best represents available air quality data for southeast San Francisco.

**Table 3.7-2: Summary of Southeast San Francisco Criteria Pollutants Monitoring Data (2012–2016)**

Air Pollutant	Averaging Time	Item	2012	2013	2014	2015	2016
Ozone	1 Hour	Max 1 Hour (ppb)	69	69	79	85	70
		Days > State Standard	0	0	0	0	0
	8 Hour	Max 8 Hour (ppb)	48	59	69	67	57
		Days > State Standard	0	0	0	0	0
		Days > National Standard	0	0	0	0	0
		3-Year Average	47	46	47	48	49
Carbon monoxide	8 Hour	Max 1 Hour (ppm)	2.0	4.8	1.6	1.8	1.7
		Max 8 Hour (ppm)	1.2	1.4	1.2	1.3	1.1
		Days > State Standard	0	0	0	0	0
		Days > National Standard	0	0	0	0	0
Nitrogen dioxide	Annual	Annual Average (ppb)	13	14	12	12	11
	1 Hour	Max 1 Hour (ppb)	124	73	84	71	58
		Days > State Standard	0	0	0	0	0
		Days > National Standard	1	0	0	0	0
Sulfur dioxide	1 Hour	Max 1 Hour (ppb)	–	–	–	–	–
		Days > National Standard	–	–	–	–	–
	24 Hour	Max 24 Hour (ppb)	–	–	–	–	–
		Days > State Standard	–	–	–	–	–
PM <sub>10</sub>	Annual	Annual Average (µg/m <sup>3</sup> )	17.5	18.3	17.0	19.2	17.0
		Max 24 Hour (µg/m <sup>3</sup> )	51	44	36	47	29
	24 hour	Days > State Standard	1	0	0	0	0
		Days > National Standard	0	0	0	0	0
PM <sub>2.5</sub>	Annual	Annual Average (µg/m <sup>3</sup> )	8.2	10.1	7.7	8.9	7.5
		3-Year Average (µg/m <sup>3</sup> )	9.4	9.3	8.6	10.5	7.6
	24 Hour	24 Hour (µg/m <sup>3</sup> )	35.7	48.5	33.2	35.4	19.6
		Estimated Days > National Standard	1	2	0	0	0
		3-Year Average (µg/m <sup>3</sup> )	24	25	23	25	22

Notes: > = exceed; µg/m<sup>3</sup> = micrograms per cubic meter; – = insufficient data; National Standard = national ambient air quality standard; PM<sub>2.5</sub> = particulate matter equal to or less than 2.5 microns in diameter; PM<sub>10</sub> = particulate matter equal to or less than 10 microns in diameter; ppb = parts per billion; ppm = parts per million; State Standard = California ambient air quality standard

Source: BAAQMD, 2017a

Both EPA and ARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. “Attainment” status refers to those regions that are meeting federal and/or State standards for a specified criteria pollutant. “Nonattainment” refers to regions that do not meet federal and/or State standards for a specified criteria pollutant. “Unclassified” refers to regions where there is not enough data to determine the region’s attainment status for a specified criteria air pollutant.

As shown in Table 3.7-3, the SFBAAB is designated as either in attainment or unclassified for most criteria pollutants with the exception of ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, for which these pollutants are designated as nonattainment for either the State or federal standards.

**Table 3.7-3: SFBAAB Attainment Designations**

Pollutant	Federal	State
Ozone	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
PM <sub>10</sub>	Unclassified	Nonattainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
Sulfates	N/A	Attainment
Hydrogen Sulfide	N/A	Unclassified
Visibility-Reducing Particles	N/A	Unclassified
Lead	Attainment	Attainment

Notes: N/A = not applicable—no standard; PM<sub>2.5</sub> = particulate matter equal to or less than 2.5 microns in diameter; PM<sub>10</sub> = particulate matter equal to or less than 10 microns in diameter  
Source: ARB, 2015a.

### **Air Quality Index**

EPA developed the Air Quality Index scale to make the public health impacts of air pollution concentrations easily understandable. The Air Quality Index, much like an air quality “thermometer,” translates daily air pollution concentrations into a number on a scale between 0 and 500. The numbers in the scale are divided into six color-coded ranges, as described below:

- Green (0–50) indicates “good” air quality. No health impacts are expected when air quality is in the green range.
- Yellow (51–100) indicates air quality is “moderate.” Unusually sensitive people should consider limited prolonged outdoor exertion.
- Orange (101–150) indicates air quality is “unhealthy for sensitive groups.” Active children and adults, and people with respiratory disease, such as asthma, should limit outdoor exertion.
- Red (151–200) indicates air quality is “unhealthy.” Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
- Purple (201–300) indicates air quality is “very unhealthy.” Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.

The Air Quality Index numbers refer to specific amounts of pollution in the air. They are based on the federal air quality standards for ozone, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. In most cases, the federal standard for these air pollutants corresponds to the number 100 on the Air Quality Index chart. If the concentration of any of these pollutants rises above its respective standard, it can be unhealthy for the public. In determining the air quality

forecast, local air districts, including BAAQMD, use the anticipated concentration measurements for each of the major pollutants, convert them into Air Quality Index numbers, and determine the highest Air Quality Index for each zone in a district.

Readings below 100 on the Air Quality Index scale would not typically affect the health of the general public (although readings in the moderate range of 50–100 may affect unusually sensitive people). Levels above 300 rarely occur in the United States, and readings above 200 have not occurred in the Bay Area in decades. Air Quality Index statistics from recent years indicate that air quality in the Bay Area is predominantly in the “good” or “moderate” category and healthy on most days for most people.

Table 3.7-4 shows the highest daily Air Quality Index value for each year from 2012 to 2016. Historical BAAQMD data indicate that the highest Air Quality Index levels measured at the San Francisco–Arkansas Street monitoring station experienced air quality in the “moderate” category between 2013 and 2016. BAAQMD data indicate that the SFBAAB experienced air quality at the red (“unhealthy”) level on 5 days between the years 2012 and 2016 (Table 3.7-5). The City had a total of 11 days at the orange level (“unhealthy for sensitive groups”) in 2012, 15 days in 2013, 11 days in 2014, 19 days in 2015, and 13 days in 2016.

**Table 3.7-4: Air Quality Index Statistics for the SFBAAB**

Air Quality Index Statistics					
Year	2012	2013	2014	2015	2016
Air Quality Index Value	44	64	97	90	58
Level of Health Concern	Good	Moderate	Moderate	Moderate	Moderate

Source: San Francisco–Arkansas Street Station air monitoring data, BAAQMD, 2017a; compiled by AECOM in 2017.

**Table 3.7-5: Air Quality Index Statistics for the SFBAAB City of San Francisco**

Air Quality Index Statistics		Number of Days By Year			
Year	2012	2013	2014	2015	2016
Unhealthy for Sensitive Groups (orange)	11	15	11	19	13
Unhealthy (red)	1	1	1	0	2

Source: BAAQMD 2017.

## Air Pollutant Types, Sources, and Effects

As discussed above, air pollutants are termed criteria air pollutants if they are regulated by developing specific public health– and welfare-based criteria as the basis for setting permissible levels. The following discussion explains the types, sources, and effects of criteria air pollutants.

### *Criteria Air Pollutants*

**Ozone**, or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NOx) in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NOx and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines), the evaporation of

solvents, paints, and fuels, and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. They decline as speeds increase up to about 50 mph, then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. NO<sub>x</sub> emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds. Ozone levels usually build up during the day, peaking in the afternoon hours.

Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

Table 3.7-2 shows that, according to published data, the standards for ozone (State 1-hour standard of 0.090 part per million [ppm] and the State/federal 8-hour standard of 0.070 ppm) were not exceeded at the San Francisco–Arkansas Street monitoring station between 2012 and 2016. However, the air basin remains listed as nonattainment for ozone because of exceedances at other monitoring stations in the SFBAAB.

**Particulate Matter** refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. Respirable particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM<sub>10</sub>. PM<sub>2.5</sub> includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 microns or less. Some particulate matter, such as pollen, is naturally occurring. In the SFBAAB, most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles.

**Fugitive Dust** is PM<sub>10</sub> and PM<sub>2.5</sub> suspended in the air by wind action and human activities. Fugitive dust particles are composed mainly of soil minerals (e.g., oxides of silicon, aluminum, calcium, and iron), but can also contain sea salt, pollen, spores, and tire particles. Because of their small size, PM<sub>10</sub> and PM<sub>2.5</sub> can remain airborne for weeks. Fugitive dust accounts for about 90 percent of all primary PM<sub>10</sub> emissions (ARB, 2007). PM<sub>10</sub> and PM<sub>2.5</sub> pose health concerns because the PM can contain harmful substances that can deposit deep in the lungs when inhaled, causing respiratory illnesses and lung damage. In addition, fugitive dust can reduce visibility.

As shown in Table 3.7-2, the State 24-hour PM<sub>10</sub> standard of 50 micrograms per cubic meter (µg/m<sup>3</sup>) was exceeded up to 6 days in 2012.<sup>1</sup> The State 24-hour PM<sub>2.5</sub> standard was exceeded on 3 days between 2012 and 2016. The SFBAAB is designated as nonattainment for the State PM<sub>10</sub> and both the federal and State PM<sub>2.5</sub> standards.

**Nitrogen Dioxide** is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO<sub>2</sub>. Aside from its contribution to ozone formation, NO<sub>2</sub> can increase the risk of acute and chronic respiratory disease and reduce visibility. NO<sub>2</sub> may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

---

<sup>1</sup> PM<sub>10</sub> concentrations were sampled every sixth day before 2013; therefore, actual days over the standard can be estimated to be six times the numbers listed in the table.



In 2010, a new federal 1-hour NO<sub>2</sub> standard was implemented. Currently, ARB is recommending that the SFBAAB be designated as an attainment area for the new standard. EPA expects to make a designation for the SFBAAB by the end of 2017. As shown in Table 3.7-2, the federal standard was exceeded on 1 day in 2012.

**Carbon Monoxide** is an odorless, colorless gas. It is formed by the incomplete combustion of fuels. The single largest source of CO in the SFBAAB is motor vehicles. Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds.

When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.

As shown in Table 3.7-2, the applicable standards for CO (State 1-hour standard of 20 ppm and the State/federal 8-hour standard of 9 ppm) were not exceeded between 2012 and 2016. The SFBAAB is classified as an attainment area for both the State and federal CO standards.

**Sulfur Dioxide** is a colorless acid gas with a pungent odor. SO<sub>2</sub> has the potential to damage materials and can have health effects at high concentrations. It is produced by the combustion of sulfur-containing fuels, such as oil, coal and diesel. SO<sub>2</sub> can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

EPA has designated the SFBAAB as an attainment area for SO<sub>2</sub>. In 2013, EPA established requirements for a monitoring network to measure SO<sub>2</sub> concentrations; however, no additional SO<sub>2</sub> monitors were required for the SFBAAB, because the BAAQMD jurisdiction had never been designated as nonattainment for SO<sub>2</sub>.

**Lead** is a metal found naturally in the environment and in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. In the early 1970s, EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

On October 15, 2008, EPA strengthened the national ambient air quality standard for lead by lowering it from 1.5 µg/m<sup>3</sup> to 0.15 µg/m<sup>3</sup>. EPA revised the monitoring requirements for lead in December 2010. These requirements focus on airports and large urban areas. Lead monitoring stations in the SFBAAB are located at Palo Alto Airport, Reid-Hillview Airport (San Jose), and San Carlos Airport. Nonairport locations for lead monitoring are in Redwood City and San Jose. The SFBAAB is designated as an attainment area for lead.

## ***Toxic Air Contaminants***

Concentrations of TACs are also used as indicators of air quality conditions. Air pollutant human exposure standards are identified for many TACs, including the following common TACs relevant to development projects: particulate matter, fugitive dust, lead, and asbestos. These air pollutants are called TACs because they are air pollutants that may cause or contribute to an increase in mortality or in serious illness or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health impact may pose a threat to public health even at low concentrations. TACs can cause long-term health effects (such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage) or short-term acute effects (such as eye watering, respiratory irritation, runny nose, throat pain, or headaches).

TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to a particular TAC. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. Cancer risk is typically expressed as excess cancer cases per million exposed individuals, typically over a lifetime exposure or other prolonged duration. For noncarcinogenic substances, there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels may vary depending on the specific pollutant. Acute and chronic exposure to noncarcinogens is expressed as a hazard index (HI), which is the ratio of expected exposure levels to an acceptable reference exposure levels. The following discussion explains the types, sources, and effects of TACs.

**Diesel Particulate Matter** (diesel PM) is the solid material in diesel exhaust. More than 90 percent of diesel PM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of PM<sub>2.5</sub> (ARB, 2016). As explained previously, PM<sub>2.5</sub> poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Exposures to PM<sub>2.5</sub> are strongly associated with mortality, respiratory diseases, and lung development in children, and other endpoints such as hospitalization for cardiopulmonary disease (SFDPH, 2008). Diesel PM was identified as a TAC by ARB in 1998 (ARB, 1998). Federal and State efforts to reduce diesel PM emissions have focused on the use of improved fuels, adding particulate filters to engines, and requiring the production of new-technology engines that emit fewer exhaust particulates.

The estimated cancer risk from exposure to diesel PM exhaust is much higher than the risk associated with any other TAC routinely measured in the BAAQMD region. BAAQMD's Community Air Risk Evaluation (CARE) program estimates and reports both local and regional impacts of TACs in the Bay Area. As part of the CARE program, communities most affected by air pollution are identified. In support of this program, the City completed the Community Risk Reduction Plan Health Risk Assessment (CRRP-Health Risk Assessment), which found that "Diesel truck traffic on freeways and the downtown roadway network is largely responsible for the areas near these roadways with incremental potential cancer risk over 100 per million" (SFDPH et al., 2012).

**Lead**, as explained previously, is a relatively soft and chemically resistant metal found in mobile and industrial sources. As an air pollutant, lead is present in small particles and slowly excreted. As such, exposures to small amounts of lead can accumulate to harmful levels. Effects from inhalation of lead include impaired blood formation and nerve conduction, which can adversely affect the nervous, reproductive, digestive, and immune systems. ARB identified lead as a TAC in 1993. Lead is considered "possibly carcinogenic" by EPA (2014). Levels of lead in the air have decreased by more than 98 percent in the last 30 years, primarily as a result of the elimination of lead from gasoline (ARB, 2001).

ARB identifies substances as TACs as defined in Health and Safety Code Section 39655 and listed in Title 17, Section 93000 of the California Code of Regulations, “Substances Identified As Toxic Air Contaminants.” ARB also collects ambient TAC emissions data at the San Francisco–Arkansas Street monitoring station (Table 3.7-6). Table 3.7-6 shows ambient concentrations of carcinogenic TACs measured at the San Francisco–Arkansas Street monitoring station and the estimated cancer risks from lifetime exposure (70-year exposure, including the second trimester of pregnancy) to these substances.

**Table 3.7-6: Carcinogenic Toxic Air Contaminants—Annual Average Ambient Concentrations at the San Francisco–Arkansas Street Monitoring Station (2015)**

Substance	Mean Concentration (ppb)	Cancer Risk per Million <sup>a</sup>
<b>Gaseous Toxic Air Contaminants</b>		
Acetaldehyde	0.66	10
Benzene	0.195	51
1,3-Butadiene	0.038	41
Para-Dichlorobenzene	*	*
Carbon Tetrachloride	0.094	72
Ethylene Dibromide	*	*
Formaldehyde	1.46	31
Perchloroethylene	0.015	2
Methylene Chloride	0.127	1
Methyl Tertiary-Butyl Ether (MBTE)	*	*
Chloroform	0.030	2
Trichloroethylene	0.012	0.4
<b>Particulate TACs<sup>b</sup></b>		
Hexavalent Chromium	0.078	32

Notes:

ppb = parts per billion; TAC = toxic air contaminant

a. The risks shown in the California Air Resources Board’s (ARB’s) annual toxic summary pages are estimated chronic cancer risk resulting from the inhalation pathway. These risks are expressed in terms of expected cancer cases per million population based on exposure to the annual mean concentration over 70 years. They are calculated using unit risk factors provided to ARB by the California Office of Environmental Health Hazard Assessment.

b. ng/m<sup>3</sup> = nanograms per cubic meter.

\* indicates that insufficient or no data were available to determine the value.

Source: ARB, 2015b

When TAC measurements at the San Francisco–Arkansas Street monitoring station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the estimated average lifetime cancer risk resulting from TAC concentrations monitored at the San Francisco–Arkansas Street station does not appear to be substantially greater or less than that for the Bay Area as whole.

### **Air Pollution Exposure Zone**

The City and BAAQMD conducted a Citywide health risk assessment<sup>2</sup> based on an inventory and assessment of air pollution and exposures from mobile, stationary, and area sources in San Francisco to identify areas of the City most adversely affected by sources of TACs. Citywide dispersion modeling was conducted using AERMOD to

<sup>2</sup> In general, a health risk assessment is required if BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The applicant is then subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, estimating the increased risk of cancer as a result of exposure to one or more TACs.

assess emissions from roadways, permitted stationary sources, port and maritime sources, and Caltrain. Emissions of diesel PM, PM<sub>2.5</sub> (including brake and tire wear), organic gases, and other TACs from stationary sources were modeled on a 20-by-20-meter receptor grid over the entire City. The results represent existing exposure to PM<sub>2.5</sub> and excess cancer risk across San Francisco. The procedures used to conduct the modeling are available in *The San Francisco Community Risk Reduction Plan: Technical Support Documentation* (SFDPH et al., 2012).

The modeling results were used to identify areas of the City with poor air quality, many of which buffer major thoroughfares (SFDPH, 2016a). These areas are within the Air Pollutant Exposure Zone (APEZ). The APEZ met either or both of the criteria described below.

- Excess Cancer Risk of 100 per One Million Persons.** This criterion is based on EPA guidance for conducting air toxic analyses and making risk management decisions at the facility and community-scale levels (BAAQMD, 2009). As described by BAAQMD, EPA considers a cancer risk of 100 per million to be within the “acceptable” range of cancer risk. Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants rulemaking (54 *Federal Register* 38044, September 14, 1989), EPA states that it

...strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in ten thousand [100 in one million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years.

The 100 per one million excess cancer cases is also consistent with the ambient cancer risk in the most pristine portions of the Bay Area based on BAAQMD regional modeling (BAAQMD, 2009).
- Fine Particulate Matter of 2.5 µg/m<sup>3</sup>.** In April 2011, EPA published *Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards*, “Particulate Matter Policy Assessment” (EPA, 2011a). In this document, EPA staff concludes that the then-current federal annual PM<sub>2.5</sub> standard of 15 µg/m<sup>3</sup> should be revised to a level within the range of 13 to 11 µg/m<sup>3</sup>, with evidence strongly supporting a standard within the range of 12 to 11 µg/m<sup>3</sup>. An APEZ for San Francisco (SFDPH, 2016a) is based on the health protective PM<sub>2.5</sub> standard of 11 µg/m<sup>3</sup>, as supported by EPA’s Particulate Matter Policy Assessment, although lowered to 10 µg/m<sup>3</sup> to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.

In addition to the APEZ criteria, two other indices have been used to determine whether areas of the City require more stringent criteria:

- Location in a Health-Vulnerable Zip Code.** In addition to the lots included in the APEZ, zip codes in the lowest 20 percent of Bay Area Health Vulnerability scores (zip codes 94102, 94103, 94105, 94124, and 94130) are identified as health-vulnerable zip codes. For areas that are included in the APEZ and a health-vulnerable zip code, the standard was lowered to an excess cancer risk from the contribution of emissions from all modeled sources greater than 90 per one million persons, and/or cumulative PM<sub>2.5</sub> concentrations greater than 9 µg/m<sup>3</sup>.
- Proximity to a Major Transportation Thoroughfare.** According to ARB, studies have shown an association between the proximity of sensitive land uses to freeways/other major transportation thoroughfares

and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children. Siting sensitive uses in close proximity to freeways/other major transportation thoroughfares increases both exposure to air pollution and the potential for adverse health effects. As evidence shows that sensitive uses in an area within a 500-foot buffer of any freeway are at an increased health risk from air pollution (ARB, 2005), lots that are within 500 feet of freeways are included in the APEZ.

The project area is not located in the APEZ. However, the project study area is located in a health-vulnerable zip code (94124).

### **Sensitive Receptors**

Air pollution does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Land uses such as residences, schools, day care centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality, because the population groups associated with these uses have increased susceptibility to respiratory distress or, as in the case of residential receptors, their exposure time is greater than that for other land uses. Therefore, these groups are referred to as sensitive receptors. Exposure assessment guidance typically assumes that residences would be exposed to air pollution 24 hours per day, 350 days per year, for 70 years.

BAAQMD defines sensitive receptors as children, adults, and seniors occupying or residing in residential dwellings, schools, day care centers, hospitals, and senior-care facilities. The project site is adjacent to an existing residential area. Figure 3.7-2 shows the nearby existing sensitive receptors.

### **Existing Emission Sources**

#### ***Project Site***

##### **India Basin Shoreline Park Property**

The 5.6-acre India Basin Shoreline Park property currently supports recreational amenities, a portion of the Blue Greenway/San Francisco Bay Trail (Bay Trail), and parking areas. India Basin Shoreline Park provides informal access along the Bay shoreline. Although many of the amenities at the park are not highly used, criteria air pollutant and TAC emissions are generated from this property by visitor vehicle trips to and from the site, landscaping and maintenance equipment, and the use of barbeque grills.

The existing PM<sub>2.5</sub> concentration is 8.2 µg/m<sup>3</sup> and existing excess cancer risk is 21.3 in a million, based on Citywide modeling conducted in 2012. This property is not located in an APEZ but is located in a health-vulnerable zip code, and Innes Avenue is not an existing a major transportation thoroughfare.

##### **900 Innes Property**

The 900 Innes property consists of seven parcels totaling 2.4 acres and is a former maritime industrial site that contains five buildings and structures. The structures on this property are dilapidated, are not currently used, and lack utilities, and thus generate no criteria air pollutant or TAC emissions. The existing PM<sub>2.5</sub> concentration is

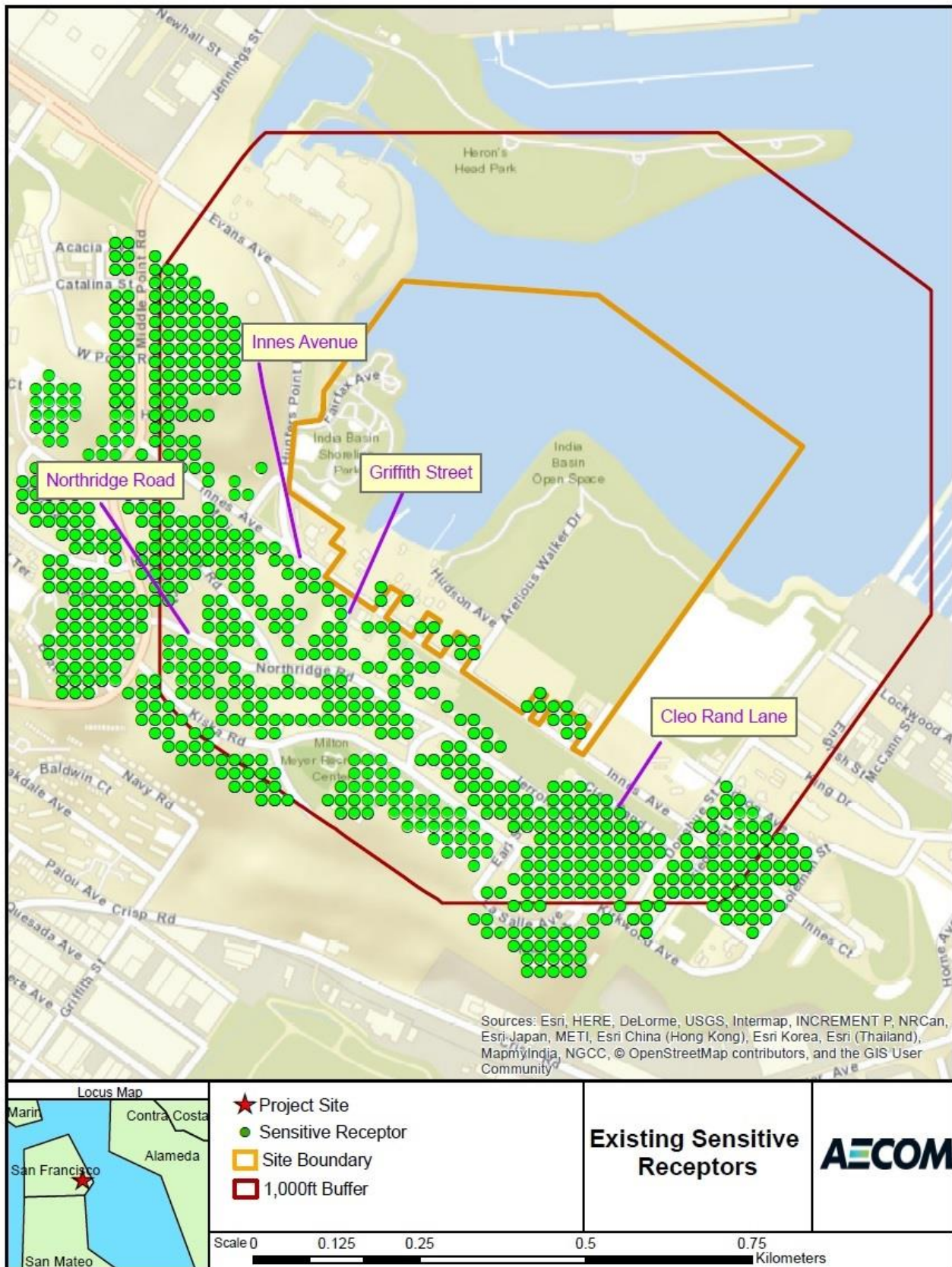


Figure 3.7-2

Existing Sensitive Receptors

8.2  $\mu\text{g}/\text{m}^3$  and existing excess cancer risk is 21.3 in a million, based on Citywide modeling conducted in 2012. This property is not located in an APEZ but is located in a health-vulnerable zip code, and Innes Avenue is not an existing major transportation thoroughfare.

### ***India Basin Open Space Property***

The 6.2-acre India Basin Open Space property is an open space bordering the Bay. This property includes a portion of the Blue Greenway/Bay Trail along its shoreline. The India Basin Open Space contains beaches, upland habitat, tidal salt marsh, mudflats, sand dunes, and native vegetation. Currently, public access to the shoreline is limited to the Blue Greenway/Bay Trail during the day, given the lack of utilities. Two easements to the shoreline exist, but they are not paved or designated for public access. Because of the nature of this property, no criteria air pollutant or TAC emissions are currently generated at this property. The existing  $\text{PM}_{2.5}$  concentration is 8.2  $\mu\text{g}/\text{m}^3$  and existing excess cancer risk is 21.3 in a million, based on Citywide modeling conducted in 2012. This property is not located in an APEZ but is located in a health-vulnerable zip code. Innes Avenue is not an existing major transportation thoroughfare.

### ***700 Innes Property***

The 700 Innes property consists of 30 parcels totaling 17.12 acres. This area generally is made of fill materials and is undeveloped except for approximately six structures: a timber-framed industrial building, a residence, a commercial building, and three temporary structures. The primary sources of criteria air pollutant and TAC emissions are vehicle trips to and from this property.

The existing  $\text{PM}_{2.5}$  concentration is 8.2  $\mu\text{g}/\text{m}^3$  and existing excess cancer risk is 29.2 in a million, based on citywide modeling conducted in 2012. This property is not located in an APEZ but is located in a health-vulnerable zip code. Innes Avenue is not an existing major transportation thoroughfare.

## **3.7.2 Regulatory Framework**

Air quality in the SFBAAB is regulated by EPA, ARB, BAAQMD, and the City. Each of these agencies develops rules, regulations, policies, and/or goals to attain the directives imposed through legislation. Although EPA regulations may not be superseded, both State and local regulations may be more stringent.

### **Federal**

EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act, which was enacted in 1970. The most recent major Clean Air Act amendments were made by Congress in 1990.

### ***Federal Clean Air Act***

The Clean Air Act required EPA to establish NAAQS. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO,  $\text{NO}_2$ ,  $\text{SO}_2$ ,  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$ , and lead. The primary standards protect public health and the secondary standards protect public welfare. The primary standards are shown in Table 3.7-1. The Clean Air Act also requires each state to prepare an air quality control plan referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 added requirements for states with

nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies.

### ***Emission Standards for New Off-Road Equipment***

Before 1994, there were no standards to limit the amount of emissions from off-road equipment. In 1994, EPA established emission standards for hydrocarbons, NO<sub>x</sub>, CO, and PM to regulate new pieces of off-road equipment. These emission standards came to be known as Tier 1. Since that time, increasingly more stringent Tier 2, Tier 3, and Tier 4 (interim and final) standards were adopted by EPA, as well as by ARB. Each adopted emission standard was phased in over time. New engines built in and after 2015 across all horsepower (hp) sizes must meet Tier 4 final emission standards. In other words, new manufactured engines cannot exceed the emissions established for Tier 4 final emissions standards.

### **State**

A SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The SIP for the State of California is administered by ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for regional air districts. The air district prepares its federal attainment plan, which is sent to ARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

### ***California Clean Air Act***

ARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act. The California Clean Air Act was adopted in 1988; it requires ARB to establish CAAQS (Table 3.7-1). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned federal criteria air pollutants. In most cases, the CAAQS are more stringent than the NAAQS.

Other ARB responsibilities include but are not limited to overseeing local air district compliance with California and federal laws; approving local air quality plans; submitting SIPs to EPA; monitoring air quality; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

### ***Verified Diesel Emission Control Strategies***

EPA's and ARB's tiered off-road emission standards only apply to new engines and off-road equipment can last several years. ARB has developed Verified Diesel Emission Control Strategies (VDECS), which are devices, systems, or strategies used to achieve the highest level of pollution control from existing off-road vehicles, to help reduce emissions from existing engines. VDECS are designed primarily for the reduction of diesel PM emissions and have been verified by ARB. There are three levels of VDECS, the most effective of which is the Level 3



VDECS. Tier 4 engines are not required to install VDECS because they already meet the emissions standards for lower tiered equipment with installed controls.

### ***ARB In-Use Off-Road Diesel Vehicle Regulation***

In 2007, ARB adopted a regulation to reduce diesel PM and NO<sub>x</sub> emissions from in-use off-road heavy-duty diesel vehicles in California. The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits to older engines. In December 2010, major amendments were made to the regulation, including a delay of the first performance standards compliance date to no earlier than January 1, 2014 (ARB, 2010).

### ***Carl Moyer Memorial Air Quality Standards Attainment Program***

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program), a partnership between ARB and local air districts, issues grants to replace or retrofit older engines and equipment with engines and equipment that exceed current regulatory requirements to reduce air pollution. Money collected through the Carl Moyer Program complements California's regulatory program by providing incentives to effect early or extra emission reductions, especially from emission sources in environmental justice communities and areas disproportionately affected by air pollution. The program has established guidelines and criteria for the funding of emissions reduction projects.

Within the SFBAAB, BAAQMD administers the Carl Moyer Program. The program establishes cost-effectiveness criteria for funding emission reductions projects, which under the final 2017 Carl Moyer Program Guidelines are \$30,000 per weighted ton of NO<sub>x</sub>, ROG, and PM (ARB 2017).

### ***Tanner Air Toxics Act and Air Toxics Hot Spots Information and Assessment Act***

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Assembly Bill 2588), also known as the Hot Spots Act. To date, ARB has identified more than 21 TACs, and has adopted EPA's list of HAPs as TACs.

### ***ARB Airborne Toxics Control Measures***

ARB has adopted Airborne Toxics Control Measures for sources that emit a particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology to minimize emissions.

### ***ARB Diesel Risk Reduction Plan***

The ARB-adopted Diesel Risk Reduction Plan recommends control measures to achieve a diesel PM reduction of 85 percent by 2020 from year 2000 levels. Recent regulations and programs include the low-sulfur diesel fuel requirement and more stringent emission standards for heavy-duty diesel trucks and off-road in-use diesel equipment. As emissions are reduced, it is expected that the risks associated with exposure to the emissions will also be reduced.

## Regional

### ***BAAQMD California Environmental Quality Act Air Quality Guidelines***

BAAQMD is the primary agency responsible for ensuring that air quality standards (NAAQS and CAAQS) are attained and maintained in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. BAAQMD prepares ozone attainment plans for the national ozone standard, clean air plans (CAPs) for the California standard, and PM plans to fulfill federal air quality planning requirements. BAAQMD also inspects stationary sources of air pollution; responds to citizen complaints; monitors ambient air quality and meteorological conditions; and implements programs and regulations required by the Clean Air Act, the Clean Air Act Amendments of 1990, and the California Clean Air Act.

BAAQMD developed quantitative thresholds of significance for its California Environmental Quality Act (CEQA) guidelines in 2010, which were also included in its updated 2011 guidelines (BAAQMD, 2010, 2011). BAAQMD's adoption of the 2010 thresholds of significance was later challenged in court. In an opinion issued on December 17, 2015, related to the BAAQMD CEQA guidelines, the California Supreme Court held that CEQA does not generally require an analysis of the impacts of locating development in areas subject to environmental hazards unless the project would exacerbate existing environmental hazards. The Supreme Court also found that CEQA requires the analysis of exposing people to environmental hazards in specific circumstances, including the location of development near airports, schools near sources of toxic contamination, and certain exemptions for infill and workforce housing. The Supreme Court also held that public agencies remain free to voluntarily conduct this analysis not required by CEQA for their own public projects (*CBIA v. BAAQMD* [2016] 2 Cal.App.5th 1067,1083).

In view of the Supreme Court's opinion, BAAQMD published a new version of its CEQA guidelines in May 2017. The BAAQMD CEQA guidelines state that local agencies may rely on thresholds designed to reflect the impact of locating development near areas of toxic air contamination where such an analysis is required by CEQA or where the agency has determined that such an analysis would assist in making a decision about the project. However, the thresholds are not mandatory and agencies should apply them only after determining that they reflect an appropriate measure of a project's impacts. BAAQMD's guidelines for implementation of the thresholds are for informational purposes only, to assist local agencies.

### ***BAAQMD 2017 Clean Air Plan***

BAAQMD adopted the *Bay Area Clean Air Plan: Spare the Air, Cool the Climate* (Bay Area Clean Air Plan) on April 19, 2017, to provide a regional strategy to improve Bay Area air quality and meet public health goals (BAAQMD, 2017d). The control strategy described in the Bay Area Clean Air Plan includes a wide range of control measures designed to reduce emissions and lower ambient concentrations of harmful pollutants, safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, and reduce greenhouse gas (GHG) emissions to protect the climate.

The Bay Area Clean Air Plan addresses four categories of pollutants: ground-level ozone and its key precursors, ROG and NO<sub>x</sub>; PM, primarily PM<sub>2.5</sub>, and precursors to secondary PM<sub>2.5</sub>; air toxics; and GHGs. The control measures are categorized based on the economic sector framework including stationary sources, transportation,

energy, buildings, agriculture, natural and working lands, waste management, and water measures (BAAQMD, 2017d).

### ***BAAQMD Particulate Matter Plan***

To fulfill federal air quality planning requirements, BAAQMD adopted a PM<sub>2.5</sub> emissions inventory for year 2010 at a public hearing on November 7, 2012. The Bay Area Clean Air Plan also included several measures for reducing PM emissions from stationary sources and wood burning. On January 9, 2013, EPA issued a final rule determining that the Bay Area has attained the 24-hour PM<sub>2.5</sub> NAAQS, suspending federal SIP planning requirements for the SFBAAB (BAAQMD, 2013). Despite this EPA action, the SFBAAB will continue to be designated as nonattainment for the national 24-hour PM<sub>2.5</sub> standard until BAAQMD submits a redesignation request and a maintenance plan to EPA, and EPA approves the proposed redesignation.

### ***BAAQMD 2001 Ozone Attainment Plan***

BAAQMD adopted the Bay Area Ozone Attainment Plan in 2001 in response to EPA's finding that the Bay Area had failed to attain the NAAQS for ozone. The plan includes a control strategy for ozone and its precursors to ensure a reduction in emissions from stationary sources, mobile sources, and the transportation sector (BAAQMD, 2001).

### ***BAAQMD Regulation 2, Rule 5***

BAAQMD regulates backup emergency generators, fire pumps, and other sources of TACs through its New Source Review (Regulation 2, Rule 5) permitting process (BAAQMD, 2016a). Although emergency generators are intended to be used only during periods of power outages, monthly testing of each generator is required; however, BAAQMD limits testing to no more than 50 hours per year. Each emergency generator installed is assumed to meet a minimum of Tier 2 emission standards (before control measures). As part of the permitting process, BAAQMD limits the excess cancer risk from any facility to no more than 10 per 1 million population for any permits that are applied for within a 2-year period and would require any source that would result in an excess cancer risk greater than 1 per 1 million to install Best Available Control Technology for Toxics.

### ***BAAQMD Regulations Pertaining to Odorous Emissions***

BAAQMD is responsible for investigating and controlling odor complaints in the Bay Area. The agency enforces odor control by helping the public to document a public nuisance. Upon receipt of a complaint, BAAQMD sends an investigator to interview the complainant and to locate the odor source if possible. BAAQMD typically brings a public nuisance court action when there are a substantial number of confirmed odor events within a 24-hour period. An odor source with five or more confirmed complaints per year averaged over 3 years is considered to have a substantial effect on receptors.

Several BAAQMD regulations and rules apply to odorous emissions. Regulation 1, Rule 301 is the nuisance provision that states that sources cannot emit air contaminants that cause nuisance to a considerable number of persons. Regulation 7 specifies limits for the discharge of odorous substances where BAAQMD receives complaints from 10 or more complainants within a 90-day period. Among other things, Regulation 7 precludes discharge of an odorous substance that causes the ambient air at or beyond the property line to be odorous after

dilution with 4 parts of odor-free air, and specifies maximum limits on the emission of certain odorous compounds.

### ***ABAG and MTC Plan Bay Area***

On July 18, 2013, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) approved the *Plan Bay Area*. The *Plan Bay Area* includes integrated land use and transportation strategies for the region and was developed through OneBayArea, a joint initiative between ABAG, BAAQMD, MTC, and the San Francisco Bay Conservation and Development Commission. The plan's transportation policies focus on maintaining the extensive existing transportation network and utilizing these systems more efficiently to handle density in Bay Area transportation cores (ABAG and MTC, 2013). Assumptions for land use development used are taken from local and regional planning documents. Emission forecasts in the Bay Area Clean Air Plan rely on projections of vehicle miles traveled, population, employment, and land use projections made by local jurisdictions during development of *Plan Bay Area*.

## **Local**

### ***San Francisco General Plan Air Quality Element***

San Francisco has a number of policies and regulations related to air quality, including those within the Air Quality Element of the *San Francisco General Plan* (General Plan) (San Francisco, 1996) and the City's Building and Health Codes. The objectives specified by the City include the following:

- **Objective 1:** Adhere to State and Federal air quality standards and regional programs.
- **Objective 2:** Reduce mobile sources of air pollution through implementation of the Transportation Element of the General Plan.
- **Objective 3:** Decrease the air quality impacts of development by coordination of land use and transportation decisions.
- **Objective 4:** Improve air quality by increasing public awareness regarding the negative health effects of pollutants generated by stationary and mobile sources.
- **Objective 5:** Minimize particulate matter emissions from road and construction sites.
- **Objective 6:** Link the positive effects of energy conservation and waste management to emission reductions.

### ***San Francisco Health Code and San Francisco Building Code***

#### ***San Francisco Construction Dust Control Ordinance***

The San Francisco Health Code Article 22B and San Francisco Building Code Section 106A.3.2.6 collectively constitute the Construction Dust Control Ordinance (adopted in July 2008). The ordinance requires that all site preparation work, demolition, or other construction activities in San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specific dust control measures whether or not the activity requires a permit from the Department of Building Inspection (DBI). For projects larger than 0.5 acre, the Dust Control Ordinance requires that the project sponsor submit a dust control

plan for approval by the San Francisco Department of Public Health (SFDPH) before DBI issues a building permit.

Building permits will not be issued without written notification from the Director of Public Health that the applicant has a site-specific dust control plan, unless the Director waives the requirement. The Construction Dust Control Ordinance requires project sponsors and contractors responsible for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director of Public Health. Dust suppression activities may include watering all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 mph. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code.

### **San Francisco Clean Construction Ordinance**

In April 2007, the City adopted an ordinance requiring public projects to reduce emissions at construction sites starting in 2009. In March 2015, the City expanded the existing ordinance to require public projects to further reduce emissions at construction sites in certain areas with high levels of background concentrations of air pollutants. Establishment of the APEZ was used as the basis for approving a series of amendments to the San Francisco Environment and Administrative codes, generally referred to as the Clean Construction Ordinance, or Environment Code Chapter 25 (Ordinance 28-15, effective April 19, 2015). The purpose of the Clean Construction Ordinance is to protect the public health, safety, and welfare by requiring contractors on City public works projects to reduce diesel and other PM emissions generated by construction activities. For projects located within the APEZ, the Clean Construction Ordinance requires the following:

- **Equipment Requirements:**
  - Equipment must meet or exceed Tier 2 standards for off-road engines and operate with the most effective ARB Verified Retrofits for Off-Road Diesel Vehicles available for the engine type (Tier 4 engines automatically meet this requirement).
  - Portable diesel engines are prohibited where access to alternative sources of power is available.
  - Idling of off-road and on-road equipment is limited to two minutes at any location, except as provided in applicable State regulations (e.g., traffic conditions, safe operating conditions). The contractor must post legible and visible signs in English, Spanish, and Chinese in designated queuing areas and at the construction site to remind operators of the 2-minute idling limit.
- **Construction Emissions Minimization Plan.** A Construction Emissions Minimization Plan must be prepared before the start of construction. The plan is required to include estimates of the construction timeline by phase and a description of each piece of off-road equipment required for every construction phase (e.g., equipment type, manufacturer, identification number, model year, tier rating, horsepower, expected fuel usage and hours of operation). Additional details may be included for VDECS (e.g., technology type, serial number, make, model, manufacturer, ARB verification number level). For off-road equipment using alternative fuels, the description must specify the type of alternative fuel being used.
- **Monitoring.** Monitoring and reporting actions are required during construction to document compliance with the ordinance.

- **Waivers.** Waivers to the requirements of the Clean Construction Ordinance can be issued under unusual circumstances (e.g., lack of available qualifying equipment)

For projects located outside the APEZ, the Clean Construction Ordinance requires the following:

- **Equipment Requirements:** Utilize only off-road equipment and off-road engines fueled by biodiesel fuel grade B20 and utilize only off-road equipment that either (a) meets or exceeds Tier 2 standards for off-road engines; or (b) operates with the most effective Verified Retrofits for Off-Road Diesel Vehicles available for the engine type.

The Clean Construction Ordinance would apply to work done by RPD, but not to work done at the India Basin Open Space and 700 Innes properties by BUILD.

### **San Francisco Protection of Sensitive Uses from Air Pollutants**

The City adopted Article 38 of the San Francisco Health Code in 2008, and amended it in 2014, to protect new sensitive uses from existing sources of air pollution by requiring enhanced ventilation and filtration systems in certain areas of the city. The amendments make the Health Code and Building Code consistent with the results of the air quality modeling undertaken to identify the City's APEZ, discussed above.

As revised in 2014, Article 38 of the Health Code applies to all development that includes "sensitive uses," as defined in the code, including all residential units; adult, child and infant care centers; schools; and nursing homes. Article 38 considers all existing known sources of TACs and PM<sub>2.5</sub>, and requires "enhanced ventilation," including filtration of outdoor air, for all such sensitive use projects located in the APEZ. The filtration requirement of Article 38 specifies Minimum Efficiency Reporting Value 13 or equivalent, based on American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 52.2, and requires SFPDPH to confer with other City departments and report to the Board of Supervisors regarding technologies it has identified or evaluated that may comply with the requirements of the Health Code.

Article 38 also requires periodic updating of the APEZ Map (about every 5 years) to account for changes in sources of TACs and PM<sub>2.5</sub> emissions or updated health risk quantification methodologies.

### **3.7.3 Impacts and Mitigation Measures**

#### **Significance Thresholds**

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Air Quality. Implementation of the proposed project or the variant would have a significant effect on Air Quality if the proposed project or variant would:

- violate any air quality standard or contribute substantially to an existing or projected air quality violation or result in a cumulatively considerable net increase in criteria pollutants;

- conflict with or obstruct implementation of the applicable air quality plan;
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

### **Approach to Analysis**

In general, the proposed project and variant would generate emissions of criteria air pollutants, ozone precursors, and TACs during construction and operation. The air quality technical report (Appendix F) analyzed regional criteria air pollutants and health risks associated with construction, operations, and overlapping construction-related and operational impacts for the proposed project and variant.<sup>3</sup> The analysis was conducted consistent with guidance and methodologies from local, regional, State, and federal agencies, including BAAQMD (2017c), ARB, the California Office of Environmental Health Hazard Assessment (OEHHA), and EPA. Pursuant to BAAQMD's guidance, California Emissions Estimator Model (CalEEMod) Version 2016.3.1 was used to estimate emissions by off-road construction equipment. Emissions were calculated for each year of construction (conservatively assumed to be 2018 through 2022) and full operation.

Construction of the proposed project or variant is estimated to start as early as spring 2018 and conservatively assumed to last approximately 5 years. These assumptions are used in the CEQA analysis to assure a conservative approach. However, given the project's phases, construction would most likely not be continual. Various activities would occur in a sequential manner. Further, the actual timing of construction would be dependent on approval and funding considerations. As a result, actual construction activities may occur over a less-concentrated time than the assumed five years.<sup>4</sup> Total construction emissions were calculated and were converted from total tons to average pounds per day (lb/day) for each construction phase and subphase. For each month during the construction period, average lb/day for the overlapping construction phases and subphases were totaled to estimate the maximum average daily emissions for the proposed project or variant.

Consistent with CEQA requirements, the analysis evaluated the following emissions impacts:

- *Short-term construction and long-term operational emissions of criteria air pollutants and precursors* associated with the proposed project and variant.
- *Health risk and hazard impacts of construction emissions* from the proposed project and variant on the existing off-site receptors located within 1,000 feet of the project site and future on-site sensitive receptors.
- *Health risk and hazard impacts of operational emissions* from the proposed project and variant on existing off-site sensitive receptors and future on-site sensitive receptors.

### **Construction Air Quality Sources**

#### **Off-Road Equipment**

Off-road construction equipment would generate exhaust-related emissions of criteria air pollutants, precursors, and TACs. To calculate emissions, the number and types of construction equipment required for each construction

<sup>3</sup> The emissions analysis in the air quality technical report (Appendix F) is based on the worst-case construction scenario. The actual construction scenario and phases could be extended such that fewer phases would overlap and result in fewer impacts related to air quality and health risks.

<sup>4</sup> The project is seeking a development agreement with a term of 25 years to permit implementation and phasing of the project over this 25-year period of time.

phase and subphase were identified. Other parameters used to quantify emissions from construction equipment were hours of operation per day, horsepower, and load factor for each respective piece of equipment.

CalEEMod contains emission factors from ARB's off-road equipment emissions estimator model, OFFROAD. Both EPA and the State of California have set emissions standards for new off-road equipment engines, ranging from Tier 1 to Tier 4. Tier 1 emission standards were phased in between 1996 and 2000, and Tier 4 interim and final emission standards for all new engines were phased in between 2008 and 2015. The emission factors for the engines were based on the fleet average, which includes all tier engines, for the calendar year of the analysis. Default assumptions for the parameters noted above contained in CalEEMod were used to quantify emissions. Default assumptions typically are conservative, providing a reasonable upper boundary for potential construction emissions.

For the health risk assessment, the  $PM_{2.5}$  and diesel PM emissions from off-road construction equipment were represented by area sources and the locations varied by construction phase. Excavation and rough and fine grading were represented by an area source of the same footprint as the project site. For building construction under the proposed project or variant, multiple area sources were located over areas of the project site where buildings are assumed to be built in 2018 through 2022.

### **On-Road Vehicles**

On-road construction sources include construction-worker vehicles, haul trucks, material delivery trucks, and on-site work trucks. CalEEMod was used to estimate emissions from on-road vehicles (running exhaust, brake wear, tire wear, and running losses). Haul trips were estimated based on the total volume of soil imported to and exported from the project site. Default assumptions for parameters such as other vehicles, construction worker trips, trip distance, and vehicle type were obtained from CalEEMod. CalEEMod incorporates emission factors from ARB's on-road emissions inventory model, EMISSION FACTORS (EMFAC) 2014 (EMFAC2014) and were used to quantify emissions (ARB, 2015a).

The health risk assessment modeled, as volume sources, the  $PM_{2.5}$  and diesel PM emissions from on-road emissions within 1,000 feet of the project site (Innes Avenue, Hunters Point Boulevard, and a portion of Evans Avenue) from construction worker vehicles, haul trucks, material delivery trucks, and on-site work trucks traveling to and from the project site.

### **Off-Gassing Materials**

Asphalt paving and architectural coating materials used during construction would generate off-gas emissions of ROG. CalEEMod was used to estimate these off-gas ROG emissions. The data collection process determined the acres of asphalt paving required, which CalEEMod uses to determine associated ROG emissions. CalEEMod contains assumptions for application of architectural coatings that are based on the land use type and square footage of the buildings to be constructed and were used to quantify emissions.

These emissions were not modeled as part of the health risk assessment, as these emissions are small compared to diesel PM emissions from the construction equipment, which are the primary risk driver.



### **In-Water Work**

On the India Basin Shoreline Park property and in the northwest corner of the India Basin Open Space property, a barge may be required for removal and construction of the piers in deeper waters. Air pollutant emissions associated with tugboats, work boats, and other waterborne vessels were quantified using ARB's Harbor Craft Emissions Inventory Database. Hours of operation per day, horsepower, and load factor for each respective piece of equipment were provided by RPD.

For the health risk assessment, the PM<sub>2.5</sub> and diesel PM emissions from the equipment were modeled as area sources matching the footprint of the in-water work area.

### ***Operational Air Quality Sources***

#### **Area Sources**

CalEEMod Version 2016.3.1 was used to estimate long-term operational emissions of criteria pollutants and precursors from area sources under both scenarios. Area-source emissions include consumer products, landscape maintenance equipment, and natural gas combustion. Emissions from landscape maintenance equipment and natural gas combustion were estimated using CalEEMod default values based on the size and type of land uses to be developed. Based on consultation between the Planning Department and BAAQMD (Wietgreffe, pers. comm., 2014), emissions from consumer products were estimated using an ROG emissions factor of 0.0000151 pound per square foot per day. This emission factor is based on San Francisco ROG emissions data and land use data. These emissions were not modeled in the health risk assessment, as these emissions are small compared to diesel PM and gasoline vehicle exhaust emissions.

#### **On-Road Vehicles**

Mobile-source emissions under both the proposed project and variant scenarios were calculated using vehicle miles traveled results from CalEEMod and compared with the output for the transportation impact study prepared for the project by Fehr & Peers (San Francisco, 2017). As described for construction on-road vehicles, CalEEMod Version 2016.3.1 incorporates EMFAC2014 mobile-source emission factors.

#### **Stationary Sources**

For either the project or the variant, up to eight emergency generators would be installed as emergency power sources for the mixed-use buildings at the 700 Innes property. These emergency generators would generate emissions of criteria pollutants and TACs. Based on information provided by BUILD, either the proposed project or the variant would use up to eight emergency generators (stacks) at four locations (two emergency generators at each location).

Each emergency generator is assumed to meet a minimum of Tier 2 emission standards (before control measures) when they are installed in 2019–2020, and to comply with BAAQMD Regulation 2, Rule 5, New Source Review

### ***Overlap of Construction and Operational Sources***

During the years 2020 through 2022, construction and operational sources of emissions were conservatively assumed to overlap, as a portion of the proposed project or variant would be completed while construction is ongoing in other project areas. In the year 2020, operational sources associated with the 900 Innes property, as discussed above, would overlap with ongoing construction at the India Basin Shoreline Park, India Basin Open Space, and 700 Innes properties. In the years 2021 and 2022, operational sources associated with the India Basin Shoreline Park and 900 Innes properties, Phase I at the 700 Innes property, and six of the eight emergency generators proposed at the 700 Innes property would overlap with ongoing construction of Phase II at the 700 Innes and India Basin Open Space properties. The overlapping construction and operational emissions are included in the analysis of criteria pollutants, as well as in the health risk assessment. The health risk assessment modeling conducted for off-site and on-site receptors occupied during 2021 and 2022 include the construction areas, traffic, and six emergency generators that would be installed after Phase I of the construction is complete.

### ***Sources and Methodology for Assessing Toxic Air Contaminants***

As discussed in the air quality technical report for this project (Appendix F), a health risk assessment for construction-related and operational emissions was completed to evaluate potential health risks to sensitive receptors. Emissions of PM<sub>2.5</sub> (from vehicle exhaust, tire and brake wear, road dust, and fugitive dust) are assessed on an annual basis whereas excess cancer risk (from diesel vehicle exhaust, diesel generator exhaust, and ROG from gasoline vehicle exhaust) is a longer term exposure, 30 years.

Typically, construction projects generate diesel PM in a single area for a short period of time. The dose of TACs to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure a person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period to a fixed amount of emissions results in a higher exposure level and higher health risks for the maximally exposed individual.

### **Project Sources**

Consistent with the San Francisco Community Risk Reduction Plan health risk assessment (CRRP-HRA) (SFDPH et al., 2012; SFDPH, 2016b), the air toxics analysis evaluated health risks and PM<sub>2.5</sub> concentrations imposed by the proposed project and variant on the surrounding community per year of construction. The American Meteorological Society/EPA Regulatory Model (AERMOD) dispersion model (Version 16216r) (40 Code of Federal Regulations Part 51) was used to estimate pollutant concentrations at specific distances from emission sources using 1 year (2008) of hourly meteorological data from the Mission Bay station, consistent with the CRRP-Health Risk Assessment.

Maximum annual for PM<sub>2.5</sub> and period-average for excess cancer risk plot files generated by AERMOD as described above were input to HARP2 with corresponding TAC emission rates for each phase of construction and the project's operational emissions to calculate project concentration contributions. These concentrations were then used to estimate the long-term effects of TACs on nearby off-site and future on-site residential locations. Note that the CRRP-HRA was conducted in 2012 and HARP2 is based on guidance from the OEHHA (2015). Therefore, the risk values in the CRRP-HRA database were scaled to reflect the changes in methodology.

Receptor locations for on-site and off-site receptors under the proposed project and the variant are shown in Figure 3.7-3 and Figure 3.7-4 (the difference between fewer on-site receptors in Figure 3.7-4), respectively. The analysis assumes that there are no on-site receptors before 2021. The Hamman Hillside Cove buildings included in project Phase I would be exposed to project-generated emissions during subsequent construction phases in 2021 and 2022, as well as operational emissions from emergency generators. The Flats and Earl on-site receptors would be completed as part of Phase II and are exposed to operational emissions only.

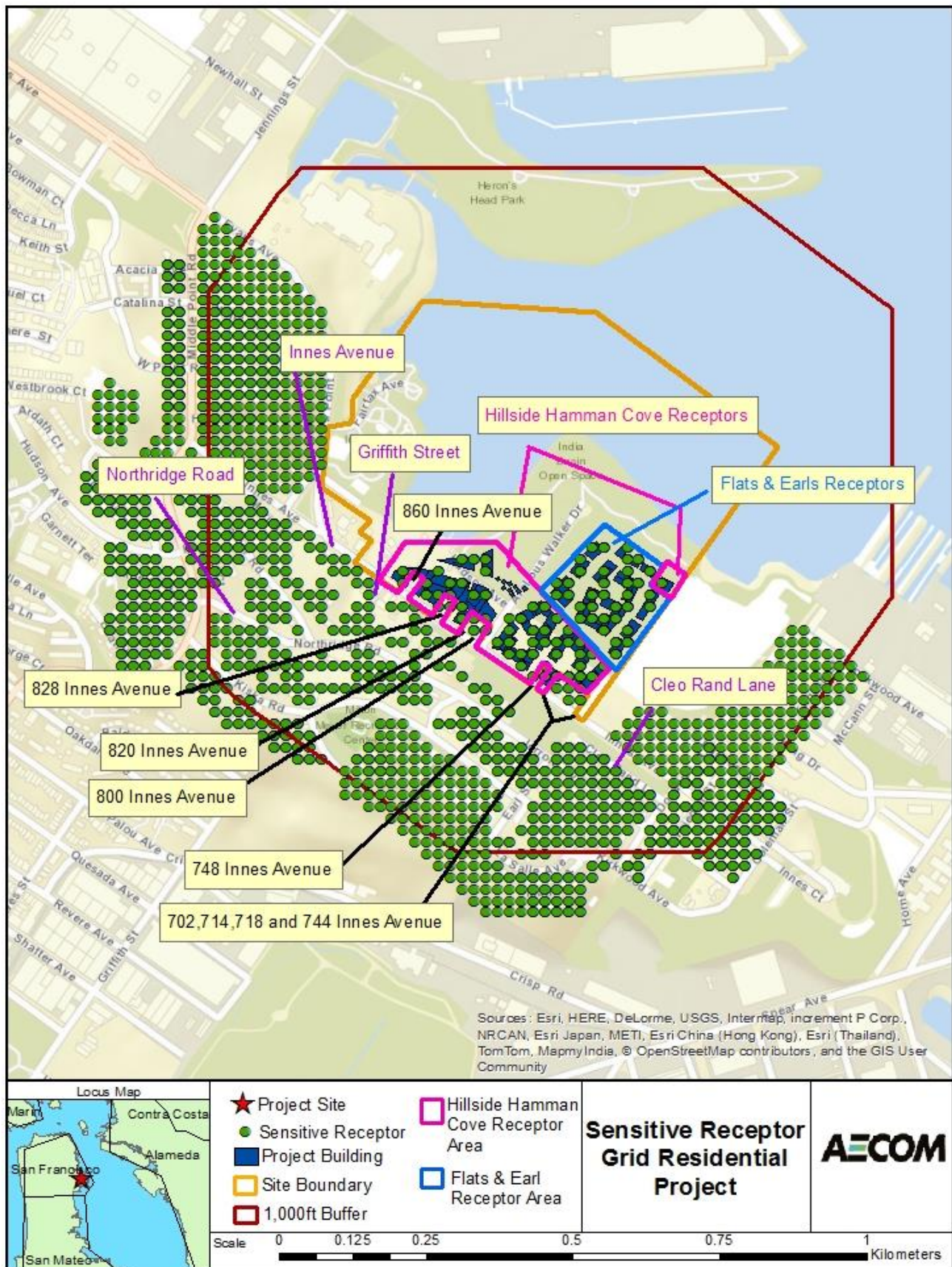


Figure 3.7-3

Sensitive Receptors Associated with the Proposed Project

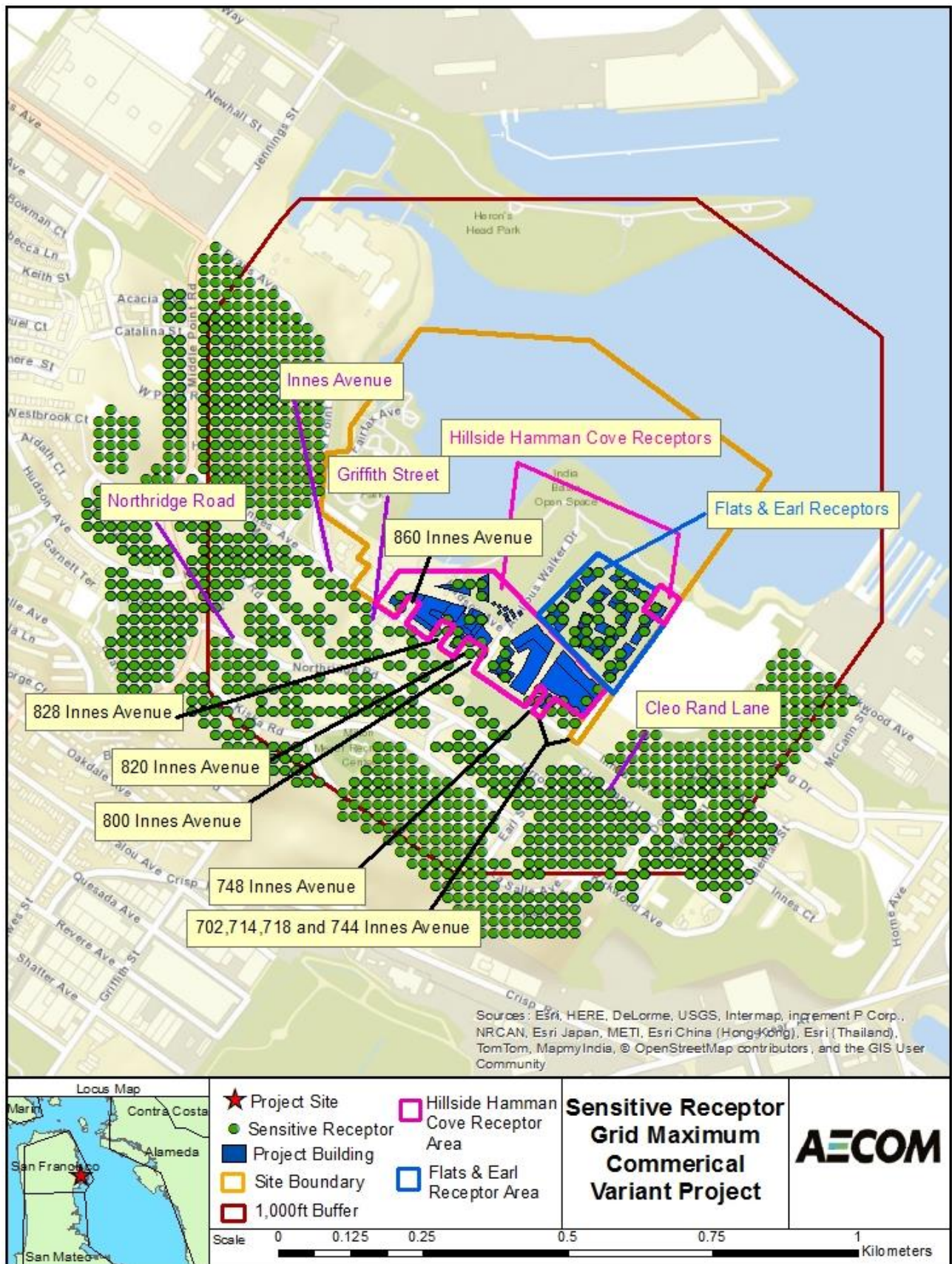


Figure 3.7-4

Sensitive Receptors Associated with the Variant

Each emergency generator is assumed to comply with BAAQMD testing limits of no more than 50 hours per year. The generator sizes would range from 300 hp to 600 hp each.

#### *Cumulative Conditions and Nearby Sources*

Nearby sources and existing cumulative conditions are derived from the Citywide modeling (CRRP-Health Risk Assessment) that was conducted using AERMOD to assess the emissions from the following primary sources:

- vehicles on local roadways;
- permitted stationary sources including gasoline dispensing stations, prime and standby diesel generators, wastewater treatment plants, recycling facilities, dry cleaners, large boilers, and other industrial facilities;
- port and maritime sources including ships and harbor craft, including cruise ships, excursion boats, and tugboats; and
- Caltrain diesel locomotives and the Transit Center bus depot.

Construction projects were not included in the year 2014 analysis, which was used as the existing conditions in this analysis. The nearby PG&E Hunters Point Shoreline Area Cleanup has been completed based on March 2017 aerial imagery, and the area is being used for small events. As future uses have yet to be determined no future uses were included in the health risk assessment. The Hunters Point Shipyard Phase 1 and 2 Redevelopment will include residential units at the corner of Innes Avenue and Donahue Street, as well as the Hillside area (Navy Road/Block 48), and along Donahue Street (Block 55E) toward the Bay. The portion of Block 48 located within 1,000 feet of the proposed project is scheduled to be completed in 2018. Additional construction in Block 48 would be beyond 1,000 feet of the proposed project or variant. Block 1 and a portion of Block 55E will be located within 1,000 feet of the proposed project or variant and, as of March 2017, had yet to be built. Under Hunters Point Shipyard Phase 2, Northside Park Parcels 1 and 2, HP-01, 2, and 3 will all be built during Major Phase 1 during 2017 through 2022 and would overlap with the proposed project or variant.

Ramboll Environ conducted an air quality assessment as part of an update to the EIR for the Hunters Point Shipyard Phase 1 and 2 Redevelopment in 2013 and provided electronic files associated with the Hunters Point Phase 1 and 2 construction modeling. Impacts associated with the Hunters Point construction were added to the annual PM<sub>2.5</sub> values and excess cancer risk values at the equivalent receptors in the existing condition (CRRP-Health Risk Assessment [year 2014]) to create the baseline condition as discussed in Appendix F. The project-related impacts are added to the baseline to calculate the combined impact of the existing concentrations, concentrations from Hunters Point construction, and concentrations from construction of the proposed project or variant.

In addition, there are other current or future construction projects whose emissions have not been incorporated into the existing Citywide health risk modeling, as BAAQMD assumed that smaller projects would be assessed individually. BAAQMD has identified a distance of 1,000 feet as an appropriate zone of influence for assessing health risk impacts and specifies that cumulative sources represent the combined total risk values of each individual source within the 1,000-foot evaluation zone. The Blue Greenway/Bay Trail, Hunters View, Executive Park, Brisbane Baylands, Visitacion Valley/Schlage Lock, Eastern Neighborhoods Plan, Muni Forward, *San Francisco Bicycle Plan*, Proposed Expansion of the Auxiliary Water Supply System, and the Biosolids Digester Facilities Project were not explicitly assessed as part of the cumulative analysis. These projects are not

within 1,000 feet of the project site and are not required to be explicitly modeled as part of the health risk assessment modeling.

For future cumulative conditions (CRRP-Health Risk Assessment [year 2040]), vehicle traffic associated with the Hunters Point and Candlestick Point redevelopment projects would generate vehicle traffic that would travel within 1,000 feet of the project area. As emissions from these projects were already included in the 2040 future baseline conditions. Therefore, only the Project Conditions were added to the Cumulative Conditions for the year 2040 to assess future cumulative conditions with the project or variant. The 2040 future baseline concentrations are slightly higher for PM<sub>2.5</sub> than the existing conditions because of this increased traffic in the project area from these other projects before addition of the project impacts to the baseline conditions.

### ***Specific Thresholds of Significance***

#### **Consistency with Air Quality Plan Impacts**

The applicable air quality plan is BAAQMD's 2017 Bay Area Clean Air Plan, which identifies measures to:

- reduce emissions and reduce ambient concentrations of air pollutants;
- safeguard public health by reducing exposure to the air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and
- reduce GHG emissions to protect the climate.

The proposed project or variant would be consistent with the Bay Area Clean Air Plan if it would support the plan's goals, include applicable control measures from the Bay Area Clean Air Plan, and would not disrupt or hinder implementation of any control measures from the plan. Consistency with this plan is the basis for determining whether the proposed project or variant would conflict with or obstruct implementation of an applicable air quality plan.

#### **Ambient Air Quality Impacts**

As discussed previously, air pollutant standards are identified for six criteria air pollutants in accordance with the Clean Air Act and California Clean Air Act. By its very nature, regional air pollution is largely a cumulative impact, in that no single project is large enough that it alone can result in nonattainment of air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality impacts. If a project's contribution to cumulative air quality impacts would be considerable, then the project's impact on air quality would be significant.

The construction and operational phases of land use projects may contribute to regional emissions of criteria air pollutants. Table 3.7-7 identifies significance thresholds for criteria air pollutants as provided by BAAQMD, followed by a discussion of each threshold (BAAQMD, 2017c). Projects that would result in emissions of criteria air pollutants less than these significance thresholds would not violate an air quality standard, contribute substantially to an air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants within the SFBAAB.

The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants that may contribute to an existing or projected air quality violation is based on the Clean Air Act and California Clean Air Act emissions limits for stationary sources. To ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulation 2, Rule 2, specifies that any new source emitting criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors, ROG and NO<sub>x</sub>, the offset emissions level is an annual average of 10 tons per year (tpy) (or 54 parts per day). These levels represent emissions below which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.

**Table 3.7-7: Criteria Air Pollutant Thresholds of Significance**

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lb/day)	Average Daily Emissions (lb/day)	Maximum Annual Emissions (tpy)
ROG	54	54	10
NO <sub>x</sub>	54	54	10
PM <sub>10</sub>	82 (exhaust)	82	15
PM <sub>2.5</sub>	54 (exhaust)	54	10
Fugitive Dust	Construction Dust Ordinance or other best management practices	Not Applicable	

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases; tpy = tons per year

Source: BAAQMD, 2017c

### ***Ozone Precursors***

As discussed previously, the SFBAAB is currently designated as nonattainment for ozone and PM. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO<sub>x</sub>. The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants, which may contribute to an existing or projected air quality violation, is based on the Clean Air Act and California Clean Air Act emissions limits for stationary sources. To ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulation 2, Rule 2 states that any new source emitting criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors ROG and NO<sub>x</sub>, the offset emissions level is an annual average of 10 tpy (or 54 lb/day) (BAAQMD, 2009:17). These levels represent emissions below which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.

Although this regulation applies to new or modified stationary sources, land use development projects generate ROG and NO<sub>x</sub> emissions as a result of increases in vehicle trips, architectural coatings, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of land use projects. Projects resulting in emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ROG and NO<sub>x</sub> emissions. Because construction activities are temporary, only average daily thresholds are applicable to construction-phase emissions.



### ***Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)***

BAAQMD has not established an offset limit for PM<sub>2.5</sub>. However, the emissions limit in the federal New Source Review (NSR) for stationary sources in nonattainment areas is an appropriate significance threshold. For PM<sub>10</sub> and PM<sub>2.5</sub>, the emissions limits under NSR are 15 tpy (82 lb/day) and 10 tpy (54 lb/day), respectively. These emissions limits represent the levels below which a source is not expected to have an impact on air quality (BAAQMD, 2009:16). Similar to the ozone precursor thresholds identified above, land use development projects typically generate PM emissions as a result of increases in vehicle trips, space heating and natural gas combustion, landscape maintenance, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of a land use project. Again, because construction activities are temporary, only average daily thresholds are applicable to construction-phase emissions.

### ***Fugitive Dust***

Fugitive dust emissions are typically generated during construction phases. Studies have shown that applying best management practices (BMPs) at construction sites significantly controls fugitive dust (WRAP, 2006) and individual measures have been shown to reduce fugitive dust by anywhere from 30 to 90 percent (BAAQMD, 2009:27). BAAQMD has identified BMPs to control fugitive dust emissions from construction activities (BAAQMD, 2011). The City's Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008) requires measures to control fugitive dust. BMPs employed in compliance with this ordinance are an effective strategy for controlling construction-related fugitive dust.

### ***Other Criteria Pollutants***

Regional concentrations of CO in the Bay Area have not exceeded State standards in the past 11 years and SO<sub>2</sub> concentrations have never exceeded the standards. The primary source of CO emissions from development projects is vehicle traffic. Construction-related SO<sub>2</sub> emissions represent a negligible portion of the total basinwide emissions and construction-related CO emissions represent less than 5 percent of the Bay Area's total basinwide CO emissions.

As discussed previously, the Bay Area is in attainment for both CO and SO<sub>2</sub>. Furthermore, BAAQMD has demonstrated, based on modeling, that to exceed the CAAQS of 9.0 parts per million (ppm) (8-hour average) or 20.0 ppm (1-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). Therefore, given the Bay Area's attainment status and the limited CO and SO<sub>2</sub> emissions that could result from development projects, such projects would not result in a cumulatively considerable net increase in CO or SO<sub>2</sub>, and quantitative analysis is not required.

### **Local Air Quality Health Risks/Hazards Impacts**

The thresholds of significance used to evaluate health risks from new sources of TACs are based on the potential for a proposed project to substantially affect the geography and severity of the APEZ at the locations of sensitive receptors.

The project site is not located in an APEZ or near a major transportation thoroughfare, but is located in a health-vulnerable zip code (94124). Therefore, a lower significance standard is required to ensure that the contribution of

the proposed project or variant to existing health risks would not be significant. The proposed project or variant would result in a significant impact if the excess cancer risk would exceed 90 in a million or annual  $PM_{2.5}$  concentrations would exceed  $9 \mu\text{g}/\text{m}^3$  and the the project's contribution would be greater than 7 in a million or  $0.2 \mu\text{g}/\text{m}^3$ , respectively.

### ***Odors Impacts***

The impact analysis qualitatively evaluates the types of land uses proposed to evaluate whether major sources of anticipated odors would be present and, if so, whether those sources would likely generate objectionable odors.

### ***Cumulative Impacts***

The cumulative impact analysis assumes that construction and operation of other projects in the geographical area, listed in Table 3-1, would be required to comply with the same regulatory requirements as the project, which may serve to avoid and reduce many impacts to less than significant on a project-by-project basis. The analysis then considers whether there would be a significant adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

The contribution of a project's individual air pollutant emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and future projects in the vicinity also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.

As described above, the project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to result in a considerable contribution to cumulative regional air quality impacts.

Similarly, the health risk assessment takes into account the cumulative contribution of localized health risks to sensitive receptors from sources included in the Citywide modeling (CRRP-Health Risk Assessment) in addition to the project's sources and other cumulative project sources as discussed above.

### **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. The construction and operation of either the proposed project or the variant would result in emissions of air pollutants. Also, emergency generators would be designed to emit exhaust from the roof elevations of the proposed buildings where they would be located.

## Impact Evaluation

**Impact AQ-1: The proposed project or variant would generate emissions of criteria pollutants and precursors during construction, operations, and overlapping construction and operational activities that could violate an air quality standard, contribute substantially to an existing or projected air quality violation, or result in a cumulatively considerable net increase in criteria pollutants. (*Significant and Unavoidable with Mitigation*)**

### *Construction—Criteria Air Pollutants*

Construction emissions are described as “short term” or temporary; however, they have the potential to represent a significant impact with respect to air quality. Construction of either the proposed project or the variant would temporarily generate emissions of ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. ROG and NO<sub>x</sub> emissions are associated primarily with mobile equipment exhaust, including off-road construction equipment and on-road motor vehicles.

### India Basin Shoreline Park Property

Under the proposed project and variant, construction at the India Basin Shoreline Park property would involve emissions of criteria air pollutants during the demolition, grading, building construction, paving, and architectural coating phases. Construction would span approximately 1 year, estimated to occur in 2020, and would involve a maximum of 12 workers per day.

The primary source of emissions during construction would be exhaust from mobile equipment, including off-road equipment and hauling trips during the grading phase. The grading phase for India Basin Shoreline Park and 900 Innes would involve a combined estimate of approximately 6,860 hauling trips. Under either the proposed project or the variant, estimated average daily unmitigated emissions during construction at the India Basin Shoreline Park property would be 3 lb/day of ROG, 32 lb/day of NO<sub>x</sub>, 1 lb/day of PM<sub>10</sub>, and 1 lb/day of PM<sub>2.5</sub> (Table 3.7-8).

**Table 3.7-8: Proposed Project and Variant—India Basin Shoreline Park: Average Daily Construction Emissions**

Construction Year/Phase	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
Maximum Average Daily (2020) Construction Emissions (lb/day)	3.2	31.8	1.2	1.1

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases. Maximum average daily emissions would occur in 2020 for this property.

Source: Compiled by AECOM in 2017

### 900 Innes Property

Under the proposed project and variant, construction at the 900 Innes property would involve emissions of criteria air pollutants during the demolition, grading, building construction, paving, and architectural coating phases. Construction would span approximately 1 year and would involve a maximum of 12 workers per day.

The primary source of emissions during construction would be exhaust from mobile equipment, including off-road equipment and hauling trips during grading. As discussed above, the grading phase for India Basin Shoreline Park and 900 Innes would involve a combined estimate of approximately 6,860 hauling trips. Under either the proposed project or the variant, the average daily unmitigated emissions during construction at the 900 Innes property would be 3 lb/day of ROG, 30 lb/day of NO<sub>x</sub>, 2 lb/day of PM<sub>10</sub>, and 2 lb/day of PM<sub>2.5</sub> (Table 3.7-9).

**Table 3.7-9: Proposed Project and Variant—900 Innes: Average Daily Construction Emissions**

Construction Year/Phase	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
Maximum Average Daily (2019) Construction Emissions (lb/day)	3.4	29.4	1.5	1.4

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
 Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases. Maximum average daily emissions would occur in 2019 for this property.  
 Source: Compiled by AECOM in 2017

### **India Basin Open Space Property**

Under the proposed project and variant, construction at the India Basin Open Space property would generate emissions of criteria air pollutants during grading, building construction, paving, and architectural coating. Construction would span approximately 1 year and would involve approximately 10–12 workers per day.

The primary source of emissions during construction would be exhaust from mobile equipment. Under either the proposed project or the variant, the average daily unmitigated emissions during construction at the India Basin Open Space property would be 2 lb/day of ROG, 17 lb/day of NO<sub>x</sub>, 1 lb/day of PM<sub>10</sub>, and 1 lb/day of PM<sub>2.5</sub> (Table 3.7-10).

**Table 3.7-10: Proposed Project and Variant—India Basin Open Space: Average Daily Construction Emissions**

Construction Year/Phase	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
Maximum Average Daily (2020–2021) Construction Emissions (lb/day)	1.9	17.1	0.9	0.9

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
 Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases. Maximum average daily emissions would occur in 2020 and 2019 for this property.  
 Source: Compiled by AECOM in 2017

### **700 Innes Property**

Under the proposed project and variant, construction at the 700 Innes property would generate emissions of criteria air pollutants during grading and excavation, and construction of the Hamman Hillside Cove, Big Green, and Flats and Earl. Typical construction activities would include the demolition, grading, building construction, paving, and architectural coating phases. It is conservatively assumed that construction would span approximately 5 years and would involve a maximum of 189 workers per day during the Flats and Earl construction.

The primary source of emissions during construction would be exhaust from mobile equipment, including off-road equipment and hauling trips during the demolition and grading phases. The demolition and grading phase would involve approximately 140 and 68,200 hauling trips, respectively. Under the proposed project, the average daily unmitigated emissions during construction at the 700 Innes property would be 49 lb/day of ROG, 216 lb/day of NO<sub>x</sub>, 4 lb/day of PM<sub>10</sub>, and 4 lb/day of PM<sub>2.5</sub> (Tables 3.7-11 and 3.7-12). Under the variant, the average daily unmitigated emissions during construction at the 700 Innes property would be 44 lb/day of ROG, 219 lb/day of NO<sub>x</sub>, 3 lb/day of PM<sub>10</sub>, and 3 lb/day of PM<sub>2.5</sub> (Tables 3.7-11 and 3.7-12).

**Table 3.7-11: Proposed Project—700 Innes: Average Daily Construction Emissions**

Construction Year/Phase	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
Maximum Average Daily (2018–2019) Construction Emissions (lb/day)	48.9	215.7	4.3	4.0

Notes: NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases. Maximum average daily emissions for each pollutant would vary by year: Maximum average daily ROG emissions would occur in 2020 and 2021, and maximum average daily NO<sub>x</sub> and PM emissions would occur in 2018 and 2019.

Source: Compiled by AECOM in 2017

### **Overall Construction Impact for Criteria Air Pollutants**

Tables 3.7-13 and 3.7-14 present the average daily emissions associated with the proposed project and variant, respectively, for all project site properties with overlapping construction phases. The primary source of construction-related emissions would be exhaust from mobile equipment, including off-road equipment and hauling trips during the demolition and grading phases. The majority of the emissions would result from construction at the 700 Innes property. Additional modeling details are provided in Appendix F.

**Table 3.7-12: Variant—700 Innes: Average Daily Construction Emissions**

Construction Year/Phase	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
Maximum Average Daily (2019–2020) Construction Emissions (lb/day)	48.4	218.8	4.3	4.0

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases.

Source: Compiled by AECOM in 2017

**Table 3.7-13: Proposed Project: Average Daily Construction Emissions**

Construction Year/Phase	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
2018	37.8	215.7	4.3	4.0
2019	41.2	245.0	5.8	5.4
2020	54.0	140.8	5.7	5.3
2021	50.9	109.0	4.5	4.2
2022	18.3	39.0	1.7	1.6
Maximum Average Daily Construction Emissions	54.0	245.0	5.8	5.4
Threshold	54	54	82	54
Exceed Threshold?	NO	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases.

Source: Compiled by AECOM in 2017

**Table 3.7-14: Variant: Average Daily Construction Emissions**

Construction Year/Phase	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
2018	33.0	218.8	4.3	4.0
2019	36.4	248.2	5.8	5.4
2020	53.5	150.1	6.0	5.6
2021	50.4	118.4	4.8	4.5
2022	22.6	45.1	2.0	1.9
Maximum Average Daily Construction Emissions	53.5	248.2	6.0	5.6
Threshold	54	54	82	54
Exceed Threshold?	NO	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases.

Source: Compiled by AECOM in 2017

As shown in Tables 3.7-13 and 3.7-14, construction-related emissions of NO<sub>x</sub> under either the proposed project or the variant would exceed the thresholds of significance. Therefore, construction emissions could violate an ambient air quality standard or contribute substantially to an existing violation. Thus, this overall construction air quality impact could be significant. Mitigation Measures M-AQ-1a through M-AQ-1d would be implemented to reduce NO<sub>x</sub> emissions to the greatest extent feasible. Although the RPD portion of the proposed project or variant would be subject to the requirements of the City's Clean Construction Ordinance, the mitigation measure requirements in M-AQ-1a would exceed the requirements of the City's Clean Construction Ordinance. Mitigation Measures M-AQ-1a and M-AQ-1d would be consistent with or exceed the requirement of this ordinance and would apply to all project site properties during construction of the proposed project or variant.

### Mitigation Measure M-AQ-1a: Minimize Off-Road Construction Equipment Emissions

The project sponsors shall comply with the following requirements:

**A. Construction Emissions Minimization Plan.** Before a construction permit is issued for each project phase or property, as applicable, the project sponsors shall submit construction emissions minimization plans to the Environmental Review Officer (ERO) or the ERO's designated representative for review and approval. The construction emissions minimization plans shall detail compliance with the following requirements:

- (1) All off-road equipment greater than 25 hp and operating for more than 20 total hours over the entire duration of construction activities shall meet the following requirements:
  - a) Where access to alternative sources of power is reasonably available, portable diesel engines shall be prohibited.
  - b) Where portable diesel engines are required because alternative sources of power are not reasonably available, all off-road equipment shall have engines that meet either EPA or ARB Tier 4 Final off-road emission standards. If engines that comply with Tier 4 Final off-road emission standards are not commercially available, then the project sponsor shall provide the next cleanest piece of off-road equipment as provided by the step-down schedules in Table M-AQ-1a-1.
    - i. For purposes of this mitigation measure, "commercially available" shall mean the availability of Tier 4 Final engines taking into consideration factors such as (i) critical-path timing of construction; (ii) geographic proximity to the project site of equipment; and (iii) geographic proximity of access to off-haul deposit sites.
    - ii. The project sponsor shall maintain records concerning its efforts to comply with this requirement.

**TABLE M-AQ-1a-1  
OFF-ROAD EQUIPMENT COMPLIANCE STEP-DOWN SCHEDULE**

<b>Compliance Alternative</b>	<b>Engine Emissions Standard</b>	<b>Emissions Control</b>
1	Tier 4 Interim	N/A
2	Tier 3	ARB Level 3 VDECS
3	Tier 2	ARB Level 3 VDECS

**How to use the table:** If the requirements of (A)(1)(b) cannot be met, then the project sponsor would need to meet Compliance Alternative 1. Should the project sponsor not be able to supply off-road equipment meeting Compliance Alternative 1, then Compliance Alternative 2 would need to be met. Should the project sponsor not be able to supply off-road equipment meeting Compliance Alternative 2, then Compliance Alternative 3 would need to be met, etc.

- (2) The project sponsor shall require in its construction contracts that the idling time for off-road and on-road equipment be limited to no more than 2 minutes, except as provided in exceptions to the applicable State regulations regarding idling for off-road and on-road equipment. Legible and visible signs shall be posted in multiple languages (English, Spanish, and Chinese) in designated queuing areas and at the construction site to remind operators of the 2-minute idling limit.

- (3) *The project sponsor shall require that construction operators properly maintain and tune equipment in accordance with manufacturer specifications.*
  - (4) *The construction emissions minimization plan shall include estimates of the construction timeline by phase with a description of each piece of off-road equipment required for every construction phase. Off-road equipment descriptions and information may include but are not limited to equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation. For VDECS installed: technology type, serial number, make, model, manufacturer, ARB verification number level, and installation date and hour meter reading on installation date. For off-road equipment using alternative fuels, reporting shall indicate the type of alternative fuel being used.*
  - (5) *The project sponsor shall keep the construction emissions minimization plan available for public review on-site during working hours. The project sponsor shall post at the perimeter of the project site a legible and visible sign summarizing the requirements of the plan. The sign shall also state that the public may ask to inspect the construction emissions minimization plan at any time during working hours, and shall explain how to request inspection of the plan. Signs shall be posted on all sides of the construction site that face a public right-of-way. The project sponsor shall provide copies of the construction emissions minimization plan to members of the public as requested.*
- B. Reporting.** *Quarterly reports shall be submitted to the ERO or the ERO's designated representative indicating the construction phase and off-road equipment information used during each phase, including the information required in A(4).*
- (1) *Within 6 months of the completion of construction activities, the project sponsor shall submit to the ERO or the ERO's designated representative a final report summarizing construction activities. The final report shall indicate the start and end dates and duration of each construction phase. For each phase, the report shall include detailed information required in A(4).*
- C. Certification Statement and On-site Requirements.** *Before the start of construction activities, the project sponsor must certify that it is in compliance with the construction emissions minimization plan, and that all applicable requirements of the plan have been incorporated into contract specifications.*

#### **Mitigation Measure M-AQ-1b: Minimize On-Road Construction Equipment Emissions**

*The project sponsors shall include in all construction contracts a requirement for construction contractors to implement the following measures to reduce construction haul truck emissions, to the extent commercially available (taking into consideration such factors as critical-path timing and geographic proximity).*



**A. Engine Requirements**

(1) *All on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used in connection with the project site (such as haul trucks, water trucks, dump trucks, and concrete trucks) shall be model year 2010 or newer, where feasible in light of commercial availability.*

**B. Construction Emissions Minimization Plan.** *As part of the construction emissions minimization plan identified above in Mitigation Measure M-AQ-1a, Section A, the construction contract shall state, in reasonable detail, how the contractor shall meet the requirements of Section A.*

(1) *The construction emissions minimization plan shall include the model year of the heavy-duty trucks with a gross vehicle weight rating of 19,500 pounds or greater and estimates of the expected fuel usage (or miles traveled or hours of operation, as relevant) for the on-road haul truck fleet. For on-road trucks using alternative fuels, the description shall also specify the type of alternative fuel being used.*

(2) *See Mitigation Measure M-AQ-1a, Section A, Part 5.*

**C. Reporting.** *See Mitigation Measure M-AQ-1a, Section B.*

**D. Monitoring.** *See Mitigation Measure M-AQ-1a, Section C.*

**Mitigation Measure M-AQ-1c: Utilize Best Available Control Technology for In-Water Construction Equipment**

*The project sponsors shall include in construction contracts a requirement to implement the following measures to reduce emissions from in-water equipment:*

**A. Engine Requirements**

(1) *The construction barge shall have engines that meet or exceed EPA marine engine Tier 3 emissions standards, if commercially available (taking into consideration such factors such as critical-path timing and geographic proximity).*

(2) *The project sponsors shall also ensure that the construction work boat engines shall be model year 2005 or newer or meet NO<sub>x</sub> and PM emissions standards for that model year, if commercially available (taking into consideration such factors such as critical-path timing and geographic proximity).*

**B. Construction Emissions Minimization Plan.** *As part of the construction emissions minimization plan identified above under Mitigation Measure M-AQ-1a, Section A, the contractor shall state, in reasonable detail, how the contractor shall meet the requirements of Section A.*

(1) *The construction emissions minimization plan shall include estimates of the construction timeline by phase, with a description of how each piece of in-water equipment (e.g., barge engines, work*

boats) required for every construction phase will comply with the engine requirements stated above. The plan shall also include expected fuel usage and hours of operation for in-water equipment. For in-water equipment using alternative fuels, the description shall also specify the type of alternative fuel being used.

(2) See Mitigation Measure M-AQ-1a, Section A, Part 5.

**C. Reporting.** See Mitigation Measure M-AQ-1a, Section B.

**D. Monitoring.** See Mitigation Measure M-AQ-1a, Section C.

**Mitigation Measure M-AQ-1d: Offset Emissions for Construction and Operational Ozone Precursor (NO<sub>x</sub> and ROG) Emissions**

Before the first construction permit is issued, the project sponsors, with oversight of the ERO or the ERO's designated representative, shall implement one of the following measures:

(1) Directly fund or implement specific emissions offset project(s) within the SFBAAB to achieve the one-time reduction of 6 tons of ozone precursor emissions. This amount is intended to offset the maximum emissions year during construction or operations (or overlapping construction and operations) that would exceed the 10 tons per year thresholds for each NO<sub>x</sub> and ROG, which would occur during operations of the fully built project. Specifically, the worst-case mitigated operational emissions are associated with the variant and are estimated at 11.96 tons per year of ROG emissions and 14 tons per year of NO<sub>x</sub> emissions, which would exceed the 10-ton NO<sub>x</sub> and ROG annual thresholds by 1.96 tons and 4 tons, respectively. Thus, the combined ozone precursor emissions (NO<sub>x</sub> and ROG) would exceed the annual 10-ton threshold in total by 5.96 tons and requires an offset of 6 tons of NO<sub>x</sub> and ROG emissions. To qualify under this mitigation measure, the specific offset project(s) shall result in 6 tons of NO<sub>x</sub> and ROG emissions reductions within the SFBAAB that would not otherwise be achieved through compliance with existing regulatory requirements. Preferred offset project(s) are implemented locally within the City and County of San Francisco. Before implementation of the offset project(s), the project sponsors shall obtain the ERO's approval of the offset project(s) by providing documentation of the associated estimated reduction amount of NO<sub>x</sub> and ROG emissions (in tons per year) within the SFBAAB. The project sponsors shall also notify the ERO within 6 months of completion of the offset project(s) for verification.

or

(2) Pay a one-time mitigation emissions offset fee to the BAAQMD Bay Area Clean Air Foundation to fund BAAQMD's reduction effort in the SFBAAB of 6 tons of ozone precursor emissions. Specifically, the worst-case mitigation offset fee is associated with the variant offset amount of 6 annual tons of combined NO<sub>x</sub> and ROG emissions and will be at a cost per ton consistent with Appendix G of the Carl Moyer grant guidelines in effect at the date of the first construction permit issuance. This fee is currently estimated to be \$30,000 per weighted ton per year of ozone precursor emissions (plus a 5 percent administrative fee). The mitigation offset fee shall fund one

*or more emissions reduction projects within the SFBAAB. This one-time fee is intended to fund reduction project(s) for purposes of offsetting the estimated annual tonnage of combined construction and operational emissions under the variant buildout scenario, which is conservatively assumed to occur in 2022. The project sponsors shall also provide documentation of offset fee payment to the ERO.*

*Acceptance of this fee by BAAQMD shall serve as acknowledgment and a commitment by BAAQMD to one or more emissions reduction project(s) within one year of receipt of the mitigation fee to achieve the emissions reduction objectives specified above. BAAQMD shall provide documentation to the ERO and to the project sponsors describing the emission reduction project(s) funded by the mitigation fee, including the amount of emissions of ROG and NO<sub>x</sub> reduced (in tons per year) within the SFBAAB from the emissions reduction project(s). If any portion of the mitigation offset fee remains unspent after implementation of the emission reduction project(s), the project sponsors shall be entitled to a refund in that amount from BAAQMD. To qualify under this mitigation measure, the specific emissions reduction project(s) shall result in emission reductions within the SFBAAB that would not otherwise be achieved through compliance with existing regulatory requirements.*

*If the project sponsors commit to the land use assumptions consistent with the proposed project (rather than with the variant) for the term of the development agreement, the one-time reduction of 6 tons of ozone precursor emissions listed above under (1) and (2) shall be reduced to a one-time reduction of 3 tons of ozone precursor emissions. This 3 tons reduction amount is intended to offset the maximum emissions year conservatively assumed to occur during the second year of proposed project construction in 2019. Specifically, the mitigated construction related NO<sub>x</sub> emissions for the proposed project are estimated at 12.60 tons, which would exceed the 10-ton threshold by 2.6 tons and require an offset of 3 tons of NO<sub>x</sub>.*

Mitigation Measure M-AQ-1a requires engines in diesel-fueled construction equipment exceeding 50 hp to meet Tier 4 Final emission standards. Interim Tier 4 and Tier 4 Final emission standards went into effect between 2008 and 2015, with the effective date dependent on engine horsepower. Based on the start date of construction for the proposed project and variant, Tier 4 Final engines for off-road equipment are anticipated to be available, and the step-down compliance schedule process would not typically be granted. The improvements in emissions standards required by ARB for off-road construction equipment with Tier 4 Final engines would result in an additional 94 percent reduction in NO<sub>x</sub> emissions from the use of Tier 2 engines, depending on the horsepower of the equipment (SCAQMD, 2017). The emission reductions associated with Mitigation Measure M-AQ-1a were quantified and included in Tables 3.7-15 and 3.7-16.

Mitigation Measure M-AQ-1b could reduce on-road truck NO<sub>x</sub> emissions by up to 96 percent per vehicle (EPA 2016a). However, the overall reduction in emissions for the project would depend on the model years of the fleet and the ability of the contractor(s) to locate newer year trucks. Mitigation Measure M-AQ-1c could reduce NO<sub>x</sub> emissions by 80 percent per marine engine, depending on the availability of newer year boat and barge engines (EPA, 2016b). However, because of uncertainty regarding the availability of the newer year vehicles called for by Mitigation Measures M-AQ-1b and M-AQ-1c, estimated emissions reductions from these measures cannot be

calculated with certainty. Therefore, emission reductions associated with those measures were not estimated for the purpose of this analysis.

As shown in Tables 3.7-15 and 3.7-16, Mitigation Measure M-AQ-1a would reduce construction-related emissions of ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>; however, NO<sub>x</sub> emissions would continue to exceed the threshold. Therefore, implementation of Mitigation Measure M-AQ-1d, which would require offsets for the maximum year of combined construction and operational emissions as shown in Tables 3.7-24 and 3.7-25 and discussed below under “Overlap of Construction and Operation,” has the potential to reduce construction-related NO<sub>x</sub> emissions. While use of the step-down schedules in Table M-AQ-1a-1 could alter the residual NO<sub>x</sub> emissions requiring offsets under Mitigation Measure M-AQ-1d, use of these waivers is not expected to occur frequently enough to alter the amount of offsets that would be required under Mitigation Measure M-AQ-1d. However, at this time, the project sponsors have not identified a specific offset project that could achieve the amount of offset needed to fully offset otherwise unmitigated ROG and NO<sub>x</sub> emissions by Mitigation Measures M-AQ-1a through M-AQ-1c. BAAQMD may be able to identify and implement an emissions reduction project funded with the fee provided by Mitigation Measure M-AQ-1d. However, implementation of an offset project through BAAQMD is outside the control of the project sponsors or the City and is therefore uncertain. Thus, even with the implementation of Mitigation Measures M-AQ-1a through M-AQ-1d, both the proposed project and the variant would violate an air quality standard, contribute to an existing or projected air quality violation, and cause a cumulatively considerable net increase in criteria air pollutants during construction. This overall construction air quality impact of the proposed project or variant would be *significant and unavoidable with mitigation*.

**Table 3.7-15: Proposed Project: Mitigated Average Daily Construction Emissions**

Construction Year/Phase	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
2018	31.7	145.7	0.8	0.7
2019	32.4	149.7	0.9	0.8
2020	45.2	53.6	0.5	0.5
2021	44.0	41.6	0.4	0.4
2022	15.3	12.2	0.1	0.1
Maximum Average Daily Construction Emissions	45.2	149.7	0.9	0.8
Threshold	54	54	82	54
Exceed Threshold?	NO	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases.

Source: Compiled by AECOM in 2017

**Table 3.7-16: Variant: Mitigated Average Daily Construction Emissions**

Construction Year/Phase	Emissions (lb/day)			
	ROG	NOx	PM <sub>10</sub> (exhaust)	PM <sub>2.5</sub> (exhaust)
2018	27.0	149.3	0.8	0.7
2019	27.7	153.3	0.9	0.8
2020	40.6	57.3	0.5	0.5
2021	39.3	45.2	0.4	0.4
2022	15.3	12.3	0.1	0.1
Maximum Average Daily Construction Emissions	40.6	153.3	0.9	0.8
Threshold	54	54	82	54
Exceed Threshold?	NO	YES	NO	NO

Notes: lb/day = pounds per day; NOx = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Maximum average daily emissions represent the greatest emissions that would occur over the entire construction period based on the overlapping construction phases and subphases.

Source: Compiled by AECOM in 2017

### ***Construction-Related Fugitive Dust***

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Fugitive PM dust emissions are associated primarily with site preparation, and vary as a function of parameters such as soil silt content, soil moisture, wind speed, acreage of disturbance area, and vehicle miles traveled by construction vehicles on- and off-site. Earthmoving and material handling operations would be the primary sources of fugitive PM dust emissions from project construction activities.

The Construction Dust Control Ordinance requires all site preparation work, demolition, or other construction activities in San Francisco that have the potential to create dust or expose or disturb more than 10 cubic yards, or 500 square feet, of soil to comply with specified dust control measures. Building permits will not be issued without written notification from the Director of Public Health that states that the applicant has a site-specific dust control plan, if required, unless the Director waives the requirement. All four project properties would be subject to the requirements of the Construction Dust Control Ordinance.

The Construction Dust Control Ordinance requires the project sponsors and contractors who are responsible for construction activities to minimize visible dust on the site. Minimum dust control measures that apply to all projects include:

- watering all construction areas sufficiently to prevent dust from becoming airborne;
- providing as much water as necessary to control dust (without creating runoff) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity;
- during excavation and dirt-moving activities, wet sweeping or vacuuming the streets, sidewalks, paths, and intersections where work is in progress at the end of the work day;
- covering any inactive stockpiles greater than 10 cubic yards or 500 square feet of excavated materials; and
- using dust enclosures, curtains, and dust collectors as necessary to control dust in the excavation area.

Other dust control measures that may be included in a dust control plan include but are not limited to:

- wetting down the area around soil improvements;
- analyzing wind direction;
- placing dust monitors;
- keeping records of PM monitoring results;
- conducting inspections and keeping records of visible dust; and
- establishing a hotline for surrounding community members to call and report visible dust problems.

Compliance with the regulations and procedures set forth by the Construction Dust Control Ordinance would ensure that potential dust-related air quality impacts would be *less than significant* for all project properties. No mitigation measures are necessary.

### ***Operational Emissions of Criteria Air Pollutants***

After construction, long-term emissions of criteria air pollutants would be generated from stationary, area, energy, and mobile sources under either the proposed project or the variant. Stationary sources would include emissions from operation of up to eight diesel emergency generators in residential and commercial buildings at the 700 Innes property. Area sources would include consumer products, periodic architectural coatings, and landscape equipment for residential land uses. Energy sources would include natural gas combustion for space and water heating in residences. Mobile sources would involve vehicle trips associated with residential, recreational, and visitor activities (e.g., work, shopping, and other trips). Additional modeling details are provided in Appendix F.

### **India Basin Shoreline Park Property**

Operational emissions at the India Basin Shoreline Park property would be generated from area, energy, and mobile sources. Energy sources would include natural gas combustion for space and water heating in the commercial land uses. Mobile sources would be the primary source of emissions and would involve vehicle trips associated with commercial and recreational uses. Under either the proposed project or the variant, estimated average daily unmitigated emissions during operation of the India Basin Shoreline Park property would be approximately 1 lb/day of NO<sub>x</sub> and less than 1 lb/day of ROG, PM<sub>10</sub>, and PM<sub>2.5</sub> (Table 3.7-17).

**Table 3.7-17: Proposed Project and Variant—India Basin Shoreline Park Property: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	0.2	0.0	0.0	0.0
Energy	0.0	<0.1	0.0	0.0
Mobile	0.2	0.5	0.2	0.1
Stationary				
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	0.3	0.6	0.2	0.1

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Source: Compiled by AECOM in 2017.

**900 Innes Property**

Operational emissions at the 900 Innes property would be generated from area, energy, and mobile sources. Energy sources would include natural gas combustion for space and water heating in the institutional and commercial land uses. Mobile sources would be the primary source of emissions and would involve vehicle trips for commercial and recreational uses. Under either the proposed project or the variant, estimated average daily unmitigated emissions during operation of the 900 Innes property would be approximately 1 lb/day of NO<sub>x</sub> and less than 1 lb/day of ROG, PM<sub>10</sub>, and PM<sub>2.5</sub> (Table 3.7-18).

**Table 3.7-18: Proposed Project and Variant—900 Innes Property: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	0.2	0.0	0.0	0.0
Energy	0.0	<0.1	0.0	0.0
Mobile	0.1	0.5	0.3	0.1
Stationary				
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	0.4	0.5	0.3	0.1

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
Source: Compiled by AECOM in 2017.

**India Basin Open Space Property**

Under either the proposed project or the variant, operational emissions at the India Basin Open Space property would be minimal, generated from area, energy, and mobile sources. Energy sources would include natural gas combustion for space and water heating in the institutional and commercial land uses. Mobile sources would be the primary source of emissions because of vehicle trips for commercial and recreational uses. Under either the proposed project or the variant, estimated average daily unmitigated emissions during operation of the India Basin Open Space property would be less than 1 lb/day of ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> (Table 3.7-19).

**Table 3.7-19: Proposed Project and Variant—India Basin Open Space Property: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	0.0	0.0	0.0	0.0
Energy	0.0	0.0	0.0	0.0
Mobile	0.1	0.2	0.0	0.0
Stationary	0.0	0.0	0.0	0.0
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	0.1	0.2	0.0	0.0

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
Source: Compiled by AECOM in 2017.

**700 Innes Property**

Under the proposed project and the variant, operational emissions at the 700 Innes property would be generated from stationary, area, energy, and mobile sources. Energy sources would include natural gas combustion for space and water heating in the commercial and residential land uses. Mobile sources would involve vehicle trips for commercial, residential, and educational uses and would be the primary source of NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions. Area sources would be the primary source of ROG emissions and would be generated from the use of consumer products, periodic architectural coatings, and landscape equipment for the residential land uses. Under the proposed project, estimated average daily unmitigated emissions during operation of the 700 Innes property would be approximately 78 lb/day of ROG, 61 lb/day of NO<sub>x</sub>, 35 lb/day of PM<sub>10</sub>, and 13 lb/day of PM<sub>2.5</sub> (Table 3.7-20). Under the variant, estimated average daily unmitigated emissions during operation would be approximately 77 lb/day of ROG, 96 lb/day of NO<sub>x</sub>, 45 lb/day of PM<sub>10</sub>, and 14 lb/day of PM<sub>2.5</sub> (Table 3.7-21). As shown in Tables 3.7-20 and 3.7-21, the variant would result in higher emissions of NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> than the proposed project because of the larger amount of vehicle trips associated with the variant's land uses.

**Table 3.7-20: Proposed Project—700 Innes Property: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	62.7	1.0	3.4	3.4
Energy	0.6	4.8	0.4	0.4
Mobile	13.8	48.5	30.8	8.6
Stationary	1.0	6.7	0.1	0.1
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	78.0	60.9	34.7	12.5

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Source: Compiled by AECOM in 2017.

**Table 3.7-21: Variant—700 Innes Property: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	50.6	0.4	1.4	1.4
Energy	0.7	6.3	0.5	0.5
Mobile	24.9	82.0	42.7	12.0
Stationary	1.1	7.3	0.2	0.2
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	77.3	96.0	44.7	14.0

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

Source: Compiled by AECOM in 2017.



**Overall Operational Impact for Criteria Air Pollutants**

Tables 3.7-22 and 3.7-23 show the average daily operational emissions from all project site properties associated with the proposed project and variant, respectively. As shown in Tables 3.7-22 and 3.7-23, operational emissions would exceed thresholds for ROG and NO<sub>x</sub>. The primary source of ROG emissions would be area sources at the 700 Innes property. Mobile sources would be the primary source of NO<sub>x</sub> emissions across all properties. The variant includes a larger amount of vehicle trips associated with the land uses, resulting in greater emissions from mobile sources. Therefore, implementation of Mitigation Measures M-AQ-1e and M-AQ-1f would be required to reduce operational emissions.

**Table 3.7-22: Proposed Project: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	63.1	0.9	3.4	3.4
Energy	0.6	4.9	0.4	0.4
Mobile	14.2	49.7	31.3	8.7
Stationary	1.0	6.7	0.2	0.2
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	78.8	62.2	35.2	12.6
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
Source: Compiled by AECOM in 2017.

**Table 3.7-23: Variant: Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	51.0	0.4	1.4	1.4
Energy	0.7	6.4	0.5	0.5
Mobile	25.3	83.2	43.2	12.2
Stationary	1.1	7.3	0.2	0.2
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions (lb/day)	78.0	97.3	45.2	14.2
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
Source: Compiled by AECOM in 2017.

**Mitigation Measure M-AQ-1e: Implement Best Available Control Technology for Operational Diesel Generators**

*To reduce operational NO<sub>x</sub> and PM emissions under the proposed project or variant, the project sponsors, as applicable, shall require in applicable contracts that the operational backup diesel generators:*

- (1) comply with ARB Airborne Toxic Control Measure emissions standards for model year 2008 or newer engines; and*
- (2) meet or exceed one of the following emission standards for particulate matter: (A) Tier 4 final certified engine or (B) Tier 4 interim or Tier 3 certified engine that is equipped with an ARB Level 3 VDECS. A nonverified diesel emissions control strategy may be used if the filter has the same PM reduction as the identical ARB-verified model and BAAQMD approves of its use.*

*The project sponsors, as applicable, shall submit documentation of compliance with the BAAQMD NSR permitting process (Regulation 2, Rule 2, and Regulation 2, Rule 5) and the emissions standard requirement of this measure to the Planning Department for review and approval before a permit for a backup diesel generator is issued by any City agency.*

*Once operational, all diesel backup generators shall be maintained in good working order for the life of the equipment and any future replacement of the diesel backup generators shall be required to be consistent with these emissions specifications. The operator of the facility at which the generator is located shall maintain records of the testing schedule for each diesel backup generator for the life of that diesel backup generator. The facility operator shall provide this information for review to the Planning Department within 3 months of a request for such information.*

**Mitigation Measure M-AQ-1f: Prepare and Implement Transportation Demand Management**

*To reduce operational mobile source emissions, the project sponsors shall prepare and implement a transportation demand management (TDM) plan. The TDM plan shall have a goal of reducing estimated aggregate daily one-way vehicle trips associated with the 700 Innes and India Basin Open Space properties by at least 15 percent compared to the aggregate daily one-way vehicle trips identified in the project-related Transportation Impact Study dated July 2017 and included in EIR Appendix F.*

*The project sponsors shall prepare and implement a transportation demand management (TDM) plan. The TDM plan shall have a goal of reducing estimated aggregate daily one-way vehicle trips by at least 15 percent compared to the aggregate daily one-way vehicle trips identified in the project-related Transportation Impact Study dated July 2017 and included in EIR Appendix F.*

*To ensure that this reduction goal could be reasonably achieved, the TDM plan will have a monitoring goal of reducing by 15 percent the daily one-way vehicle trips for each building that has received a certificate of occupancy and that is at least 75 percent occupied, relative to the one-way vehicle trips anticipated for that building based on expected development on that parcel. The calculations shall use the trip generation rates contained in the project's Transportation Impact Study. There shall be a transportation management association that would be responsible for the administration, monitoring, and*

*adjustment of the TDM plan. The project sponsors shall be responsible for monitoring implementation of the TDM plan and proposing adjustments to the plan if its goal is not being achieved, in accordance with the following provisions. The TDM plan may include but is not limited to the types of measures summarized below by way of example. Actual TDM measures selected should include those from the City's adopted TDM Program Standards, which describe the scope and applicability of candidate measures in detail and include:*

- **Active Transportation:** Streetscape improvements to encourage walking, secure bicycle parking, shower and locker facilities for cyclists, subsidized bikeshare memberships for project occupants, bicycle repair and maintenance services, and other bicycle-related services.
- **Car-Share:** Car-share parking spaces and subsidized memberships for project occupants.
- **Delivery:** Amenities and services to support delivery of goods to project occupants.
- **Family-Oriented Measures:** On-site childcare and other amenities to support the use of sustainable transportation modes by families.
- **High-Occupancy Vehicles:** Carpooling/vanpooling incentives and shuttle bus service.
- **Information and Communications:** Multimodal wayfinding signage, transportation information displays, and tailored transportation marketing services.
- **Land Use:** On-site affordable housing and healthy food retail services in underserved areas.
- **Parking:** Unbundled parking, short-term daily parking, parking cash-out offers, and reduced off-street parking supply.

*The TDM plan shall describe each measure, including the degree of implementation (e.g., how long will it be in place, how many tenants or visitors it will benefit, on which locations within the site it will be placed) and the population that each measure is intended to serve (e.g., residential tenants, retail visitors, employees of tenants, visitors). The TDM plan shall commit to monitoring of vehicle trips to and from the project site to determine the plan's effectiveness, as described in "TDM Plan Monitoring and Reporting" below. The TDM plan shall have been approved by the Planning Department before site permit application for the first building, and the plan shall be implemented for each new building upon the issuance of the certificate of occupancy for that building.*

*The TDM plan shall be submitted to the Planning Department for approval to ensure that components of the plan intended to meet the reduction target are shown in the plan and/or ready to be implemented upon the issuance of each certificate of occupancy*

*The TDM plan shall remain a component of the proposed project and variant to be implemented for the duration of the proposed project or variant.*

***TDM Plan Monitoring and Reporting:*** *The TDM Coordinator shall collect data, prepare monitoring reports, and submit them to the Planning Department. To ensure that the goal of reducing by at least 15*

*percent the aggregate daily one-way vehicle trips is reasonably achievable, the project sponsor shall monitor daily one-way vehicle trips for all buildings that have received a certificate of occupancy, and shall compare these vehicle trips to the aggregate daily one-way vehicle trips anticipated for the those buildings based on the trip generation rates contained within the project's Transportation Impact Study.*

**Timing.** *The TDM Coordinator shall collect monitoring data and shall begin submitting monitoring reports to the Planning Department 18 months after issuance of the first certificate of occupancy for buildings on the 700 Innes property that include off-street parking or the establishment of surface parking lots or garages. Thereafter, annual monitoring reports shall be submitted (referred to as "reporting periods") until five consecutive reporting periods show that the full built project has met the reduction goal. From that point on, monitoring data shall be submitted to the Planning Department once every three years. Each trip count and survey (see below for description) shall be completed within 30 days after the end of the applicable reporting period. Each monitoring report shall be completed within 90 days after the applicable reporting period. The timing of monitoring reports shall be modified such that a new monitoring report is submitted 12 months after adjustments are made to the TDM plan to meet the reduction goal, as may be required under the "TDM Plan Adjustments" heading, below. In addition, the Planning Department may modify the timing of monitoring reports as needed to consolidate this requirement with other monitoring and/or reporting requirements for the proposed project or variant, such as annual reporting under the proposed project's or variant's development agreement.*

**Term.** *The project sponsors shall monitor, submit monitoring reports, and make plan adjustments until the earlier of: (i) the expiration of the development agreement, or (ii) the date the Planning Department determines that the reduction goal has been met for up to eight consecutive reporting periods.*

*Notwithstanding the foregoing or any other provision of this mitigation measure, all obligations for monitoring, reporting, and adjusting the TDM plan shall terminate if the project sponsor has paid and/or made a commitment to pay the offset fee for any shortfall in the TDM plan's meeting the reduction goal as provided below.*

*Components: The monitoring and reporting, including trip counts, surveys and travel demand information, shall include the following components or comparable alternative methodology and components, as approved, accepted or provided by Planning Department staff:*

- (1) Trip Count and Intercept Survey: Provide a site-wide trip count and intercept survey of persons and vehicles arriving and leaving the project site for no less than two days during the reporting period between 6:00 a.m. and 8:00 p.m. One day shall be a Tuesday, Wednesday, or Thursday during one week without federally recognized holidays, and another day shall be a Tuesday, Wednesday, or Thursday during another week without federally recognized holidays. The trip count and intercept survey shall be prepared by a qualified transportation or survey consultant, and the Planning Department shall approve the methodology prior to the Project Sponsors conducting the components of the trip count and intercept survey. The Planning Department anticipates it will have a standard trip count and intercept survey methodology developed and available to project sponsors at the time of data collection.*

- (2) *Travel Demand Information:* The above trip count and survey information shall be able to provide the travel demand analysis characteristics (work and non-work trip counts, origins and destinations of trips to/from the project site, and modal split information), as outlined in the Planning Department's Transportation Impact Analysis Guidelines for Environmental Review, October 2002, or subsequent updates in effect at the time of the survey.

*Documentation of Plan Implementation:* The TDM coordinator shall work in conjunction with the Planning Department to develop a survey (online or paper) that can be reasonably completed by the TDM coordinator and/or Transportation Management Association (TMA) staff members to document implementation of TDM program elements and other basic information during the reporting period. The project sponsors shall include this survey in the monitoring report submitted to the Planning Department.

*Assistance and Confidentiality:* The Planning Department will assist the TDM coordinator with questions regarding the components of the monitoring report and will assist the TDM coordinator in determining ways to protect the identity of individual survey responders.

**TDM Plan Adjustments.** The project sponsors shall adjust the TDM plan based on the monitoring results if three consecutive reporting periods demonstrate that measures in the TDM plan are not achieving the reduction goal. The TDM plan adjustments shall be made in consultation with Planning Department staff and may require refinements to existing measures (e.g., change to subsidies, increased bicycle parking), inclusion of new measures (e.g., a new technology), or removal of existing measures (e.g., measures shown to be ineffective or induce vehicle trips).

If the monitoring results from three consecutive reporting periods demonstrate that measures in the TDM plan are not achieving the reduction goal, the TDM plan adjustments shall occur within 270 days after the last consecutive reporting period. The TDM plan adjustments shall occur until the monitoring results of three consecutive reporting periods demonstrate that the reduction goal is achieved.

If after implementing TDM plan adjustments, the project sponsors have not met the reduction goal for up to eight consecutive reporting periods, as determined by the Planning Department, then the project sponsors may, at any time thereafter, elect to use another means to address the shortfall in meeting the TDM plan reduction target. Specifically, in addition to paying the emission offset fees set forth in Mitigation Measure M-AQ-1d, the project sponsors may pay an additional offset fee in accordance with Mitigation Measure M-AQ-1d. This additional offset fee would be the amount required to address both the shortfall in reduction during the previously monitored years and the anticipated shortfall in the remaining expected years of project operations. The anticipated shortfall shall be based on the shortfall that occurred in the most recently monitored year. Calculations of emissions to be offset shall be based on the total amount of emissions anticipated to be reduced by achieving the 15 percent TDM goal, adjusted for the actual percentage of aggregate daily one-way vehicle trip reduction achieved in the most recently monitored year.

**Table 3.7-24: Proposed Project: Mitigated Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	63.1	0.9	3.4	3.4
Energy	0.6	4.9	0.4	0.4
Mobile	12.1	42.2	26.6	7.4
Stationary	0.2	0.3	<0.1	<0.1
Waste	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Average Daily Emissions	76.0	48.3	30.4	11.2
Threshold	54	54	82	54
Exceed Threshold?	YES	NO	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
Source: Compiled by AECOM in 2017.

**Table 3.7-25: Variant: Mitigated Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Area	51.0	0.4	1.4	1.4
Energy	0.7	6.4	0.5	0.5
Mobile	21.5	70.7	36.7	10.4
Stationary	0.2	0.3	<0.1	<0.1
Waste	0.0	0.0	0.0	0.00
Water	0.0	0.0	0.0	0.00
Average Daily Emissions	73.4	77.8	38.6	12.3
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases  
Source: Compiled by AECOM in 2017.

Mitigation Measure M-AQ-1e would require that operational backup diesel generators include Tier 4 final or Tier 4 interim or Tier 3 certified engines equipped with a Level 3 VDECS, resulting in an estimated 93 percent reduction in NO<sub>x</sub> emissions and an 85 percent reduction in PM emissions. Tables 3.7-24 and 3.7-25 show the average daily operational emissions from all project site properties associated with the proposed project and variant with implementation of Mitigation Measure M-AQ-1e. In addition to the emissions presented in Tables 3.7-24 and 3.7-25, Mitigation Measure M-AQ-1f would require a TDM plan with a goal of reducing estimated one-way vehicle trips by 15 percent and mobile-source ROG and NO<sub>x</sub> emissions by 15 percent. The TDM plan would result in an estimated reduction of 2 lb/day of ROG emissions and 7 lb/day of NO<sub>x</sub> emissions for the proposed project and 4 lb/day of ROG emissions and 12 lb/day of NO<sub>x</sub> emissions for the variant. Even with implementation of Mitigation Measures M-AQ-1e and the estimated emissions reductions from M-AQ-1f assuming implementation to the maximum extent feasible, the proposed project would continue to exceed thresholds for ROG emissions and the variant would continue to exceed thresholds for ROG and NO<sub>x</sub> emissions.

Implementation of Mitigation Measure M-AQ-1d has the potential to further reduce operational mobile-source emissions of ROG and NO<sub>x</sub> to below the BAAQMD threshold. However, at this time, the project sponsors have not identified a specific offset project that could achieve the amount of offset needed to fully offset otherwise

unmitigated ROG and NO<sub>x</sub> emissions by Mitigation Measures M-AQ-1a through M-AQ-1c, M-AQ-1e, and M-AQ-1f. BAAQMD may be able to identify and implement an emissions reduction project funded with the fee provided by Mitigation Measure M-AQ-1d. However, implementation of an offset project through BAAQMD is outside the control of the project sponsors or the City and is therefore uncertain. Therefore, operation of either the proposed project or the variant could violate an air quality standard, contribute to an existing or projected air quality violation, and cause a cumulatively considerable increase in criteria air pollutants. This overall operational air quality impact would be *significant and unavoidable with mitigation* with implementation of M-AQ-1d through M-AQ-1f.

### ***Overlap of Construction and Operation***

During the years 2020 through 2022, construction-related and operational emissions were assumed to overlap, as a portion of the proposed project would be completed while construction is completed in other project areas. Tables 3.7-26 and 3.7-27 show the average daily overlapping construction and operational emissions from all project site properties associated with the proposed project and variant, respectively. As shown in Table 3.7-26, the combined construction-related and operational emissions for the proposed project would exceed the thresholds for ROG and NO<sub>x</sub> emissions in 2020 through 2022. As shown in Table 3.7-27, the combined construction-related and operational emissions for the variant would exceed the thresholds for ROG in 2021 and 2022 and for NO<sub>x</sub> emissions in 2020 through 2022.

Tables 3.7-28 and 3.7-29 present the combined construction-related and operational emissions with mitigation for the proposed project and variant, respectively. Although implementing Mitigation Measures M-AQ-1a through M-AQ-1c and Mitigation Measures M-AQ-1e and M-AQ-1f would reduce emissions to the maximum extent feasible, the combined construction-related and operational emissions for the proposed project would exceed the thresholds for ROG emissions in 2021 and NO<sub>x</sub> emissions in 2020. The combined construction-related and operational emissions for the variant would exceed the thresholds for ROG emissions in 2021 and 2022 and for NO<sub>x</sub> emissions in 2020 through 2022.

**Table 3.7-26: Proposed Project: Overlapping Construction and Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> <sup>1</sup>	PM <sub>2.5</sub> <sup>1</sup>
2020				
Construction	54.0	140.8	5.7	5.3
Operations (900 Innes)	0.3	0.5	0.3	0.1
<b>Total</b>	<b>54.4</b>	<b>141.4</b>	<b>6.0</b>	<b>5.4</b>
2021				
Construction	18.5	42.2	1.9	1.8
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	52.9	44.8	26.1	9.1
<b>Total</b>	<b>71.4</b>	<b>87.0</b>	<b>28.1</b>	<b>10.9</b>
2022				
Construction	18.3	39.0	1.7	1.6
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	53.0	45.0	26.1	9.1
<b>Total</b>	<b>71.3</b>	<b>84.0</b>	<b>27.8</b>	<b>10.7</b>
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

<sup>1</sup>Construction PM<sub>10</sub> and PM<sub>2.5</sub> emissions are exhaust emissions only. Operational PM<sub>10</sub> and PM<sub>2.5</sub> emissions are total (includes exhaust and fugitive emissions).

Source: Compiled by AECOM in 2017.

**Table 3.7-27: Variant: Overlapping Construction and Operational Emissions**

Source	Emissions (lb/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> <sup>1</sup>	PM <sub>2.5</sub> <sup>1</sup>
2020				
Construction	53.5	150.1	6.0	5.6
Operations (900 Innes)	0.3	0.5	0.3	0.1
<b>Total</b>	<b>53.9</b>	<b>150.7</b>	<b>6.3</b>	<b>5.7</b>
2021				
Construction	24.7	65.5	3.2	3.0
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	53.3	81.0	36.2	10.7
<b>Total</b>	<b>78.0</b>	<b>146.4</b>	<b>39.4</b>	<b>13.7</b>
2022				
Construction	22.6	45.1	2.0	1.9
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	53.4	81.1	36.2	10.7
<b>Total</b>	<b>76.0</b>	<b>126.2</b>	<b>38.2</b>	<b>12.6</b>
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

<sup>1</sup>Construction PM<sub>10</sub> and PM<sub>2.5</sub> emissions are exhaust emissions only. Operational PM<sub>10</sub> and PM<sub>2.5</sub> emissions are total (includes exhaust and fugitive emissions).

Source: Compiled by AECOM in 2017.



**Table 3.7-28: Proposed Project: Overlapping Mitigated Construction and Operational Emissions**

Source	Emissions (lb/day) <sup>1</sup>			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> <sup>2</sup>	PM <sub>2.5</sub> <sup>2</sup>
2020				
Construction	45.2	53.6	0.5	0.5
Operations (900 Innes)	0.3	0.5	0.3	0.1
<b>Total</b>	45.6	54.1	0.8	0.5
2021				
Construction	15.4	11.3	0.1	0.1
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	52.3	40.2	26.0	9.0
<b>Total</b>	67.7	51.4	26.2	9.1
2022				
Construction	15.3	12.3	0.1	0.1
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	52.4	40.3	26.0	9.0
<b>Total</b>	67.7	52.6	26.2	9.1
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

<sup>1</sup> Assumes implementation of Mitigation Measures M-AQ-1a through M-AQ-1c and Mitigation Measures M-AQ-1e and M-AQ-1f.

<sup>2</sup> Construction PM<sub>10</sub> and PM<sub>2.5</sub> emissions are exhaust emissions only. Operational PM<sub>10</sub> and PM<sub>2.5</sub> emissions are total (includes exhaust and fugitive emissions). Source: Compiled by AECOM in 2017.

**Table 3.7-29: Variant: Overlapping Mitigated Construction and Operational Emissions**

Source	Emissions (lb/day) <sup>1</sup>			
	ROG	NO <sub>x</sub>	PM <sub>10</sub> <sup>2</sup>	PM <sub>2.5</sub> <sup>2</sup>
2020				
Construction	40.6	57.3	0.5	0.5
Operations (900 Innes)	0.3	0.5	0.3	0.1
<b>Total</b>	40.9	57.8	0.8	0.5
2021				
Construction	15.4	11.3	0.1	0.1
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	52.7	75.7	36.1	10.6
<b>Total</b>	68.0	87.0	36.2	10.7
2022				
Construction	15.3	12.3	0.1	0.1
Operations (India Basin Shoreline Park, 900 Innes, 700 Innes Phase I)	52.7	75.9	36.1	10.6
<b>Total</b>	68.0	88.2	36.2	10.7
Threshold	54	54	82	54
Exceed Threshold?	YES	YES	NO	NO

Notes: lb/day = pounds per day; NO<sub>x</sub> = oxides of nitrogen; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; PM<sub>10</sub> = particulate matter with aerodynamic diameter less than 10 microns; ROG = reactive organic gases

<sup>1</sup> Assumes implementation of Mitigation Measures M-AQ-1a through M-AQ-1c and Mitigation Measures M-AQ-1e and M-AQ-1f.

<sup>2</sup> Construction PM<sub>10</sub> and PM<sub>2.5</sub> emissions are exhaust emissions only. Operational PM<sub>10</sub> and PM<sub>2.5</sub> emissions are total (includes exhaust and fugitive emissions). Source: Compiled by AECOM in 2017.

Under either the proposed project or the variant, the combined construction and operation even with implementation of Mitigation Measures M-AQ-1a through M-AQ-1c and M-AQ-1e and M-AQ-1f, the proposed project or the variant would generate emissions that would exceed the thresholds for ROG and NO<sub>x</sub> emissions. Therefore, Mitigation Measures M-AQ-1d also would be required.

Implementation of Mitigation Measures M-AQ-1a through M-AQ-1f has the potential to mitigate ROG and NO<sub>x</sub> emissions to a level of insignificance. However, at this time, the project sponsors have not identified a specific offset project that could achieve the amount of offset needed to fully offset otherwise unmitigated ROG and NO<sub>x</sub> emissions by Mitigation Measures M-AQ-1a through M-AQ-1c, M-AQ-1e, and M-AQ-1f. BAAQMD may be able to identify and implement an emissions reduction project funded with the fee provided by Mitigation Measure M-AQ-1d. However, implementation of an offset project through BAAQMD is outside the control of the project sponsors or the City and is therefore uncertain.

The proposed project or variant's ROG and NO<sub>x</sub> residual emissions increases after the application of all feasible mitigation measures could contribute to new, or exacerbate existing, air quality violations in the SFBAAB by contributing to ozone or resulting in Air Quality Index values that would be unhealthy for sensitive groups and others. As discussed in Section 3.7.1, "Environmental Setting," the Air Quality Index refers to specific amounts of pollution in the air and is based on the federal air quality standards. Air Quality Index statistics from 2012 to 2016 indicate that air quality in the Bay Area is predominantly in the "good" or moderate" category and healthy on most days for most people. When air quality is "moderate," unusually sensitive people should consider limited prolonged outdoor exertion. The main health concern of exposure to ground-level ozone is the effect on the respiratory system. Several factors influence health impacts, including the concentrations of ground-level ozone, the duration of exposure, breathing rate, the length of intervals between exposures, and the sensitivity of the person to the exposure. The concentration of ground-level ozone in the atmosphere is influenced by the volume of air available for dilution, the temperature, and the intensity of ultraviolet light. Given these various factors, it is difficult to predict the magnitude of health effects from the proposed project or variant's exceedance of significance criteria for regional ROG and NO<sub>x</sub> emissions.

However, because residual emissions generated from construction and operation of the proposed project or variant could violate an air quality standard, contribute substantially to an existing or projected air quality violation, and would be cumulatively considerable, these residual air pollutant emissions are conservatively considered *significant and unavoidable with mitigation*.

### **Overall Impact Conclusion**

The impact conclusion would be significant and unavoidable with mitigation for ROG and NO<sub>x</sub> emissions during construction, operation, and overlapping construction and operation, and cumulatively even with implementation of Mitigation Measures M-AQ-1a through M-AQ-1f discussed above under Impact AQ-1a. Therefore, the overall impact related to generation of emissions that could contribute to new, or exacerbate existing, air quality violations in the SFBAAB would be *significant and unavoidable with mitigation*.

**Impact AQ-2: The proposed project or variant would generate construction-related and operational emissions of criteria pollutants and precursors that could conflict with or obstruct implementation of the applicable air quality plan. (*Less than Significant with Mitigation*)**

Air quality plans describe air pollution control strategies to be implemented by a city, county, or region. The primary purpose of an air quality plan is to bring an area that does not attain federal and State air quality standards into compliance with the requirements of the Clean Air Act and California Clean Air Act. As discussed previously, the most recent air quality plan is the 2017 Bay Area Clean Air Plan. Construction or operation under the proposed project or variant would be consistent with the 2017 Bay Area Clean Air Plan if it would support the plan's goals, include applicable control measures from the plan, and would not disrupt or hinder implementation of any of the plan's control measures.

***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

The primary goals of the 2017 Bay Area Clean Air Plan are to protect public health and protect the climate by reducing emissions, concentrations of harmful air pollutants, and exposure to the pollutants that pose the greatest health risk. To meet the primary goals, the Bay Area Clean Air Plan includes individual control measures that describe specific actions to reduce emissions of air pollutants and GHGs, with measures assigned into categories such as mobile-source, stationary-source, and land use and local impacts measures. The 2017 Bay Area Clean Air Plan control strategy is based upon the control measure categories of stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and short lived climate pollutants.

The proposed project and variant include mitigation measures identified to reduce emissions of criteria pollutants during both project construction and operations. For construction, Mitigation Measures M-AQ-1a through M-AQ-1c would reduce ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from off-road equipment, on-road truck trips, and in-water construction equipment. For operations, Mitigation Measures M-AQ-1e and M-AQ-1f would reduce ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from emergency generators and on-road vehicles. Mitigation Measure M-AQ-1d would require offsets for the maximum year of construction or operations or combined construction and operational emissions.

For mobile sources, the 2017 Bay Area Clean Air Plan includes measures applicable to the project related to the use of off-road construction equipment. Control measure TR22, Construction, Freight and Farming Equipment, calls for incentives to retrofit construction equipment with diesel PM filters or upgrade to Tier 3 or 4 engines and use renewable alternative fuels in applicable equipment. Both the proposed project and variant would be consistent with TR22 because they would use construction equipment equipped with diesel PM filters or Tier 4 Final engines, as required by the Clean Construction Ordinance and Mitigation Measure M-AQ-1a.

Implementation of control measure TR19, Medium- and Heavy-Duty Trucks, will directly provide incentives for the purchase of new trucks with engines that exceed ARB's 2010 NO<sub>x</sub> emission standards for heavy-duty engines, hybrid trucks, and zero-emission trucks. Both the proposed project and variant would be consistent with TR19 through implementation of Mitigation Measure M-AQ-1b. Control measure TR21, Boats: Cleaner Commercial Harbor Craft, would develop financial incentives for wind assist, hybrid systems, use of alternative fuels, retrofit of existing older marine engines with selective catalytic converters, and diesel particulate filters. Both the proposed project and variant would be consistent with TR21 with the implementation of Mitigation Measure M-AQ-1c.

For stationary sources, the Bay Area Clean Air Plan includes stationary-source control measures (SSMs) to enhance BAAQMD's regulatory program. SS21, "Revise Regulation 2, Rule 5: New Source Review for Air Toxics," would be applicable to the project. SS21 supports implementing more stringent requirements through BAAQMD's New Source Review program and the Air Toxics Hot Spots program, based on revisions to OEHHA risk factors and methodologies. This analysis uses the more stringent 2015 OEHHA guidance in evaluating the project's health risks and hazards. Mitigation Measure M-AQ-1e, "Implement Best Available Control Technology for Operational Diesel Generators," would reduce ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from emergency generators.

The 2017 Bay Area Clean Air Plan also includes TR2, Trip Reduction Programs. TR2 includes a mandatory and voluntary program to implement strategies that encourage trip reduction from worker commutes. Additional measures in the 2017 Bay Area Clean Air Plan that encourage trip reduction include TR1 (Clean Air Teleworking), TR8 (Ridesharing and Last-Mile Connections), and TR9 (Bicycle and Pedestrian Access and Facilities). Mitigation Measure M-AQ-1f requires developing a TDM plan to reduce the use of single-occupancy vehicles and encourage the use of transit and nonmotorized travel modes. Thus, the proposed project or variant would include the applicable control measures identified in the Bay Area Clean Air Plan.

Therefore, the proposed project or variant would not conflict with or obstruct implementation of the 2017 Bay Area Clean Air Plan, particularly with implementation of Mitigation Measures M-AQ-1a through M-AQ-1c, M-AQ-1e and M-AQ-1f. This impact would be *less than significant with mitigation* with implementation of Mitigation Measures M-AQ-1a through M-AQ-1c, M-AQ-1e and M-AQ-1f.

**Impact AQ-3: The proposed project or variant would generate emissions that could expose sensitive receptors to substantial pollutant concentrations. (*Significant and Unavoidable with Mitigation*)**

The project site is located in an area with nearby sensitive receptors. In addition, the proposed project and variant would develop residential land uses that would be considered sensitive receptors. During construction of either the proposed project or the variant, construction-related emissions of TACs and PM<sub>2.5</sub> could expose nearby sensitive receptors to substantial pollutant concentrations. Furthermore, because residential receptors would be developed on the project site while construction continues to build out the remainder of the project, proposed residents could be exposed to concentrations of pollutants generated by construction under the proposed project or variant, which could exacerbate conditions. After buildout of the proposed project or variant, air pollutant emissions generated during day-to-day activities could expose nearby sensitive receptors to substantial pollutant concentrations.

The greatest potential risk from TAC and PM<sub>2.5</sub> emissions associated with the proposed project or variant would come from diesel PM emissions generated by operation of heavy equipment during construction and brake and tire wear from increased vehicle traffic during operations. Off-road diesel equipment used for clearing and grading, materials handling and installation, and other construction activities would generate diesel PM emissions.

***Construction—Annual PM<sub>2.5</sub> Concentrations***

**India Basin Shoreline Park Property**

Construction at the India Basin Shoreline Park property is assumed to occur in the year 2020. PM<sub>2.5</sub> impacts associated with construction at the India Basin Shoreline Park property at all off-site sensitive receptors in the

study area as described above would be less than 8 percent of the total maximum PM<sub>2.5</sub> impact of 1.4 µg/m<sup>3</sup> and 1.1 µg/m<sup>3</sup> in the year 2020 for the proposed project and variant, respectively (Table 3.7-30). There would be no on-site sensitive receptors in the year 2020.

#### **900 Innes Property**

Construction at the 900 Innes property is assumed to occur in the year 2019, overlapping with construction at the 700 Innes property. PM<sub>2.5</sub> impacts in the year 2019 would be approximately 20 percent of the total maximum 2.5 µg/m<sup>3</sup> for the proposed project and 2.2 µg/m<sup>3</sup> for the variant, respectively (Table 3.7-30). There would be no on-site sensitive receptors in the year 2019.

#### **India Basin Open Space Property**

Construction at the India Basin Open Space property is conservatively assumed to occur in the years 2020 through 2022, with the shoreline wetlands being constructed in 2020 through 2021 and the beach area being constructed in late 2021 through 2022. PM<sub>2.5</sub> impacts associated with construction at the India Open Space property at all off-site sensitive receptors described above in the years 2020 through 2022 and on-site sensitive receptors at Hillside Hamman Cove (Figures 3.7-3 and 3.7-4) would be approximately 20 percent of the maximum PM<sub>2.5</sub> impacts for the years 2020 through 2022 (Table 3.7-30).

#### **700 Innes Property**

Construction at the 700 Innes property is conservatively assumed to occur in all 5 years of the construction period, 2018 through 2022, peaking in 2019. PM<sub>2.5</sub> impacts associated with construction at the 700 Innes property in the year 2019 at all off-site receptors and on-site sensitive receptors at Hillside Hamman Cove (Figures 3.7-3 and 3.7-4) would be approximately 80 percent (Table 3.7-30). PM<sub>2.5</sub> impacts associated with the construction at the 700 Innes property in the year 2020 would be approximately 70 percent and approximately 80 percent in the years 2021 and 2022.

#### **Overall Construction Impact**

The following details are presented in Table 3.7-30 for the maximally exposed resident receptor during each year of construction for the proposed project and variant. The maximum annual average concentration for PM<sub>2.5</sub>, occurring in the year 2019, is equal to 2.5 µg/m<sup>3</sup> for the proposed project and 2.2 µg/m<sup>3</sup> for the variant. When the impacts of the proposed project and the variant are added to baseline conditions from the CRRP-HRA [2014] modeling (Table 3.7-31), the proposed project and the variant in addition to baseline conditions would result in totals of 10.8 µg/m<sup>3</sup> and 10.6 µg/m<sup>3</sup>, respectively. Therefore, both the proposed project and variant would result in a significant impact before mitigation at a limited number of receptors along Innes Avenue, as the total concentration would exceed the threshold for health-vulnerable zip codes of 9.0 µg/m<sup>3</sup>, and the proposed project and variant contribution would be greater than 0.2 µg/m<sup>3</sup>.

Implementing Mitigation Measure M-AQ-1a with the requirement to use Tier 4 Final construction equipment would reduce the maximum annual average concentration of PM<sub>2.5</sub> during the year 2019 to 1.1 µg/m<sup>3</sup> for the proposed project and 1.0 µg/m<sup>3</sup> for the variant (Table 3.7-32). The maximum annual average PM<sub>2.5</sub> concentration for 2019 in combination with baseline conditions would still be above the respective thresholds of 9.0 µg/m<sup>3</sup>

(Table 3.7-33 and Figure 3.7-5). Therefore, implementing Mitigation Measure M-AQ-1a would reduce the overall construction-related concentration of PM<sub>2.5</sub> emissions generated during construction; however, the concentration impact would still exceed the threshold of 9.0 µg/m<sup>3</sup> and the project contribution threshold of 0.2 µg/m<sup>3</sup> because of haul truck impacts (75 percent) and construction equipment at 700 Innes (21 percent) and 900 Innes (4 percent) in 2019 and 2020 at a limited number of receptors along Innes Avenue. Mitigation Measures M-AQ-1b through M-AQ-1d have the potential to further reduce PM<sub>2.5</sub> impacts, but these mitigation measures are not accounted for in Table 3.7-32 because of uncertainty as to their effectiveness. Therefore, even with implementation of Mitigation Measures M-AQ-1a through M-AQ-1d, the construction impact would still be *significant and unavoidable with mitigation*.

**Table 3.7-30: PM<sub>2.5</sub> Concentrations with Construction of the Proposed Project or Variant**

Year	X (UTM)	Y (UTM)	Proposed Project (µg/m <sup>3</sup> )		Variant (µg/m <sup>3</sup> )	
			X (UTM)	Y (UTM)		
Off-Site Receptors						
2018 <sup>1</sup>	555,120	4,176,220	1.4	555,120	4,176,220	1.3
2019 <sup>2</sup>	555,100	4,176,220	2.5	555,100	4,176,220	2.2
2020 <sup>3</sup>	555,100	4,176,220	1.4	555,100	4,176,220	1.1
2021 <sup>5</sup>	555,100	4,176,220	0.4	555,100	4,176,220	0.4
2022 <sup>5</sup>	554,880	4,176,440	0.2	554,880	4,176,440	0.2
On-Site Receptors at Hillside Hamman Cove						
2021 <sup>4,5</sup>	555,480	4,176,260	1.1	555,480	4,176,260	1.1
2022 <sup>4,5</sup>	555,480	4,176,260	0.5	555,480	4,176,260	0.5

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; UTM = Universal Transverse Mercator

<sup>1</sup> Maximum concentrations attributable primarily to grading (50%) and 700 Innes unmitigated construction sources at an off-site receptor.

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes unmitigated construction sources (75%) at an off-site receptor.

<sup>3</sup> Maximum concentrations attributable primarily to 700 Innes (80%) unmitigated construction sources at an off-site receptor.

<sup>4</sup> Maximum concentrations attributable primarily to 700 Innes (90%) unmitigated construction sources at an on-site receptor.

<sup>5</sup> Assumes six of the eight emergency generators (Tier 2) would be operating after the completion of Phase 1 construction.

<sup>6</sup> Maximum concentrations attributable to vehicle traffic at on-site receptor.

Source: Compiled by AECOM in 2017.

**Table 3.7-31: PM<sub>2.5</sub> Concentrations for Maximum Modeled Construction Year for the Proposed Project or Variant, Baseline plus Project Conditions**

Year	Proposed Project (µg/m <sup>3</sup> )	Variant (µg/m <sup>3</sup> )
Baseline Conditions (CRRP-HRA [2014]) <sup>1</sup>	8.4	8.4
Project Construction <sup>2</sup>	2.5	2.2
Total PM <sub>2.5</sub>	10.8	10.6
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions) plus construction impact from Hunters Point and Candlestick areas (data provided by Ramboll Environ).

<sup>2</sup> Based on 2019 construction PM<sub>2.5</sub> annual concentrations using unmitigated construction equipment at an off-site receptor. Receptor location: X (UTM) = 555,100, Y (UTM) = 4,176,220.

Source: Compiled by AECOM in 2017.

**Table 3.7-32: PM<sub>2.5</sub> Concentrations with Construction of the Proposed Project or Variant with Mitigation Measure M-AQ-1a<sup>7</sup>**

Year	X (UTM)	Y (UTM)	Proposed Project ( $\mu\text{g}/\text{m}^3$ )		Y (UTM)	Variant ( $\mu\text{g}/\text{m}^3$ )
			X (UTM)	Y (UTM)		
Off-Site Receptors						
2018 <sup>1</sup>	555,100	4,176,220	0.5	555,100	4,176,220	0.5
2019 <sup>2</sup>	555,100	4,176,220	1.1	555,100	4,176,220	1.0
2020 <sup>3</sup>	554,880	4,176,440	0.8	554,880	4,176,440	0.6
2021 <sup>5</sup>	554,880	4,176,440	0.3	554,880	4,176,440	0.3
2022 <sup>5</sup>	554,880	4,176,440	0.2	554,880	4,176,440	0.2
On-Site Receptors at Hillside Hamman Cove <sup>6</sup>						
2021 <sup>4,5</sup>	555,240	4,176,120	0.3	555,220	4,176,140	0.2
2022 <sup>4,5</sup>	555,240	4,176,240	0.2	555,220	4,176,140	0.1

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Maximum concentrations attributable primarily to grading (50%) and 700 Innes construction sources/haul truck trips (Tier 4 final off-road engines) at an off-site receptor.

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes construction sources/haul truck trips (75%) (Tier 4 final off-road engines) at an off-site receptor.

<sup>3</sup> Maximum concentrations attributable primarily to 700 Innes (80%) construction sources/haul truck trips (Tier 4 final off-road engines) at an off-site receptor.

<sup>4</sup> Maximum concentrations attributable primarily to 700 Innes (90%) construction sources (Tier 4 final off-road engines) at an off-site receptor.

<sup>5</sup> Assumes six of the eight emergency generators (Tier 2) would be operating after the completion of Phase 1 construction. Assumes Tier 4 diesel engines for the emergency generators.

<sup>6</sup> Assumes Tier 4 diesel engines for the emergency generators.

<sup>7</sup> Mitigation Measures M-AQ-1b, M-AQ-1c, and M-AQ-1d not included in calculation.

Source: Compiled by AECOM in 2017.

**Table 3.7-33: PM<sub>2.5</sub> Concentrations for Maximum Modeled Construction Year for the Proposed Project or Variant, Baseline plus Project Conditions with Mitigation Measure M-AQ-1a<sup>4</sup>**

Year	Proposed Project ( $\mu\text{g}/\text{m}^3$ )	Variant ( $\mu\text{g}/\text{m}^3$ )
Baseline Conditions (CRRP-HRA [2014]) <sup>1</sup>	8.4	8.4
Project Construction <sup>2</sup>	1.1	1.0
Total PM <sub>2.5</sub>	9.4	9.3
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

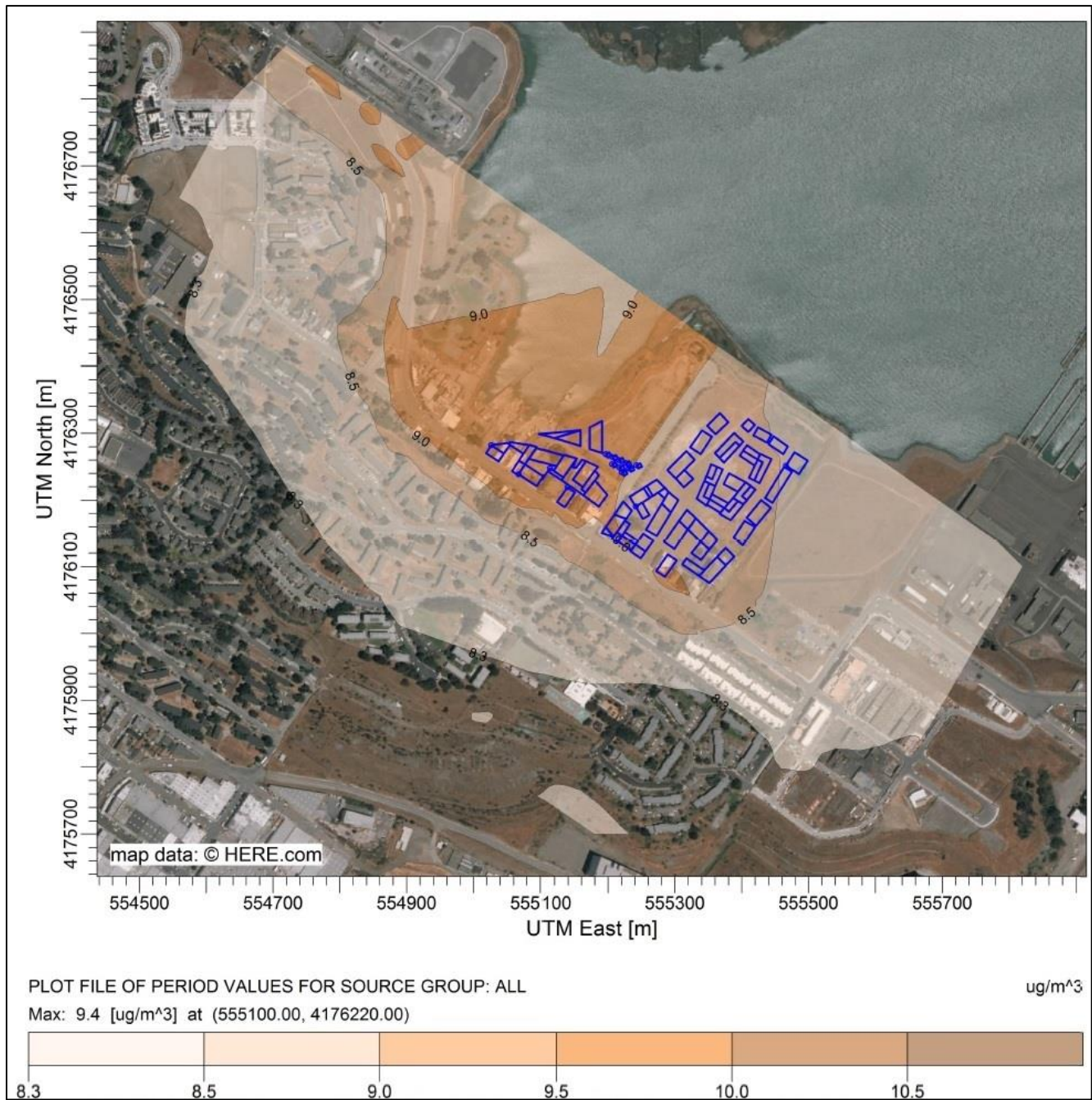
<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Based on 2019 construction PM<sub>2.5</sub> annual concentrations using unmitigated construction equipment at an off-site receptor. Receptor location: X (UTM) = 555,100, Y (UTM) = 4,176,220.

<sup>3</sup> Concurrent construction projects at Hunters Point and Candlestick Point areas.

<sup>4</sup> Mitigation Measures M-AQ-1b, MM-AQ-1c, and MM-AQ-1d not included in calculation.

Source: Compiled by AECOM in 2017.



**Figure 3.7-5** **Baseline plus Proposed Project Maximum with Mitigation Measure Modeled PM<sub>2.5</sub> Annual Concentrations for 2019 Construction Year**

**Operations—Annual PM<sub>2.5</sub> Concentrations**

Operational emission sources evaluated in the dispersion modeling for both the proposed project and the variant included on-road vehicles and emergency generators. Project-generated on-road traffic within 1,000 feet of the project site was modeled. Based on consultation with Fehr & Peers (San Francisco, 2017), the route modeled for the on-road traffic extended from the project site west to Jennings Street, south to Kiska Road/Kirkwood Avenue,



and east to Coleman Street. Figure 3.7-6 illustrates the on-road vehicle routes modeled for operation under the proposed project or variant at all sensitive receptors.

The proposed project and variant would include the operation of up to eight emergency generators. These sources were modeled as point sources, with stack height equal to 1 meter above the nearest building height. Operational emissions were analyzed at all off-site and on-site receptors (Figures 3.7-3 and 3.7-4).

#### **India Basin Shoreline Park Property**

Operations associated with the India Basin Shoreline Park property include PM<sub>2.5</sub> emissions from vehicle trips to the property. Less than 1 percent of the modeled total PM<sub>2.5</sub> concentrations of 1.6 µg/m<sup>3</sup> and 2.4 µg/m<sup>3</sup> for the proposed project and variant, respectively, are associated with trips to this property (Table 3.7-34).

#### **900 Innes Property**

Operations associated with the 900 Innes property include PM<sub>2.5</sub> emissions from vehicle trips to the property. Less than 1 percent of the modeled total PM<sub>2.5</sub> concentrations of 1.6 µg/m<sup>3</sup> and 2.4 µg/m<sup>3</sup> for the proposed project and variant, respectively, are associated with trips to this property (Table 3.7-34).

#### **India Basin Open Space Property**

Operations associated with the India Basin Open Space property include PM<sub>2.5</sub> emissions from vehicle trips to the property. Less than 0.1 percent of the modeled total PM<sub>2.5</sub> concentrations of 1.6 µg/m<sup>3</sup> and 2.4 µg/m<sup>3</sup> for the proposed project and variant, respectively, are associated with trips to this property (Table 3.7-34).

#### **700 Innes Property**

Operations associated with the 700 Innes property include PM<sub>2.5</sub> emissions from vehicle trips to the property and up to eight emergency generators. Approximately 98 percent of the modeled total PM<sub>2.5</sub> concentrations of 1.6 µg/m<sup>3</sup> and 2.4 µg/m<sup>3</sup> for the proposed project and variant, respectively, are associated with trips to this property (Table 3.7-34). The other 2 percent of the total PM<sub>2.5</sub> concentration is due to the emergency generators.

#### **Overall Operational Impact**

Project operation under either the proposed project or variant would generate PM<sub>2.5</sub> concentrations of 1.6 µg/m<sup>3</sup> and 2.4 µg/m<sup>3</sup> for the proposed project or variant, respectively that would cause project emissions in combination with baseline emissions to exceed the threshold of significance for PM<sub>2.5</sub> (Table 3.7-34) and the proposed project and variant contribution would be greater than 0.2 µg/m<sup>3</sup>. Therefore, the overall operational impact of emissions generated under the proposed project or variant could be significant. Implementing Mitigation Measure M-AQ-1e would not change the maximum PM<sub>2.5</sub> concentrations because they are attributable to vehicle traffic operation, which the mitigation measure would not reduce. Mitigation Measure M-AQ-1f, by reducing the number of vehicle trips, would reduce PM<sub>2.5</sub> impacts by approximately 15 percent. Mitigation Measure M-AQ-1d could also reduce PM<sub>2.5</sub> emissions, depending on the proposed program selected for the offset credits. Neither of these mitigation measures are accounted for in Table 3.7-34 because of uncertainty as to their effectiveness; therefore, the overall impact of operational PM<sub>2.5</sub> emissions by the proposed project or variant would be *significant and unavoidable with mitigation* with implementation of Mitigation Measures M-AQ-1d through M-AQ-1f.

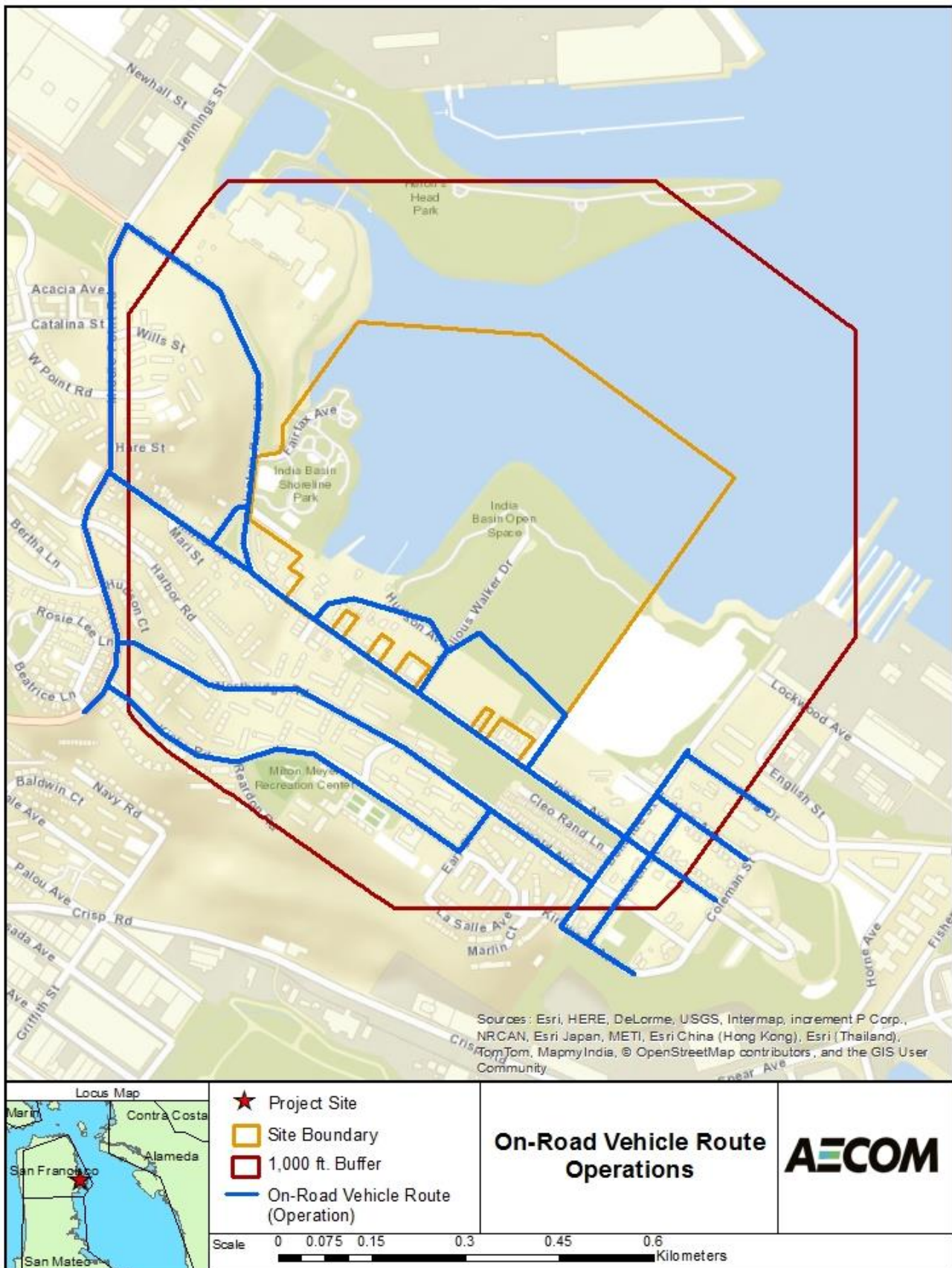


Figure 3.7-6

On-Road Vehicle Routes Modeled

**Table 3.7-34: PM<sub>2.5</sub> Concentrations for Operations under the Proposed Project or Variant, Baseline plus Project Conditions<sup>4</sup>**

Year	Proposed Project ( $\mu\text{g}/\text{m}^3$ )	Variant ( $\mu\text{g}/\text{m}^3$ )
Baseline Conditions (CRRP-HRA [2014]) <sup>1</sup>	8.4	8.4
Project Operation <sup>2</sup>	1.6	2.4
Total PM <sub>2.5</sub>	10.0	10.8
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Based on PM<sub>2.5</sub> annual concentrations at an off-site receptor. Receptor location: X (UTM) = 555,180, Y (UTM) = 4,176,200.

<sup>3</sup> Concurrent construction projects at Hunters Point and Candlestick Point areas.

<sup>4</sup> Does not include Mitigation Measure Mitigation Measure M-AQ-1d, M-AQ-1e (10% reduction from traffic demand management) or Mitigation Measure M-AQ-1f.

Source: Compiled by AECOM in 2017.

### ***Overlap of Construction and Operation—Annual PM<sub>2.5</sub> Concentrations***

During the years 2021 and 2022, construction-related and operational emissions would overlap as a portion of the project site under the proposed project or variant would be occupied while construction is completed in other areas of the site.

### ***India Basin Shoreline Park Property***

As stated above, construction at the India Basin Shoreline Park property would be completed in 2020. Operations beginning in 2021 associated with India Basin Shoreline Park, which would include PM<sub>2.5</sub> emissions from vehicle trips to the property, would overlap with continued construction at the India Basin Open Space and 700 Innes properties. However, less than 1 percent of the total operational PM<sub>2.5</sub> concentration is associated with trips to the India Basin Shoreline Park property. There would be no on-site receptors at this property.

### ***900 Innes Property***

As stated above, construction at the 900 Innes property would be completed in 2019. Operations beginning in 2020 associated with the 900 Innes property, which would include PM<sub>2.5</sub> emissions from vehicle trips to the property, would overlap with construction at the India Basin Shoreline Park, India Basin Open Space, and 700 Innes properties. However, less than 1 percent of the total PM<sub>2.5</sub> concentration is associated with trips to the 900 Innes property. There would be no on-site receptors at this property.

### ***India Basin Open Space Property***

As stated above, construction at the India Basin Open Space property would occur in the years 2020 through 2022. Construction-related impacts were discussed previously in the “Construction—Annual PM<sub>2.5</sub> Concentrations” section, which included an assessment of concentrations at both existing off-site receptors for all 3 years of construction and at on-site receptors for the years 2021 and 2022 as Phase I of 700 Innes construction is

completed at the end of 2020. Operations associated with the India Basin Open Space property include PM<sub>2.5</sub> emissions from vehicle trips to the property, which were assessed previously in the “Operations—Annual PM<sub>2.5</sub> Concentrations” discussion.

### **700 Innes Property**

As stated above, construction at the 700 Innes property is conservatively assumed to occur during all 5 years of the construction period. After Phase I is completed, which is assumed to be at the end of 2020 for this analysis, on-site receptors would be occupied. These on-site receptors would be exposed to all of the following:

- construction emissions from Phase II at this property;
- construction emissions at the India Basin Open Space property; and
- operational emissions from existing vehicle traffic, additional vehicle traffic from the portion of the proposed project or variant that is complete at the time the new residences are occupied, and operation of six emergency generators that would be completed as part of Phase I of construction at 700 Innes.

As stated previously in the “Operations—Annual PM<sub>2.5</sub> Concentrations” discussion, approximately 98 percent of the total PM<sub>2.5</sub> emissions are associated with trips to this property and the emergency generators. In the years 2021 and 2022, only Phase I would be occupied, and thus, approximately 75 percent of the vehicle traffic and emergency generator emissions would overlap with construction emissions.

### **Overall Impact for Overlapping Construction and Operation**

Under either the proposed project or the variant, implementing Mitigation Measures M-AQ-1a through M-AQ-1f would reduce concentrations of PM<sub>2.5</sub> from construction and operation of the proposed project or variant. However, only emission reductions from Mitigation Measures M-AQ-1a and M-AQ-1e can be estimated with certainty. With these two mitigation measures, project construction and operation emissions of PM<sub>2.5</sub> would exceed APEZ threshold and the proposed project and variant contribution would be greater than 0.2 µg/m<sup>3</sup> (Tables 3.7-32 and 3.7-34). Mitigation Measures M-AQ-1b, M-AQ-1c, M-AQ-1d and M-AQ-1f would be expected to further reduce PM<sub>2.5</sub> emissions but the effectiveness of these measures cannot be accurately quantified at this time, as the availability of this equipment is uncertain and a program for offset credits has not been identified.

The proposed project or variant would have a significant impact during construction in 2019 and 2020 and in all years of operation. The greatest PM<sub>2.5</sub> impacts would result from operation of the proposed project or variant when all construction phases are complete. Therefore, even with the implementation of Mitigation Measures M-AQ-1a through M-AQ-1f, the overall impact of the proposed project or variant from overlapping construction and operation of the proposed project or variant would be *significant and unavoidable with mitigation*.

### **Construction and Operation—Lifetime Excess Cancer Risk**

Sources of construction emissions from the project or variant evaluated for their contribution to excess cancer risk for both the proposed project and the variant included on-road vehicles and off-road construction equipment. Project-generated on-road construction traffic within 1,000 feet of the project site was modeled.

Sources of operational emissions evaluated for their contribution to excess cancer risk for both the proposed project and the variant included on-road vehicles and emergency generators. Project-generated on-road traffic within 1,000 feet of the project site was modeled. Based on consultation with Fehr & Peers (San Francisco, 2017), the route modeled for the on-road traffic extended from the project site west to Jennings Street, south to Kiska Road/Kirkwood Avenue, and east to Coleman Street. Figure 3.7-6 illustrates the on-road vehicle routes modeled for project operation. The EMFAC Gasoline Total Organic Gases Speciation was used to develop TACs from nondiesel vehicles for modeling.

Either the proposed project or the variant would include the operation of up to eight emergency generators. These sources were modeled as point sources, with stack heights equal to 1 meter above the nearest building height. Operational emissions were analyzed at all off-site and on-site receptors (Figures 3.7-3 and 3.7-4).

#### **India Basin Shoreline Park Property**

Construction at the India Basin Shoreline Park property is assumed to occur in the year 2020, before on-site receptors are present. For off-site sensitive receptors, the excess cancer risk from construction at and operation of this property (Table 3.7-35) would be less than 4 percent of the project excess cancer risk from construction of the proposed project or variant. For on-site sensitive receptors, the project excess cancer risk from project construction and operation at this property (Tables 3.7-36) and project operation (Table 3.7-37) would be less than 1 percent of the project-related excess cancer risk.

#### **900 Innes Property**

Construction at the 900 Innes property is assumed to occur in the year 2019, before on-site receptors are present. For off-site sensitive receptors, the project excess cancer risk from construction at and operation of this property (Table 3.7-35) would be less than 15 percent of the project excess cancer risk from construction and operation of the proposed project or variant. For on-site sensitive receptors, the project excess cancer risk from project operation at this property (Tables 3.7-36 and 3.7-37) would be less than 1 percent of the project-related excess cancer risk.

#### **India Basin Open Space Property**

Construction at the India Basin Open Space property is assumed to occur in the years 2020 through 2022. For off-site sensitive receptors, the project excess cancer risk from construction at and operation of this property (Table 3.7-35) would be less than 10 percent of the project excess cancer risk from construction and operation of the proposed project or variant. For on-site sensitive receptors, the project excess cancer risk from project construction and operation at this property (Tables 3.7-36) and project operation (Table 3.7-37) would be less than 1 percent of the project-related excess cancer risk.

**700 Innes Property**

Construction at the 700 Innes property is assumed to occur in the years 2018 through 2022. For off-site sensitive receptors, the project excess cancer risk from construction and operation at the 700 Innes property (Table 3.7-35) would be more than 70 percent of the project excess cancer risk from construction and operation of the proposed project or variant. For on-site sensitive receptors, the project excess cancer risk from project construction and operation at this property (Tables 3.7-36) and project operation (Table 3.7-37) would be approximately 98 percent of the project-related excess cancer risk.

**Overall Impact for Lifetime Excess Cancer Risk**

Table 3.7-35 presents the following details regarding excess cancer risk for the maximally exposed off-site resident receptor during each year of construction and 25 years of operation for the proposed project and variant (for a total of 30 years of assumed exposure) based on the OEHHA 2015 Guidance.

The maximum excess cancer risk due to the project is equal to 137.8 in a million for the proposed project and 125.4 in a million for the variant during the 30-year period. When added to existing conditions and the excess cancer risk contributions from nearby concurrent projects under construction, the total excess cancer risk during the 30-year period is 160.2 in a million for the proposed project and 147.8 in a million for the variant.

**Table 3.7-35: Total Excess Cancer Risk for the Proposed Project or Variant at Existing Off-Site Residential Receptors Including Existing Conditions and Concurrent Projects**

Year	Years of Age	Proposed Project (in a million) <sup>9</sup>	Variant (in a million) <sup>9</sup>
Existing Conditions (CRRP-HRA [2014]) <sup>1</sup>	–	21.7	21.7
2018 <sup>2</sup>	Third trimester to 1	42.2	39.0
2019 <sup>3</sup>	1–2	79.0	69.5
2020 <sup>4</sup>	2–3	10.2	8.4
2021 <sup>5,6</sup>	3–4	1.7	1.7
2022 <sup>5,6</sup>	4–5	0.69	0.7
Operation	25	4.0	6.1
Project Excess Cancer Risk	30	137.8	125.4
Concurrent Projects <sup>8</sup>	30	0.7	0.7
Total Excess Cancer Risk	30	160.2	147.1.8
APEZ Criterion		90.0	90.0
Project Contribution Criterion		7.0	7.0
Significant?		Yes	Yes

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to grading (50%) and 700 Innes construction sources.

<sup>3</sup> Maximum concentrations attributable primarily to 700 Innes construction sources (75%).

<sup>4</sup> Maximum concentrations attributable primarily to 700 Innes (80%) construction sources.

<sup>5</sup> Maximum concentrations attributable primarily to 700 Innes construction sources.

<sup>6</sup> Assumes six of the eight emergency generators would be operating after the completion of Phase 1 construction.

<sup>7</sup> Maximum concentrations attributable primarily to 700 Innes sources (traffic).

<sup>8</sup> Hunters Point and Candlestick Point area construction excess cancer risk. Provided by Ramboll Environ.

<sup>9</sup> Receptor location: X (UTM) = 555,120, Y (UTM) = 4,176,220.

Source: Compiled by AECOM in 2017.

Table 3.7-36 presents the following details regarding excess cancer risk for the maximally exposed on-site resident receptor during the latter two years of construction and 28 years of operation for the proposed project and variant (for a total of 30 years of assumed exposure) based on the OEHHA 2015 Guidance.

The maximum excess cancer risk due to the project is equal to 104.1 in a million for the proposed project and 106.0 in a million for the variant during the 30-year period. When added to existing conditions and the excess cancer risk contributions from nearby concurrent projects under construction, the total excess cancer risk during the 30-year period is 113.0 in a million for the proposed project and 114.9 in a million for the variant.

**Table 3.7-36: Total Excess Cancer Risk for the Proposed Project or Variant at On-Site Residential Receptors (Hillside Hamman Cove) during 2020–2021 Construction Years and Operation Including Existing Conditions and Concurrent Projects**

Year	Years of Age	Proposed Project (in a million) <sup>5</sup>	Variant (in a million) <sup>5</sup>
Existing Conditions (CRRP-HRA [2014]) <sup>1</sup>	–	7.4	7.4
2021 <sup>2,3</sup>	Third trimester to 1	60.3	60.3
2022 <sup>2,3</sup>	1–2	39.0	39.1
Operation	28	4.8	6.6
Project Excess Cancer Risk	30	104.1	106.0
Concurrent Projects <sup>4</sup>	30	1.5	1.5
Total Excess Cancer Risk	30	113.0	114.9
APEZ Criterion		90.0	90.0
Project Contribution Criterion		7.0	7.0
Significant?		Yes	Yes

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes construction sources at Flats and Earl.

<sup>3</sup> Assumes six of the eight emergency generators would be operating after the completion of Phase 1 construction.

<sup>4</sup> Hunters Point and Candlestick Point area construction excess cancer risk. Provided by Ramboll Environ.

<sup>5</sup> Receptor location: X (UTM) = 555,480, Y (UTM) = 4,176,260.

Source: Compiled by AECOM in 2017

Table 3.7-37 presents the following details regarding excess cancer risk for the maximally exposed on-site resident receptor during 30 years of operation (assumed exposure) for the proposed project and variant based on the OEHHA 2015 Guidance.

The maximum excess cancer risk due to the project is equal to 17.7 in a million for the proposed project and 19.3 in a million for the variant during the 30-year period. When added to existing conditions and the excess cancer risk contributions from nearby concurrent projects under construction, the total excess cancer risk during the 30-year period is 30.6 in a million for the proposed project and 32.2 in a million for the variant.

**Table 3.7-37: Total Excess Cancer Risk for the Proposed Project or Variant at On-Site Residential Receptors (Flats and Earl) Postconstruction Including Existing Conditions and Concurrent Projects**

Year	Years of Age	Proposed Project (in a million) <sup>5</sup>	Variant (in a million) <sup>5</sup>
Existing Conditions (CRRP-HRA [2014]) <sup>1</sup>	–	12.3	12.3
Project Operation	30	17.7	19.3
Concurrent Projects <sup>4</sup>	30	0.6	0.6
Total Excess Cancer Risk	30	30.6	32.2
APEZ Criterion		90.0	90.0
Significant?		No	No

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes construction sources at Flats and Earl.

<sup>3</sup> Assumes six of the eight emergency generators would be operating after the completion of Phase 1 construction.

<sup>4</sup> Hunters Point and Candlestick Point area construction excess cancer risk. Provided by Ramboll Environ.

<sup>5</sup> Receptor location: X (UTM) = 555,300, Y (UTM) = 4,176,260.

Source: Compiled by AECOM in 2017

Both the proposed project and the variant would result in a significant impact before mitigation at a limited number of receptors along Innes Avenue. Table 3.7-36 summarizes the excess cancer risk for the maximally exposed on-site receptor (a receptor located in Hillside Hamman Cove buildings completed in 2020) during the last 2 years of construction (2021 and 2022) and 28 years of operation for the proposed project and variant (for a total of 30 years of assumed exposure). When added to existing conditions and the excess cancer risk from nearby concurrent projects under construction, the total excess cancer risk to the maximally exposed on-site receptor during the 30-year period is 113.0 in a million for the proposed project and 114.9 in a million for the variant. The project contribution as shown in Tables 3.7-35 and 3.7-36 exceed the project contribution criterion of 7.0 in a million. The proposed project and variant would result in a *significant* impact before mitigation at a limited number of receptors along Earl Street.

Table 3.7-37 summarizes the contribution to excess cancer risk for the maximally exposed on-site receptor (buildings at Flats and Earl completed in 2022) during 30 years of operation for the proposed project and variant. When added to existing conditions and the excess cancer risk from nearby concurrent projects under construction, the excess cancer risk during the 30-year period is 30.6 in a million for the proposed project and 32.2 in a million for the variant. The impact of the proposed project and the variant at these receptors would be *less than significant*. No mitigation measures are necessary.

Implementing Mitigation Measure M-AQ-1a, which is consistent with or exceeds the mitigation required by the Clean Construction Ordinance with the requirement to use Tier 4 Final construction equipment, and Mitigation Measure M-AQ-1e would reduce the total excess cancer risk from existing conditions, concurrent projects, and project-related emissions to 56.4 in a million for the proposed project and 57.7 in a million for the variant at off-site resident receptors (Table 3.7-38). The project related cancer risk is 9.9 in a million for the proposed project and 11.2 in a million for the variant, respectively.



**Table 3.7-38: Total Excess Cancer Risk for the Proposed Project or Variant Including Mitigation Measures M-AQ-1a and M-AQ-1e at Existing Off-Site Residential Receptors Including Existing Conditions and Concurrent Projects**

Year	Years of Age	Proposed Project (in a million) <sup>9</sup>	Variant (in a million) <sup>9</sup>
Existing Conditions (CRRP-HRA [2014]) <sup>1</sup>	–	46.0	46.0
2018 <sup>2</sup>	Third trimester to 1	3.4	3.4
2019 <sup>3</sup>	1–2	4.3	4.7
2020 <sup>4</sup>	2–3	0.4	0.4
2021 <sup>5,6</sup>	3–4	0.1	0.1
2022 <sup>5,6</sup>	4–5	< 0.1	< 0.1
Operations	25	1.6	2.5
Project Excess Cancer Risk	30	9.9	11.2
Concurrent Projects <sup>8</sup>	30	0.7	0.7
Total Excess Cancer Risk	30	56.4	57.7
APEZ Criterion		90.0	90.0
Significant?		No	No

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to grading (50%) and 700 Innes construction sources using Tier 4 off-road equipment.

<sup>3</sup> Maximum concentrations attributable primarily to 700 Innes construction sources (75%) using Tier 4 off-road equipment.

<sup>4</sup> Maximum concentrations attributable primarily to 700 Innes (80%) construction sources using Tier 4 off-road equipment.

<sup>5</sup> Maximum concentrations attributable primarily to 700 Innes construction sources using Tier 4 off-road equipment.

<sup>6</sup> Assumes six of the eight emergency generators (Tier 4) would be operating after the completion of Phase 1 construction.

<sup>7</sup> Maximum concentrations attributable primarily to 700 Innes sources (traffic).

<sup>8</sup> Hunters Point and Candlestick Point area construction excess cancer risk. Provided by Ramboll Environ.

<sup>9</sup> Receptor location: X (UTM) = 554,740, Y (UTM) = 4,176,860.

Source: Compiled by AECOM in 2017.

Implementing Mitigation Measures M-AQ-1a and M-AQ-1e would reduce the total excess cancer risk at Hillside Hamman Cove on-site resident receptors to 36.0 in a million for the proposed project and 39.4 in a million for the variant (Table 3.7-39). The project related cancer risk is 6.1 in a million for the proposed project and 9.5 in a million for the variant, respectively.

**Table 3.7-39: Total Excess Cancer Risk for the proposed Project or Variant Including Mitigation Measures M-AQ-1a and M-AQ-1e at On-Site Residential Receptors (Hillside Hamman Cove) during 2020–2021 Construction Years and Operation Including Existing Conditions and Concurrent Projects**

Year	Years of Age	Proposed Project (in a million) <sup>6</sup>	Variant (in a million) <sup>6</sup>
Existing Conditions (CRRP-HRA [2014]) <sup>1</sup>	–	29.2	29.2
2021 <sup>2,3</sup>	Third trimester to 1	0.8	0.8
2022 <sup>2,3</sup>	1–2	0.1	0.1
Operation	28	5.2	8.6
Project Excess Cancer Risk	30	6.1	9.5
Concurrent Projects <sup>3</sup>	30	0.7	0.7
Total Excess Cancer Risk	30	36.0	39.4
APEZ Criterion		90.0	90.0
Significant?		No	No

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2014 (Existing Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes construction sources (Tier 4 final off-road equipment) at Flats and Earl.

<sup>3</sup> Assumes six of the eight emergency generators (Tier 4) would be operating after the completion of Phase 1 construction.

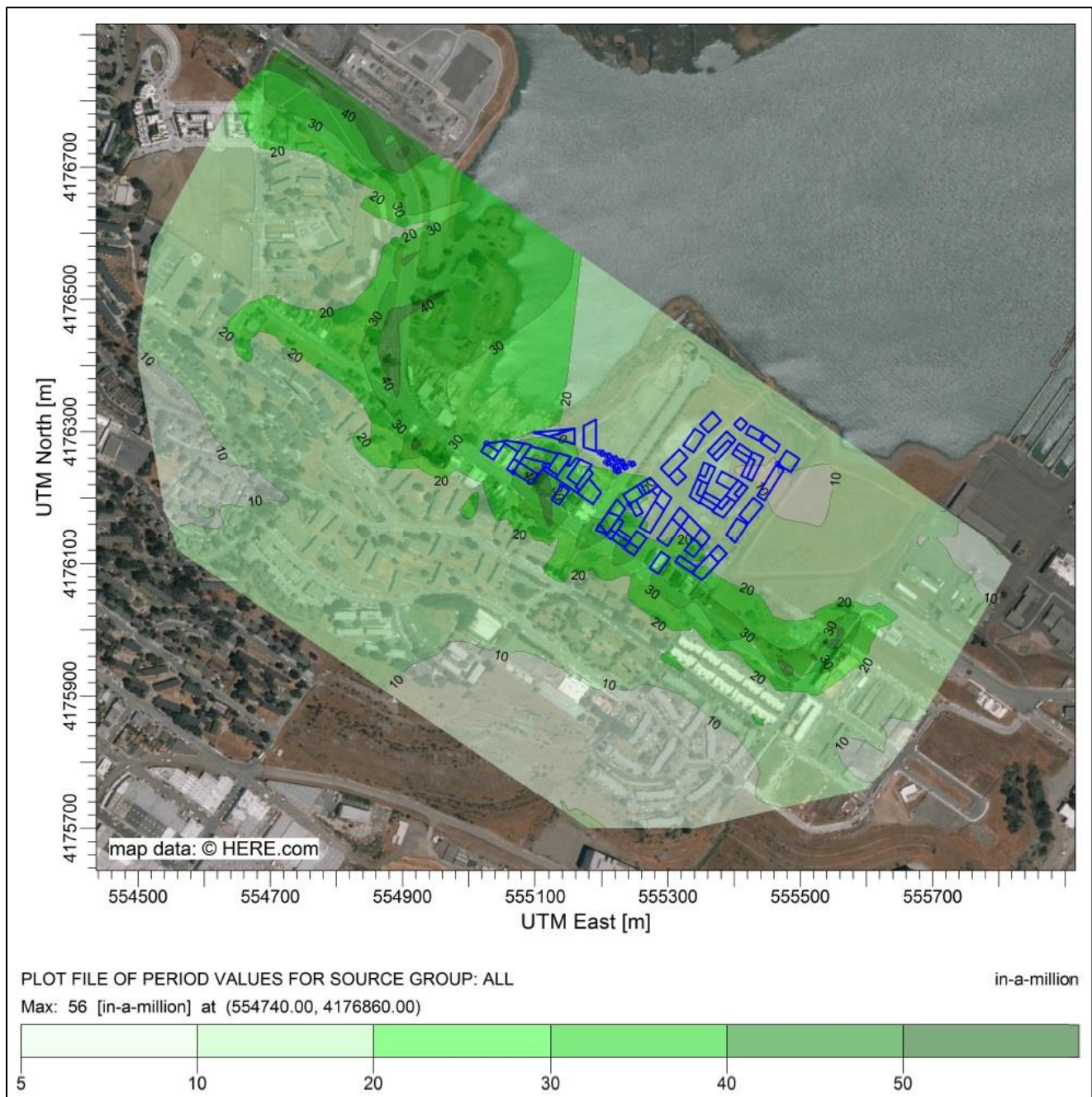
<sup>4</sup> Maximum concentrations attributable primarily to 700 Innes sources (traffic).

<sup>5</sup> Hunters Point and Candlestick Point area construction excess cancer risk. Provided by Ramboll Environ.

<sup>6</sup> Receptor location: X (UTM) = 555,040, Y (UTM) = 4,176,260.

Source: Compiled by AECOM in 2017.

Figure 3.7-7 shows the maximum excess cancer risk from construction of the proposed project at off-site and on-site receptors with the mitigation measures incorporated. The maximum excess cancer risk would be below the respective thresholds after implementation of Mitigation Measures M-AQ-1a and M-AQ-1e. Therefore, the impact of health effects from diesel PM emissions and vehicle exhaust generated during construction would be *less than significant with mitigation* with implementation of Mitigation Measures M-AQ-1a and M-AQ-1e.



**Figure 3.7-7 Baseline plus Residential Proposed Project Maximum with Mitigation Measure Excess Cancer Risk from Construction and Operation**

**Overall Impact Conclusion**

The proposed project or variant would have a significant impact due to construction and operation for PM<sub>2.5</sub> and excess cancer risk. Under either the proposed project or the variant, implementing Mitigation Measures M-AQ-1a through M-AQ-1f would reduce concentrations of PM<sub>2.5</sub> from construction and operation of the proposed project or variant below the values reported in Table 3.7-34, but PM<sub>2.5</sub> concentrations would still be greater than the APEZ thresholds as there is uncertainty in the effectiveness of Mitigation Measures M-AQ-1b, M-AQ-1c, M-AQ-

1d, and M-AQ-1f. Mitigation Measures M-AQ-1a and M-AQ-1f would reduce the excess cancer risk to below the APEZ thresholds and thus the project would result in a *less than significant impact with mitigation* related to excess cancer risk. The impact conclusion related to PM<sub>2.5</sub> concentrations during construction and operation of the proposed project or variant would be significant and unavoidable with mitigation, as discussed above under Impact AQ-3. Therefore, the overall impact related to generation of emissions that would expose sensitive receptors to substantial pollutant concentrations would be *significant and unavoidable with mitigation*.

**Impact AQ-4: The proposed project or variant would not generate emissions that create objectionable odors affecting a substantial number of people. (*Less than Significant*)**

The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Although offensive odors do not cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and can cause citizens to submit complaints to local governments and regulatory agencies.

Projects with the potential to expose a substantial number of people to objectionable odors are deemed to have a significant impact. Facilities that may generate objectionable odors affecting a substantial number of people include wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, and food processing facilities.

***Construction***

**India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Project construction under the proposed project or variant would include minor sources of odors. Exhaust odors from diesel engines, as well as ROG emissions from asphalt paving and the application of architectural coatings, may be considered offensive by some individuals. Odors from these sources would be localized and generally confined to the immediate area surrounding the development area. Similarly, diesel-fueled vehicles and trucks traveling on local roadways would produce diesel exhaust emissions. However, odors from diesel fumes, asphalt paving, and architectural coatings would be temporary and would disperse rapidly with distance from the source. Therefore, construction-generated odors would not result in frequent exposure of sensitive receptors to objectionable odor emissions. Construction-related odor impacts would be *less than significant*. No mitigation measures are necessary.

***Operation***

**India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

After buildout of the proposed project or variant, localized odors emitted by project sources such as solid waste collection, food preparation, and maintenance activities should have minimal effects on on-site and off-site sensitive receptors. The project would not include facilities that may generate objectionable odors affecting a substantial number of people. Furthermore, BAAQMD Regulation 7 limits odorous substances and specific odorous compounds from restaurants that employ more than five persons, like those that may be present at the project site. Therefore, operational odor impacts would be *less than significant*. No mitigation measures are necessary.

### ***Overall Impact Conclusion***

The proposed project or variant would have a *less than significant* impact due to construction or operation for objectionable odors. Project construction under the proposed project or variant would include minor sources of odors such as diesel engine exhaust, asphalt paving or architectural coatings but these would be confined to the immediate area of application and would be temporary. Project operation would include localized sources of odors such as food preparation, solid waste collection or buildings and grounds maintenance activities that would not affect a substantial number of people at any one time.

#### **3.7.4 Cumulative Impacts**

This section discusses the cumulative air quality impacts that could result from the proposed project or variant in conjunction with past, present, and reasonably foreseeable future projects.

**Impact-C-AQ-1: The proposed project or variant, in combination with past, present, and reasonably foreseeable future development in the project area, would contribute to cumulative regional air quality impacts. (*Significant and Unavoidable with Mitigation*)**

The contribution of a project's individual air pollutant emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and future projects in the region also have contributed or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative regional air quality conditions.

As described above, the project-level thresholds for criteria air pollutants are based on the levels at which new sources are anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Emissions under the proposed project or variant would exceed the project-level thresholds. Therefore, either the proposed project or the variant would result in a considerable contribution to cumulative regional air quality impacts. Implementing Mitigation Measures M-AQ-1a through M-AQ-1f would reduce this impact, but not to less than significant. This impact would be *significant and unavoidable with mitigation*.

**Impact C-AQ-2: The proposed project or variant, in combination with past, present, and reasonably foreseeable future development in the project area, would contribute to cumulative health risk impacts on sensitive receptors. (*Significant and Unavoidable with Mitigation*)**

The health risk assessment takes into account the cumulative contribution of existing, baseline localized health risks to sensitive receptors from sources included in the Citywide modeling, plus the sources associated with the proposed project or variant as well as future year 2040 assumptions concerning vehicle traffic.

#### ***Cumulative 2040 Conditions—PM<sub>2.5</sub> Concentrations***

As shown in Tables 3.7-40 through 3.7-42, the year 2040 cumulative PM<sub>2.5</sub> concentrations are approximately 8.2 to 8.3 µg/m<sup>3</sup> in the area of India Basin. When the project's operational impacts are added to cumulative conditions for the year 2040 from the CRRP-HRA, the PM<sub>2.5</sub> concentrations are 9.6 and 10.3 µg/m<sup>3</sup> at off-site receptors, respectively. For the on-site receptors at Hillside Hamman Cove, the PM<sub>2.5</sub> concentrations are 9.9 and 10.7 µg/m<sup>3</sup>,

respectively, and for the on-site receptors at Flats and Earl, the PM<sub>2.5</sub> concentrations are 8.7 and 9.0 µg/m<sup>3</sup>, respectively. Both the proposed project and variant would result in a cumulatively considerable contribution to the 2040 cumulative conditions that would exceed the APEZ threshold (Figure 3.7-8). Construction impacts are not included in this analysis as the buildout of the project is assumed to be complete by 2040.

**Table 3.7-40: Cumulative Plus Project Conditions—Maximum Modeled PM<sub>2.5</sub> Annual Concentrations for the Proposed Project or Variant for Off-Site Receptors**

Year	Proposed Project (µg/m <sup>3</sup> )	Variant (µg/m <sup>3</sup> )
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	8.3	8.3
Project Operations <sup>2</sup>	1.3	2.0
Cumulative PM <sub>2.5</sub> Total	9.6	10.3
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions). Includes Hunters Point and Candlestick Point area project traffic.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an off-site receptor. Receptor location: X (UTM) = 555,160, Y (UTM) = 4,176,180.

Source: Compiled by AECOM in 2017.

**Table 3.7-41: Cumulative Plus Project Conditions—Maximum Modeled PM<sub>2.5</sub> Annual Concentrations for the Proposed Project or Variant for On-Site Hillside Hamman Cove Receptors**

Year	Proposed Project (µg/m <sup>3</sup> )	Variant (µg/m <sup>3</sup> )
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	8.3	8.3
Project Operations	1.6 <sup>2</sup>	2.4 <sup>3</sup>
Cumulative PM <sub>2.5</sub> Total	9.9	10.7
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions). Includes Hunters Point and Candlestick Point area project traffic.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: : X (UTM) = 555,200, Y (UTM) = 4,176,160.

<sup>3</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: : X (UTM) = 555,180, Y (UTM) = 4,176,200.

Source: Compiled by AECOM in 2017.

**Table 3.7-42: Cumulative Plus Project Conditions—Maximum Modeled PM<sub>2.5</sub> Annual Concentrations for the Proposed Project or Variant for On-Site Flats and Earl Receptors**

Year	Proposed Project ( $\mu\text{g}/\text{m}^3$ ) <sup>2</sup>	Variant ( $\mu\text{g}/\text{m}^3$ ) <sup>3</sup>
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	8.3	8.3
Project Operations <sup>2</sup>	1.6	2.4
Cumulative PM <sub>2.5</sub> Total	9.9	10.7
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions). Includes Hunters Point and Candlestick Point area project traffic.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: : X (UTM) = 555,200, Y (UTM) = 4,176,160.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: : X (UTM) = 555,180, Y (UTM) = 4,176,200.

Source: Compiled by AECOM in 2017.

Implementing Mitigation Measure M-AQ-1e would not reduce the contribution from the proposed project or variant to 2040 cumulative conditions from those presented in Tables 3.7-40 through 3.7-42 as shown in Tables 3.7-43 through 3.7-45 to an annual average concentration of PM<sub>2.5</sub> less than 9.0  $\mu\text{g}/\text{m}^3$  at the maximally exposed receptor. Implementing Mitigation Measures M-AQ-1d and M-AQ-1f could potentially reduce these concentrations further but would likely not reduce them to below the APEZ threshold. When the proposed project's and variant's concentrations are added to the maximum annual-average cumulative concentrations of PM<sub>2.5</sub> in 2040, the PM<sub>2.5</sub> threshold and the project contribution threshold would be exceeded. Therefore, health effects associated with PM<sub>2.5</sub> emissions generated during operation of the proposed project or variant would be cumulatively considerable and impacts would be *significant and unavoidable with mitigation*.

**Table 3.7-43: Cumulative Plus Project Conditions with Mitigation Measure M-AQ-1e —Maximum Modeled PM<sub>2.5</sub> Annual Concentrations for the Proposed Project or Variant for Off-Site Receptors**

Year	Proposed Project ( $\mu\text{g}/\text{m}^3$ )	Variant ( $\mu\text{g}/\text{m}^3$ )
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	8.3	8.3
Project Operations <sup>2</sup>	1.3	2.0
Cumulative PM <sub>2.5</sub> Total	9.6	10.3
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions). Includes Hunters Point and Candlestick Point area project traffic.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: X (UTM) = 555,160, Y (UTM) = 4,176,180.

Source: Compiled by AECOM in 2017.

**Table 3.7-44: Cumulative Plus Project Conditions with Mitigation Measure M-AQ-1e —Maximum Modeled PM<sub>2.5</sub> Annual Concentrations for the Proposed Project or Variant for On-Site Hillside Hamman Cove Receptors**

Year	Proposed Project ( $\mu\text{g}/\text{m}^3$ )	Variant ( $\mu\text{g}/\text{m}^3$ )
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	8.3	8.3
Project Operations <sup>2,3</sup>	1.6	2.4 <sup>3</sup>
Cumulative PM <sub>2.5</sub> Total	9.9	10.7
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	Yes	Yes

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions). Includes Hunters Point and Candlestick Point area project traffic.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: X (UTM) = 555,200, Y (UTM) = 4,176,160.

<sup>3</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: X (UTM) = 555,180, Y (UTM) = 4,176,200.

Source: Compiled by AECOM in 2017.

**Table 3.7-45: Cumulative Plus Project Conditions with Mitigation Measure M-AQ-1e —Maximum Modeled PM<sub>2.5</sub> Annual Concentrations for the Proposed Project or Variant for On-Site Flats and Earl Receptors**

Year	Proposed Project ( $\mu\text{g}/\text{m}^3$ )	Variant ( $\mu\text{g}/\text{m}^3$ )
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	8.2	8.2
Project Operations <sup>2</sup>	0.5	0.8
Cumulative PM <sub>2.5</sub> Total	8.7	9.0
APEZ Criterion	9.0	9.0
Project Contribution Criterion	0.2	0.2
Significant?	No	Yes

Notes:  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; PM<sub>2.5</sub> = particulate matter with aerodynamic diameter less than 2.5 microns; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions). Includes Hunters Point and Candlestick Point area project traffic.

<sup>2</sup> Maximum concentrations attributable to vehicle traffic (tire and brake wear) at an on-site receptor. Receptor location: X (UTM) = 555,300, Y (UTM) = 4,176,240.

Source: Compiled by AECOM in 2017.

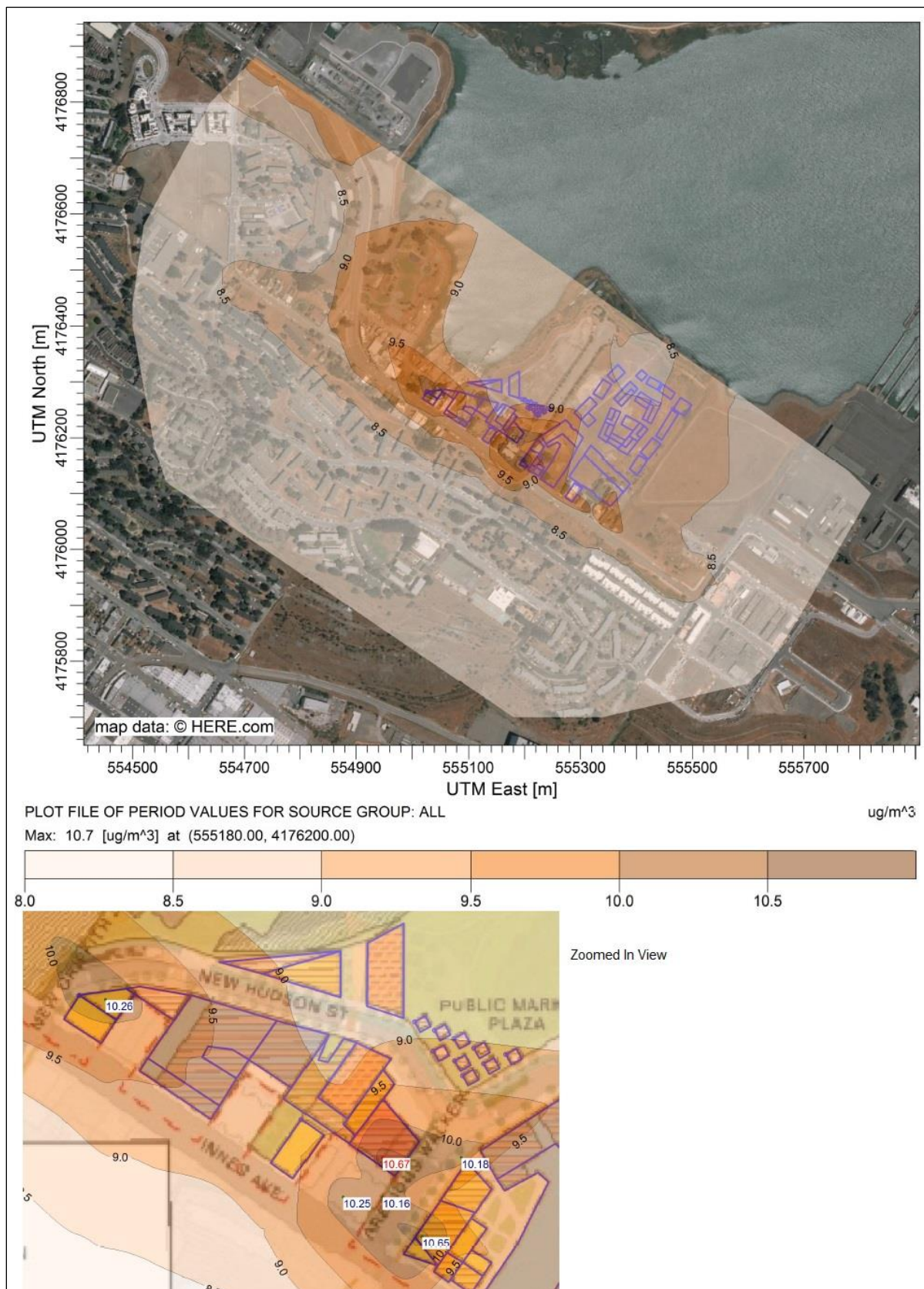
### **Cumulative 2040 Excess Cancer Risk**

The following details are presented in Table 3.7-46 through 3.7-48 for the maximally exposed resident receptor at the off-site and on-site receptor locations for the proposed project and variant in addition to cumulative excess cancer risk as modeled for the CRRP-HRA in the year 2040. When the excess cancer risk from operation of the proposed project or variant is added to cumulative 2040 conditions, the cumulative total excess cancer risk is 52.7 in a million for the proposed project and 55.1 in a million for the variant (Figure 3.7-9) at an off-site receptor. For the on-site receptor locations at Hillside Hamman Cove, the cumulative total excess cancer risk is 42.5 and 55.7 in a million for the proposed project and variant, respectively. For the on-site receptor locations at Flats and Earl, the cumulative total excess cancer risk is 29.9 and 31.4 in a million for the proposed project and variant, respectively.



These amounts are below the threshold for a cumulative excess cancer risk impact of 90.0. Therefore, no cumulative impact would occur. This impact would be *less than significant* before mitigation.

Although Mitigation Measure M-AQ-1e is not required to reduce excess cancer risk from the project under 2040 cumulative conditions, it is required to reduce the project's operational impact as discussed in Impact AQ-3. Mitigation Measure M-AQ-1e would reduce the excess cancer risk from operation of the proposed project or variant to 52.5 in a million for the proposed project and 54.9 in a million for the variant.



**Figure 3.7-8 Modeled PM<sub>2.5</sub> Annual Concentrations under Cumulative Conditions (CRRP-HRA [2040]) plus Project Conditions for the Variant with Mitigation Measure**

**Table 3.7-46: Total Excess Cancer Risk Attributable to Project Operations under the Proposed Project or Variant plus Cumulative Conditions for Off-Site Receptors (CRRP-HRA [2040])**

Year	Proposed Project (in a million) <sup>3</sup>	Variant (in a million) <sup>3</sup>
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	48.4	48.4
Project Operations <sup>2</sup>	4.3	6.7
Cumulative Excess Cancer Risk	52.7	55.1
APEZ Criterion	90.0	90.0
Significant?	No	No

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes sources (specifically traffic).

<sup>3</sup> Receptor location: X (UTM) = 554,720, Y (UTM) = 4,176,860.

Source: Compiled by AECOM in 2017.

**Table 3.7-47: Total Excess Cancer Risk Attributable to Project Operations under the Proposed Project or Variant plus Cumulative Conditions for Hillside Hamman Cove On-Site Receptors (CRRP-HRA [2040])**

Year	Proposed Project (in a million) <sup>3</sup>	Variant (in a million) <sup>3</sup>
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	26.0	26.0
Project Operations <sup>2</sup>	16.5	29.7
Cumulative Total Excess Cancer Risk	42.5	55.7
APEZ Criterion	90.0	90.0
Significant?	No	No

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes sources (specifically traffic).

<sup>3</sup> Receptor location: X (UTM) = 555,200, Y (UTM) = 4,176,160.

Source: Compiled by AECOM in 2017.

**Table 3.7-48: Total Excess Cancer Risk Attributable to Project Operations under the Proposed Project or Variant plus Cumulative Conditions for Flats and Earl On-Site Receptors (CRRP-HRA [2040])**

Year	Proposed Project (in a million) <sup>3</sup>	Variant (in a million) <sup>3</sup>
Cumulative Conditions (CRRP-HRA [2040]) <sup>1</sup>	12.2	12.2
Project Operations <sup>2</sup>	17.7	19.2
Cumulative Total Excess Cancer Risk	29.9	31.4
APEZ Criterion	90.0	90.0
Significant?	No	No

Notes: APEZ = Air Pollutant Exposure Zone; CRRP = Community Risk Reduction Plan; HRA = health risk assessment; UTM = Universal Transverse Mercator

<sup>1</sup> Community Risk Reduction Plan health risk assessment for Year 2040 (Cumulative Conditions).

<sup>2</sup> Maximum concentrations attributable primarily to 700 Innes sources (specifically traffic).

<sup>3</sup> Receptor location: X (UTM) = 555,300, Y (UTM) = 4,176,260.

Source: Compiled by AECOM in 2017.

### ***Overall Impact Conclusion for Cumulative Health Risk Impact***

When PM<sub>2.5</sub> impacts of the proposed project or variant are added to the cumulative conditions for the year 2040, either the proposed project or variant would result in a cumulatively considerable contribution to a 2040 cumulative impact. Implementing Mitigation Measures M-AQ-1d, M-AQ-1e, and M-AQ-1f would reduce the project's contribution, but not sufficiently to result in an annual average concentration below the APEZ threshold of 9.0 µg/m<sup>3</sup> and the project and variant contribution threshold of 0.2 µg/m<sup>3</sup>. The cumulative impact of the PM<sub>2.5</sub> concentrations related to emissions that would expose sensitive receptors to substantial pollutant concentrations would be *significant and unavoidable with mitigation*. The cumulative impact of the total excess cancer risk related to emissions that would expose sensitive receptors to substantial pollutant concentrations would be *less than significant*.

The proposed project or variant would be required to implement Mitigation Measures M-AQ-1d through M-AQ-1f. Implementing those mitigation measures would reduce the emissions of TACs and the PM<sub>2.5</sub> modeled impacts, but not to less than significant. Therefore, the cumulative air quality impact would be *significant and unavoidable with mitigation*.

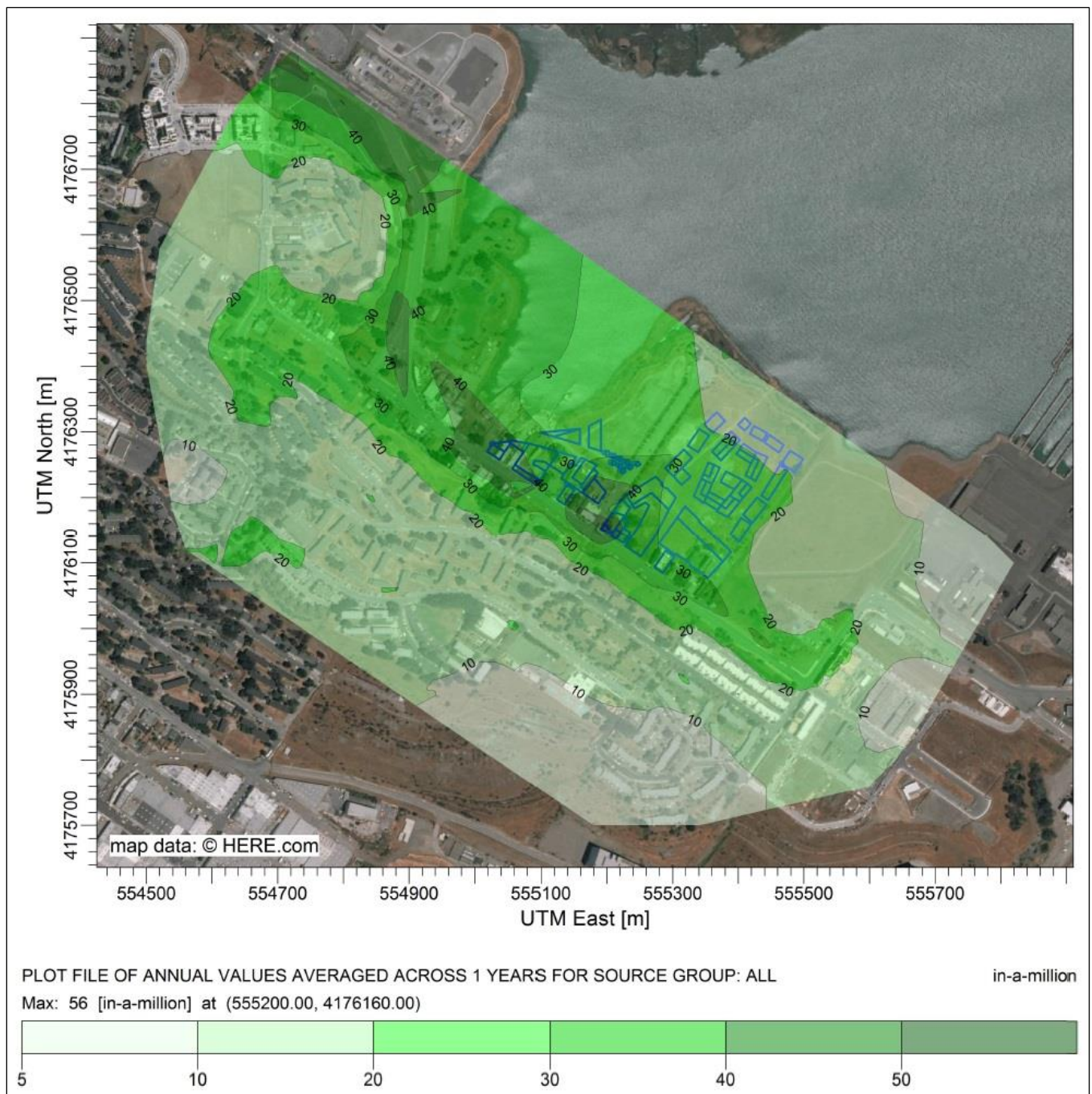


Figure 3.7-9

Excess Cancer Risk under Cumulative CRRP-HRA 2040 Conditions plus Variant Conditions

### 3.7.5 References

- Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG and MTC). 2013. *Plan Bay Area: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area, 2013–2040*. Adopted July 18, 2013.
- Bay Area Air Quality Management District (BAAQMD). 2001 (October 24). *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*. Adopted October 24, 2001. Planning and Research Division, San Francisco, CA. Available: [http://www.baaqmd.gov/~media/files/planning-and-research/plans/2001-ozone-attainment-plan/oap\\_2001.pdf](http://www.baaqmd.gov/~media/files/planning-and-research/plans/2001-ozone-attainment-plan/oap_2001.pdf). Accessed May 2017
- . 2008 (September). *Developing Regulatory Approaches for Traffic-related Air Pollution Hot Spots*. Available: [http://www.baaqmd.gov/~media/files/planning-and-research/care-program/task-force-meetings/091708-tf/20080917\\_tf\\_sfdphroadway.pdf?la=en](http://www.baaqmd.gov/~media/files/planning-and-research/care-program/task-force-meetings/091708-tf/20080917_tf_sfdphroadway.pdf?la=en). Accessed May 2017.
- . 2009 (October). *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*.
- . 2010 (May). California Environmental Quality Act Air Quality Guidelines. Available: [http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft\\_BAAQMD\\_CEQA\\_Guidelines\\_May\\_2010\\_Final.ashx](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx). Accessed July 2015. Page 7.
- . 2011 (May). *California Environmental Quality Act Air Quality Guidelines*. <http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en>. Accessed May 2017.
- . 2012a. Tools and Methodologies (Stationary Source Screening Analysis Tool, Gasoline Dispensing Facility Distance Multiplier Tool, Diesel Internal Combustion Engine Distance Multiplier Tool, Highway Screening Analysis Tool). Available: <http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines>. Accessed July 2015.
- . 2016 (December 7). Regulation 2, Permits; Rule 5, New Source Review of Toxic Air Contaminants. Available: [http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/reg-02/rg0205\\_120716-pdf.pdf?la=en](http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/reg-02/rg0205_120716-pdf.pdf?la=en). Accessed May 2017.
- . 2017a. Annual Bay Area Air Quality Summaries: 2014, 2015, and 2016. Available: <http://www.baaqmd.gov/about-air-quality/air-quality-summaries>. Accessed May 2017.
- . 2017b. Air Quality Standards and Attainment Status. Available: <http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status>. Accessed May 2017.
- . 2017c. *CEQA Air Quality Guidelines Update*. Available: [http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa\\_guidelines\\_may2017-pdf.pdf?la=en](http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en). Accessed May 2017.
- . 2017 (April 19). *Bay Area 2010 Clean Air Plan: Spare the Air, Cool the Climate. A Blueprint for Clean Air and Climate Protection in the Bay Area*. Final. San Francisco, CA.

- California Air Resources Board (ARB). 1998 (October). "The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines." Fact Sheet.
- . 2001 (July). *Health Information on Asbestos*. Fact Sheet. Sacramento, CA. Available: <https://www.arb.ca.gov/toxics/asbestos/1health.pdf>. Accessed May 2017.
- . 2002 (July). *Lead*. Fact Sheet. Sacramento, CA. Available: <https://www.arb.ca.gov/toxics/lead/factsheet.pdf>. Accessed May 2017.
- . 2005 (April). *Air Quality and Land Use Handbook: A Community Health Perspective*. Sacramento, CA.
- . 2007. *Fugitive Dust Control Self-Inspection Handbook How to Control Dust and Reduce Air Pollution*. Sacramento, CA. Available: [https://www.arb.ca.gov/pm/fugitivedust\\_large.pdf](https://www.arb.ca.gov/pm/fugitivedust_large.pdf). Accessed May 2017.
- . 2010. Off-Road Diesel Vehicle Regulation Compliance Requirements Summary. [https://www.arb.ca.gov/msprog/ordiesel/documents/post\\_2010\\_hearing\\_fact\\_sheet.pdf](https://www.arb.ca.gov/msprog/ordiesel/documents/post_2010_hearing_fact_sheet.pdf). Accessed May 2017.
- . 2015a (May). EMFAC2014 Volume III—Technical Documentation v1.0.7. Available: <https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>. Accessed May 2017.
- . 2015b. Ambient Air Toxics Summary. Available: <http://www.arb.ca.gov/adam/toxics/sitesubstance.html>. Accessed May 2017.
- . 2017. Carl Moyer Program Guidelines. Available: <https://www.arb.ca.gov/msprog/moyer/guidelines/current.htm>. Accessed July 2017.
- Office of Environmental Health Hazard Assessment (OEHHA). 2015 (February). *Air Toxics Hot Spots Program Guidance Manual*.
- San Francisco, City and County of (San Francisco). 1996. *San Francisco General Plan*. Amended by Resolution No. 14149, adopted on June 27, 1996. Air Quality Element. Available: [http://generalplan.sfplanning.org/I10\\_Air\\_Quality.htm](http://generalplan.sfplanning.org/I10_Air_Quality.htm). Accessed May 2017.
- . 2017 (July). *India Basin Development, Transportation Impact Analysis*. San Francisco, CA. Case Number: 2014.2541E. Prepared for San Francisco Planning Department by Fehr & Peers, San Francisco, CA.
- San Francisco Department of Public Health (SFDPH). 2008 (May). *Assessment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Review*. San Francisco, CA.
- . 2016a (May). Air Pollutant Exposure Zone Map. San Francisco, CA.
- . 2016b (August). *San Francisco Community Risk Reduction Plan: Year 2040*. San Francisco, CA.

- San Francisco Department of Public Health, San Francisco Planning Department, and Bay Area Air Quality Management District (SFDPH et al.). 2012 (December). *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*. San Francisco, CA.
- South Coast Air Quality Management District, 2017. Off-Road Engines. Available at <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/off-road-engines>. Accessed August 20, 2017.
- U.S. Environmental Protection Agency (EPA). 2010. Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network and Data Reporting Requirements for Sulfur Dioxide, June 2, 2010. Available: [https://www.epa.gov/sites/production/files/2016-05/documents/final\\_primary\\_naaqs\\_factsheet.pdf](https://www.epa.gov/sites/production/files/2016-05/documents/final_primary_naaqs_factsheet.pdf). Accessed June 2017.
- . 2011a (April). *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards*. EPA/452/R-11-003. Office of Air Quality Planning and Standards.
- . 2011b. Clean Air Act Section 112 (Air Toxics). Available: <https://www3.epa.gov/airtoxics/overview.html>. Accessed May 2017.
- . 2013 (January). *Determination of Attainment for the San Francisco Bay Area Nonattainment Area for the 2006 Fine Particle Standard; California; Determination Regarding Applicability of Clean Air Act Requirements*. Available: <https://www.gpo.gov/fdsys/pkg/FR-2013-01-09/pdf/2013-00170.pdf>. Accessed May 2017.
- . 2014. Prioritized Chronic Dose-Response Values. Available: <https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf>. Accessed June 2017.
- . 2016a. Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards. Available at <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10009ZZ.pdf>. Accessed August 20, 2017.
- . 2016b. EPA Emission Standards for Nonroad Engines and Vehicles. Available at <https://www.epa.gov/emission-standards-reference-guide/epa-emission-standards-nonroad-engines-and-vehicles>. Accessed August 20, 2017.
- . 2017. Air Quality Index Report. Available: <https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report>. Accessed July 2017.
- Western Regional Air Partnership (WRAP). 2006 (September 7). *WRAP Fugitive Dust Handbook*. Available: [http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook\\_Rev\\_06.pdf](http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf). Accessed February 16, 2012.



## 3.8 GREENHOUSE GAS EMISSIONS

This section describes the existing environmental and regulatory setting related to greenhouse gas (GHG) emissions and addresses the potential impacts of the proposed project and variant. Further information supporting the GHG emissions analysis is provided in Appendix G of this EIR. Comments related to sea level rise, the potential impact of GHG emissions, and energy conservation measures (e.g., green roofs) were received during the public scoping period in response to the Notice of Preparation. These comments are addressed in this section.

### 3.8.1 Environmental Setting

#### Greenhouse Effect, Global Warming, and Climate Change

Most of the energy that affects the earth's climate comes from the sun. Some solar radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected by the atmosphere back toward space. As the earth absorbs high-frequency solar radiation, its surface gains heat and then re-radiates lower frequency infrared radiation back into the atmosphere.<sup>1</sup>

Most solar radiation passes through gases in the atmosphere classified as GHGs; however, infrared radiation is selectively absorbed by GHGs. GHGs in the atmosphere play a critical role in maintaining the balance between the earth's absorbed and radiated energy, the earth's radiation budget,<sup>2</sup> by trapping some of the infrared radiation emitted from the earth's surface that otherwise would have escaped to space (Figure 3.8-1). Specifically, GHGs affect the radiative forcing of the atmosphere,<sup>3</sup> which in turn affects the earth's average surface temperature. This phenomenon, the *greenhouse effect*, keeps the earth's atmosphere near the surface warmer than it would be otherwise and allows successful habitation by humans and other forms of life.

Combustion of fossil fuels and deforestation release carbon into the atmosphere that historically has been stored underground in sediments or in surface vegetation, thus exchanging carbon from the geosphere and biosphere to the atmosphere in the carbon cycle. With the accelerated increase in fossil fuel combustion and deforestation since the Industrial Revolution of the 19th century, concentrations of GHGs in the atmosphere have increased exponentially. Such emissions of GHGs in excess of natural ambient concentrations contribute to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect has contributed to *global warming*, an increased rate of warming of the earth's average surface temperature.<sup>4</sup> Specifically, increases in GHGs lead to increased absorption of infrared radiation by the earth's atmosphere and warm the lower atmosphere further, thereby increasing temperatures and evaporation rates near the surface.

Variations in natural phenomena such as volcanoes and solar activity produced most of the global temperature increase that occurred during preindustrial times; more recently, however, increasing atmospheric GHG

---

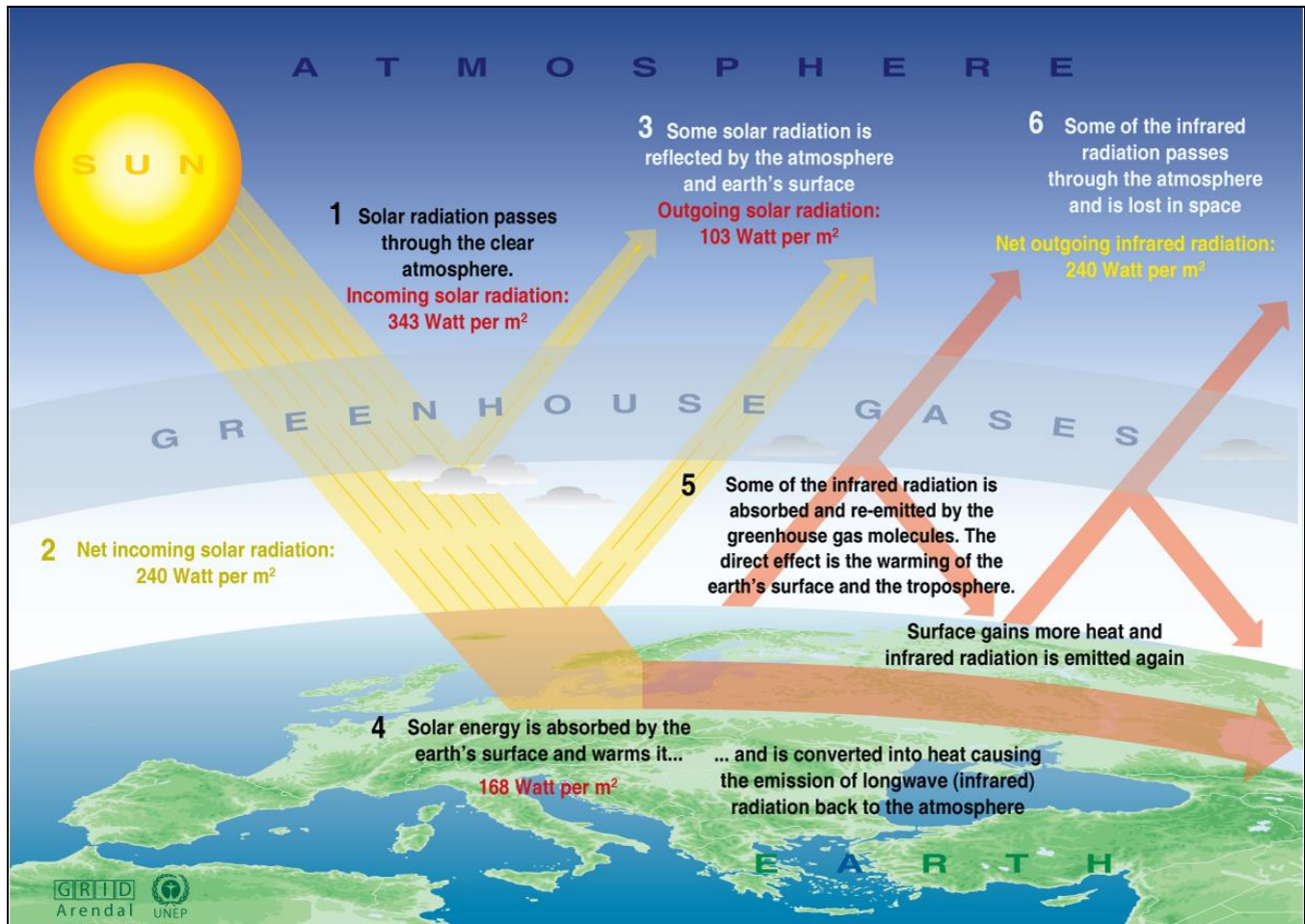
<sup>1</sup> Frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun and emits radiation at a lower frequency (longer wavelength) than the high-frequency (short-wavelength) solar radiation emitted by the sun.

<sup>2</sup> This includes all gains of incoming energy and all losses of outgoing energy; the planet is always striving to be in equilibrium.

<sup>3</sup> This is the change in net irradiance at the tropopause after allowing stratospheric temperatures to readjust to radiative equilibrium, but with surface and tropospheric temperatures and state held fixed at the unperturbed values.

<sup>4</sup> This condition results when the earth has to work harder to maintain its radiation budget, because when more GHGs are present in the atmosphere, the earth must force emissions of additional infrared radiation out into the atmosphere.

concentrations resulting from human activity have been responsible for most of the observed global temperature increase.<sup>5</sup>



Source: UNEP/GRID-Arendal, 2005

**Figure 3.8-1:**

### The Greenhouse Effect

Global warming affects global atmospheric circulation and temperatures; oceanic circulation and temperatures; wind and weather patterns; average sea level; ocean acidification; chemical reaction rates; precipitation rates, timing, and form; snowmelt timing and runoff flow; water supply; wildfire risks; and other phenomena, in a manner commonly referred to as *climate change*.

### Temperature Predictions by the Intergovernmental Panel on Climate Change

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. Warming of the climate system is now considered to be unequivocal (IPCC, 2007a), with the global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. The IPCC

<sup>5</sup> These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

predicts increases in global average temperature of between 2° and 11°F over the next 100 years, depending on the scenario (IPCC, 2007a).

### **Greenhouse Gases and Global Emission Sources**

Prominent GHGs that naturally occur in the earth's atmosphere are water vapor, carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, and ozone. Anthropogenic (human-caused) emissions include additional releases of these GHGs plus releases of human-made gases with high global warming potential (GWP) (sulfur hexafluoride, hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and ozone-depleting substances) into the earth's atmosphere. The GHGs listed by the IPCC (CO<sub>2</sub>, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride) are discussed below, in order of abundance in the atmosphere. Water vapor, despite being the most abundant GHG, is not discussed below because natural concentrations and fluctuations far outweigh anthropogenic influences, making it impossible to predict. Ozone is not included because it does not directly affect radiative forcing. Ozone-depleting substances, which include chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform, and hydrochlorofluorocarbons, are not included because they have been primarily replaced by HFCs and PFCs.

GHGs have different potentials for contributing to global warming. For example, methane is 21 times as potent as CO<sub>2</sub>, while sulfur hexafluoride is 22,200 times more potent than CO<sub>2</sub>. To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method for comparing GHG emissions is the GWP methodology defined in the IPCC reference documents (IPCC, 2001a). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalents (CO<sub>2</sub>e), which compares the gas in question to that of the same mass of CO<sub>2</sub> (by definition, CO<sub>2</sub> has a GWP of 1). As such, a high GWP represents high absorption of infrared radiation and a long atmospheric lifetime compared to CO<sub>2</sub>. One must also select a time horizon to convert GHG emissions to equivalent CO<sub>2</sub> emissions to account for chemical reactivity and lifetime differences among various GHG species. The standard time horizon for climate change analysis is 100 years. Generally, GHG emissions are quantified in terms of metric tons (MT) of CO<sub>2</sub>e (MTCO<sub>2</sub>e) emitted per year.

The atmospheric residence time of a gas is equal to the total atmospheric abundance of the gas divided by its rate of removal (Seinfeld and Pandis, 2006). The atmospheric residence time of a gas is, in effect, a half-life measurement of the length of time a gas is expected to persist in the atmosphere when accounting for removal mechanisms such as chemical transformation and deposition.

Table 3.8-1 lists the GWP of each GHG and its lifetime. Units commonly used to describe the concentration of GHGs in the atmosphere are parts per million (ppm), parts per billion (ppb), and parts per trillion (ppT), referring to the number of molecules of the GHG in a sampling of 1 million, 1 billion, or 1 trillion molecules of air. Collectively, HFCs, PFCs, and sulfur hexafluoride are referred to as high-GWP gases. CO<sub>2</sub> is by far the largest component of worldwide CO<sub>2</sub>e emissions, followed by methane, nitrous oxide, and high-GWP gases, in order of decreasing contribution to CO<sub>2</sub>e.

The primary human processes that release GHGs include the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release methane, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high-GWP gases. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the earth's capacity to

remove CO<sub>2</sub> from the air and altering the earth's albedo or surface reflectance, thus allowing more solar radiation to be absorbed. Specifically, CO<sub>2</sub> emissions associated with fossil fuel combustion are the primary contributors to human-induced climate change. CO<sub>2</sub>, methane, and nitrous oxide emissions associated with human activities are the next largest contributors to climate change. Table 3.8-2 lists the anthropogenic contribution of GHGs in terms of CO<sub>2</sub>e for the year 2004.

**Table 3.8-1: Lifetimes, Global Warming Potentials, and Abundances of Significant Greenhouse Gases**

Gas	Global Warming Potential (100 years)	Lifetime (years)
CO <sub>2</sub>	1	50–200
CH <sub>4</sub>	25	12
N <sub>2</sub> O	298	114
HFC-23	14,800	270
HFC-134a	1,430	14
HFC-152a	124	1.4
CF <sub>4</sub>	7,390	50,000
C <sub>2</sub> F <sub>6</sub>	12,200	10,000
SF <sub>6</sub>	22,800	3,200

Notes:

C<sub>2</sub>F<sub>6</sub> = hexafluoroethane; CF<sub>4</sub> = tetrafluoromethane; CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; HFC = hydrofluorocarbon; N<sub>2</sub>O = nitrous oxide; SF<sub>6</sub> = sulfur hexafluoride

Tetrafluoromethane and hexafluoroethane are perfluorocarbons.

Source: IPCC, 2007b

**Table 3.8-2: Global Anthropogenic Greenhouse Gas Emissions in 2004 (CO<sub>2</sub> Equivalent)**

Gas	Source	GHG Emissions (Gt CO <sub>2</sub> e/year)	CO <sub>2</sub> e Percentage
CO <sub>2</sub>	Deforestation, decay of biomass, etc.	8.5	17.3
CO <sub>2</sub>	Fossil fuel use	27.7	56.6
CO <sub>2</sub>	Other	1.4	2.8
CH <sub>4</sub>	Agriculture, natural gas combustion, coal mining, etc.	7.0	14.3
N <sub>2</sub> O	Agriculture, industry, transportation, etc.	3.9	7.9
High-GWP gases (includes HFCs, PFCs, and SF <sub>6</sub> )	Consumer products, refrigerants, aluminum production, semiconductor manufacturing	0.5	1.1
All GHGs		49.0	100

Notes:

CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; CO<sub>2</sub>e = carbon dioxide equivalent; GHG = greenhouse gas; Gt = gigatonnes; GWP = global warming potential; HFC = hydrofluorocarbon; N<sub>2</sub>O = nitrous oxide; PFC = perfluorocarbon; SF<sub>6</sub> = sulfur hexafluoride

Source: IPCC, 2007c

### ***Carbon Dioxide***

CO<sub>2</sub> is the most important anthropogenic GHG and accounts for more than 75 percent of all anthropogenic GHG emissions. Its long atmospheric lifetime (on the order of decades to centuries) ensures that atmospheric concentrations of CO<sub>2</sub> will remain elevated for decades after GHG mitigation efforts to reduce GHG concentrations are promulgated (IPCC, 2007c).

Increasing concentrations of CO<sub>2</sub> in the atmosphere are largely attributable to emissions from the burning of fossil fuels, gas flaring, cement production, and land use changes. Three-quarters of the current radiative forcing is likely caused by anthropogenic CO<sub>2</sub> emissions that result from fossil fuel burning (and to a very small extent, from cement production); approximately one-quarter of radiative forcing results from land-use changes (IPCC, 2007d).

Anthropogenic emissions of CO<sub>2</sub> have increased concentrations in the atmosphere most notably since the Industrial Revolution. In the last 250 years, the concentration of CO<sub>2</sub> has increased from approximately 280 ppm to 379 ppm, an increase of more than 35 percent (IPCC, 2007d). IPCC estimates that the present atmospheric concentration of CO<sub>2</sub> has not been exceeded in the last 650,000 years and is likely to be the highest ambient concentration in the last 20 million years (IPCC, 2007e).

### ***Methane***

Methane, the main component of natural gas, is the second largest contributor to anthropogenic GHG emissions and has a GWP of 25 (IPCC, 2007b).

Anthropogenic emissions of methane are the result of growing rice, raising cattle, combusting natural gas, and mining coal. Atmospheric methane has increased from a preindustrial concentration of 715 ppb to 1,775 ppb in 2005 (IPCC, 2001b). Although the reason is unclear, atmospheric concentrations of methane have not risen as quickly as anticipated (NOAA, 2015).

### ***Nitrous Oxide***

Nitrous oxide is a powerful GHG with a GWP of 298 (IPCC, 2007b). Anthropogenic sources of nitrous oxide include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. Nitrous oxide also is used in rocket engines and racecars, and as an aerosol spray propellant. Agricultural processes that result in anthropogenic emissions of nitrous oxide are fertilizer use and microbial processes in soil and water.

Nitrous oxide concentrations in the atmosphere have increased from preindustrial levels of 270 ppb to 319 ppb in 2005, an 18 percent increase (IPCC, 2007b).

### ***Hydrofluorocarbons***

HFCs are human-made chemicals used in commercial, industrial, and consumer products and have high GWPs (EPA, 2017). HFCs generally are used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants.

Concentrations of HFCs have risen from zero to current levels (Table 3.8-2). Because these chemicals are human-made, they do not exist naturally in ambient conditions.

### ***Perfluorocarbons***

The most abundant PFCs are tetrafluoromethane (PFC-14) and hexafluoroethane (PFC-116). These human-made chemicals are emitted largely from aluminum production and semiconductor manufacturing processes. PFCs are extremely stable compounds that are destroyed only by very high-energy ultraviolet rays, which results in the very long lifetimes of these chemicals (EPA, 2017).

PFCs have large GWPs and have risen from zero to current levels (Table 3.8-2).

### ***Sulfur Hexafluoride***

Sulfur hexafluoride, another human-made chemical, is used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, and in semiconductor manufacturing and also as a trace chemical for study of oceanic and atmospheric processes (IPCC, 2001a). In 1998, atmospheric concentrations of sulfur hexafluoride were 4.2 ppT and steadily increasing in the atmosphere.

Sulfur hexafluoride is the most powerful of all GHGs listed in IPCC studies, with a GWP of 22,800 (IPCC, 2007b).

## **Global Climate Change Issue**

Climate change is a global problem because GHGs are global pollutants, unlike criteria air pollutants and hazardous air pollutants (also called toxic air contaminants), which are pollutants of regional and local concern. Pollutants with localized air quality effects have relatively short atmospheric lifetimes, approximately 1 day; by contrast, GHGs have long atmospheric lifetimes, several years to several thousand years. GHGs persist in the atmosphere for a long enough time to be dispersed around the globe.

Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, more CO<sub>2</sub> is currently emitted into the atmosphere than is sequestered. CO<sub>2</sub> sinks, or reservoirs, include vegetation and the ocean, which absorb CO<sub>2</sub> through photosynthesis and dissolution, respectively. These are two of the most common processes of CO<sub>2</sub> sequestration. Of the total annual human-caused CO<sub>2</sub> emissions, approximately 54 percent is sequestered through ocean uptake, Northern Hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO<sub>2</sub> emissions is stored in the atmosphere (Seinfeld and Pandis, 1998).

Similarly, effects of GHGs are borne globally, as opposed to the localized air quality effects of criteria air pollutants and hazardous air pollutants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known and cannot be quantified, and no single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global or local climates or microclimate.

Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. A cumulative discussion and analysis of project impacts on global

climate change is presented in this EIR because, although it is unlikely that a single project will contribute significantly to climate change, cumulative emissions from many projects affect global GHG concentrations and the climate system.

Global climate change has the potential to result in sea level rise (resulting in flooding of low-lying areas), to affect rainfall and snowfall (leading to changes in water supply), to affect temperatures and habitats (affecting biological resources and public health), and to result in many other adverse environmental consequences.

Although the international, national, State, and regional communities are beginning to address GHGs and the potential effects of climate change, worldwide GHG emissions will likely continue to rise over the next decades.

## **Climate and Topography**

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place. For a detailed discussion of climate and topography, see Section 3.7, “Air Quality.”

## **Existing Greenhouse Gas Emissions**

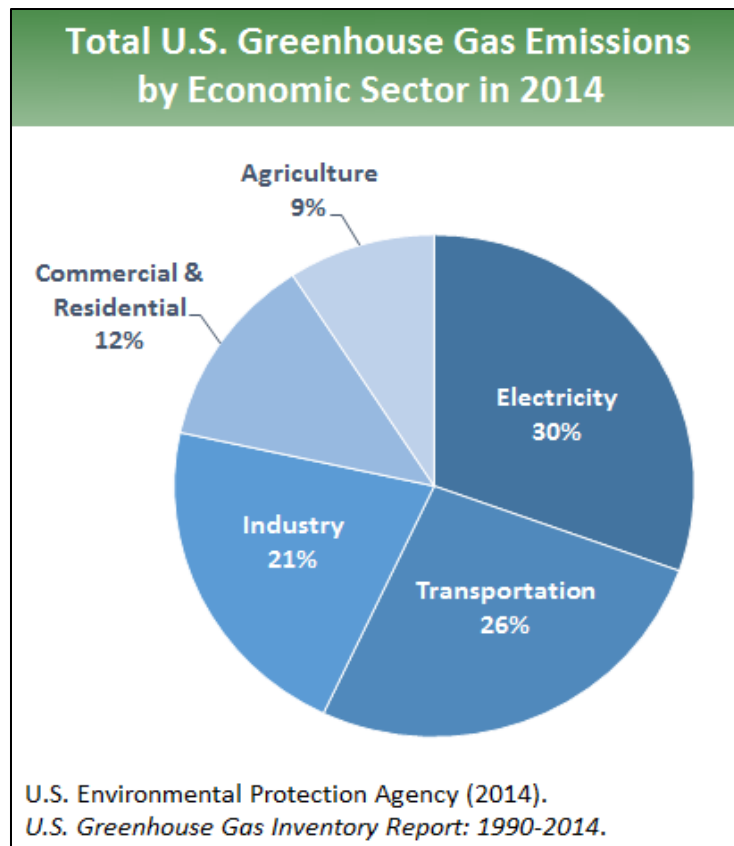
### ***U.S. Greenhouse Gas Inventory***

Total U.S. GHG emissions were approximately 1 percent higher in 2014 than in 2013 (EPA, 2014). Figure 3.8-2 presents 2014 U.S. GHG emissions by economic sector.

Total U.S. GHG emissions increased by 7.4 percent from 1990 to 2014 (from 6,233.2 million metric tons [MMT] CO<sub>2</sub>e in 1990 to 6,870.5 MMT CO<sub>2</sub>e in 2014). Since 1990, U.S. emissions have increased at an average annual rate of 0.3 percent. In 2014, cool winter conditions led to an increase in CO<sub>2</sub>e emissions associated with fuels used for heating in the residential and commercial sectors. Transportation emissions also increased because of a small increase in vehicle miles traveled. There was also an increase in industrial production across multiple sectors, resulting in slight increases in industrial-sector emissions (EPA, 2016).

### ***California Greenhouse Gas Inventory***

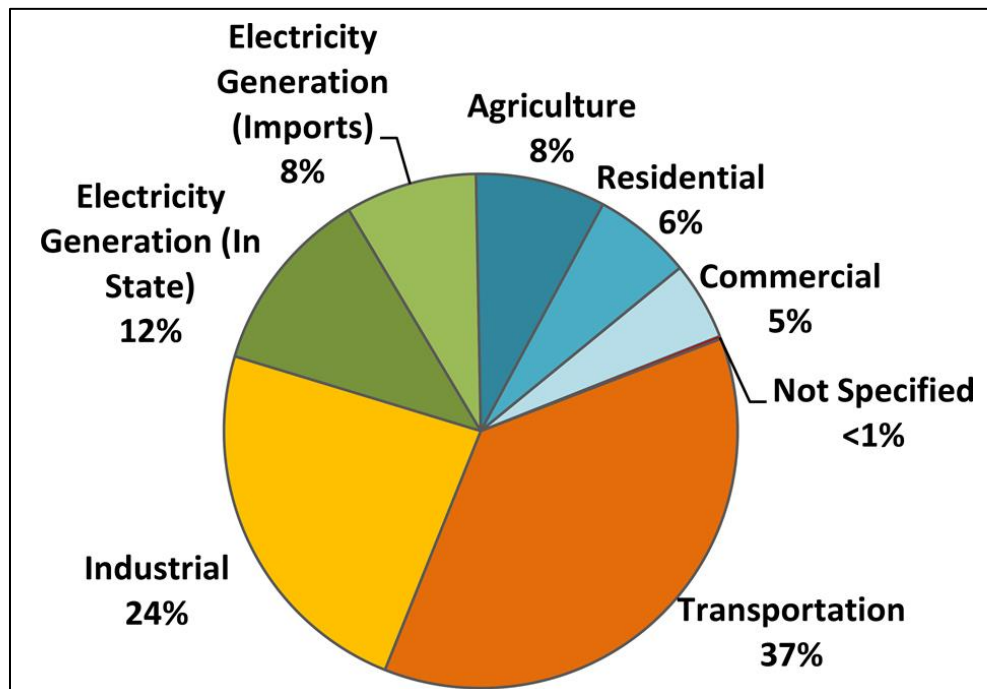
As the second largest emitter of GHGs in the U.S. and the 12th to 16th largest GHG emitter in the world, California contributes a large quantity of GHGs to the atmosphere (CEC, 2006). Emissions of CO<sub>2</sub> are byproducts of fossil-fuel combustion and are attributable in large part to human activities associated with transportation, industry/manufacturing, electricity and natural gas consumption, and agriculture (ARB, 2016a and 2016b). In California, the transportation sector is the largest emitter of GHGs, followed by industry/manufacturing (ARB, 2016a and 2016b) (Figure 3.8-3).



Source: EPA, 2014

Note: Emissions shown do not include carbon sinks such as change in land uses and forestry.

**Figure 3.8-2: 2012 U.S. Greenhouse Gas Emissions by Gas**



Sources: ARB, 2016a and 2016b

**Figure 3.8-3: 2014 California Greenhouse Gas Emissions by Sector**



Emissions of methane and nitrous oxide are generally much lower than CO<sub>2</sub> emissions and are associated with anaerobic microbial activity resulting from agricultural practices, flooded soils, and landfills. The respective GWPs of methane and nitrous oxide are approximately 25 and 298 times the GWP of CO<sub>2</sub>.

### ***Bay Area Air Quality Management District Greenhouse Gas Inventory***

The Bay Area Air Quality Management District (BAAQMD) published a GHG inventory for the San Francisco Bay Area (Bay Area), which provides an estimate of GHG emissions in the base year 2011 for all counties located in the jurisdiction of BAAQMD: Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Napa, and the southern portions of Solano and Sonoma counties (BAAQMD, 2015). This GHG inventory is based on the standards for criteria pollutant inventories and is intended to support BAAQMD's climate protection activities.

Table 3.8-3 shows the 2011 breakdown of emissions by end-use sector for each county within BAAQMD's jurisdiction. The estimated GHG emissions are presented in CO<sub>2</sub>e, which weights each GHG by its GWP. The GWPs used in the BAAQMD inventory are from the Second Assessment Report of the IPCC.

In 2011, San Francisco's GHG emissions accounted for approximately 6.6 percent of the Bay Area's total GHG emissions (BAAQMD, 2015). Transportation is the largest GHG emissions sector in the Bay Area and in San Francisco, followed by industrial/commercial, electricity generation and cogeneration, and residential fuel usage.

**Table 3.8-3: 2011 County Emissions Breakdown by Sector**

<b>Sector</b>	<b>Alameda</b>	<b>Contra Costa</b>	<b>Marin</b>	<b>Napa</b>	<b>San Francisco</b>	<b>San Mateo</b>	<b>Santa Clara</b>	<b>Solano*</b>	<b>Sonoma*</b>
Industrial/Commercial	2.7	17.8	0.4	0.2	1.2	1.4	4.1	2.7	0.5
Residential Fuel	1.3	1.0	0.3	0.1	0.9	0.8	1.5	0.3	0.4
Electricity/Co-gen.	0.9	7.2	0.1	0.1	0.5	0.4	2.2	0.4	0.2
Off-Road Equipment	0.2	0.2	0.0	0.0	0.2	0.1	0.4	0.0	0.1
Transportation	7.9	5.0	1.3	0.9	3.0	5.0	7.6	1.6	2.0
Agriculture/Farming	0.1	0.2	0.2	0.1	0.0	0.0	0.2	0.1	0.2
<b>Total</b>	<b>13.2</b>	<b>31.4</b>	<b>2.4</b>	<b>1.5</b>	<b>5.7</b>	<b>7.7</b>	<b>16.0</b>	<b>5.1</b>	<b>3.5</b>

Notes:

BAAQMD = Bay Area Air Quality Management District; CO<sub>2</sub>e = carbon dioxide equivalent; co-gen = cogeneration

\* Portion within BAAQMD jurisdiction

Source: BAAQMD, 2015

### ***Existing Greenhouse Gas Emissions on the Project Site***

#### **India Basin Shoreline Park Property**

The 5.6-acre India Basin Shoreline Park property currently supports recreational amenities, a portion of the Blue Greenway/San Francisco Bay Trail (Bay Trail), and parking areas. India Basin Shoreline Park provides informal access along the San Francisco Bay shoreline. Although many of the amenities at the park are not highly

used, GHG emissions are currently generated by vehicle trips to and from the site, from landscaping and maintenance equipment, and the use of barbecue grills.

### **900 Innes Property**

The 900 Innes property totals 2.4 acres and is a former maritime industrial site that contains five buildings and structures. The structures on this property are dilapidated, are not currently used, and lack energy-generating or energy-consuming utilities. Therefore, these structures do not generate operational GHG emissions.

### **India Basin Open Space Property**

The 6.2-acre India Basin Open Space property includes a pathway that is a portion of the Blue Greenway/Bay Trail and contains benches, upland habitat, tidal salt marsh, mudflats, sand dunes, and native vegetation. Public access to the shoreline is limited to the Blue Greenway/Bay Trail. Therefore, this property does not generate GHG emissions.

### **700 Innes Property**

The 700 Innes property consists of 30 parcels totaling 17.12 acres. This area generally is made of fill materials and is undeveloped except for six structures: a timber-framed industrial building, a residence, a commercial building, and three temporary structures. The primary sources of GHG emissions are vehicle trips to and from the site and energy consumption by the structures.

## **Climate Change Trends and Effects**

CO<sub>2</sub> accounts for more than 75 percent of all anthropogenic GHG emissions, the atmospheric residence time of CO<sub>2</sub> is decades to centuries, and global atmospheric concentrations of CO<sub>2</sub> continue to increase at a faster rate than ever previously recorded. Thus, the warming impacts of CO<sub>2</sub> will persist for hundreds of years after mitigation is implemented to reduce GHG concentrations. Substantially higher temperatures, more extreme wildfires, and rising sea levels are just some of the direct effects experienced in California (CNRA, 2009; CEC, 2012). As reported by the California Natural Resources Agency in 2009, despite annual variations in weather patterns, California has seen a trend of increased average temperatures, more extreme hot days, fewer cold nights, longer growing seasons, less winter snow, and earlier snowmelt and rainwater runoff. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and a larger proportion of total precipitation is falling as rain instead of snow (CEC, 2006). Sea level rose by as much as 7 inches along the California coast over the last century, leading to increased erosion and adding pressure to the State's infrastructure, water supplies, and natural resources.

These observed trends in California's climate are projected to continue in the future. Research indicates that California will experience overall hotter and drier conditions with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures and accelerating sea level rise. The frequency, intensity, and duration of extreme weather events such as heat waves, wildfires, droughts, and floods will also change (CNRA, 2009). The following is a summary of climate change factors and predicted trends specific to the Bay Area, using the latest information available as of 2014.

### ***Temperature/Heat***

The Bay Area is expected to experience warming over the rest of the 21st century. Consistent with statewide projections, the annual average temperature in the Bay Area will likely increase by 2.7°F between 2000 and 2050, based on GHGs that have already been emitted into the atmosphere. By the end of the century, the increase in the Bay Area's annual average temperature may range from approximately 3.5°F to 11°F relative to the average annual temperature simulated for the 1961–1990 baseline period used for the study, depending on the GHG emissions scenarios (CEC, 2009). The projected rate of warming, especially in the latter half of the 21st century, is considerably greater than warming rates derived from historical observed data.

Specific predictions related to temperature/heat are summarized below.

- The annual average temperature in the Bay Area has been increasing over the last several decades.
- The Bay Area is expected to see an increase in average annual temperature of 2.7°F by 2050, and 3.5°F to 11°F by 2100. Projections show a greater warming trend during the summer season. The coastal parts of the Bay Area will experience the most moderate warming trends. Locally, San Francisco is expected to see an increase of approximately 2.2°F by 2050, and 3.3°F to 5.5°F by 2100 (Cal-Adapt, 2014).
- Extreme heat events are expected to increase in duration, frequency, and severity by 2050. Extreme freeze events are expected to decrease in frequency and severity by 2100, but occasional colder-than-historical events may occur by 2050 (Cal-Adapt, 2014).

### ***Precipitation/Rainfall/Extreme Events***

Recent studies of the effect of climate change on the long-term average precipitation for the state of California show some disagreement (CEC, 2009). Considerable variability exists across individual models, and examining the average changes can mask more extreme scenarios that project much wetter or drier conditions. California is expected to maintain a Mediterranean climate through the next century, with dry summers and wet winters that vary between seasons, years, and decades. Wetter winters and drier springs are also expected, but overall annual precipitation is not projected to change substantially. By mid-century, more precipitation is projected to occur in winter in the form of less frequent but larger events. The majority of global climate models predict drying trends across the state by 2100 (CNRA, 2009).

Specific factors related to precipitation/rainfall/extreme events are summarized below.

- The Bay Area has not experienced substantial changes in rainfall depth or intensities over the past 30 years.
- The Bay Area will continue to experience a Mediterranean climate, with little change in annual precipitation projected by 2050, although a high degree of variability may persist.
- An annual drying trend is projected to occur by 2100. The greatest decline in precipitation is expected to occur during the spring months, while minimal change is expected during the winter months.
- Increases in drought duration and frequency coupled with higher temperatures, as experienced in 2012, 2013, and 2014, will increase the likelihood of wildfires.
- California is expected to see increases in the magnitude of extreme events, including increased precipitation delivered from atmospheric river events, which would bring high levels of rainfall during short time periods

and increase the chance of flash floods. The Bay Area is also expected to see an increase in precipitation intensities, but possibly through less frequent events (CEC, 2009).

### ***Sea Level Rise***

For a detailed discussion of climate change trends and effects specific to sea level rise, see Section 3.15, “Hydrology and Water Quality.”

### ***Project Site***

The project site ranges in site elevation from 6 feet to 45 feet (this elevation references the San Francisco City Datum<sup>6</sup> plus 100 feet), which is roughly equivalent to 5–50 feet above mean sea level.

## **3.8.2 Regulatory Framework**

### **Federal**

#### ***Massachusetts et al. v. Environmental Protection Agency (2007)***

Twelve U.S. states and cities, including California, in conjunction with several environmental organizations, sued in *Massachusetts et al. v. Environmental Protection Agency* to force the U.S. Environmental Protection Agency (EPA) to regulate GHGs as a pollutant pursuant to the Clean Air Act (CAA). On April 2, 2007, the U.S. Supreme Court held that EPA has the authority to regulate GHG emissions as a pollutant pursuant to the CAA. However, the court did not decide whether EPA is required to regulate GHG emissions at this time, or may exercise discretion to not regulate at this time. Despite the Supreme Court ruling and the EPA proposal, no currently promulgated federal regulations that limit GHG emissions are applicable to the proposed project or variant.

#### ***U.S. Environmental Protection Agency Finding of Endangerment (2007)***

On April 17, 2009, EPA issued a Proposed Endangerment and Cause or Contribute Finding for GHGs (Endangerment Finding) under the CAA. Through this Endangerment Finding, the EPA Administrator proposed that current and projected concentrations of CO<sub>2</sub>, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride threaten the public health and welfare of current and future generations. In addition, the Administrator proposed that combined emissions of CO<sub>2</sub>, methane, nitrous oxide, and HFCs from motor vehicles contribute to the atmospheric concentrations, and thus to the threat of climate change. Although the Endangerment Finding in itself does not place requirements on industry, it is an important step in EPA’s process to develop regulation.

#### ***U.S. Environmental Protection Agency Advance Notice of Proposed Rulemaking (2008)***

In June 2008, EPA issued an Advance Notice of Proposed Rulemaking inviting comments on options and questions regarding regulation of GHGs under the CAA; however, EPA has not yet proposed or adopted regulations in response to the decision in *Massachusetts et al. v. Environmental Protection Agency*. Thus, no

---

<sup>6</sup> The San Francisco City Datum is a reference datum that has been used by San Francisco for surveying purposes since the early 1900s. To convert to the North American Vertical Datum of 1988 (approximately mean sea level), add 11.37 feet to the City Datum.

currently promulgated federal regulations that limit GHG emissions are applicable to the proposed project or variant.

### ***U.S. Environmental Protection Agency Rule: Mandatory Reporting of Greenhouse Gases (2009)***

On September 22, 2009, the EPA Administrator signed a rule requiring mandatory reporting of emissions of GHGs from large sources in the United States. The rule was published in the *Federal Register* on October 30, 2009, and went into effect December 29, 2010. The rule applies to emissions of CO<sub>2</sub>, methane, nitrous oxide, HFCs, PFCs, sulfur hexafluoride, nitrogen trifluoride, hydrofluorinated ethers, and select other fluorinated compounds. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 MT or more per year of GHGs are required to report annual emissions to EPA. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to EPA in 2011.

### ***Energy Independence and Security Act***

The Energy Policy Act of 2005 created the Renewable Fuel Standard program. The Energy Independence and Security Act of 2007 expanded this program by:

- expanding the Renewable Fuel Standard program to include diesel in addition to gasoline;
- increasing the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- establishing new categories of renewable fuel, and setting separate volume requirements for each one; and
- requiring EPA to apply life-cycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

This expanded Renewable Fuel Standard program lays the foundation for achieving substantial reductions of GHG emissions from the use of renewable fuels, reducing the use of imported petroleum, and encouraging the development and expansion of the nation's renewable-fuels sector. For purposes of the proposed project and variant, implementation of the Energy Independence and Security Act's Renewable Fuel Standard program would take place in the form of compliance with the San Francisco GHG Reduction Strategy.

### ***EPA and National Highway Traffic Safety Administration Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards Final Rule***

The final combined EPA and National Highway Traffic Safety Administration (NHTSA) standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012–2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, equivalent to 35.5 miles per gallon, if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements. Together, these standards will cut GHG emissions by an estimated 960 MMT and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program.

The State of California has received a waiver from EPA to have separate, stricter corporate average fuel economy standards. Thus, for purposes of the proposed project and variant, EPA's NHTSA GHG emissions and corporate average fuel economy standards would be implemented through compliance with Assembly Bill (AB) 1493, described below.

## **State**

### ***California Low Carbon Fuel Standard***

The purpose of the California Low Carbon Fuel Standard (California Code of Regulations Title 17, Sections 95480–95490) is to reduce GHG emissions by reducing the full-fuel-cycle carbon intensity of the transportation fuel pool used in California. The California Low Carbon Fuel Standard generally applies to any transportation fuel that is sold, supplied, or offered for sale in California, and to any person responsible for a transportation fuel in a calendar year. The Low Carbon Fuel Standard applies to the following types of transportation fuels:

- California reformulated gasoline
- California diesel fuel
- Fossil compressed natural gas (CNG) or fossil liquefied natural gas (LNG)
- Biogas CNG or biogas LNG
- Electricity
- Compressed or liquefied hydrogen
- A fuel blend containing hydrogen
- A fuel blend containing greater than 10 percent ethanol by volume
- A fuel blend containing biomass-based diesel
- Denatured fuel ethanol (also known as E100)
- Neat biomass-based diesel (also known as B100)
- Any other liquid or nonliquid fuel

### ***Assembly Bill 1493 “Pavley”—Light Duty Vehicle Greenhouse Gas Emissions Standards***

On June 30, 2009, EPA granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles. With this waiver, it was expected that implementing California's AB 1493 “Pavley” regulations would reduce GHG emissions from California passenger vehicles by approximately 22 percent in 2012 and 30 percent in 2016, all while improving fuel efficiency and reducing motorists' costs.

The California Air Resources Board (ARB) has adopted a new approach to passenger vehicles—cars and light trucks—by combining the control of smog-causing pollutants and GHG emissions into a single coordinated package of standards. The new approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emission vehicles in California.

### ***Executive Orders S-3-05 and B-30-15***

Executive Order (EO) S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million MTCO<sub>2e</sub>); by 2020, reduce emissions to 1990 levels (approximately 427 million MTCO<sub>2e</sub>); and by 2050, reduce emissions to 80 percent below 1990 levels (approximately 85 million MTCO<sub>2e</sub>). As discussed in Section 3.8.1, “Environmental Setting,” above, California produced about 452 million MTCO<sub>2e</sub> in 2010, thereby meeting the 2010 target date to reduce GHG emissions to 2000 levels.

EO B-30-15 set an additional, interim statewide GHG reduction target of 40 percent below 1990 levels to be achieved by 2030. The purpose of this interim target is to ensure that California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050 (Governor’s Office, 2015). EO B-30-15 also requires all State agencies with jurisdiction over sources of GHG emissions to implement measures within their statutory authority to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets.

### ***Assembly Bill 32 and Climate Change Scoping Plan***

In 2006, the California Legislature passed AB 32 (California Health and Safety Code Section 38500 et seq.), also known as the California Global Warming Solutions Act. AB 32 requires ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020.

Pursuant to AB 32, ARB adopted the *Climate Change Scoping Plan* (Scoping Plan) in December 2008, outlining measures to meet the 2020 GHG reduction limits. To meet the goals of AB 32, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels (approximately 15 percent below 2008 levels) (ARB, 2010). The Scoping Plan estimates a reduction of 174 million MTCO<sub>2e</sub> from transportation, energy, agriculture, forestry, and other high-global-warming sectors (Table 3.8-4) (ARB, 2010).

The AB 32 Scoping Plan also anticipates that actions by local governments will result in reduced GHG emissions because local governments have the primary authority to plan, zone, approve, and permit development to accommodate population growth and the changing needs of their jurisdictions (ARB, 2008). The Scoping Plan also relies on the requirements of Senate Bill (SB) 375 (discussed below) to align local land use and transportation planning to achieve GHG reductions.

The Scoping Plan must be updated every 5 years to evaluate AB 32 policies and ensure that California is on track to achieve the 2020 GHG reduction goal. In 2014, ARB released the *First Update to the Climate Change Scoping Plan* (First Update), which builds on the initial Scoping Plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low-carbon investments. This update defines ARB’s climate change priorities for the next 5 years and sets the groundwork to reach the long-term goals set forth in EO S-3-05. The First Update highlights California’s progress toward meeting the near-term 2020 GHG emission reduction goals in the initial Scoping Plan. It also evaluates how to align the State’s longer-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use (ARB, 2014).

**Table 3.8-4: Greenhouse Gas Reductions from the Assembly Bill 32 Scoping Plan Categories**

<b>Scoping Plan Category</b>	<b>GHG Reductions (MMTCO<sub>2</sub>e)</b>
Transportation	62.3
Electricity and Natural Gas	49.7
Industry	1.4
Landfill Methane Control	1
Forestry	5
High-Global Warming Potential GHGs	20.2
Additional Reductions Needed to Achieve the GHG Cap	34.4
Other Recommended Measures	
Government Operations	1–2
Agriculture—Methane Capture at Large Dairies	1
Water	4.8
Green Buildings	26
Recycling/Zero Waste	9
<b>Total Reductions Counted toward 2020 Target</b>	<b>216.8 to 217.8</b>

Notes:

GHG = greenhouse gas; MMTCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; Scoping Plan = Climate Change Scoping Plan

Sources: ARB, 2008 and 2010

### ***Senate Bill 32***

On August 24, 2016, the California Legislature passed SB 32 (California Health and Safety Code Section 38566), amending the California Global Warming Solutions Act of 2006. SB 32 directs ARB to adopt, to the extent technologically feasible and cost-effective, any rules and regulations necessary to achieve a reduction in statewide GHG emissions of 40 percent below 1990 levels by 2030. The passage of SB 32 codifies the 2030 interim GHG emissions reduction target established by EO B-30-15.

SB 32 was paired with AB 197 (California Government Code Section 9147.10; California Health and Safety Code Sections 39510, 39607, 38506, 38531, and 38562.5). AB 197 provides additional guidance on how to achieve the reduction targets established in EO B-30-15 and SB 32. SB 32 and AB 197 became effective January 1, 2017.

### ***Senate Bill 375***

The Scoping Plan also relies on the requirements of SB 375 (Chapter 728, Statutes of 2008), also known as the Sustainable Communities and Climate Protection Act of 2008, to reduce carbon emissions from land use decisions. SB 375 requires regional transportation plans developed by each of the State's 18 metropolitan planning organizations to incorporate a "sustainable communities strategy" in each regional transportation plan that will then achieve GHG emission reduction targets set by ARB. For the Bay Area, the per-capita GHG emission reduction target is a 7 percent reduction by 2020 and a 15 percent reduction by 2035 from 2005 levels



(ARB, 2011). *Plan Bay Area*, the Metropolitan Transportation Commission's regional transportation plan, adopted in July 2013, is the region's first plan subject to SB 375 requirements (ABAG and MTC, 2013).

### ***Senate Bills 1078, 107, X1-2, and 350 and Executive Orders S-14-08 and S-21-09***

California established aggressive renewable portfolio standards under SB 1078 (Chapter 516, Statutes of 2002) and SB 107 (Chapter 464, Statutes of 2006), which require retail sellers of electricity to provide at least 20 percent of their electricity supply from renewable sources by 2010. EO S-14-08 (November 2008) expanded the State's renewable portfolio standard from 20 percent to 33 percent of electricity from renewable sources by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the renewable portfolio standard by signing EO S-21-09, which directed ARB to enact regulations to help California meet the renewable portfolio standard goal of 33 percent renewable energy by 2020 (CPUC, 2015).

In April 2011, Governor Brown signed SB X1-2 (Chapter 1, Statutes of 2011), codifying the GHG reduction goal of 33 percent by 2020 for energy suppliers. This renewable portfolio standard preempts ARB's electricity standard of 33 percent renewable sources and applies to all electricity suppliers (not just retail sellers) in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. SB X1-2 specified that all of these entities would have to adopt the new renewable portfolio standard goals of 20 percent of retail sales from renewable sources by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020 (CPUC, 2015). Eligible renewable sources include geothermal, ocean wave, solar photovoltaic, and wind, but exclude large hydroelectric (30 megawatts or more). Because the San Francisco Public Utilities Commission (SFPUC) receives more than 67 percent of its electricity from large hydroelectric facilities, the remaining electricity provided by SFPUC must be 100 percent renewable (SFPUC, 2011). SB 350 (Chapter 547, Statutes of 2015), signed by Governor Brown in October 2015, dramatically increased the stringency of the renewable portfolio standard. SB 350 establishes a target for the renewable portfolio standard of 50 percent by 2030, along with interim targets of 40 percent by 2024 and 45 percent by 2027.

## **Regional**

### ***Bay Area 2010 Clean Air Plan***

BAAQMD is responsible for attaining and maintaining federal and State air quality standards in the San Francisco Bay Area Air Basin, as established by the federal CAA and the California Clean Air Act (CCAA), respectively. The CAA and CCAA require that plans be developed for areas that do not meet air quality standards. The most recent air quality plan, the *Bay Area 2010 Clean Air Plan*, includes a goal of reducing GHG emissions to 1990 levels by 2020, 40 percent below 1990 levels by 2035, and 80 percent below 1990 levels by 2050 (BAAQMD, 2010a).

In addition, BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The program includes GHG-reduction measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative energy sources (BAAQMD, 2012a).

The BAAQMD CEQA Air Quality Guidelines also assist lead agencies in complying with CEQA requirements regarding potentially adverse impacts on air quality. BAAQMD advises lead agencies to consider adopting a

GHG reduction strategy capable of meeting AB 32 goals and then reviewing projects for compliance with the San Francisco GHG Reduction Strategy as a CEQA threshold of significance (BAAQMD, 2012b). This is consistent with the approach to analyzing GHG emissions described in State CEQA Guidelines Section 15183.5.

## **Local**

### ***San Francisco Greenhouse Gas Reduction Ordinance***

In May 2008, the City adopted Ordinance No. 81-08, amending the San Francisco Environment Code to establish GHG emissions targets and require departmental action plans and to authorize the San Francisco Department of the Environment to coordinate efforts to meet these targets. The City ordinance establishes the following GHG emissions reduction limits and target dates by which to achieve them (San Francisco, 2008):

- Determine 1990 citywide GHG emissions by 2008, the baseline level, with reference to which target reductions are set.
- Reduce GHG emissions by 25 percent below 1990 levels by 2017.
- Reduce GHG emissions by 40 percent below 1990 levels by 2025.
- Reduce GHG emissions by 80 percent below 1990 levels by 2050.

The City's GHG reduction targets are consistent with and are more ambitious than those set forth in Governor Brown's EO B-30-15 by targeting a 40 percent reduction of GHGs by 2025, rather than a 40 percent reduction by 2030.

### ***San Francisco Greenhouse Gas Reduction Strategy***

San Francisco has developed a number of plans and programs to reduce the City's contribution to global climate change and meet the goals of the Greenhouse Gas Reduction Ordinance. San Francisco's *Strategies to Address Greenhouse Gas Emissions* (San Francisco, 2013) documents the City's actions to pursue cleaner energy, energy conservation, alternative transportation, and solid waste policies. For instance, the City has implemented requirements and incentives that have measurably reduced GHG emissions, such as:

- increasing the energy efficiency of new and existing buildings,
- installing solar panels on building roofs,
- implementing a green-building strategy,
- adopting a zero-waste strategy,
- adopting a construction and demolition debris recovery ordinance,
- creating a solar energy generation subsidy,
- incorporating alternative fuel vehicles in the City's transportation fleet (including buses), and
- adopting a mandatory recycling and composting ordinance.

The strategy also includes 35 specific regulations for new development that would reduce a project's GHG emissions. If the 2013 Climate Action Strategy's plans and policies are implemented, San Francisco can reduce GHG emissions by 52 percent below 1990 levels by 2030 (San Francisco, 2013).

### 3.8.3 Impacts and Mitigation Measures

#### Significance Thresholds

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Greenhouse Gas Emissions. Implementation of the proposed project or the variant would have a significant effect on Greenhouse Gas Emissions if the proposed project or variant would:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

#### Approach to Analysis

GHG emissions and global climate change represent cumulative impacts. GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the GHG emissions from past, present, and future projects and activities have contributed and will contribute to global climate change and its associated environmental impacts.

BAAQMD has prepared guidelines and methodologies for analyzing GHGs. These guidelines are consistent with Sections 15064.4 and 15183.5 of the State CEQA Guidelines, which address the analysis and determination of significant impacts from a proposed project's GHG emissions. State CEQA Guidelines Section 15064.4 allows lead agencies to rely on a qualitative analysis to describe GHG emissions resulting from a project. State CEQA Guidelines Section 15183.5 allows public agencies to analyze and mitigate GHG emissions as part of a larger plan for the reduction of GHGs and describes the required contents of such a plan. Accordingly, San Francisco has prepared its own GHG reduction strategy (described above), which BAAQMD has reviewed and concluded that "Aggressive GHG reduction targets and comprehensive strategies like San Francisco's help the Bay Area move toward reaching the State's AB 32 goals, and also serve as a model from which other communities can learn" (BAAQMD, 2010b). The San Francisco GHG Reduction Strategy, in the form of GHG checklists, was used to assess the GHG impacts of the proposed project and variant. The GHG emissions of the proposed project and variant were quantified for informational purposes and are available in Appendix G of this EIR.

The following analysis of the impact of the proposed project or variant on climate change focuses on the project's contribution to cumulatively significant GHG emissions. Because no individual project could emit GHGs at a level that could result in a significant impact on the global climate, this analysis is in a cumulative context, and this section does not include an individual project-specific impact statement.

## Project Features

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. As discussed below, the proposed project or variant would be required to comply with regulations and would include features designed to reduce energy-, transportation-, and waste-related emissions and to promote energy and water use efficiency.

## Impact Evaluation

Note that because GHG emissions are global air pollutant emissions with an atmospheric residence time of at least 200 years, construction-related and operational GHG emissions associated with the proposed project and variant are discussed and analyzed in the cumulative impact analysis below.

### 3.8.4 Cumulative Impacts

**Impact-C-GG-1: The proposed project or variant would generate greenhouse gas emissions, but not at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing greenhouse gas emissions. (*Less than Significant*)**

The proposed project and variant would be subject to regulations adopted to reduce GHG emissions as identified in the San Francisco GHG Reduction Strategy. As discussed below, compliance with the applicable regulations would reduce the GHG emissions associated with either the proposed project or the variant related to transportation, energy use, waste disposal, wood burning, and use of refrigerants associated with all four project site properties.

Specifically, compliance with the City's Commuter Benefits Program, Emergency Ride Home Program, transportation management programs, transportation sustainability fee, Jobs-Housing Linkage Program, bicycle parking requirements, low-emission car-parking requirements, and carsharing requirements would reduce transportation-related emissions (CO<sub>2</sub>, methane, nitrous oxide) for the proposed project and variant. These regulations reduce GHG emissions from single-occupancy vehicles by promoting the use of alternative transportation modes with zero or lower GHG emissions on a per capita basis.

For the proposed project or variant, RPD and BUILD would be required to comply with the energy efficiency requirements of the City's Green Building Code, Stormwater Management Ordinance, Water Conservation and Irrigation ordinances, and Residential Energy Conservation Ordinance, which would promote energy and water use efficiency, thereby reducing the energy-related GHG emissions (CO<sub>2</sub>, methane, nitrous oxide) of the proposed project or variant.<sup>7</sup> Additionally, the proposed project or variant would be required to meet the renewable-energy criteria of the Green Building Code, further reducing the project's energy-related GHG emissions.

The waste-related emissions associated with the proposed project or variant would be reduced through compliance with the City's Recycling and Composting Ordinance, Construction and Demolition Debris Recovery Ordinance, and Green Building Code requirements. These regulations reduce the amount of materials sent to

---

<sup>7</sup> Compliance with water conservation measures reduce the energy (and GHG emissions) required to convey, pump, and treat water required for the project.

landfills, reducing emissions of GHGs (methane) by landfill operations. These regulations also promote the reuse of materials, conserving their embodied energy<sup>8</sup> and reducing the energy required to produce new materials.

Compliance with the City's Street Tree Planting requirements would serve to increase carbon sequestration. Other regulations, including those limiting refrigerant emissions and the Wood Burning Fireplace Ordinance, would reduce emissions of HFCs, CO<sub>2</sub>, and black carbon, respectively. Regulations requiring low-emitting finishes would reduce volatile organic compounds (VOCs).<sup>9</sup>

Thus, the proposed project and variant were both determined to be consistent with San Francisco's GHG reduction strategy via the GHG checklists for private development and municipal projects (San Francisco, 2016) (see Appendix G).

RPD and BUILD are required to comply with these regulations. The regulations have proven effective, as San Francisco's GHG emissions have measurably decreased relative to 1990 emissions levels, demonstrating that the City has met and exceeded EO S-3-05, AB 32, and the *Bay Area 2010 Clean Air Plan* GHG reduction goals for the year 2020. Other existing regulations, such as those implemented through AB 32, will continue to reduce the contributions of projects to climate change. In addition, San Francisco's local GHG reduction targets are consistent with the long-term GHG reduction goals of EO S-3-05, EO B-30-15, AB 32, SB 32, and the *Bay Area 2010 Clean Air Plan*.

Because the proposed project and variant are consistent with the City's GHG reduction strategy, they are also consistent with the GHG reduction goals of EO S-3-05, EO B-30-15, AB 32, SB 32, and the *Bay Area 2010 Clean Air Plan*, and would not conflict with these plans. Therefore, both the proposed project and variant would not exceed San Francisco's applicable GHG threshold of significance. As a result, the operational impact of the proposed project or variant at all four project site properties with respect to GHG emissions would be *less than significant*. No mitigation measures are necessary.

### 3.8.5 References

- Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG and MTC). 2013. *Plan Bay Area: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area 2013–2040*. Adopted July 18, 2013.
- Bay Area Air Quality Management District (BAAQMD). 2010a (September). *Bay Area 2010 Clean Air Plan*. Final. Adopted September 15, 2010. San Francisco, CA.
- . 2010b (October 28). Draft GHG Reduction Strategy. Letter to Bill Wycko, San Francisco Planning Department. Available: [http://www.sf-planning.org/ftp/files/MEA/GHG-Reduction\\_Letter.pdf](http://www.sf-planning.org/ftp/files/MEA/GHG-Reduction_Letter.pdf). Accessed March 3, 2016.
- . 2012a. Climate Protection Program. Available: <http://www.baaqmd.gov/plans-and-climate/climate-protection/climate-protection-program>. Accessed August 23, 2012.

<sup>8</sup> Embodied energy is the total energy required for the extraction, processing, manufacture, and delivery of building materials to the building site.

<sup>9</sup> Although they are not GHGs, VOCs are precursor pollutants that form ground-level ozone. Increased ground-level ozone is an anticipated effect of future global warming that would result in added health effects locally. Reducing VOC emissions would reduce the anticipated local effects of global warming.

- . 2012b (May). *California Environmental Quality Act Air Quality Guidelines*. Updated May 2012. San Francisco, CA.
- . 2015 (January). *Bay Area Emissions Inventory Summary Report: Greenhouse Gases: Base Year 2011*. Updated January 2015. San Francisco, CA.
- Cal-Adapt. 2014. Cal-Adapt Web Tool. Available: <http://cal-adapt.org/>. Accessed August 24, 2014.
- California Air Resources Board (ARB). 2008 (December). *Climate Change Scoping Plan: A Framework for Change. Pursuant to AB 32, The California Global Warming Solutions Act of 2006*. Sacramento, CA.
- . 2010. *California's Climate Plan: Fact Sheet*. Updated January 27, 2010. Available: [http://www.arb.ca.gov/cc/facts/scoping\\_plan\\_fs.pdf](http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf). Accessed March 3, 2016.
- . 2011 (February 15). Executive Order No. G-11-024, "Relating to Adoption of Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375." Available: [http://www.arb.ca.gov/cc/sb375/executive\\_order\\_g11024.pdf](http://www.arb.ca.gov/cc/sb375/executive_order_g11024.pdf). Accessed March 3, 2016.
- . 2014 (May). *First Update to the Climate Change Scoping Plan: Building on the Framework. Pursuant to AB 32, The California Global Warming Solutions Act of 2006*. Sacramento, CA.
- . 2016a. California Greenhouse Gas Emissions for 2000 to 2014—Trends of Emissions and Other Indicators. In California GHG Emission Inventory, 2016 Edition. Available: [http://www.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2014/ghg\\_inventory\\_trends\\_00-14\\_20160617.pdf](http://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf). Last updated June 17, 2016. Accessed August 12, 2016.
- . 2016b. California Greenhouse Gas Emission Inventory Program. Available: <https://www.arb.ca.gov/cc/inventory/inventory.htm>. Last updated June 17, 2016. Accessed October 28, 2016.
- California Energy Commission (CEC). 2006. *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*. Staff Final Report. Sacramento, CA.
- . 2009 (August). *Climate Change Scenarios and Sea Level Rise Estimates for the California 2009 Climate Change Scenarios Assessment*. California Climate Change Center. CEC-500-2009-014-F. Sacramento, CA.
- . 2012. *Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California*. A Summary Report on the Third Assessment from the California Climate Change Center. CEC-500-2012-007. Sacramento, CA.
- California Natural Resources Agency (CNRA). 2009. *2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008*. Sacramento, CA.
- California Public Utilities Commission (CPUC). 2015 (June). RPS Program Overview. Available: [http://www.cpuc.ca.gov/RPS\\_Overview/](http://www.cpuc.ca.gov/RPS_Overview/). Accessed March 3, 2016.

- Intergovernmental Panel on Climate Change (IPCC). 2001a. *Climate Change 2001: The Scientific Basis*. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.
- . 2001b. Atmospheric Chemistry and Greenhouse Gases. Chapter 4 in *Climate Change 2001: The Scientific Basis*. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.
- . 2007a. Summary for Policymakers. In *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.
- . 2007b. Direct Global Warming Potentials. Section 2.10.2 in *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.
- . 2007c. Introduction. Chapter 1 in *Climate Change 2007: Mitigation*. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.
- . 2007d (February). Changes in Atmospheric Constituents and in Radiative Forcing. Chapter 2 in *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom: Cambridge University Press.
- . 2007e. *Climate Change 2007: Synthesis Report*. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Switzerland.
- National Oceanic and Atmospheric Administration (NOAA). 2015. Greenhouse Gases: Introduction—What Are Greenhouse Gases? Available: <https://www.ncdc.noaa.gov/monitoring-references/faq/greenhouse-gases.php>. Accessed January 13, 2015.
- Office of Governor Edmund G. Brown Jr. (Governor’s Office). 2015 (April 29). Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America. Available: <https://www.gov.ca.gov/news.php?id=18938>. Accessed March 3, 2016.
- San Francisco, City and County of (San Francisco). 2008 (May 13). Greenhouse Gas Emissions Targets and Departmental Action Plans. Available: <http://environment.sanfranciscocode.org/9/>. Accessed March 3, 2016.
- . 2013 (October 21). *San Francisco Climate Action Strategy*. 2013 Update. San Francisco, CA.
- . 2016. Greenhouse Gas Analysis: Compliance Checklists for India Basin Mixed-Use Project Private Development (BUILD), May 5, 2016, and for India Basin Mixed-Use Project Municipal Project (RPD), May 11, 2016. San Francisco, CA.
- San Francisco Public Utilities Commission (SFPUC). 2011 (December 13). Approval of the Enforcement Program for the California Renewable Energy Resources Act. Available:

<https://infrastructure.sfwater.org/fds/fds.aspx?lib=SFUC&doc=741114&data=285328890>. Accessed March 3, 2016.

Seinfeld, J. H., and S. N. Pandis. 1998. *Atmospheric Chemistry and Physics*. New York: John Wiley & Sons.

United Nations Environment Programme/GRID-Arendal (UNEP/GRID-Arendal). 2005. Vital Climate Change Graphics Collection. Prepared by Philippe Rekacewicz. Available: [http://www.grida.no/graphicslib/detail/factors-influencing-the-greenhouse-effect\\_267f](http://www.grida.no/graphicslib/detail/factors-influencing-the-greenhouse-effect_267f). Accessed January 14, 2015.

U.S. Environmental Protection Agency (EPA). 2014 (April 15). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012*. EPA 430-R-14-003. Washington, DC. Available: <https://www.epa.gov/sites/production/files/2015-12/documents/us-ghg-inventory-2014-main-text.pdf>. Accessed August 22, 2014.

———. 2016 (April 15). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014*. EPA 430-R-16-002. Washington, DC. Available: <https://www.epa.gov/sites/production/files/2016-04/documents/us-ghg-inventory-2016-main-text.pdf>. Accessed October 28, 2016.

———. 2017 (February 14). *Overview of Greenhouse Gases*. Available: <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>. Accessed March 16, 2017.



## 3.9 WIND

This section describes the existing environmental and regulatory setting related to wind and addresses the potential impacts of the proposed project and variant. The discussion of wind impacts in this section is supported by a wind tunnel report prepared by BMT Fluid Mechanics (BMT), included in EIR Appendix H. Comments regarding the differences in wind impacts between the proposed project and the variant were received during the public scoping period in response to the Notice of Preparation.

### 3.9.1 Environmental Setting

#### Wind and Buildings Basics

The difference in atmospheric pressure between two points on the earth causes air masses to move from the area of higher pressure to the area of lower pressure. This movement of air masses results in wind currents. The direction and speed of wind currents can be altered by natural features of the land or by buildings and structures. A building's exposure, massing, and orientation can affect nearby ground-level wind accelerations.

*Exposure* is a measure of the degree to which a building extends above surrounding structures into the wind stream. A building surrounded by taller structures is unlikely to cause adverse wind accelerations at ground level, while a small building can cause wind acceleration if it is freestanding and exposed. The friction and drag of groups of structures tend to slow the winds near ground level. A building that is much taller than its surrounding buildings intercepts and redirects winds down the vertical face of the building, where it creates ground-level wind and turbulence. Because of this downward deflection of high-level winds, substantial localized acceleration can occur around the base of a building, particularly near the building's corners. This is demonstrated by the common experience of windy conditions that occur near tall buildings even on a relatively calm day. The corner geometry is particularly important because sharp-edged corners cause separated flows with strong wind speed gradients (rapid changes over a short distance). Softer or more rounded corners improve this condition, although some acceleration still occurs. These redirected winds can be relatively strong and turbulent, and can be incompatible with the intended use of nearby ground-level spaces, such as walking, sitting, gathering, or waiting.

*Massing* affects the amount of wind a building intercepts and the occurrence of wind acceleration at ground level. In general, slab-shaped buildings (oriented perpendicular to the prevailing wind direction) have the greatest potential for wind acceleration; buildings with unusual shapes or setbacks have lesser effects. Buildings with geometrically complex design result in less ground-level wind acceleration.

The *orientation* of a building also affects the amount of wind the building intercepts and the extent of wind acceleration. Buildings with a wide axis perpendicular to prevailing winds will generally cause greater ground-level wind acceleration.

The comfort of pedestrians varies under different conditions of sun exposure, temperature, and wind speed:

- Winds up to 4 miles per hour (mph) have no noticeable effect on pedestrian comfort.
- At velocities between 4 and 8 mph, wind is felt on the face.

- Winds between 8 and 13 mph will disturb hair, cause clothing to flap, and extend a light flag mounted on a pole.
- Winds between 13 and 19 mph will raise loose paper, dust, and dry soil, and will disarrange hair.
- Winds between 19 and 26 mph will cause the force of the wind to be felt on the body.
- At 26 to 34 mph, umbrellas are used with difficulty, hair is blown straight, walking steadily is difficult, and wind noise is unpleasant.
- Winds exceeding 34 mph can result in loss of balance, and gusts can blow people over.

## **Existing Wind Conditions**

### ***San Francisco***

Generally, winds in San Francisco originate on the Pacific Ocean and blow through the City in an easterly direction. Average wind speeds in San Francisco are highest in the summer and lowest in the winter, although the strongest peak winds generally occur in the winter. Throughout the year, wind speeds are typically highest in midafternoon and lowest in the early morning. Winds generally flow with the greatest frequency and strength from the northwest, west-northwest, west, and west-southwest.

### ***India Basin Area and Project Site***

The India Basin area is exposed primarily to winds blowing across San Francisco Bay (Bay) from the north to the east. However, these winds are more infrequent and calmer than the prevailing winds, which blow mainly from the west up and over Hunters Point Ridge, directly above the project site. The project site sits on the downwind edge of Hunters Point Ridge. Relatively low-rise (one- to three-story) buildings are dispersed around the immediate neighborhood. There is more space between the residential units occupying the sloped terrain on the west side of Hunters Point Ridge, west of the project site, than is typical in San Francisco. The existing upwind terrain, project site topography, and low-rise buildings that surround the project site do relatively little to block or impede strong prevailing winds originating from the Pacific Ocean on the west side of San Francisco. Thus, strong winds blow across the peninsula and, as might be expected, reach the India Basin area. The immediate vicinity of the India Basin area is substantially exposed on the west and receives some of the highest predominant wind flow.

## **3.9.2 Regulatory Framework**

### **Federal**

No federal plans, policies, regulations, or laws related to wind are applicable to the proposed project or variant.

### **State**

No State plans, policies, regulations, or laws related to wind are applicable to the proposed project or variant.

## Local

### *San Francisco Planning Code Section 148*

To provide a safe and comfortable wind environment for people in San Francisco, the City has established pedestrian-comfort and wind-hazard criteria for use in evaluating the wind effects of proposed buildings. Section 148, “Reduction of Ground-level Wind Currents in C-3 Districts,” of the San Francisco Planning Code (Planning Code) specifically outlines these criteria for the Downtown Commercial (C-3) districts.<sup>1</sup> Section 148 states that new buildings and additions in specific areas of San Francisco may not cause wind speeds that meet or exceed the wind-hazard criterion.

Section 148 establishes 11 mph as the pedestrian-comfort level for wind speed in areas of substantial pedestrian use and 7 mph as the comfort level for wind speed in public seating areas. New development cannot exceed these comfort levels more than 10 percent of the time year-round between 7:00 a.m. and 6:00 p.m. Section 148 also establishes a wind-hazard criterion: ground-level winds cannot meet or exceed an equivalent wind speed of 26 mph for more than a single hour during the year.

The requirements and criteria of Section 148 do not apply to the project site. However, the San Francisco Planning Department (Planning Department) uses the Section 148 wind-hazard criterion as a significance threshold in the CEQA environmental review process to assess the environmental impacts of projects throughout San Francisco. Therefore, the wind-hazard criterion serves as the basis of the analysis in this EIR.

The Section 148 criteria are based on pedestrian-level wind speeds that include the effects of wind turbulence; these are referred to as “equivalent wind speeds,” defined in the Planning Code as “an hourly mean wind speed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.” The pedestrian-comfort criteria listed above are based on wind speeds measured and averaged over 1 minute, the same averaging time as used for the National Weather Service’s wind data. In contrast, the wind-hazard criterion is defined by a wind speed measured and averaged over 1 hour. When stated on the same time basis as comfort-criteria wind speeds, the hazard-criterion wind speed (26 mph for a full hour) is a 1-minute average wind speed of 36 mph. The test results presented in the wind tunnel report for the project and in this section of the EIR use the 1-minute average of 36 mph for the wind-hazard criterion.

### **3.9.3 Impacts and Mitigation Measures**

#### **Significance Thresholds**

The following significance threshold is from Appendix B of the San Francisco Planning Department’s Environmental Review Guidelines and is used to determine the level of impacts related to wind. The proposed project or variant would result in a significant impact if it would:

- alter wind in a manner that substantially affects public areas.

---

<sup>1</sup> Additional Planning Code sections apply the same criteria to the Rincon Hill, Van Ness Avenue, and South of Market zoning or special use districts.

To assess whether a project would result in a significant impact under this significance criterion, the City uses the Planning Code's wind-hazard criterion; that is, it determines whether a project would cause equivalent wind speeds to reach or exceed the wind-hazard criterion of 26 mph for a single hour of the year. If a project would cause a wind hazard or add to an existing wind hazard in a public area, it may result in a significant impact under CEQA, because the project would result in hazardous wind conditions for pedestrians. The City requires mitigation measures to avoid new wind hazards or an increase in existing wind hazards.

The Section 148 comfort criteria are not CEQA significance criteria. The comfort criteria are discussed for informational purposes only.

### **Approach to Analysis**

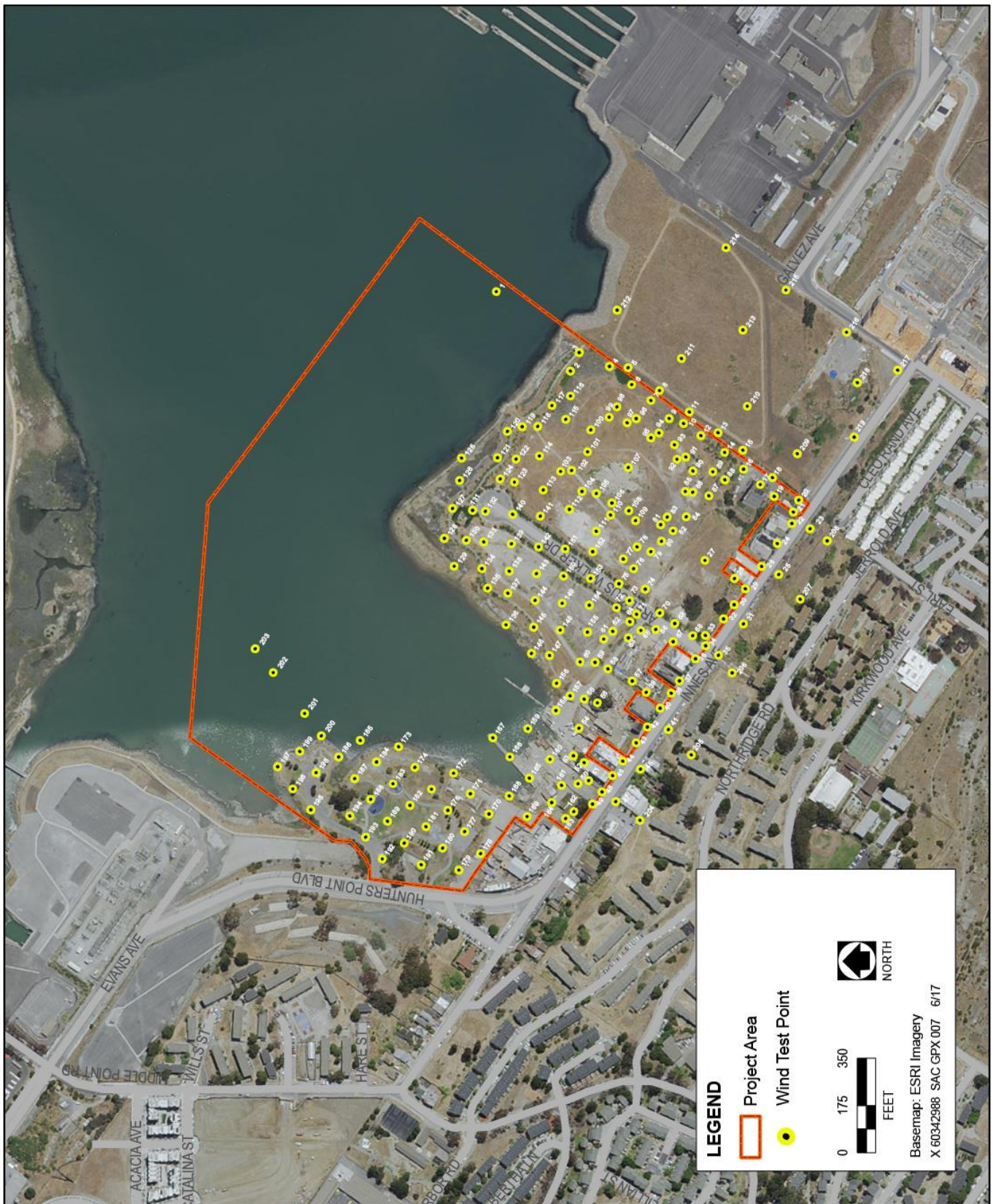
Wind tunnel testing is a well-established means of assessing the wind microclimate experienced by pedestrians. Such testing can simulate a site's wind conditions so that the wind flow can be quantified and classified. Wind is often classified as unsteady or gusty, and this "gustiness" or turbulence depends on the project site. Existing wind conditions are modeled using a series of grid, barrier, and floor roughness elements to create an atmospheric boundary layer that is representative of urban or open-country conditions.

Measurements of existing wind speeds were set up at 219 identified publicly accessible locations on the project site (all four project site properties) and within a 1,500-foot radius of the project site (Figure 3.9-1). These measurements were set up using a series of probes that can measure fluctuating pressure differences that are calibrated against wind speed. Measurements for the existing scenario were set up at a height corresponding to 5 feet, which is the approximate average pedestrian viewing height. Measurements were taken for a full rotation of 16 wind directions in increments of 22.5 degrees (0 degrees represents compass north). The following methodology was used to quantify the existing pedestrian-level wind microclimate of the site:

- Measure building-induced wind speeds at pedestrian level in the wind tunnel.
- Combine the winds with wind frequency statistics derived from the San Francisco International Airport weather station to obtain the expected frequency and magnitude of wind speeds at pedestrian level.
- Compare the results with the Planning Code Section 148 wind-speed criteria to the conditions around the site.

### **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. Most of the buildings for the proposed project or variant would be less than 100 feet tall, and only two buildings would be more than 100 feet tall. Buildings more than 100 feet tall could affect ground-level wind conditions on or near the project site.



Source: San Francisco, 2017

Figure 3.9-1:

Test Point Map

## Impact Evaluation

### **Impact WI-1: The proposed project or variant would alter wind in a manner that substantially affects public areas or outdoor recreation facilities. (*Significant and Unavoidable with Mitigation*)**

As stated in Section 3.9.1, “Environmental Setting,” the project site can generally be characterized as windy. The existing site and surrounding areas are subject to winds exceeding the City’s pedestrian-comfort criterion for more than 10 percent of the time during the year. The project site and project vicinity are also prone to exceedances of the wind-hazard criteria at a number of locations.

This analysis of wind impacts evaluates construction-related and operational impacts of the proposed project and the variant, and uses both the City’s pedestrian-comfort and wind-hazard criteria. Note that the discussion of effects under the pedestrian-comfort criterion is provided here solely for informational purposes, and, thus, no associated impact conclusions are provided. Because the significance threshold used to assess and identify significant wind impacts is the wind-hazard criterion, associated impact conclusions are provided.

#### ***Construction: Hazardous Wind Conditions During Partial Build-Out***

##### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Construction under either the proposed project or variant at all four project site properties would occur in phases over multiple years, but for purposes of this EIR, the analysis assumes the project will reach build out by 2022 in order to take a more conservative approach to potential impacts. Wind effects during interim conditions could differ from conditions at full build-out. The wind tunnel report (San Francisco, 2017) does not provide quantitative results for wind conditions during interim stages of development, and as a practical matter, it cannot provide such information given the number of possible permutations of development.

The wind study assessed buildings up to 155 feet tall for both the proposed project and the variant.<sup>2</sup> Once buildings are present on the project site and the site is fully built-out, building design may provide effective wind shelter. (See discussion below under **Operation**, and **Mitigation Measure M-WI-1c**.) The long-term wind effect would depend on the final architectural designs of those buildings. However, even if building design is effective at reducing wind impacts during full build-out, the project or variant could result in additional wind effects during the interim partial build-out period. Depending on the circumstances of construction, temporary effects could continue until full build-out. Because wind hazards could result from a very large number of possible combinations of different building designs, and permutations of construction sequences during construction, wind conditions during construction cannot be predicted. Therefore, a qualitative discussion of wind effects during construction is provided below.

The wind tunnel report (San Francisco, 2017) provides information on wind conditions at sidewalks, parks, and open spaces on the project site and in the surrounding area at full build-out. A massing model was created to simulate future proposed buildings on the site and in the surrounding area to determine whether some buildings would provide shelter from prevailing winds or change the downwind effects created by tall buildings next to shorter ones. Before full build-out, stronger pedestrian-level winds are likely to occur in open spaces and at

<sup>2</sup> BMT modeled towers 150–155 feet tall in the wind study. BMT subsequently determined in an addendum to the wind study that towers up to 160 feet tall would marginally increase the likelihood of downdrafts, which would have a marginally greater but unnoticeable impact on the wind microclimate under the proposed project or variant. The addendum to the wind study is included in EIR Appendix H.

individual building sites. Thus, exceedances of the wind-hazard criterion could occur at locations not identified in the tested scenarios.

Based on the wind tunnel study and knowledge of prevailing wind directions, developing buildings on the project site generally from west to east would provide the best protection from potential wind hazards. The amount of sheltering provided by then-existing buildings on adjacent parcels or areas located upwind (to the west-southwest, west, west-northwest, and northwest) of a subsequent development site should be considered for its potential to change wind conditions in the area. Depending on circumstances, such as the height and proximity of surrounding buildings, buildings less than 100 feet tall generally would be less likely to create hazardous wind conditions. Most of the buildings for the proposed project or variant would be less than 100 feet tall. Two buildings are proposed to be more than 100 feet tall.

In summary, the potential exists for wind-hazard impacts to occur during partial build-out that may not occur at full build-out because of insufficient protection from the effects of strong winds that might otherwise be provided when all buildings are constructed. This scenario likely would occur only at locations adjacent to buildings at least 100 feet tall. Most of the buildings for the proposed project or variant would be less than 100 feet tall. During partial build-out, wind hazards could occur at public locations not identified in the wind tunnel study, and wind effects at identified wind-hazard locations could be greater in severity or duration than shown by the study. This impact during the phased buildout period could be significant. Such wind hazards would likely exist until buildings on adjacent parcels are completed and able to provide shelter from the wind. Implementing Mitigation Measures M-WI-1a and M-WI-1b would reduce the severity and duration of wind impacts adjacent to buildings at least 100 feet tall during the construction period under partial build-out conditions.

**Mitigation Measure M-WI-1a: Wind Impact Analysis and Mitigation for Buildings 100 Feet or Greater in Height During Partial Buildout**

*With the goal of preventing a net increase in hazardous wind hours beyond those identified by prior wind tunnel testing conducted for this EIR during project construction, prior to obtaining a building permit for any project or variant building within the project site proposed to be at least 100 feet in height, the project sponsors shall undertake or cause their construction contractor(s) to undertake a wind impact analysis for such proposed building.*

- a. The wind impact analysis shall be conducted by a qualified wind consultant approved by the Planning Department's Environmental Review Officer (ERO). The wind consultant shall review the proposed building design taking into account the building design and feasible mitigation required by Mitigation M-WI-1c. The wind consultant shall provide a qualitative analysis of whether the building could result in a net increase in hazardous wind hours under partial build-out conditions that are beyond those identified for full build-out conditions by prior wind tunnel testing conducted for this EIR. The analysis shall compare the exposure, massing, and orientation of the proposed building to the same building in the representative massing models for the proposed project or variant. The comparison shall also analyze the potential wind impacts of the proposed building relative to existing conditions, those identified in the discussion of operational wind hazards, and to the City's wind hazard criterion. The existing conditions in this analysis shall be considered to include any existing buildings at the site, the as-built designs of all previously completed structures, and the then-current*

*designs of approved but as-yet-unbuilt structures that would be completed by the time of occupancy of the subject building.*

- b. *If the qualified wind consultant determines that the building could result in a net increase in hazardous wind hours under partial build-out conditions that are beyond those identified for full build-out conditions by prior wind tunnel testing conducted for this EIR, but in the consultant's professional judgment, temporary measures would reduce such impact, the consultant shall notify the ERO and the building applicant. The consultant's professional judgment may be informed by the use of "desktop" analytical tools, such as computer tools relying on results of prior wind tunnel testing for the proposed project and other projects (i.e., "desktop" analysis does not include new wind tunnel testing). The analysis shall include consideration of wind location, duration, and speed of wind. The building applicant shall propose temporary measures to reduce wind hazards under partial build-out conditions to the extent feasible. Such temporary measures include but are not limited to the following measures:*

- *At building corners, introduce hard landscaping such as localized porous/solid screens, soft landscaping such as localized trees, or hedge plantings.*
- *Install semi-permanent windscreens or temporary landscaping features (such as shrubs in large planters) that provide some wind sheltering and also direct pedestrian and bicycle traffic around hazardous areas.*
- *Introduce solid/porous screens and soft landscaping to create localized pockets suitable for use as recreational space or for lengthy use as outdoor seating.*
- *Introduce temporary canopies and cabanas at outdoor seating areas.*

*The wind consultant shall then reevaluate the building design(s) taking into account the temporary measures. If the wind consultant demonstrates to the satisfaction of the ERO that the modified design, taking into account any temporary measures, would not create a net increase in hazardous wind hours under partial build-out conditions that are beyond those identified for full build-out conditions by prior wind tunnel testing conducted for this EIR and in subsequent wind analysis required by this mitigation measure, no further review would be required.*

- c. *If the qualified wind consultant is unable to demonstrate that temporary measures would reduce wind hazard impacts under partial build-out conditions to less-than-significant levels, then wind tunnel testing or an equivalent method of quantitative evaluation shall be required. The proposed building shall be wind tunnel tested using a model that represents the proposed building in the context of existing partial build-out conditions. The testing shall include test points deemed appropriate by the consultant and agreed upon by the Planning Department to determine the wind performance of the building, such as building entrances and sidewalks. If the wind tunnel testing determines that the building's design, including temporary measures, would increase the hours of wind hazard or the extent of area subject to hazardous winds under partial build-out conditions beyond those identified for full build-out conditions by prior wind testing conducted for this EIR, the wind consultant shall notify the Planning Department and the building applicant. The building applicant shall propose feasible mitigation strategies including any of the above measures to reduce wind hazards. If the wind consultant demonstrates to the satisfaction of the ERO that the modified design would not create a net*



*increase in hazardous wind hours or locations under partial build-out conditions beyond those identified for full build-out conditions by prior wind tunnel testing conducted for this EIR, no further review would be required.*

- d. If the qualified wind consultant is unable to demonstrate that wind mitigation measures would reduce wind hazard impacts to less-than-significant levels after wind tunnel testing or an equivalent method of quantitative evaluation, the building applicant shall provide a Wind Safety Plan to the Planning Department and the ERO. The Wind Safety Plan shall include recommendations for site safety precautions for times when very strong winds occur on-site or may be expected, such as when high-wind watches or warnings are announced by the National Weather Service. Site safety precautions can include, but not be limited to any of the following:*

- warning pedestrians and bicyclists of hazardous winds by placing weighted warning signs; and*
- identifying alternative pedestrian and bicycle routes that avoid areas likely to be exposed to hazardous winds.*

*The project sponsors shall ensure by conditions of approval for any construction activity, and the Planning Department shall ensure by conditions of approval for building permits and site permits, that the project sponsors and the subsequent building developer(s) cooperate to implement and maintain all measures and precautions identified by the wind consultant.*

#### **Mitigation Measure M-WI-1b: Temporary Wind Reduction Measures during Construction**

*For the active construction areas, the wind consultant may identify those construction sites that would be especially exposed to strong winds. The consultant may recommend construction site safety precautions for times when very strong winds occur on-site or may be expected, such as when high-wind watches or warnings are announced by the National Weather Service. The objective of these precautions shall be to minimize risks and prevent injuries to workers and the public from stacked materials, such as shingles and sheets of plywood, that can be picked up and carried by strong winds, and from temporary signage, siding or roofing, or light structures that could be detached and carried by the wind.*

*As part of construction site safety planning, the project sponsors shall require, as a condition of contracts, that contractors consider all potential wind-related risks to the public from their construction activities, and shall develop a safety plan to address and control all such risks related to their work. The safety plan could include but not be limited to measures such as:*

- warning pedestrians and bicyclists of hazardous winds by placing weighted warning signs;*
- identifying alternative pedestrian and bicycle routes that avoid areas likely to be exposed to hazardous winds; and*
- installing semi-permanent windscreens or temporary landscaping features (such as shrubs in large planters) that provide some wind sheltering and also direct pedestrian and bicycle traffic around hazardous areas.*

Implementation of Mitigation Measures M-WI-1a and M-WI-1b would reduce the severity of hazardous wind impacts during construction. However, because interim wind effects occurring during the phased buildout period

could differ from those tested in the wind tunnel, it is unknown whether Mitigation Measure M-WI-1a or Mitigation Measure M-WI-1b would reduce impacts to a less-than-significant level. As a result, the impact of the proposed project or variant related to interim hazardous wind conditions during construction would be *significant and unavoidable* with mitigation.

## **Operation**

### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

#### *Proposed Project*

#### Pedestrian-Comfort Criterion

Under existing conditions, the average wind speed at the project site is 19.6 mph. Conditions generally exceed the City's 11 mph pedestrian-comfort criterion more than 10 percent of the time. Almost all points on the project site and in the project vicinity that were tested—218 of the 219 points—currently exceed the comfort criterion (San Francisco, 2017).

Implementing the proposed project at all four project site properties would reduce average wind speeds in the project area from the existing 19.6 mph to 17.2 mph and would eliminate 12 exceedances of the pedestrian-comfort criterion (a reduction from 218 exceedances to 206). The eliminated exceedances are located mainly on the east side of the 700 Innes site. A total of 12 exceedance points, located mainly on the western sidewalk of Earl Street, would be more suitable for pedestrians throughout the year than under existing conditions. The proposed project would create zero new exceedances of the pedestrian-comfort criterion.

The greatest increase in average wind speed relative to existing conditions would occur at the southwest corner of the 700 Innes property under the 14-story, 160-foot-tall building (test point #33),<sup>3</sup> where average wind speed would increase by 19 mph, from the existing 13 mph to 32 mph. This wind-speed increase would be caused mainly by wind downdraft from the 14-story building and subsequent accelerations of prevailing westerly winds at the building's corner.

#### Wind-Hazard Criterion

The wind-hazard testing results show that most test locations fail to comply with the City's hazard criterion under existing conditions. Almost two-thirds (137) of the 219 test locations currently fail to comply with the hazard criterion, while the remaining 82 locations comply. Wind speeds exceed the hazard criterion for a total of 888 hours per year (San Francisco, 2017). In summary, the existing relatively vacant project site is expectedly windy, with both the pedestrian-comfort and wind-hazard criteria exceeded at several locations before the introduction of any new structures or architectural elements.

Implementing the proposed project at all four project site properties would reduce exceedances of the wind-hazard criterion from the existing 137 locations to 83. The proposed project would also reduce the total duration of hazardous winds from the current 888 hours per year to 767. Thus, 54 fewer exceedances of the wind-hazard

---

<sup>3</sup> BMT modeled towers up to 155 feet in height. BUILD is considering towers up to 160 feet tall. BMT has determined that only a marginal increase in the likelihood of downdrafts may result from this height difference, which would have a marginally greater but unnoticeable impact on the wind microclimate from the proposed project or variant.

criterion would occur and hazardous winds would blow for 121 fewer hours than under existing conditions. A total of 54 additional locations in the project vicinity, mainly on the India Basin Open Space property and southeast of the Big Green, would be suitable for pedestrians and cyclists throughout the year.

Although there would be an overall improvement in the number of hazard exceedances and the duration of hazardous winds, localized increases in wind speed and duration of hazardous winds would occur. Table 3.9-1 shows the wind hazard analysis results for the proposed project. In Table 3.9-1, the test locations which exceed hazard criterion under existing conditions are indicated with the letter, “e,” the test locations which exceed hazard criterion under the proposed project or the variant and did not exceed the hazard criterion under existing conditions are indicated with the letter, “p,” and test locations in which hazard criterion exceedances were eliminated due to the proposed project or the variant are indicated with “-.” The red numbers in Table 3.9-1 represent an increase in wind hazard exceedances relative to existing conditions, while numbers in green represent fewer wind hazard exceedances relative to existing conditions.

**Table 3.9-1: Summary of Wind Hazard Results—Proposed Project**

Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
1	36	30	0		26	0	0		26	0	0	0	
2	36	45	13	e	39	4	-9	e	40	4	-9	0	e
3	36	42	4	e	41	5	1	e	41	5	1	0	e
4	36	40	2	e	41	3	1	e	42	3	1	0	e
5	36	41	3	e	41	2	-1	e	40	2	-1	0	e
6	36	38	1	e	34	0	-1	-	35	0	-1	0	-
7	36	40	2	e	36	1	-1	e	36	1	-1	0	e
8	36	42	9	e	42	4	-5	e	42	4	-5	0	e
9	36	43	15	e	36	0	-15	-	36	0	-15	0	-
10	36	37	1	e	35	0	-1	-	34	0	-1	0	-
11	36	44	10	e	38	1	-9	e	39	1	-9	0	e
12	36	42	4	e	34	0	-4	-	33	0	-4	0	-
13	36	44	6	e	37	1	-5	e	37	1	-5	0	e
14	36	39	2	e	34	0	-2	-	34	0	-2	0	-
15	36	39	2	e	37	1	-1	e	38	1	-1	0	e
16	36	26	0		27	0	0		28	0	0	0	
17	36	28	0		25	0	0		25	0	0	0	
18	36	33	0		31	0	0		33	0	0	0	
19	36	35	0		29	0	0		29	0	0	0	
20	36	37	1	e	36	1	0	e	35	0	-1	-1	-
21	36	41	3	e	32	0	-3	-	31	0	-3	0	-
22	36	33	0		36	1	1	p	36	0	0	-1	
23	36	25	0		25	0	0		27	0	0	0	
24	36	31	0		33	0	0		34	0	0	0	
25	36	33	0		25	0	0		26	0	0	0	
26	36	34	0		34	0	0		28	0	0	0	
27	36	29	0		31	0	0		27	0	0	0	
28	36	30	0		33	0	0		32	0	0	0	
29	36	28	0		34	0	0		34	0	0	0	
30	36	34	0		35	0	0		35	0	0	0	
31	36	27	0		34	0	0		34	0	0	0	
32	36	27	0		52	252	252	p	52	261	261	9	p

Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
34	36	30	0		39	2	2	p	39	1	1	-1	p
35	36	29	0		38	1	1	p	39	1	1	0	p
36	36	33	0		29	0	0		30	0	0	0	
37	36	33	0		30	0	0		30	0	0	0	
38	36	34	0		28	0	0		28	0	0	0	
39	36	35	0		22	0	0		22	0	0	0	
40	36	34	0		28	0	0		28	0	0	0	
41	36	35	0		38	1	1	p	38	1	1	0	p
42	36	32	0		24	0	0		26	0	0	0	
43	36	27	0		23	0	0		25	0	0	0	
44	36	30	0		29	0	0		30	0	0	0	
45	36	27	0		27	0	0		27	0	0	0	
46	36	29	0		32	0	0		33	0	0	0	
47	36	35	0		35	0	0		35	0	0	0	
48	36	29	0		38	1	1	p	37	1	1	0	p
49	36	27	0		27	0	0		27	0	0	0	
50	36	25	0		26	0	0		26	0	0	0	
51	36	25	0		23	0	0		23	0	0	0	
52	36	30	0		28	0	0		27	0	0	0	
53	36	24	0		30	0	0		30	0	0	0	
54	36	33	0		24	0	0		25	0	0	0	
55	36	32	0		36	0	0		38	2	2	2	p
56	36	31	0		41	3	3	p	39	2	2	-1	p
57	36	37	1	e	59	23	22	e	57	20	19	-3	e
58	36	33	0		46	79	79	p	42	13	13	-66	p
59	36	37	1	e	42	3	2	e	40	2	1	-1	e
60	36	32	0		41	8	8	p	41	8	8	0	p
61	36	40	6	e	47	6	0	e	44	4	-2	-2	e
62	36	37	1	e	32	0	-1	-	33	0	-1	0	-
63	36	38	1	e	39	1	0	e	39	2	1	1	e
64	36	38	2	e	28	0	-2	-	29	0	-2	0	-
65	36	35	0		32	0	0		35	0	0	0	
66	36	34	0		43	16	16	p	44	19	19	3	p
67	36	39	2	e	55	17	15	e	54	15	13	-2	e
68	36	31	0		46	7	7	p	48	10	10	3	p

Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
69	36	32	0		36	1	1	p	37	1	1	0	p
70	36	30	0		40	5	5	p	41	4	4	-1	p
71	36	40	2	e	34	0	-2	-	34	0	-2	0	-
72	36	37	1	e	14	0	-1	-	14	0	-1	0	-
73	36	43	5	e	27	0	-5	-	26	0	-5	0	-
74	36	36	1	e	33	0	-1	-	31	0	-1	0	-
75	36	44	8	e	27	0	-8	-	26	0	-8	0	-
76	36	40	3	e	31	0	-3	-	31	0	-3	0	-
77	36	42	4	e	39	2	-2	e	39	2	-2	0	e
78	36	39	2	e	34	0	-2	-	34	0	-2	0	-
79	36	39	2	e	38	1	-1	e	40	2	0	1	e
80	36	42	4	e	36	0	-4	-	36	0	-4	0	-
81	36	36	0		34	0	0		35	0	0	0	
82	36	36	0		31	0	0		30	0	0	0	
83	36	32	0		33	0	0		33	0	0	0	
84	36	41	3	e	26	0	-3	-	28	0	-3	0	-
85	36	33	0		27	0	0		29	0	0	0	
86	36	40	2	e	36	0	-2	-	37	1	-1	1	e
87	36	38	2	e	31	0	-2	-	31	0	-2	0	-
88	36	40	3	e	39	2	-1	e	39	2	-1	0	e
89	36	48	18	e	51	15	-3	e	50	13	-5	-2	e
90	36	42	7	e	31	0	-7	-	31	0	-7	0	-
91	36	35	0		29	0	0		31	0	0	0	
92	36	32	0		23	0	0		25	0	0	0	
93	36	35	0		26	0	0		28	0	0	0	
94	36	40	3	e	29	0	-3	-	31	0	-3	0	-
95	36	37	1	e	30	0	-1	-	30	0	-1	0	-
96	36	35	0		27	0	0		29	0	0	0	
97	36	40	6	e	30	0	-6	-	31	0	-6	0	-
98	36	40	5	e	28	0	-5	-	28	0	-5	0	-
99	36	39	4	e	26	0	-4	-	27	0	-4	0	-
100	36	36	1	e	35	0	-1	-	37	1	0	1	e
101	36	38	1	e	30	0	-1	-	30	0	-1	0	-
102	36	49	14	e	30	0	-14	-	30	0	-14	0	-
103	36	45	10	e	31	0	-10	-	32	0	-10	0	-

Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
104	36	50	29	e	31	0	-29	-	32	0	-29	0	-
105	36	33	0		36	0	0		36	1	1	1	p
106	36	37	1	e	33	0	-1	-	37	1	0	1	e
107	36	41	4	e	22	0	-4	-	22	0	-4	0	-
108	36	44	5	e	31	0	-5	-	31	0	-5	0	-
109	36	51	20	e	36	1	-19	e	35	0	-20	-1	-
110	36	34	0		34	0	0		40	2	2	2	p
111	36	34	0		31	0	0		31	0	0	0	
112	36	41	11	e	33	0	-11	-	34	0	-11	0	-
113	36	42	7	e	36	1	-6	e	37	1	-6	0	e
114	36	46	13	e	36	1	-12	e	36	1	-12	0	e
115	36	46	11	e	31	0	-11	-	31	0	-11	0	-
116	36	50	39	e	35	0	-39	-	35	0	-39	0	-
117	36	48	23	e	37	1	-22	e	37	1	-22	0	e
118	36	44	9	e	24	0	-9	-	24	0	-9	0	-
119	36	40	3	e	35	0	-3	-	35	0	-3	0	-
120	36	39	3	e	36	1	-2	e	37	1	-2	0	e
121	36	41	6	e	38	3	-3	e	39	3	-3	0	e
122	36	47	15	e	39	4	-11	e	39	4	-11	0	e
123	36	42	7	e	38	3	-4	e	38	3	-4	0	e
124	36	45	15	e	41	9	-6	e	41	8	-7	-1	e
125	36	38	1	e	34	0	-1	-	35	0	-1	0	-
126	36	40	3	e	35	0	-3	-	35	0	-3	0	-
127	36	42	4	e	35	0	-4	-	35	0	-4	0	-
128	36	36	1	e	32	0	-1	-	32	0	-1	0	-
129	36	38	1	e	32	0	-1	-	33	0	-1	0	-
130	36	43	8	e	39	3	-5	e	39	3	-5	0	e
131	36	44	7	e	37	1	-6	e	37	1	-6	0	e
132	36	43	7	e	38	2	-5	e	38	2	-5	0	e
133	36	44	8	e	36	1	-7	e	36	1	-7	0	e
134	36	43	5	e	36	1	-4	e	36	1	-4	0	e
135	36	43	9	e	40	6	-3	e	40	5	-4	-1	e
136	36	33	0		28	0	0		28	0	0	0	
137	36	41	7	e	39	3	-4	e	39	3	-4	0	e
138	36	47	11	e	37	1	-10	e	37	1	-10	0	e

Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
139	36	41	3	e	35	0	-3	-	35	0	-3	0	-
140	36	40	3	e	35	0	-3	-	35	0	-3	0	-
141	36	42	6	e	32	0	-6	-	32	0	-6	0	-
142	36	41	3	e	32	0	-3	-	32	0	-3	0	-
143	36	43	9	e	37	1	-8	e	37	1	-8	0	e
144	36	40	4	e	38	3	-1	e	38	2	-2	-1	e
145	36	44	5	e	36	0	-5	-	35	0	-5	0	-
146	36	33	0		32	0	0		32	0	0	0	
147	36	32	0		30	0	0		31	0	0	0	
148	36	39	2	e	46	63	61	e	46	55	53	-8	e
149	36	43	4	e	36	0	-4	-	35	0	-4	0	-
150	36	43	7	e	32	0	-7	-	32	0	-7	0	-
151	36	42	4	e	29	0	-4	-	29	0	-4	0	-
152	36	41	4	e	26	0	-4	-	27	0	-4	0	-
153	36	40	5	e	28	0	-5	-	28	0	-5	0	-
154	36	47	14	e	30	0	-14	-	29	0	-14	0	-
155	36	42	5	e	27	0	-5	-	27	0	-5	0	-
156	36	33	0		29	0	0		28	0	0	0	
157	36	31	0		26	0	0		26	0	0	0	
158	36	32	0		27	0	0		27	0	0	0	
159	36	37	1	e	31	0	-1	-	30	0	-1	0	-
160	36	33	0		30	0	0		29	0	0	0	
161	36	24	0		26	0	0		26	0	0	0	
162	36	28	0		33	0	0		34	0	0	0	
163	36	25	0		28	0	0		29	0	0	0	
164	36	25	0		24	0	0		24	0	0	0	
165	36	30	0		27	0	0		27	0	0	0	
166	36	33	0		32	0	0		32	0	0	0	
167	36	32	0		31	0	0		31	0	0	0	
168	36	31	0		29	0	0		28	0	0	0	
169	36	35	0		31	0	0		30	0	0	0	
170	36	36	0		32	0	0		32	0	0	0	
171	36	36	1	e	33	0	-1	-	32	0	-1	0	-
172	36	39	2	e	35	0	-2	-	35	0	-2	0	-
173	36	33	0		32	0	0		31	0	0	0	



Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
174	36	40	2	e	36	1	-1	e	36	1	-1	0	e
175	36	38	1	e	35	0	-1	-	35	0	-1	0	-
176	36	44	9	e	40	3	-6	e	40	3	-6	0	e
177	36	44	25	e	41	12	-13	e	41	14	-11	2	e
178	36	44	8	e	40	2	-6	e	40	2	-6	0	e
179	36	39	3	e	37	1	-2	e	38	1	-2	0	e
180	36	48	20	e	43	10	-10	e	43	11	-9	1	e
181	36	51	81	e	47	56	-25	e	47	56	-25	0	e
182	36	45	24	e	43	16	-8	e	42	15	-9	-1	e
183	36	45	15	e	42	10	-5	e	41	8	-7	-2	e
184	36	43	5	e	39	2	-3	e	38	1	-4	-1	e
185	36	34	0		33	0	0		33	0	0	0	
186	36	37	1	e	35	0	-1	-	35	0	-1	0	-
187	36	41	3	e	38	1	-2	e	37	1	-2	0	e
188	36	40	3	e	38	1	-2	e	37	1	-2	0	e
189	36	44	20	e	44	20	0	e	43	18	-2	-2	e
190	36	41	7	e	41	8	1	e	41	8	1	0	e
191	36	30	0		29	0	0		29	0	0	0	
192	36	49	17	e	47	12	-5	e	47	12	-5	0	e
193	36	38	2	e	37	1	-1	e	37	1	-1	0	e
194	36	41	4	e	39	3	-1	e	40	3	-1	0	e
195	36	37	1	e	36	0	-1	-	36	0	-1	0	-
196	36	39	2	e	37	1	-1	e	37	1	-1	0	e
197	36	38	2	e	38	2	0	e	37	2	0	0	e
198	36	38	1	e	36	1	0	e	36	0	-1	-1	-
199	36	38	1	e	36	1	0	e	36	0	-1	-1	-
200	36	37	1	e	36	1	0	e	36	0	-1	-1	-
201	36	39	2	e	37	1	-1	e	38	1	-1	0	e
202	36	30	0		30	0	0		30	0	0	0	
203	36	35	0		35	0	0		35	0	0	0	
204	36	31	0		31	0	0		32	0	0	0	
205	36	37	1	e	32	0	-1	-	33	0	-1	0	-
206	36	31	0		36	0	0		36	1	1	1	p
207	36	39	2	e	37	1	-1	e	37	1	-1	0	e
208	36	43	5	e	38	3	-2	e	39	3	-2	0	e

Location Number	Hazard Criterion (mph)	Existing Conditions			Proposed Project				Variant				
		Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1 Hour per Year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Hours Change Relative to Project	Exceeds
209	36	38	1	e	31	0	-1	-	31	0	-1	0	-
210	36	38	1	e	34	0	-1	-	34	0	-1	0	-
211	36	40	2	e	40	2	0	e	39	2	0	0	e
212	36	43	7	e	43	5	-2	e	44	6	-1	1	e
213	36	39	1	e	38	1	0	e	38	1	0	0	e
214	36	36	0		36	0	0		37	1	1	1	p
215	36	45	20	e	43	6	-14	e	43	6	-14	0	e
216	36	40	2	e	40	2	0	e	40	2	0	0	e
217	36	42	3	e	40	2	-1	e	40	2	-1	0	e
218	36	38	1	e	35	0	-1	-	35	0	-1	0	-
219	36	38	1	e	35	0	-1	-	36	0	-1	0	-
		<b>Average</b>	<b>Sum</b>	<b>Sum</b>	<b>Average</b>	<b>Sum</b>	<b>Sum</b>	<b>Sum</b>	<b>Average</b>	<b>Sum</b>	<b>Sum</b>	<b>Sum</b>	<b>Sum</b>
		37.5	888	137	34.2	767	-121	83	34.3	696	-192	-71	85
		Existing, e		137	Existing, e			70	Existing, e			68	
					New, due to proposed project variant, p			13	New, due to proposed project variant, p			17	
					Eliminated by proposed project variant, -			67	Eliminated by proposed project variant, -			69	

Source: San Francisco, 2017

As shown in Table 3.9-1, there would be 20 locations that would experience an increase in hazardous wind exceedances after introduction of the proposed project. The total number of hazard hour increases relative to existing conditions between these 20 test locations would be 480 hours. Furthermore, the following locations would experience a substantial increase in the wind speed and the duration of hazardous winds: 33, 57, 58, 60, 66, 67, 68, and 148. Pedestrians and cyclists would have a difficult time maintaining their balance while passing through these locations and could be at risk of injury. On balance, the increase in wind speed and the duration of hazardous winds at these locations outweighs the overall improvement in wind conditions on the project site.

At test point #33, where the entrance to a proposed building would be located, the wind speed would increase from 27 mph to 52 mph and the duration of hazardous winds would increase by 252 hours.

Implementing the proposed project would introduce an obstruction to wind blowing across the site. Thus, the proposed project would generally have a positive effect on the wind microclimate, reducing the total number of locations exceeding the wind-hazard criterion and the total duration of hazardous winds relative to existing conditions. However, as shown in Table 3.9-1, the wind speed and duration of hazardous winds would increase at several locations. Pedestrians and cyclists would have a difficult time maintaining their balance while passing through these locations and could be at risk of injury.

On balance, the increase in wind speed and duration of hazardous winds at these locations outweighs the overall improvement in wind conditions on the project site. For this reason, the operational wind impact of the proposed project could be significant. An effort would be made to reduce the wind hazards that would occur or to limit the exposure to those hazards by residents and visitors through implementation of Mitigation Measure M-WI-1c, described below.

#### **Mitigation Measure M-WI-1c: Reduce Effects of Ground-Level Hazardous Winds through Ongoing Review**

*In order to mitigate to the extent feasible new wind hazards created with full build-out under the proposed project or variant identified by prior wind testing, a wind impact analysis by a qualified wind consultant shall be required prior to building permit issuance for any building more than 100 feet tall. The purpose of this supplemental wind impact analysis would be to prevent the total duration of wind hazard exceedances across the project site from exceeding the total duration of wind hazard exceedances under full build-out conditions with the proposed project or variant determined in the Wind Tunnel Report, included in EIR Appendix H, based on the prior wind tunnel testing undertaken by BMT Fluid Mechanics (BMT). Based on the Wind Tunnel Report, the total number of wind hazard exceedance hours shall not exceed 767 hours*

- The proposed building(s) shall be wind tunnel tested using a model that represents the current proposed building(s) defined as the building configurations assumed in the Wind Tunnel Report updated to reflect the design of any constructed buildings at the site and the as-built designs of all approved but yet unbuilt structures. The testing shall include the test points previously studied (see Table 3.9-1). If the wind tunnel testing determines that the building's design would increase the total duration of hazardous winds from the conditions identified in the Wind Tunnel Report, the wind consultant shall notify the Planning Department and the building applicant. The building applicant*

*shall then propose feasible mitigation strategies, including any architectural features, to reduce the total duration of wind hazards.*

- *At building corners, introduce hard landscaping such as localized porous/solid screens, soft landscaping such as localized trees, or hedge plantings.*
- *Introduce canopies along building façades at the pedestrian level.*
- *Introduce solid/porous screens and soft landscaping to create localized pockets suitable for use as recreational space or for lengthy use as outdoor seating.*
- *Introduce parapets, canopies, and cabanas at outdoor seating areas.*

*If the wind consultant demonstrates to the satisfaction of the ERO that the modified design would not increase the total duration of hazardous winds identified in prior wind tunnel testing conducted for this EIR, no further design modifications would be required.*

- *If the wind consultant determines that even after the modifications of the design that the building(s) would result in greater than 767 wind hazard exceedance hours, the wind consultant shall work with the project sponsors, architect, and/or landscape architect to identify specific additional feasible measures that may include landscaping features and street furniture that would reduce the total duration of wind hazards to the extent feasible. The ability of the design alterations to reduce the wind hazard to the extent feasible shall be demonstrated by subsequent wind tunnel testing of the modified design and landscaping that compares the modified building design and landscaping to the wind hazard exceedance hours of 767 hours for the proposed project, no further review is required.*

Implementation of Mitigation Measure M-WI-1c would ensure that at full build-out and to the extent feasible, the total duration of hazardous winds on the project site would not exceed 767 hours. Most short-duration wind hazards that would occur in mid-block locations could be effectively eliminated through simple design measures that would change the shape of the building or the height of its street wall, and/or a combination of street furniture and landscaping that would protect pedestrian walkways and building entrances. Finally, although including some topographic variation and adding landscaping and street furniture can reduce wind speeds and eliminate wind hazards in specific locations of the open spaces, there appears to be no practical way to eliminate all wind hazards on project sidewalks and open spaces without changing the basic character of these open spaces. As a result, even with the implementation of Mitigation Measure M-WI-1c, this operational impact of the proposed project would be *significant and unavoidable with mitigation*.

#### *Variant*

##### Pedestrian-Comfort Criterion

Implementing the variant at all four project site properties would reduce average wind speeds in the project area from the existing 19.6 mph to 17.3 mph and would eliminate 14 exceedances of the pedestrian-comfort criterion (a reduction from 218 exceedances to 204). A total of 14 locations, mainly on the western sidewalk of Earl Street, would be more suitable for pedestrians throughout the year than under existing conditions. The variant would create zero new exceedances of the pedestrian-comfort criterion.

Relative to the proposed project, the variant would cause a marginal increase in the average wind speed exceeded 10 percent of the time, from 17.2 mph to 17.3 mph. However, the variant would also cause a marginal reduction

in the number of locations at which the 11 mph pedestrian-comfort criterion would be exceeded, from 205 locations (proposed project) to 204 (variant). Thus, the overall pedestrian-comfort conditions under the variant would be nearly the same as under the proposed project.

#### Wind-Hazard Criterion

With implementation of the variant, 85 locations would fail to comply with the wind-hazard criterion, a net reduction of 52 exceedance locations compared to existing conditions. In addition, the total duration of hazardous winds would be reduced by 192 hours, from the current 888 hours per year to 696. Thus, an additional 52 locations in the project vicinity, located mainly in the southeast portion of the 700 Innes property, would be suitable for pedestrians and cyclists throughout the year.

Under the variant at all four project site properties, wind speeds would exceed the wind-hazard criterion at a total of 85 locations, compared to 83 locations under the proposed project. The variant would also reduce the total duration of hazardous winds by 71 hours per year compared to the proposed project, from 767 hours per year (proposed project) to 696 (variant).

The number of hazard exceedances and the duration of hazardous winds would improve overall when compared to existing conditions, but localized increases in wind speed and the duration of hazardous winds would occur. Table 3.9-1 shows where the variant would result in a substantial increase in the duration of hazardous winds (longer than 5 hours compared to existing conditions).

As with the proposed project, implementation of the variant would reduce the total number of locations exceeding the wind-hazard criterion and the total duration of hazardous winds when compared to existing conditions. As shown in Table 3.9-1, there would be 25 locations that would experience an increase in hazardous wind exceedances after introduction of the proposed project. The total number of hazard hour increases relative to existing conditions between these 25 test locations would be 419 hours. Furthermore, wind speed and the duration of hazardous winds would increase substantially at several locations. The following locations would experience a substantial increase in the wind speed and the duration of hazardous winds: 33, 57, 58, 60, 66, 67, 68, and 148. Pedestrians and cyclists would have a difficult time maintaining their balance while passing through these locations and could be at risk of injury.

On balance, the substantial increase in wind speed and the duration of hazardous winds at these locations outweighs the overall improvement in wind conditions on the project site. For this reason, the operational wind impact of the variant could be significant. Implementation of Mitigation Measure M-WI-1c, described above, would reduce localized wind impacts during the lifetime of the project but would not reduce the impacts to a less-than-significant level. Therefore, this impact would be *significant and unavoidable with mitigation*.

### **3.9.4 Cumulative Impacts**

**Impact C-WI-1: The proposed project or variant would not combine with past, present, or reasonably foreseeable future projects to alter wind in a manner that would substantially affect public areas or outdoor recreation facilities. (*Less than Significant*)**

Because the relevant cumulative projects listed in Table 3-1 are somewhat removed from the project site by distance (more than 1,500 feet away) and topography (the hill on the west side of Innes Avenue across from the

project site), the wind effect of the cumulative projects in combination with the proposed project or variant is not expected to result in a materially different wind effect at public areas in the project vicinity. In general, projects that are separated by less than one-quarter mile (1,340 feet) have the potential to interact with each other to alter ground-level wind conditions on and around their respective sites. The cumulative development projects that are proposing large multi-story buildings are more than 1,500 feet from the project site. In addition, the hill to the west of the project site is a physical barrier that separates the proposed project from cumulative development projects further to the west. This physical barrier prevents the cumulative development projects to the west from interacting with the proposed project to alter ground-level wind conditions on and around the project site. For this reason, a wind tunnel test including the other cumulative projects listed in Table 3-1 was not conducted.

The changes to the wind environment under cumulative conditions would be the same as the changes occurring under the proposed project or variant. Although the proposed project or variant would result in significant and unavoidable project-level wind impacts, neither would combine with past, present, or reasonably foreseeable future projects to create a cumulative wind impact. For these reasons, this cumulative impact would be *less than significant*. No mitigation measures are necessary.

### 3.9.5 References

San Francisco, City and County of (San Francisco). 1996. *San Francisco General Plan*. Recreation and Open Space Element. San Francisco, CA.

———. 2017. *India Basin Mixed-Use Project Wind Microclimate Study*. Case No. 2014-002541ENV. Prepared by BMT Fluid Mechanics.

## 3.10 SHADOW

This section describes the existing environmental and regulatory setting related to shadow and addresses the potential impacts of the proposed project and variant. The discussion of shadow impacts in this section is supported by a shadow report prepared by BMT Fluid Mechanics (BMT), included in this EIR as Appendix I.<sup>1</sup> Comments regarding the differences in shadow impacts between the proposed project and the variant were received during the public scoping period in response to the Notice of Preparation. These comments are addressed in this section.

### 3.10.1 Environmental Setting

#### Shadow Conditions Basics

In an urban environment, shadow is a function of the angle of the sun and the orientation, height, and massing of buildings and other elements of the built environment. The angle of the sun varies based on the time of day (reflecting the rotation of the earth) and the change in seasons (reflecting the orbit of the earth around the sun). The longest shadows are cast during the winter, when the sun reaches its lowest point in the sky, and the shortest shadows are cast during the summer, when the sun reaches its highest point in the sky.

In the Northern Hemisphere, the longest day and the shortest night occur on the summer solstice (typically around June 21), and the shortest day and longest night occur on the winter solstice (typically around December 21). The vernal and autumnal (i.e., spring and fall) equinoxes, on which the day and night are of equal length, occur around March 20 and September 23, respectively, and represent the midway points between the solstices. Thus, measuring shadow lengths during the summer and winter solstices captures the extremes of shadow patterns that occur throughout the year.

Shadow conditions are described with reference to the Theoretical Available Annual Sunlight (TAAS), the amount of sunlight that would be available in a park or open space in the course of a year if there were no shadows from structures, trees, or other objects. TAAS is calculated in square foot–hours (sfh), the expression of shadow, based on 15-minute sample times over the course of an hour, by multiplying the area of the park/open space (in square feet [sq. ft.]) by 3,721.4, the maximum number of hours of sunlight available each year in San Francisco. Shadows cast by the elements of the proposed project or variant are measured by the annual amount of shadow, expressed in sfh as a percentage of TAAS.

#### Shadow Conditions on the Project Site

The project site has two existing open spaces, India Basin Shoreline Park and India Basin Open Space, that could be affected by shadows cast by buildings and structures associated with the project site. Both open spaces are under the jurisdiction of the Recreation and Park Commission and subject to the provisions of Section 295 of the San Francisco Planning Code (Planning Code).

No other existing open spaces in the project vicinity are within the reach of shadows cast by buildings and structures on the project site.

---

<sup>1</sup> An addendum to the shadow report that analyzes the 5- to 10-foot increase in maximum building heights between the modeled scenario and the proposed project and variant is also included in Appendix I.

### ***India Basin Shoreline Park Property***

India Basin Shoreline Park is an existing RPD park located between Hunters Point Boulevard and Pacific Gas and Electric Company's vacant parcels to the north (off-site) and the 900 Innes property to the south (on-site). The park's publicly accessible recreational and open space facilities consist of two play structures, a basketball court, a portion of the Blue Greenway/San Francisco Bay Trail (Bay Trail), artwork by local artists and students, barbecue grills, seating areas, a water fountain, educational signage, and landscaping, including trees.

No shadows are currently cast on India Basin Shoreline Park, because no buildings are located adjacent to this property.

### ***900 Innes Property***

The 900 Innes property consists of seven parcels totaling 2.4 acres, 0.6 acre of which is submerged, that are located between the India Basin Shoreline Park and India Basin Open Space properties (Figure 2-2). This property is a former maritime industrial site that contains five structures between 10 and 25 feet tall, totaling approximately 7,760 gross square feet (gsf). Some shadows from buildings on this property are cast on the 900 Innes property; however, these shadows do not reach any nearby publicly accessible parks or open spaces.

### ***India Basin Open Space Property***

The India Basin Open Space property contains a publicly accessible natural area located along the India Basin waterfront on San Francisco Bay (Bay), north of Hudson Avenue. The main entry point to this property is at the end of Arelious Walker Drive, off Innes Avenue. India Basin Open Space is an existing 6.2-acre RPD open space consisting of benches, a walking path, upland habitat, tidal salt marsh, mudflats, sand dunes, and native vegetation that borders the Bay.

The area around the India Basin Open Space property that was evaluated has a total area of 287,334 sq. ft.<sup>2</sup> that currently has 363,855 sfh of shade annually. The TAAS at the India Basin Open Space is 1,069,284,748 sfh, meaning that this property is shaded 0.034 percent of the year.

### ***700 Innes Property***

The 700 Innes property consists of 30 parcels totaling 17.12 acres (Figure 2-2). The property is generally undeveloped and open, except for six buildings and structures covering only a small portion of the site. The few structures on this property range from one to four stories and are between 10 and 40 feet tall. Shadows from buildings on this property do not reach any nearby publicly accessible parks or open spaces.

## **3.10.2 Regulatory Framework**

### **Federal**

No federal plans, policies, regulations, or laws related to shadow are applicable to the proposed project or variant.

---

<sup>2</sup> The shadow report (Appendix I) analyzes a larger area for the India Basin Open Space property to be more conservative and represent the maximum development potential for this property.



## **State**

No State plans, policies, regulations, or laws related to shadow are applicable to the proposed project or variant.

## **Local**

### ***San Francisco General Plan***

The *San Francisco General Plan* contains objectives and policies that are related to preserving sunlight on open spaces and other public areas. These objectives and policies are found in the Recreation and Open Space Element and the Urban Design Element.

#### **Recreation and Open Space Element**

The Recreation and Open Space Element (Objective 1, Policy 1.9) states that solar access to public open space should be protected. In San Francisco, the presence of the sun's warming rays is essential to enjoying open space. This is because climatic factors, including ambient temperature, humidity, and wind, usually combine to create a comfortable climate only when direct sunlight is present. Therefore, the shadows created by new development nearby can critically diminish the utility of the open space.

#### **Urban Design Element**

The Urban Design Element (Objective 3, Policy 3.4) states that buildings located to the south, east, and west of parks and plazas should be limited in height or effectively oriented so as not to prevent the penetration of sunlight to such parks and plazas. Large buildings and developments should, where feasible, provide ground-level open space on their sites, well situated for public access and for sunlight penetration.

### ***Accountable Planning Initiative***

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the Planning Code, establishing eight priority policies. The eighth policy addresses recreational facilities:

- (8) that our parks and open space and their access to sunlight ... be protected from development.

### ***San Francisco Planning Code Section 295***

San Francisco adopted Section 295 of the Planning Code, "Height Restrictions on Structures Shadowing Property under the Jurisdiction of the Recreation and Park Commission," in response to Proposition K, the Sunlight Ordinance (approved by voters in November 1984). Section 295 prohibits the approval of "any structure that would cast any shade or shadow upon any property under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission" unless the Planning Commission, upon the recommendation of RPD's general manager and after review and comment by the Recreation and Park Commission, has found that the shadows cast by a proposed project would not have an adverse impact on the use of the property. Section 295 does not apply to structures that do not exceed 40 feet in height. The period analyzed is from the first hour after sunrise until the last hour before sunset.

On February 7, 1989, pursuant to Proposition K, the Planning Commission and the Recreation and Park Commission adopted a joint resolution establishing criteria for determination of significant shadows on 14 downtown parks, as described in a February 3, 1989 memorandum regarding Proposition K (San Francisco, 1989). These criteria establish an “absolute cumulative limit” (ACL) for new shadow allowed in these parks, as well as qualitative criteria for allocating the ACL among individual development projects. India Basin Shoreline Park and India Basin Open Space are not among the 14 downtown parks for which ACLs were established.

### **3.10.3 Impacts and Mitigation Measures**

#### **Significance Thresholds**

The following significance threshold is from Appendix B of the San Francisco Planning Department’s (Planning Department’s) Environmental Review Guidelines and is used to determine the level of impacts related to shadow. The proposed project or variant would result in a significant impact if it would:

- create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas.

The thresholds for determining the significance of shadow impacts in San Francisco pursuant to CEQA and Section 295 of the Planning Code are different. Under Planning Code Section 295 and the joint Planning Commission/Recreation and Park Commission criteria, any shadow above the ACL would be “significant” in the way that the term is used in Section 295. In contrast, the CEQA significance threshold for environmental review addresses a broader array of shadow-related considerations that may include not only quantitative criteria, but also qualitative criteria: open space usage; time of day and/or time of year; physical layout of the affected facilities; duration, size, shape, and location of the shadow; and proportion of open space affected. If the Planning Department determines, based on these factors, that the use and enjoyment of the park or public space would be substantially and adversely affected, the impact would be “significant” in the way that the term is used under CEQA. Therefore, in certain situations, new shadow could be significant under Planning Code Section 295 but would not be a significant environmental impact under CEQA, and vice versa.

Compliance with Section 295 of the Planning Code occurs independently of this EIR’s analysis and evaluation of shadow impacts. The purpose of this EIR analysis is to provide the public and City decision-makers with information that sufficiently describes the proposed project’s or variant’s shadow in terms of:

- the types of parks and open spaces the shadow would affect,
- the times and locations where the shadow would occur,
- the anticipated duration of the shadow, and
- the potential for the shadow to substantially and adversely affect any activities or uses in the subject parks or open spaces.

#### **Approach to Analysis**

The variant would include buildings both taller and with larger massing than the proposed project’s buildings, and the resulting shadows would be worse in both area and duration. As a result, the proposed project was not modeled separately because any shadow impacts resulting from buildings under the proposed project would be

less than impacts under the variant. The discussion below applies primarily to the variant, and is a conservative, worst-case scenario that assumes impacts from the proposed project would be less than impacts of the variant.

The shadowing effect is assessed in terms of hourly shadow diagrams and shadow calculations, from 1 hour after sunrise through 1 hour before sunset.

*Shadow Diagrams:* Shadow diagrams are graphical illustrations of the shadows cast by project elements under the variant, and by the surrounding developments, on the parks/open spaces regulated by Planning Code Section 295 under both existing and with-variant conditions. Shadow diagrams are produced hourly, starting 1 hour after sunrise and ending 1 hour before sunset, for up to 5 days of the year:

- *Winter solstice (December 21)*—midday sun is lowest and shadows are at their longest.
- *Summer solstice (June 21)*—midday sun is at its highest and shadows are at their shortest.
- *Vernal equinox (March 21)*—shadows are midway through a period of lengthening.<sup>3</sup>
- *“Worst-case” shadow day (area)*—the day on which the net new shadows cover the largest area.
- *“Worst-case” shadow day (duration)*—the day on which the net new shadows have the longest overall duration, expressed in sfh.

*Shadow Calculations:* Tabulated data indicating the amount of net new shadow and existing shadow, expressed in sfh, in 15-minute increments throughout the day between 1 hour after sunrise and 1 hour before sunset on each day where project elements under the variant would cast net new shadows on parks/open spaces regulated by Section 295 of the Planning Code.

Three-dimensional models were constructed and used to represent existing site conditions and proposed commercial development for the variant within the existing surrounding conditions. The models included a sufficiently detailed representation of adjacent developments located within a distance judged to influence shadowing conditions around the proposed development site.

Any local topography that could affect the shadowing was included in the model. The model of the variant was constructed based on three-dimensional CAD models supplied to BMT by RPD and BUILD and the design team. The inputs entered into the model for calibration represented the proposed sizes and heights of structures.<sup>4</sup>

A shadow fan was previously defined by the Planning Department as part of the preliminary project assessment on September 10, 2015. The shadow fan indicated the likelihood that the proposed project or variant would cast new shadows on parks/open spaces. This initial assessment identified the India Basin Open Space property as the only existing park/open space that could be adversely affected by the proposed project or the variant, in terms of shadowing. Based on updated information about the project site, the proposed project, and the variant, a subsequent shadow fan prepared by BMT (see Figure 3.10-1) determined that India Basin Shoreline Park, the future park on the 900 Innes property, and the future “Big Green” would receive new shadows from either the

<sup>3</sup> Shadow patterns on the autumnal equinox (September 21) would be the same as shadow patterns on the vernal equinox, so separate diagrams for the autumnal equinox are not necessary.

<sup>4</sup> The shadow report analyzed building heights up to a maximum of 150–155 feet; however, building heights were subsequently changed by 5–10 feet. In some locations, building heights were raised up to a maximum of 160 feet whereas in other locations, building heights decreased by 5-10 feet. An addendum to the shadow report states that this increase would have a marginally greater but unnoticeable shadow effect on open spaces. The addendum to the shadow report is included in Appendix I.

proposed project or the variant. The 900 Innes property is not an existing park or open space, but as a future park under RPD jurisdiction, it would be protected under Section 295 of the Planning Code. An analysis of the shadows cast on the 900 Innes property by the proposed project and variant is included below for informational purposes only. The Big Green is not an existing park, is currently located on privately owned land, and would later be transferred to the Port of San Francisco (SF Port) for ownership, and operated under a memorandum of understanding with RPD. Accordingly, because the Big Green is not currently under the jurisdiction of or designated for acquisition by the Recreation and Park Commission, it would not be protected under Section 295 of the Planning Code. An analysis of the shadows cast on the Big Green by the proposed project and variant is included below for informational purposes only.

## **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. Some of the proposed buildings would be tall enough that they could cast shadows on existing and proposed open spaces on or near the project site.

The proposed 5.63-acre Big Green at the 700 Innes property would be a publicly accessible open space. Currently owned by BUILD, it may be transferred to SF Port in the future.

The 900 Innes property would be developed as a waterfront park providing a connection between India Basin Shoreline Park and the India Basin Open Space. RPD would have jurisdiction over and operate the 900 Innes property.

## **Impact Evaluation**

As described above in “Approach to Analysis,” the variant would include buildings both taller and with larger massing than the proposed project’s buildings, and the resulting shadows would be worse in both area and duration. As a result, the proposed project scenario was not modeled separately because any shadow impacts from buildings under the proposed project would be less than impacts under the variant. The discussion below is for the variant, but is relevant to the proposed project as well because the impacts of the proposed project would be less than those of the variant.

**Impact SH-1: The proposed project or variant would not create new shadow in a manner that would substantially affect outdoor recreation facilities or other public areas. (*Less than Significant*)**

### ***Construction***

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Project construction under the proposed project or variant would not create adverse shadow effects on publicly accessible open space areas, because construction activities and equipment would not cast substantive shadows on existing open space areas such as the India Basin Shoreline Park and India Basin Open Space properties. Some construction equipment, such as cranes, would exceed 40 feet in height; however, the shadows cast by this equipment would not be substantial (because of the cranes’ lack of bulk) and would be temporary (limited to the construction period).



Source: San Francisco, 2017

Figure 3.10-1:

Shadow Fan Analysis

## ***Operation***

Because of its additional massing, the variant has been determined to be the worst-case between the two build scenarios (the proposed project and variant) for operational impacts. The proposed buildings and structures would generally have the same heights under the variant as under the proposed project, but would contain approximately 20,000 sq. ft. more area. Because the variant is considered the “worst-case” or more conservative scenario, shadow diagrams were produced only for the variant, and the following analysis of operational shadow impacts is for the variant only. The proposed project’s operational shadow impacts would be slightly less than the operational shadow impacts of the variant presented below, because buildings under the proposed project would be either the same height or, in some cases, approximately 10 feet shorter than buildings under the variant.

Presented on the following pages are 12 diagrams showing 5 representative days of the year, each during three representative times of day (1 hour after sunrise, noon, and 1 hour before sunset):

- the summer solstice, June 21 (shown in Figures 3.10-2 through 3.10-4);
- the vernal and autumnal equinoxes, March 21 and September 21 (Figures 3.10-5 through 3.10-7);
- the winter solstice, December 21 (Figures 3.10-8 through 3.10-10); and
- the “worst-case” day of maximum shading (Figures 3.10-11 and 3.10-12 for overall sfh of shadow, and Figures 3.10-13 and 3.10-14 for the moment when the shadow reaches its maximum area).

### **India Basin Shoreline Park Property**

As part of the either the proposed project or the variant, India Basin Shoreline Park would be redesigned to serve the surrounding community and enhance citywide program offerings. The Blue Greenway/Bay Trail and Class I bicycle lane would continue through this park. Pedestrian, bicycle, and vehicular access to the shoreline would be enhanced, and approximately 2,700 gsf of institutional uses, in the form of the outfitters building (kayak concessions, office and restroom), covered outdoor space, and a multi-stall restroom near the playground would be built at India Basin Shoreline Park. The maximum height of proposed buildings on this property would be 25 feet. Compared to taller buildings, a 25-foot-tall building would cast shadows that are shorter in length and duration and, in general, would cover a smaller area (i.e., a shorter building would result in a smaller shadow fan than would a taller building). Because of the relatively low heights of the buildings proposed to be constructed in the park, shadows cast by these buildings would not substantially affect the public’s ability to use and enjoy the park.

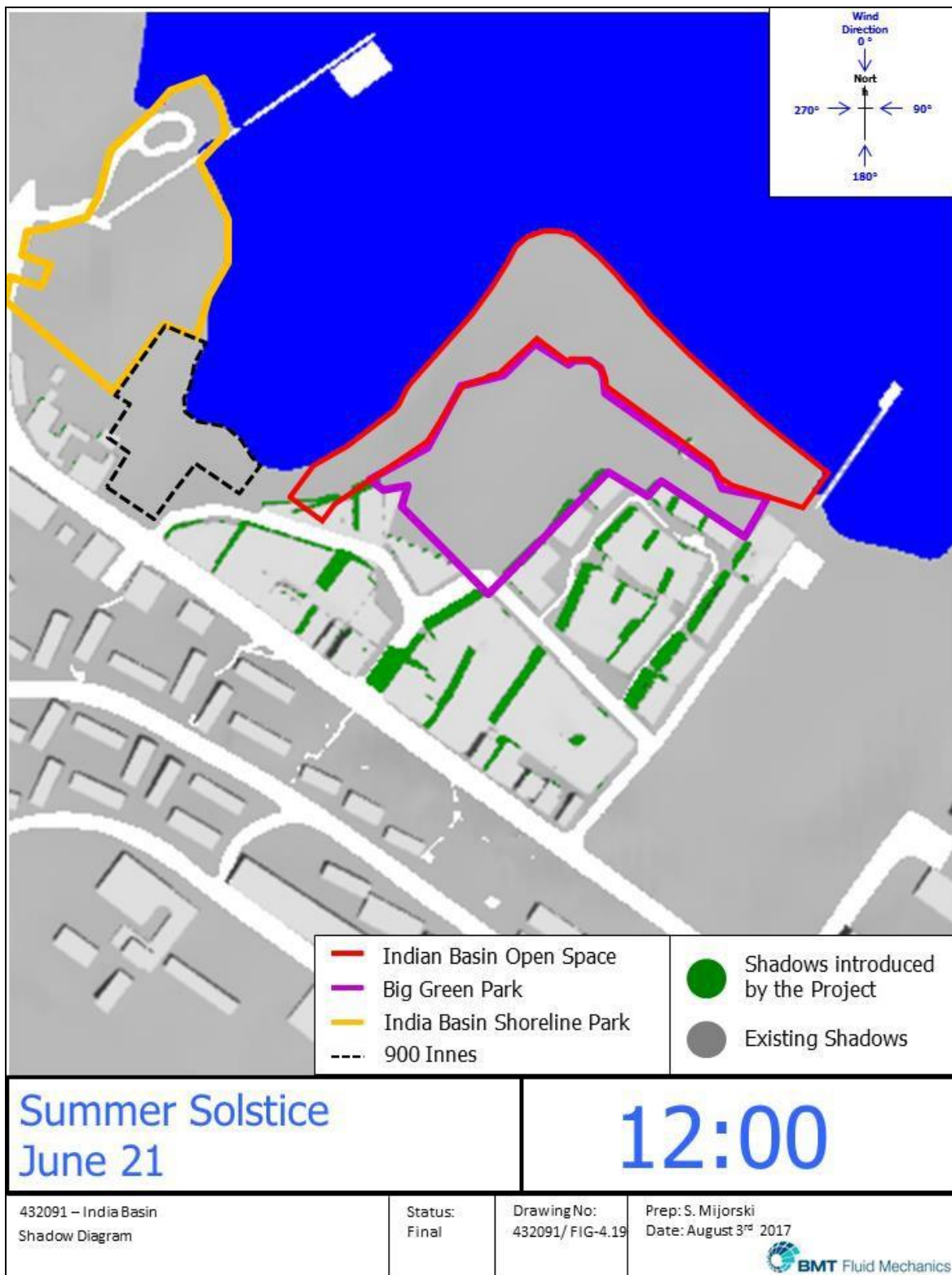
During the winter, shadow from some of the proposed buildings on the 700 Innes property would reach the southeastern corner of the park at the beginning of the day. The shadow, which is not expected to last more than 20 minutes, would gradually decrease in area and recede eastward across the park, moving off the park before 9:00 a.m. The affected portion of the park is currently a landscaped area that does not include any pedestrian pathways or seating areas. Given the short duration of the shadow and the use of the affected portion of the park, shadow from the proposed buildings on the 700 Innes property would not substantially affect the public’s ability to use and enjoy the park. Shadow from the proposed buildings on the 700 Innes property would not reach the park at any other time during the year.

Therefore, implementation of the proposed project or variant would not create new shadow in a manner that would substantially affect India Basin Shoreline Park.



Source: San Francisco, 2017

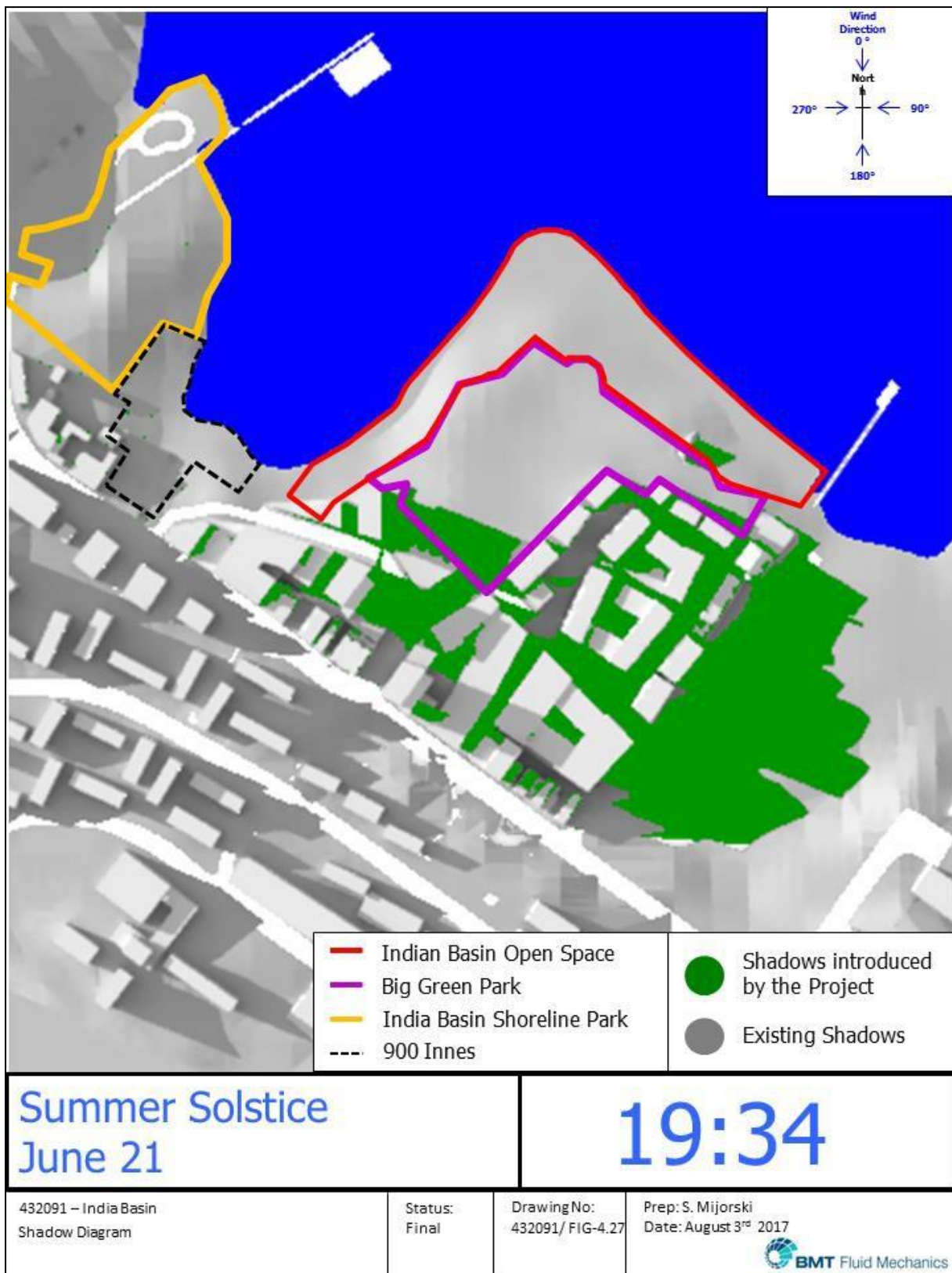
**Figure 3.10-2: Shadow Diagram, 1 Hour after Sunrise on the Summer Solstice (June 21, 6:48 a.m.)**



Source: San Francisco, 2017

**Figure 3.10-3: Shadow Diagram, Noon on the Summer Solstice (June 21, 12:00 p.m.)**





Source: San Francisco, 2017

**Figure 3.10-4: Shadow Diagram, 1 Hour before Sunset on the Summer Solstice (June 21, 7:34 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-5: Shadow Diagram, 1 Hour after Sunrise on the Vernal/Autumnal Equinox (March 21/September 21, 8:10 a.m.)**



Source: San Francisco, 2017

**Figure 3.10-6: Shadow Diagram, Noon on the Vernal/Autumnal Equinox (March 21/September 21, 12:00 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-7: Shadow Diagram, 1 Hour before Sunset on the Vernal/Autumnal Equinox (March 21/September 21, 6:22 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-8: Shadow Diagram, 1 Hour after Sunrise on the Winter Solstice (December 21, 8:21 a.m.)**



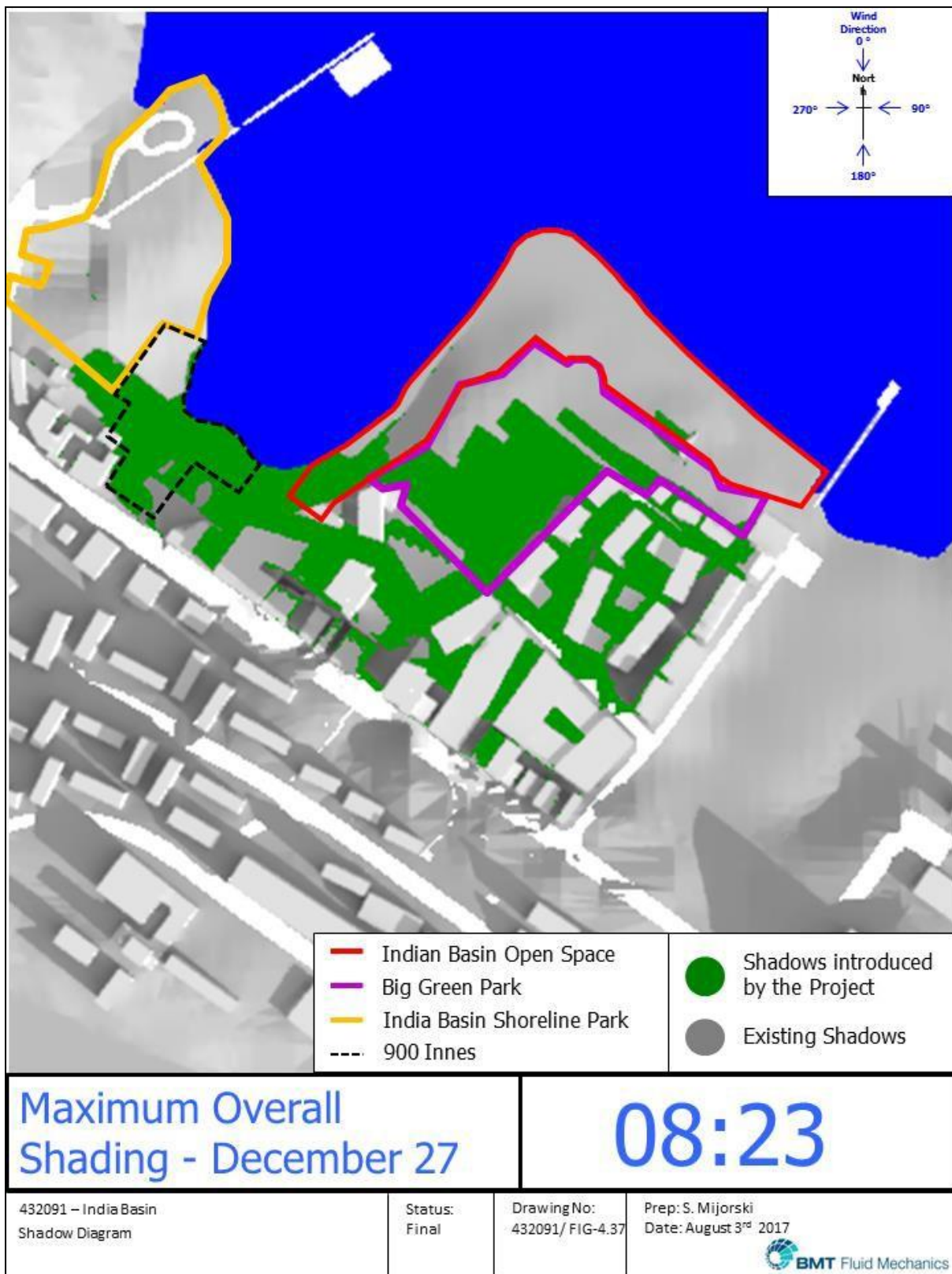
Source: San Francisco, 2017

**Figure 3.10-9: Shadow Diagram, Noon on the Winter Solstice (December 21, 12:00 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-10: Shadow Diagram, 1 Hour before Sunset on the Winter Solstice (December 21, 3:54 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-11: Shadow Diagram, Date of Maximum Overall Shading, 1 Hour after Sunrise (December 27, 8:23 a.m.)**





Source: San Francisco, 2017

**Figure 3.10-12: Shadow Diagram, Maximum Overall Shading (December 27, 3:00 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-13: Shadow Diagram, Moment of Maximum Shaded Area on the India Basin Open Space (February 2, 4:33 p.m.)**



Source: San Francisco, 2017

**Figure 3.10-14: Shadow Diagram, Moment of Maximum Shaded Area on the Big Green (January 1, 4:00 p.m.)**

**900 Innes Property**

There are no existing open spaces on the 900 Innes property. Accordingly, the 900 Innes property, which would be a future publicly accessible park under either the proposed project or the variant, is discussed under “Future Open Spaces on the Project Site.”

**India Basin Open Space Property**

The India Basin Open Space property has a total area of 287,334 sq. ft.<sup>5</sup> and currently has 363,855 sfh of shade annually. Based on the property’s TAAS of 1,069,284,748 sfh, the open space is currently shaded 0.03 percent of the year.

Table 3.10-1 presents the TAAS calculations for the India Basin Open Space property.

**Table 3.10-1: Theoretical Annual Available Sunlight at the India Basin Open Space Property**

Park area	287,334 sq. ft.
Hours of annual available sunlight (from 1 hour after sunrise to 1 hour before sunset on each day)	3,721.4 hours
Theoretical Annual Available Sunlight	1,069,284,748 sfh

Notes: sfh = square foot–hours; sq. ft. = square feet  
Source: San Francisco, 2017

As described above, the variant is considered the “worst-case” or more conservative scenario, and shadow diagrams were produced only for the variant. The following analysis of operational shadow impacts is for the variant only.

With implementation of the variant, there would be 39,506,930 sfh of annual shade on the India Basin Open Space property, with the variant contributing 39,143,075 sfh, or 3.66 percent, net additional shading. The day of maximum shading would occur on December 27; new shadows from the variant would create an increase of 248,399 sfh, or 7.78 percent, above current shading levels on this day. The new shadows from the variant on the open space on this day would occur in the afternoon hours.

The largest net new shadow area cast on the India Basin Open Space property would be 75,427 sq. ft., or 26.25 percent of the total India Basin Open Space area. The moment of maximum shading on the India Basin Open Space would occur on February 2 at 4:33 p.m.

Tables 3.10-2 through 3.10-4 summarize shadow impacts on the India Basin Open Space property.

<sup>5</sup> India Basin Open Space property is 6.2 acres (270,072 sq. ft.). The square footage used in the shadow analysis (287,334 sq. ft.) includes rights-of-way within the park boundary. The rights-of-way are not under the jurisdiction of the Recreation and Park Commission, but they were included in the shadow analysis so that the entire park could be analyzed as a single functional area.

**Table 3.10-2: Annual Shading at the India Basin Open Space Property**

	Annual Shading (sfh)	Annual Shading (% of TAAS)
Existing Conditions	363,855	0.03%
Variant	39,506,930	3.69%
Net New Shading	39,143,075	3.66%

Notes: sfh = square foot-hours; TAAS = Theoretical Annual Available Sunlight  
Source: San Francisco, 2017

**Table 3.10-3: India Basin Open Space Property—Day of Maximum Shading**

Date(s) when maximum new shading would occur	December 27
Percentage net new shading on date(s) of maximum shading	7.78%
Total net new shading on date(s) of maximum shadow	248,399 sfh

Note: sfh = square foot-hours  
Source: San Francisco, 2017

**Table 3.10-4: India Basin Open Space Property—Time and Date of Maximum Shading**

Time and date when maximum new shading would occur	February 2, 4:33 p.m.
Percentage net new shading on time and date of maximum shading	26.25%
Total net new shading on time and date of maximum shadow	75,427 sq. ft.

Note: sq. ft. = square feet  
Source: San Francisco, 2017

The shadow diagrams provided in Figures 3.10-2 through 3.10-14 provide a visual representation of the new shadows that would be cast on the India Basin Open Space property by the variant's buildings and structures on 5 representative days of the year. Figures showing results on an hourly basis, starting 1 hour after sunrise and ending 1 hour before sunset, are provided in Appendix I and summarized for the days below.

- *Vernal/autumnal equinox, March 21/September 21*: New shadows would be cast on the India Basin Open Space property all day long, from 7:10 a.m., predominantly on the southwest corner of the open space, with the maximum net new shadow occurring at 9:00 a.m.
- *Summer solstice, June 21*: New shadows would be cast on the India Basin Open Space property all day long, with the minimum net new shadow occurring at an hour after sunrise, at 6:48 a.m., and the maximum in the afternoon, at 6:34 p.m., principally to the southeast of the open space.
- *Winter solstice, December 21*: The India Basin Open Space property would be exposed to new shadows all day long, with a minimum net new shadow occurring at 9:00 a.m. and the maximum at 3:54 p.m., principally covering the southeast and southwest corners of the open space.
- *“Worst-case” shadow day, December 27*: The worst day of the year, in terms of overall sfh of net new shadow cast on the India Basin Open Space property by the variant, has been identified to be December 27.

The maximum net new shadow cast on this property by the variant's buildings and structures would occur at 3:58 p.m.

- *“Worst-case” shadow time and day, for the India Basin Open Space property, February 2, 4:33 p.m.:* This figure represents the moment when net new shadow cast on the India Basin Open Space property by the variant's buildings and structures would reach its maximum area.

Nearly 8 percent net new shading would be cast on the India Basin Open Space property by proposed buildings at the 700 Innes property during the days when maximum shading would occur. Over an entire year, 3.69 percent of TAAS on the India Basin Open Space property would be shaded as a result of development at the 700 Innes property. As stated above in Section 3.10.2, “Regulatory Framework,” the India Basin Open Space is not among the 14 downtown parks for which absolute cumulative limits were established in Section 295 of the Planning Code. Moreover, additional shadow is permitted on the India Basin Open Space as long as the new shadow would not adversely affect use of the park. The acceptability of any new shadow is determined by the Planning and Recreation and Park commissions and takes into account the amount of area shaded, the duration of the shadow, the importance of sunlight to the type of open space, and the potential for the new shadow to adversely affect the use of the park. Because no absolute cumulative limit is established for the India Basin Open Space, the qualitative criteria applied in this case are similar to the qualitative criteria pursuant to CEQA. Thus, the discussion below focuses on how the open space would be used and whether new shadow would adversely affect these uses anticipated.

As stated in Section 3.10.1, “Environmental Setting,” the India Basin Open Space property is currently used primarily by pedestrians on the Blue Greenway/Bay Trail. The open, accessible nature of the India Basin Open Space, together with its location in a relatively quiet residential area of the City, would allow a substantial number of people to use it when simply crossing through the park. The primary types of activities at the India Basin Open Space property (e.g., walking, running, biking) are transitory and not particularly sensitive to the availability of sunlight, so net new shadow would not substantially affect the public's ability to use and enjoy the open space. Furthermore, the “worst-case” shadow day, or the day when there would be the most net new sfh of shadow, would occur during the winter, on December 27 at 3:58 p.m. According to the National Oceanic and Atmospheric Administration (NOAA 1995), more than 80 percent of San Francisco's seasonal rain falls between November and March. The two coldest months of the year are December and January (WRCC, 2006). Park usage would likely be the lowest during this time of the winter season, because the weather in this part of San Francisco is typically colder and rainier in the winter than in the more temperate spring, summer, and fall seasons.

Under either the proposed project or the variant, 2,000 gsf of commercial uses would be built immediately adjacent to the India Basin Open Space property to serve visitors to the publicly accessible beach and open space. These uses, consisting of a café, a maintenance facility, and rental and concessions facilities, would all be less than 25 feet in height. As discussed above, the shadows cast by 25-foot-tall buildings would be shorter in length and duration and would cover smaller areas than the shadows cast by taller buildings. Because the heights of the buildings proposed for construction immediately adjacent to the India Basin Open Space property would be relatively low, the shadows cast by those buildings would not be noticeable to users of this space.

As stated above, the “worst-case” shadow day would occur during the winter, on December 27. Future recreational uses of the enhanced India Basin Open Space property could include people sitting on the beach, dog walkers, and kayakers. This is the time of year, and the time of day (late afternoon), when there would be the most

sfh of shadow. It is assumed that the winter weather in this part of San Francisco, typically colder and rainier than in the spring, summer, and fall is likely to result in the year's lowest use level of the open spaces. During the winter, because of the less temperate weather, park uses would likely be more active (walking or jogging) than passive (sitting or reading), and thus would not be adversely affected by shadow because the amount of time users would spend within the net new shadow areas would be substantially less. Therefore, new net shadow would not adversely affect the public's ability to use and enjoy the open space, and implementation of the proposed project or variant would not create new shadow in a manner that would substantially affect the India Basin Open Space property.

### **700 Innes Property**

There are no existing open spaces on the 700 Innes property. The Big Green, which would be a future publicly accessible open space on the 700 Innes property, is discussed under "Future Open Spaces on the Project Site."

### **Sidewalks**

The buildings and structures associated with the variant would shade portions of streets and sidewalks in the project vicinity at various times of the day throughout the year. The streets and sidewalks in the vicinity are already shadowed by existing buildings. Additional shadows on streets and sidewalks cast by the variant would be transitory and would not exceed levels commonly expected in urban areas. As a result, the proposed project or variant would not create new shadow in a manner that would substantially affect any public areas.

### ***Overall Impact Conclusion***

As stated above, the buildings proposed for construction within India Basin Shoreline Park would be relatively short (25 feet tall). The shadows that would be cast by these buildings would not substantially affect the public's ability to use and enjoy the park. The "worst-case" shadow day on the India Basin Open Space would occur during the winter season when uses of the park would likely be more active (walking or jogging) than passive (sitting or reading) because of the cold, rainy weather and fewer hours of daylight. For the reasons discussed above, the construction-related and operational shadow impacts of the proposed project and variant on existing outdoor recreation facilities or other public areas would be *less than significant*. No mitigation measures are necessary.

### ***Future Open Spaces on the Project Site***

### **900 Innes Property**

Under either the proposed project or the variant, the 900 Innes property would be developed as a waterfront park providing a connection between India Basin Shoreline Park and the India Basin Open Space. The 900 Innes property would also provide a connection for the Blue Greenway/Bay Trail, the Class 1 bikeway, and pedestrian, bicycle, and vehicular access to the shoreline. Other potential project elements for this property include piers, fishing areas, plazas, event areas, tidal marshes, facilities for concessions, drinking fountains, restrooms, passive recreational areas for picnicking, shade structures, bicycle parking, wayfinding signage, and historical and education displays.

Once created, the future park on the 900 Innes property would be owned and operated by RPD and would be protected under Section 295 of the Planning Code. Because the 900 Innes property does not yet exist as an open space, the net new shadow cast on the 900 Innes property by the variant's buildings and structures could not result in an impact under CEQA (i.e., the variant cannot affect an existing expectation of sunlight on an open space when that open space does not currently exist). The analysis below is presented for informational purposes.

Either the proposed project or the variant would cast shadow on portions of the 900 Innes property throughout the year:

- *Winter:* At the beginning of the day, shadow from some of the proposed buildings on the 700 Innes property would cover most of the park. The shadow would gradually decrease in area and recede eastward across the park as the day progresses, moving off the park around 12:00 p.m. For the remainder of the day, the only shadow cast on the park by the variant would be from two buildings not exceeding 20 feet in height that contain park-serving commercial uses. At the end of the day, the entire park would be shadowed by existing off-site buildings and topographical features (e.g., the hill on the west side of Innes Avenue across from the project site).
- *Spring:* At the beginning of the day, shadow from some of the proposed buildings on the 700 Innes property would cover the eastern edge of the park. The shadow would gradually decrease in area and recede eastward across the park, moving off the park around 9:00 a.m. For the remainder of the day, the only shadow cast on the park by the variant would be from the aforementioned buildings that contain park-serving commercial uses. At the end of the day, most of the park would be shadowed by existing off-site buildings and topographical features.
- *Summer:* During the summer, the only shadow cast on the park by the variant would be from the aforementioned buildings that contain park-serving commercial uses.
- *Fall:* The project shadow patterns would be the same as the shadow patterns during the spring.

Depending on the actual configuration and layout of the 900 Innes property, the project shadow could affect the park's plazas, event areas, picnic areas, and pedestrian pathways. In general, the largest amount of shadow cast by the variant would occur during the winter. Park uses during the winter would likely be more active (walking or jogging) than passive (sitting, reading, gathering, or children playing), due to colder, rainy weather. Active uses are less likely to be negatively affected by shadow, as users engaging in these types of uses (walking or jogging) would spend less time in shaded areas because they would be moving through the open space rather than passively sitting. Moreover, the 900 Innes property is not an existing park. As such, shadows cast on the 900 Innes property would not constitute an impact under CEQA.

### **700 Innes Property**

The Big Green would be a publicly accessible open space on the 700 Innes property under either the proposed project or the variant. Once created, the Big Green would be transferred to SF Port, and operated under a memorandum of understanding with RPD. Because the Big Green would be privately owned at project buildout and would not be under the jurisdiction of the Recreation and Park Commission, it would not be subject to the provisions of Planning Code Section 295. The Big Green does not yet exist as an open space; therefore, net new shadow cast on the Big Green by the variant's buildings and structures could not result in an impact under CEQA.



(i.e., the variant cannot affect an existing expectation of sunlight on an open space when that open space does not currently exist). The analysis below is presented for informational purposes only.

The Big Green would occupy a total area of 245,243 sq. ft. This area currently has 817,661 sfh of shade annually. As shown in Table 3.10-5, the Big Green's TAAS is 912,646,556 sfh and the Big Green area is currently shaded 0.09 percent of the year, because the site is mostly vacant.

Table 3.10-5 presents TAAS calculations for the "Big Green" proposed for the 700 Innes property.

**Table 3.10-5: Big Green—Theoretical Annual Available Sunlight**

Park area	245,243 sq. ft.
Hours of annual available sunlight (from 1 hour after sunrise to 1 hour before sunset on each day)	3,721.4 hours
Theoretical Annual Available Sunlight	912,646,556 sfh

Notes: sfh = square foot-hours; sq. ft. = square feet  
Source: San Francisco, 2017

Tables 3.10-6 through 3.10-8 summarize shadow impacts on the Big Green. As shown, with implementation of the variant:

- The Big Green would have 132,875,433 sfh of shade annually, with the variant's buildings and structures contributing 132,057,772 sfh (14.47 percent) net new shading (Table 3.10-6).
- The day of maximum shading would occur on December 27. On that day, new shadows from the variant's buildings and structures would create an increase of 567,336 sfh (19.57 percent) above current shading levels on the Big Green (Table 3.10-7). New shadows cast on the Big Green by the variant on this day would occur in the afternoon hours.
- The largest net new shadow area cast on the Big Green would be 138,637 sq. ft., or 56.53 percent of the total Big Green area. This shadow would be cast on January 1 at 4:00 p.m. (Table 3.10-8).

**Table 3.10-6: Big Green—Shadow Impacts**

	Annual Shading (sfh)	Annual Shading (% of TAAS)
Existing Conditions	817,661	0.09%
Proposed Development	132,875,433	14.56%
Net New Shading	132,057,772	14.47%

Note: sfh = square foot-hours; TAAS = Theoretical Available Annual Sunlight  
Source: San Francisco, 2017

**Table 3.10-7: Big Green—Day of Maximum Shading**

Date(s) when maximum new shading occurs	December 27
Percentage net new shading on date(s) of maximum shading	19.57%
Total net new shading on date(s) of maximum shadow	567,336 sfh

Source: San Francisco, 2017

**Table 3.10-8: Big Green—Time and Date of Maximum Shading**

Time and date when maximum new shading occurs	January 1, 4:00 p.m.
Percentage net new shading on time and date of maximum shading	56.53%
Total net new shading on time and date of maximum shadow	138,637 sq. ft.

Note: sq. ft. = square feet

Source: San Francisco, 2017

The shadow diagrams provided in Figures 3.10-2 through 3.10-14 provide a visual representation of the new shadows cast on the Big Green by the variant's buildings and structures on 5 representative days of the year. Figures showing results on an hourly basis, starting 1 hour after sunrise and ending 1 hour before sunset, are provided in Appendix I and summarized for the days below.

- *Vernal/autumnal equinox, March 21/September 21*: New shadows would be cast on the Big Green all day long, starting at 7:10 a.m., predominantly on the southern portion of the Big Green. The maximum net new shadow would occur at 5:15 p.m.
- *Summer solstice, June 21*: New shadows would be cast on the Big Green all day long, with the minimum net new shadow occurring at 1:15 p.m. and the maximum at 6:30 p.m., principally on the southwest and southeast portions of the Big Green.
- *Winter solstice, December 21*: The Big Green would be exposed to new shadows all day long, with a minimum net new shadow occurring at 12:45 p.m. and the maximum at 3:45 p.m., covering the majority of the north and northeast portions of the Big Green.
- *“Worst-case” shadow day, December 27*: The worst day of the year, in terms of overall sfh of net new shadow cast on the Big Green by the variant, has been identified to be December 27. The maximum net new shadow cast on the India Basin Open Space by the variant's buildings and structures would occur at 3:45 p.m.
- *“Worst-case” shadow time and day for the Big Green, January 1, 4:00 p.m.*: This figure represents the moment when net new shadow cast on the Big Green by the variant's buildings and structures would reach its maximum area.

Under either the proposed project or the variant, the majority of the Big Green would be composed of grasslands, stormwater bioretention ponds, swales, planters, a wet meadow, and groves of trees. The Big Green would also include some children's play areas, a fitness loop, small gathering spaces, pedestrian-focused pathways, streets, and plazas. Additional shadow on this area would be cast on this space, which could have the potential to negatively affect users of this space. As stated above, shadow cast on this space would be the worst during the winter (December 27 and January 1), when park uses would likely be more active (walking or jogging) than

passive (sitting, reading, gathering, or children playing) because of the cold, rainy weather and fewer hours of daylight. Active uses are less likely to be negatively affected by shadow, as users engaging in these types of uses (walking or jogging) would spend less time in shaded areas because they would be moving through the open space rather than passively sitting. Moreover, the Big Green is currently vacant and is not an existing park. As such, shadows cast on the Big Green would not constitute an impact under CEQA.

### ***Future Open Spaces in the Project Vicinity***

Northside Park is a 12.8-acre future open space that will be created as part of the Candlestick Point–Hunters Point Shipyard Phase II Development Plan Project (San Francisco, 2010). Northside Park will be southeast of and adjacent to the project site. As envisioned, Northside Park will include both active and passive recreational uses. The active recreational uses will be concentrated in the southwest portion of the open space and will include community gardens; basketball, tennis, and volleyball courts; a children’s playground; and restrooms. There will be an open-air marketplace and pedestrian pathways will cross the open space. The northeast portion of the open space will feature passive recreational uses such as picnic areas and pathways along the waterfront.

Because Northside Park does not yet exist, shadow cast on this open space by the buildings and structures for the proposed project or the variant could not result in an impact under CEQA (i.e., the proposed project cannot affect an existing expectation of sunlight on an open space when that open space does not currently exist). Therefore, the discussion below is presented for informational purposes only.

Either the proposed project or the variant would cast shadow on portions of Northside Park throughout the year:

- *Winter:* The project shadow would begin around 3:00 p.m. along the western boundary of Northside Park. The shadow would gradually increase in area and move eastward across the open space as the day progresses, eventually covering the northwest portion of the open space by the end of the day (Figure 3.10-10).
- *Spring:* The project shadow would begin around 4:00 p.m. along the western boundary of Northside Park. The shadow would gradually increase in area and move eastward across the open space, eventually covering the western third of the open space by the end of the day (Figure 3.10-9).
- *Summer:* The project shadow would begin around 5:00 p.m. along the western boundary of Northside Park. The shadow would gradually increase in area and move eastward across the open space, eventually covering the western half of the open space by the end of the day (Figure 3.10-6).
- *Fall:* The project shadow patterns would be the same as the shadow patterns during the spring.

Depending on the actual configuration and layout of Northside Park, the project shadow would affect the park’s community gardens; the basketball, tennis, and volleyball courts; and possibly the open-air marketplace and some of the pedestrian pathways. The northeast portion of Northside Park, originally envisioned to include picnic areas and pathways along the waterfront, would be largely unaffected by shadow from the proposed project or the variant.

As discussed above, project shadow on Northside Park would be limited to the late afternoon and early evening throughout the year. The proposed project or variant would not cast shadow on Northside Park during the morning and early to mid-afternoon at any time during the year.

### 3.10.4 Cumulative Impacts

**Impact C-SH-1: The proposed project or variant would not combine with past, present, or reasonably foreseeable future projects to create new shadow in a manner that would affect outdoor recreation facilities or other public areas. (*Less than Significant*)**

The relevant cumulative projects listed in Table 3-1 are somewhat removed from the project site by distance (more than 1,500 feet away). Therefore, the shadowing effect of the cumulative projects in combination with the proposed project or variant would not result in a different shadow effect on outdoor recreation facilities or other public areas in the vicinity of the project site. The changes to shadow patterns under cumulative conditions would be the same as the changes to shadow patterns under the proposed project or variant. Neither the proposed project nor the variant would combine with past, present, or reasonably foreseeable future projects to create a cumulative shadow impact on outdoor recreation facilities. For these reasons, this impact would be *less than significant*. No mitigation measures are necessary.

Sidewalks in the project vicinity are already shadowed in the morning and afternoon by existing buildings. As discussed above, changes to shadow patterns under cumulative conditions would be the same as changes to shadow patterns under the proposed project or variant. The proposed project or variant would add net new shadow to the streets and sidewalks in the project vicinity; however, these shadows would be transitory, would not substantially affect the use of the streets and sidewalks, and would not increase shadows above levels that are common and generally expected in a developed urban environment.

The proposed project or variant would not combine with past, present, and reasonably foreseeable future projects in the project vicinity to create a significant cumulative shadow impact on streets or sidewalks. This impact would be *less than significant*. No mitigation measures are necessary.

### 3.10.5 References

- National Oceanic and Atmospheric Administration (NOAA). 1995 (January). *Climate of San Francisco*. NOAA Technical Memorandum NWS WR-126. Prepared by Jan Null, National Weather Service Forecast Office, San Francisco Bay Area. Accessed July 19, 2017. Available: [http://www.wrh.noaa.gov/mtr/sfd\\_sjc\\_climate/sfd/SFD\\_CLIMATE3.php](http://www.wrh.noaa.gov/mtr/sfd_sjc_climate/sfd/SFD_CLIMATE3.php). Accessed July 19, 2017.
- San Francisco, City and County of (San Francisco). 1989 (February 3). "Proposition K, The Sunlight Ordinance." Memorandum from San Francisco Planning Department to San Francisco Planning Commission and Recreation and Park Commission. San Francisco, CA.
- . 1996. *San Francisco General Plan*. Recreation and Open Space Element. San Francisco, CA.
- . 2010. *Candlestick Point–Hunters Point Shipyard Phase II Final Environmental Impact Report (FEIR)*. Case Number 2007.0946E. Certified by the San Francisco Planning Commission and the Redevelopment Agency Commission on June 3, 2010.
- . 2017. *India Basin Mixed-Use Project Shadow Analysis*. San Francisco, CA. Planning Department Case No. 2014-002541ENV. Prepared by BMT Fluid Mechanics.

Western Regional Climate Center (WRCC). 2006. San Fran Mission Dolore, California: Monthly Total Precipitation (inches). Available: <https://wrcc.dri.edu/cgi-bin/cliMONtpre.pl?casfod>. Last updated July 24, 2006. Accessed July 19, 2017.

This page intentionally left blank.

## 3.11 RECREATION

This section describes the existing environmental and regulatory setting related to recreational resources and addresses the potential impacts of the proposed project and variant. Comments regarding recreation were received during the public scoping period for the Notice of Preparation, covering topics that included the San Francisco Bay Trail (Bay Trail), nonmotorized boat access, ability to experience nature, recreational facilities, and public access. These comments are addressed in this section.

### 3.11.1 Environmental Setting

#### Recreational and Open Space Resources

##### *San Francisco*

RPD owns and manages more than 3,400 acres of recreational facilities and open space throughout San Francisco (San Francisco, 2014). San Francisco also has 250 acres of open space owned and managed by the State of California, including Mt. Sutro Open Space and Candlestick State Recreation Area (San Francisco, 2014). Approximately 1,600 acres of federally owned open space are located at the Golden Gate National Recreation Area, Ocean Beach, Fort Funston, Fort Mason, Lands End, Sutro Heights, China Beach, and the Presidio (San Francisco, 2014). Almost 20 percent of the City's land area is publicly owned open space (San Francisco, 2014).

The National Park and Recreation Association does not have an absolute target for average park acreage per population. The City also has no target ratio of parkland to residents. Rather, the City focuses on the distribution of open space and on acquisition of open space in high-need areas, defined as a combination of areas where access to open space is low; the most population growth is expected to occur; and there are high percentages of children, youth, seniors, and low-income households (San Francisco, 2014). The City also focuses on improving access and connectivity to open space and ensuring high utilization of open space.

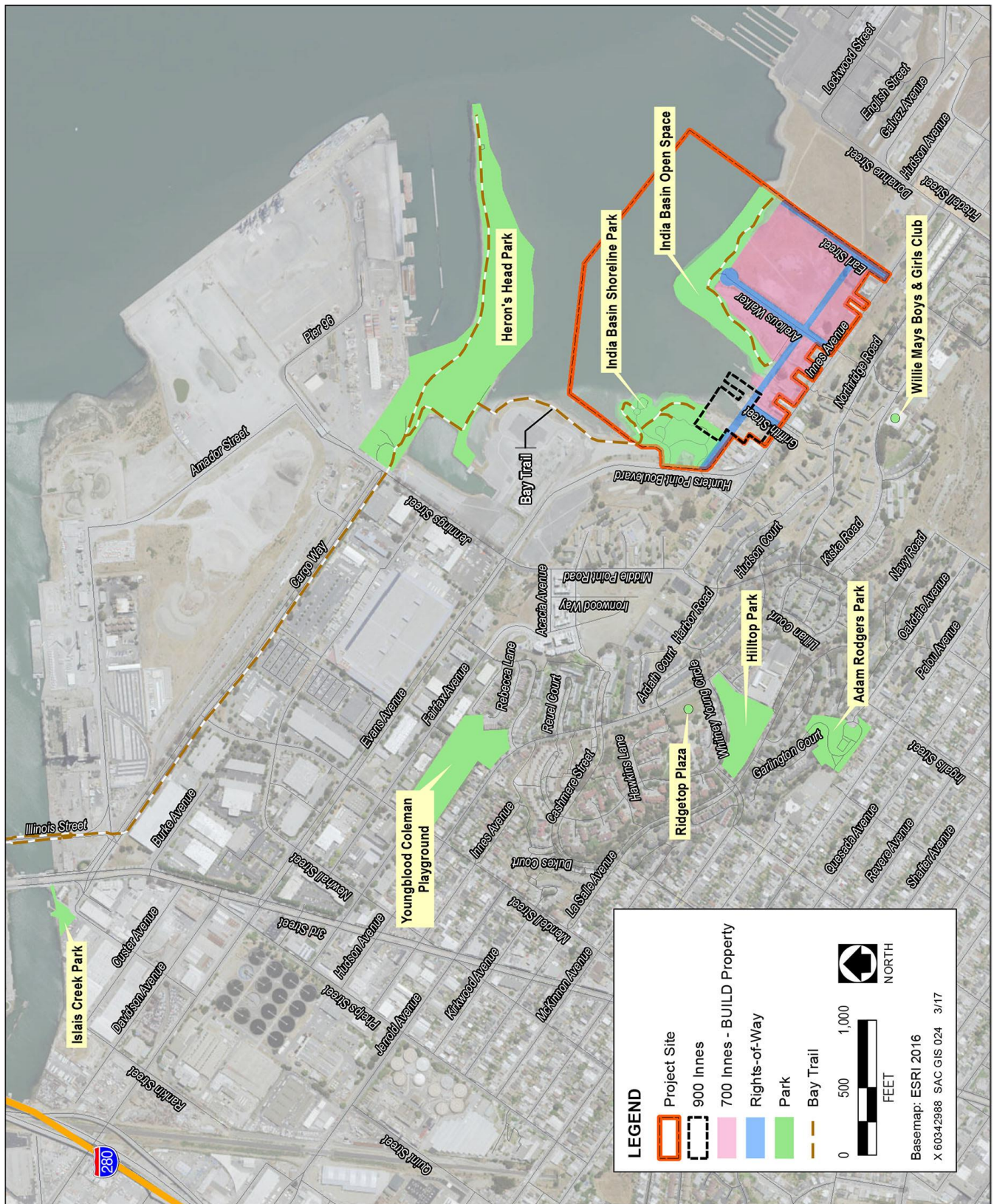
##### *Bayview Hunters Point Area*

The Bayview Hunters Point area has a high ratio of open space per household. Supervisorial District 10, as mapped on the San Francisco Board of Supervisors Web site (San Francisco, 2016), has approximately 25.7 acres of parkland per 1,000 households (when Candlestick Point State Recreation Area is included), compared to the Citywide average of 16.3 acres per 1,000 households (San Francisco, 2010).<sup>1</sup>

Several recreation areas, summarized in the following list, are located in the Bayview Hunters Point area (Figure 3.11-1). All but two of these recreation areas, Heron's Head Park and Willie Mays Boys and Girls Club, contain facilities operated by RPD.

---

<sup>1</sup> Boundary of Supervisorial District 10: Beginning at the San Francisco/Daly City border and census block line east of Red Leaf Court and west of Robinson Drive—following census block line north to Walbridge Street, east on Walbridge Street, west along Geneva Avenue, north between John McLaren Park and Luther Burbank High School to la Grande Avenue, north along la Grande Avenue, east on Persia Avenue, east following Mansell Street, east on Salinas Avenue, north at Wheat Street, north along Bayshore Boulevard, west at Paul Avenue, north following James Lick Freeway, east at Interstate 280 (I-280) to Bayshore Boulevard, north following Bayshore Boulevard, west on Cesar Chavez Street, north at Potrero Avenue, west on 20th Street, north on Bryant Street, east following the Central Freeway, east at Division Street, northeast on Townsend Street, southeast on 7th Street to Hubbell Street, east along Hubbell Street, south following I-280 to Mariposa Street, east on Mariposa Street, north along Terry Francois Street, east to shoreline at 16th Street.



Sources: OpenStreetMap.org (accessed September 12, 2016) and BUILD Inc., 2016

**Figure 3.11-1 Existing Recreational Facilities on the Project Site and in the Vicinity**



- *Islais Creek Park* is a 0.52-acre park owned by the Port of San Francisco that contains a dock, gravel beach, boat storage, picnic tables, and parking area for 18 vehicles. The park provides nonmotorized boat access to Islais Creek and San Francisco Bay (Bay) and is stewarded by Kayaks Unlimited (SFBAWT, 2016).
- *Adam Rodgers Park* is a 2.74-acre facility that contains a community garden, basketball court, playground, barbeque area, and restrooms (RPD, 2016a). This park, located west of the project site, provides the nearest alternate basketball court to the site. No parking area is provided at this park (RPD, 2016a).
- *Ridgetop Plaza* is a 0.29-acre park that provides excellent views but few recreational facilities. This park is located west of the project site. The park contains some picnic/seating areas but no parking or restrooms (RPD, 2016b).
- *Youngblood Coleman Playground*, located on 6.13 acres northwest of the project site, contains soccer and softball fields, basketball and tennis courts, a play area, a picnic area, and restrooms. No parking area is provided on this site (RPD, 2016c).
- *Hilltop Park* contains a playground, amphitheater, skate park, picnic area, cement slides, and restrooms (RPD, 2016d). This 3.5-acre park has recently been remodeled and includes an updated skate park, picnic area, playground, scenic overlook, and exercise area for adults (RPD, 2016e). Hilltop Park, located west of the project site, is the closest playground to the site. No parking area is provided at this park (RPD, 2016e).
- *Heron's Head Park*, owned by the Port of San Francisco and located north of the project site, is the nearest alternate shoreline park and picnic area to the site. This 22-acre park includes wetlands, a dog run, picnic area, parking area, and hiking trail, as well as the EcoCenter, which is used for educational programs (SF Port, 2016).
- *Willie Mays Boys and Girls Club at Hunters Point* is a privately owned, membership-based children's recreation center located south of the project site. This facility provides a learning center, multimedia center, art studio, teen center, games room, community room, full-size gymnasium, baseball field, and organic teaching garden (Boys and Girls Clubs of San Francisco, 2016).

Table 3.11-1 summarizes the recreational facilities located near the project site. The table shows the distance of each park from the site and, based on information from RPD, characterizes each park's overall use level and typical users. Most of the parks are within 1 mile of the project site and are used by similar user groups: children, picnickers (groups/families), and basketball players. The only other park with boating use is Islais Creek Park. All parks listed in Table 3.11-1 receive moderate use, compared to the light to moderate use received at India Basin Shoreline Park.

### ***Project Site***

#### **India Basin Shoreline Park Property**

India Basin Shoreline Park is a 5.6-acre public park, owned by the City and managed by RPD, that contains a picnic area, playground, parking area, and basketball court and a portion of the Bay Trail (San Francisco Parks Alliance, 2016; RPD, 2016f). The Bay Trail is a hiking and biking trail that encircles San Francisco and San Pablo bays, although the trail is incomplete in some locations, including within the project area and east of the site in the Hunters Point Shipyard area (San Francisco Bay Trail, 2016). India Basin Shoreline Park is also an informal launch site (i.e., no formal launching facilities exist) for the San Francisco Bay Water Trail (Bay Water Trail), which constitutes a network of launch and landing sites, or "trail heads," that allow people to enjoy

continuous, multiple-day and single-day trips on the Bay in beachable sail craft and human-powered boats (CSCC, 2011). The nearest alternate Bay Water Trail launch site is Islais Creek Park, northwest of India Basin (CSCC, 2011).

**Table 3.11-1: Recreational Facilities near the Project Site**

Site Name	Distance from Project Site	Recreational Facilities	Use Level/Users
Islais Creek Park	1.2 miles northwest	Dock, beach, picnic area, parking, boat storage	Average use is moderate. Users include human-powered boaters and picnickers (groups/families).
Adam Rodgers Park	0.7 mile west	Community garden, basketball court, playground, barbeque area, restrooms	Average use is moderate. Users include gardeners, basketball players, children, and picnickers (groups/families).
Ridgetop Plaza	0.7 mile west	Picnic/seating area	Average use is moderate. Users include picnickers (individuals and groups) and walkers.
Youngblood Coleman Playground	0.8 mile northwest	Soccer and softball fields, basketball and tennis courts, play area, picnic area, restrooms	Average use is moderate. Users include teams (softball and soccer), basketball and tennis players, children, and picnickers (groups/families).
Hilltop Park	0.6 mile west	Playground, amphitheater, skate park, picnic area, cement slides, restrooms	Average use is moderate. Users include children, performers/performance attendees, picnickers (groups/families), and children.
Heron's Head Park	0.5 mile north	Dog run, picnic area, hiking trail, EcoCenter	Average use is moderate. Users include dog owners/dogs, picnickers (groups/families), hikers and bird-watchers.
Willie Mays Boys and Girls Club at Hunters Point	0.1 mile south	Learning center, multimedia center, art studio, teen center, games room, community room, full-size gymnasium, baseball field, and organic teaching garden	Not available.

Sources: Avril, pers. comm., 2016; Boys and Girls Clubs of San Francisco, 2016; RPD, 2016a, 2016b, 2016c, 2016d, and 2016f; SFBAWT, 2016; SF Port, 2016

India Basin Shoreline Park is generally used during daylight hours by residents and visitors including Bay Trail users, kayakers, children (at the playground), families and groups (at the picnic area), and people playing basketball. The park is lightly used during weekdays, with moderate use on weekends. The main recreation activities are playing at the playground, picnicking, playing basketball, and kayaking (Avril, pers. comm., 2016). Many of the amenities at India Basin Shoreline Park are in outdated condition.

### **900 Innes Property**

No public recreational facilities exist at the 900 Innes property.

### **India Basin Open Space Property**

The India Basin Open Space property (Figure 3.11-1) does not currently contain any formal public recreational facilities other than a portion of the Bay Trail; however, this property is used by Bay Trail hikers, bird-watchers/naturalists, and dog walkers (off-trail informal/unauthorized access) during daylight hours. This property is lightly used on weekdays and weekends, with authorized usage of sand dunes occurring during low tide (Avril, pers. comm., 2016). The property does not have restrooms or parking facilities, but street parking is available nearby at the end and along the side of Arelious Walker Drive.

### **700 Innes Property**

No public recreational facilities exist on the 700 Innes property.

## **3.11.2 Regulatory Framework**

### **Federal**

No federal plans, policies, regulations, or laws related to recreation are applicable to the proposed project or the variant.

### **State**

#### ***San Francisco Bay Conservation and Development Commission***

Under the McAteer-Petris Act, the San Francisco Bay Conservation and Development Commission (BCDC) has jurisdiction over the Bay and a band of land extending inland 100 feet from the Bay shoreline. The McAteer-Petris Act requires that a permit be obtained from BCDC to place fill in, extract materials exceeding \$20 in value from, or substantially change the use of any land, water, or structure within BCDC's jurisdictional area. BCDC focuses on public access and can designate certain water-oriented priority land uses within the 100-foot shoreline band that are essential to the public welfare of the San Francisco Bay Area (Bay Area). BCDC grants a permit after a proposed project has been found consistent with its plans and policies, with the goal of providing the maximum feasible public access to the Bay and its shoreline (BCDC, 2016a).

In 1971, as part of its jurisdiction under the McAteer-Petris Act, BCDC designated the India Basin shoreline between the Pacific Gas and Electric Company power plant and the Hunters Point Shipyard for waterfront park, beach priority use. Development in waterfront park priority-use areas must be consistent with the recreation policies in the *San Francisco Bay Plan* (Bay Plan) (described below) that describe appropriate uses and other development and management considerations for waterfront parks (BCDC, 2016b).

#### ***San Francisco Bay Plan***

The Bay Plan, originally adopted in 1968, includes policies to guide future uses of the Bay and shoreline (BCDC, 2016c), including several policies related to recreation (BCDC, 2006). Bay Plan recreation policies relevant to the proposed project and variant are listed below.

- **Policy 3:** Recreational facilities, such as waterfront parks, trails, marinas, live-aboard boats, non-motorized small boat access, fishing piers, launching lanes, and beaches, should be encouraged and allowed by the Commission, provided they are located, improved and managed consistent with the following standards:
  - a. General Recreational facilities should: ...
    4. Be consistent with the public access policies that address wildlife compatibility and disturbance. In addition:
    5. Different types of compatible public and commercial recreation facilities should be clustered to the extent feasible to permit joint use of ancillary facilities and provide a greater range of choices for users. ...
    7. Access to marinas, launch ramps, beaches, fishing piers, and other recreational facilities should be clearly posted with signs and easily available from parking reserved for the public or from public streets or trails.
    8. To reduce the human health risk posed by consumption of contaminated fish, projects that create or improve fishing access to the Bay at water-oriented recreational facilities, such as fishing piers, beaches, and marinas, should include signage that informs the public of consumption advisories for the species of Bay fish that have been identified as having potentially unsafe levels of contaminants.
    9. Complete segments of the Bay and Ridge Trails where appropriate, consistent with policy 4-a-6 [of the Bay Plan]. ...
  - e. Non-Motorized Small Boats<sup>2</sup> Where practicable, access facilities for non-motorized small boats should be incorporated into waterfront parks, marinas, launching ramps and beaches, especially near popular waterfront destinations. (2) Access points should be located, improved and managed to avoid significant adverse affects on wildlife and their habitats, should not interfere with commercial navigation, or security and exclusion zones or pose a danger to recreational boaters from commercial shipping operations, and should provide for diverse water-accessible overnight accommodations, including camping, where acceptable to park operators. (3) Sufficient, convenient parking that accommodates expected use should be provided at sites improved for launching non-motorized small boats. Where feasible, overnight parking should be provided. (4) Site improvements, such as landing and launching facilities, restrooms, rigging areas, equipment storage and concessions, and educational programs that address navigational safety, security, and wildlife compatibility and disturbance should be provided, consistent with use of the site. (5) Facilities for boating organizations that provide training and stewardship, operate concessions, provide storage or boathouses should be allowed in recreational facilities where appropriate. (6) Design standards for non-motorized small boat launching access should be developed to guide the improvement of these facilities. Launching facilities should be accessible and designed to ensure that boaters can easily launch their watercraft. Facilities should be durable to minimize maintenance and replacement cost.
  - f. Fishing Piers. Fishing piers should not block navigation channels, nor interfere with normal tidal flow.
  - g. Beaches. Sandy beaches should be preserved, enhanced, or restored for recreational use, such as swimming, consistent with wildlife protection. New beaches should be permitted if the site conditions are suitable for sustaining a beach without excessive beach nourishment.

<sup>2</sup> Note to the reader: Section e of Policy 3 in the Bay Plan is presented here verbatim. The first sentence of this section was not labeled in the Bay Plan as item (1).

- h. Water-oriented commercial-recreation. Water-oriented commercial recreational establishments, such as restaurants, specialty shops, private boatels, recreational equipment concessions, and amusements, should be encouraged in urban areas adjacent to the Bay. Public docks, floats or moorages for visiting boaters should be encouraged at these establishments where adequate shoreline facilities can be provided. Effort should be made to link commercial-recreation centers and waterfront parks by ferry or water taxi.
- **Policy 4:** To assure optimum use of the Bay for recreation, the following facilities should be encouraged in waterfront parks and wildlife refuges.
    - a. In waterfront parks. (1) Where possible, parks should provide some camping facilities accessible only by boat, and docking and picnic facilities for boaters. (2) To capitalize on the attractiveness of their bayfront location, parks should emphasize hiking, bicycling, riding trails, picnic facilities, swimming, environmental, historical and cultural education and interpretation, viewpoints, beaches, and fishing facilities. Recreational facilities that do not need a waterfront location, e.g., golf courses and playing fields, should generally be placed inland, but may be permitted in shoreline areas if they are part of a park complex that is primarily devoted to water-oriented uses, or are designed to provide for passive use and enjoyment of the Bay when not being used for sports. (3) Where shoreline open space includes areas used for hunting waterbirds, public areas for launching non-motorized small boats should be provided so long as they do not result in overuse of the hunting area. (4) Public launching facilities for a variety of boats and other water-oriented recreational craft, such as kayaks, canoes and sailboards, should be provided in waterfront parks where feasible. (5) Except as may be approved pursuant to recreation policy 4-b [in the Bay Plan], limited commercial recreation facilities, such as small restaurants, should be permitted within waterfront parks provided they are clearly incidental to the park use, are in keeping with the basic character of the park, and do not obstruct public access to and enjoyment of the Bay. Limited commercial development may be appropriate (at the option of the park agency responsible) in all parks shown on the Plan maps except where there is a specific note to the contrary. (6) Trails that can be used as components of the San Francisco Bay Trail, the Bay Area Ridge Trail or links between them should be developed in waterfront parks. San Francisco Bay Trail segments should be located near the shoreline unless that alignment would have significant adverse effects on Bay resources; in this case, an alignment as near to the shore as possible, consistent with Bay resource protection, should be provided. Bay Area Ridge Trail segments should be developed in waterfront parks where the ridgeline is close to the Bay shoreline. (7) Bus stops, kiosks and other facilities to accommodate public transit should be provided in waterfront parks to the maximum extent feasible. Public parking should be provided in a manner that does not diminish the park-like character of the site. Traffic demand management strategies and alternative transportation systems should be developed where appropriate to minimize the need for large parking lots and to ensure parking for recreation uses is sufficient. (8) Interpretive information describing natural, historical and cultural resources should be provided in waterfront parks where feasible. (9) In waterfront parks that serve as gateways to wildlife refuges, interpretive materials and programs that inform visitors about the wildlife and habitat values present in the park and wildlife refuges should be provided. Instructional materials should include information about the potential for adverse impacts on wildlife, plant and habitat resources from certain activities. (10) The Commission may permit the placement of public utilities and services, such as underground sewer lines and power cables, in recreational facilities provided they would be unobtrusive, would not permanently disrupt use of the site for recreation, and would not detract from the visual character of the site.
    - b. In waterfront parks and wildlife refuges with historic buildings.

- c. Historic Buildings in waterfront parks and wildlife refuges should be developed and managed for recreation uses to the maximum practicable extent consistent with the Bay Plan Map policies and all of the following:
1. Physical and visual access corridors between inland public areas, vista points and the shoreline should be created, preserved or enhanced. Corridors for Bay-related wildlife should also be created, preserved and enhanced where needed and feasible.
  2. Historic structures and districts listed on the National Register of Historic Places or California Registered Historic Landmarks should be preserved consistent with applicable state and federal Historic Preservation law and should be used consistent with the Bay Plan recreation policies. Public access to the exterior of these structures should be provided. Public access to the interiors of these structures should be provided where appropriate.
  3. To assist in generating the revenue needed to preserve historic structures and develop, operate and maintain park improvements and to achieve other important public objectives, uses other than water-oriented recreation, commercial recreation and public assembly facilities may be authorized only if they would: (a) not diminish recreational opportunities or the park-like character of the site; (b) preserve historic buildings where present for compatible new uses; and (c) not significantly, adversely affect the site's fish, other aquatic life and wildlife and their habitats.
- **Policy 5:** Bay resources in waterfront parks and, where appropriate, wildlife refuges should be described with interpretive signs. Where feasible and appropriate, waterfront parks and wildlife refuges should provide diverse environmental education programs, facilities and community service opportunities, such as classrooms and interpretive and volunteer programs.
  - **Policy 7:** Because of the need to increase the recreational opportunities available to Bay Area residents, small amounts of Bay fill may be allowed for waterfront parks and recreational areas that provide substantial public benefits and that cannot be developed without some filling.
  - **Policy 8:** Signs and other information regarding shipping lanes, ferry routes, U.S. Coast Guard rules for navigation, such as U.S. Coast Guard Rule 9, weather, tide, current and wind hazards, the location of habitat and wildlife areas that should be avoided, and safety guidelines for smaller recreational craft, should be provided at marinas, boat ramps, launch areas, personal watercraft and recreational vessel rental establishments, and other recreational watercraft use areas.

### ***San Francisco Waterfront Special Area Plan***

The *San Francisco Waterfront Special Area Plan* (Special Area Plan) (1975, as amended through 2012) describes a vision for the San Francisco waterfront from the Hyde Street Pier through India Basin that applies the Bay Plan policies in greater detail (BCDC, 2012 and 2016c). The Special Area Plan's policies apply only to areas that are within BCDC jurisdiction for permit purposes (BCDC, 2012). Special area plans inform public agencies and private parties regarding what fill, dredging, or change in use of a shoreline area would be consistent with the McAteer-Petris Act and the Bay Plan policies (BCDC, 2016c).

Special Area Plan Map 7 shows the India Basin Shoreline Park and India Basin Open Space properties, as well as portions of the 900 Innes and 700 Innes properties, as a Park Priority Use area.<sup>3</sup> According to the Special Area Plan, permitted uses on new or replacement fill include public recreation/open space/public access and a marina. The plan has three policies that are specific to India Basin (BCDC, 2012):

- **Policy 1:** The India Basin area should be developed as a major waterfront park in accordance with the Recreation and Open Space Plan of the City of San Francisco. Some fill may be needed.
- **Policy 2:** Limited development, preferably Bay-oriented commercial recreation, should be permitted on the shoreline provided it is incidental to public access and water-related recreation and does not obstruct public access.
- **Policy 3:** Continuous public access should be provided along the west side of future Pier 98, along India Basin, and a public access connection should be provided between the two.

The following general policies from the Special Area Plan related to required public access are applicable to the proposed project and variant (BCDC, 2012):

- **Policy a:** In accordance with general Bay Plan policies, maximum feasible public access should be provided in conjunction with any development in the area covered by this Special Area Plan. Public access should be located at ground or platform level, but minor variations in elevation intended to enhance design of open space may be permitted. Public access should also be open to the sky, although some covering may be allowed if it serves the public areas and does not support structures. Particular attention should be given to the provision of perimeter public access along the platform edge. Other uses may extend to the platform edge subject to the following conditions:
  - i) Such uses should enhance the total design of the project, should serve to make the public access more interesting, and should not divert the public way along more than twenty percent (20%) of the total platform edge;
  - ii) Deviations of the public way from the platform edge should be limited to short distances.
- **Policy b:** Development of public access should be required as a condition of permits for new maritime and non-maritime development. The location of such access obtained as a condition of maritime development between Channel Street and India Basin should be guided by the designations for public recreation, open space, and public access, as found on Special Area Plan Maps 5 and 6.

### ***Enhanced San Francisco Bay Area Water Trail Plan***

The California State Coastal Conservancy's *Enhanced San Francisco Bay Area Water Trail Plan* describes the Bay Water Trail as a "network of launch and landing sites, or 'trail heads,' to allow people in human-powered boats and beachable sail craft to enjoy the historic, scenic and environmental richness of San Francisco Bay through continuous, multiple-day and single-day trips on the Bay" (CSCC, 2011). The plan guides implementation of the trail access points and lists India Basin Shoreline Park as an existing launching site, which

<sup>3</sup> Priority use areas include ports, water-related industry, airports, wildlife refuges, and water-related recreation. BCDC has designated the areas that should be reserved for priority uses on the Bay Plan maps. Priority use areas designated for such uses in the Bay Plan are to be reserved for them to minimize the need for future filling in the Bay for such uses (BCDC, 2016c).

should be focused on during implementation of the plan because minimal planning, management changes, and improvements (i.e., signage only) are required (CSCC, 2011).

## Local

### *San Francisco General Plan, Recreation and Open Space Element*

The Recreation and Open Space Element of the *San Francisco General Plan* (General Plan) (San Francisco, 2014) contains several objectives and policies that apply to recreation and the open space areas within India Basin, including using existing open space for maximum benefit and improving connectivity to open space areas. The following objectives and policies are applicable to the proposed project and variant.

**Objective 1:** Ensure a well-maintained, highly utilized, and integrated open space system.

- **Policy 1.1:** Encourage the dynamic and flexible use of existing open spaces and promote a variety of recreation and open space uses, where appropriate.
- **Policy 1.2:** Prioritize renovation in highly-utilized open spaces and recreational facilities and in high need areas.
- **Policy 1.3:** Preserve existing open space by restricting its conversion to other uses and limiting encroachment from other uses, assuring no loss of quantity or quality of open space.
- **Policy 1.4:** Maintain and repair recreational facilities and open spaces to modern maintenance standards.
- **Policy 1.5:** Prioritize the better utilization of McLaren Park, Ocean Beach, the Southeastern Waterfront and other underutilized significant open spaces.
- **Policy 1.7:** Support public art as an essential component of open space design.
- **Policy 1.9:** Preserve sunlight in public open spaces.
- **Policy 1.10:** Ensure that open space is safe and secure for the City's entire population.
- **Policy 1.11:** Encourage private recreational facilities on private land that provide a community benefit, particularly to low and moderate-income residents.

**Objective 2:** Increase recreation and open space to meet the long-term needs of the City and Bay region.

- **Policy 2.2:** Provide and promote a balanced recreation system which offers a variety of high quality recreational opportunities for all San Franciscans.
- **Policy 2.4:** Support the development of signature public open spaces along the shoreline.
- **Policy 2.7:** Expand partnerships among open space agencies, transit agencies, private sector and nonprofit institutions to acquire, develop and/or manage existing open spaces.
- **Policy 2.8:** Consider repurposing underutilized City-owned properties as open space and recreational facilities.
- **Policy 2.11:** Assure that privately developed residential open spaces are usable, beautiful, and environmentally sustainable.

**Objective 3:** Improve access and connectivity to open space.



- **Policy 3.2:** Establish and implement a network of Green Connections that increases access to parks, open spaces, and the waterfront.
- **Policy 3.3:** Develop and enhance the City’s recreational trail system, linking to the regional hiking and biking trail system and considering restoring historic water courses to improve stormwater management.
- **Policy 3.4:** Encourage non-auto modes of transportation—transit, bicycle and pedestrian access—to and from open spaces while reducing automobile traffic and parking in public open spaces.
- **Policy 3.5:** Ensure that, where feasible, recreational facilities and open spaces are physically accessible, especially for those with limited mobility.

**Objective 4:** Protect and enhance the biodiversity, habitat value, and ecological integrity of open spaces and encourage sustainable practices in the design and management of our open space system.

- **Policy 4.3:** Integrate the protection and restoration of local biodiversity into open space construction, renovation, management and maintenance.
- **Policy 4.4:** Include environmentally sustainable practices in construction, renovation, management and maintenance of open space and recreation facilities.

**Objective 5:** Engage communities in the stewardship of their recreation programs and open space.

- **Policy 5.1:** Engage communities in the design, programming and improvement of their local open spaces, and in the development of recreational programs.
- **Policy 5.3:** Facilitate the development of community-initiated or supported open spaces.

### ***Accountable Planning Initiative***

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the San Francisco Planning Code, establishing eight priority policies. The eighth policy addresses recreational facilities (American Legal Publishing Corporation, 2017):

(8) that our parks and open space and their access to sunlight and vistas be protected from development.

### ***Bayview Hunters Point Area Plan***

The *Bayview Hunters Point Area Plan* (San Francisco, 2010) encompasses the project site and contains objectives and policies related to improving recreation and open spaces in the Bayview Hunters Point area, particularly the open space facilities along the shoreline. The following objectives and policies are applicable to the proposed project and variant.

**Objective 12:** Provide and maintain adequately located, well designed, fully equipped recreation facilities and encourage their use.

- **Policy 12.1:** Make better use of existing facilities.
- **Policy 12.1:** Maximize joint use of recreation and education facilities.
- **Policy 12.3:** Renovate and expand Bayview’s parks and recreation facilities, as needed.

**Objective 13:** Provide continuous public open space along the shoreline of Bayview Hunters Point unless public access clearly conflicts with maritime uses or other non-open space uses requiring a waterfront location.

- **Policy 13.1:** Assure that new development adjacent to the shoreline capitalizes on the unique waterfront location by improving visual and physical access to the water in conformance with urban design policies.
- **Policy 13.2:** Maintain and improve the quality of existing shoreline open space.
- **Policy 13.3:** Complete the San Francisco Bay Trail around the perimeter of the City which links open space areas along the shoreline and provides for maximum waterfront access.
- **Policy 13.4:** Provide new public open spaces along the shoreline—at Islais Creek, Heron’s Head, India Basin, Hunters Point Shipyard, and Candlestick Point/South Basin.

### ***Bay Trail Plan***

The *Bay Trail Plan*, prepared by the Association of Bay Area Governments (ABAG) and adopted in 1989, describes a 400-mile alignment of trail around the perimeter of San Francisco and San Pablo bays (ABAG, 2015). The plan also includes policies that guide selection of trail routes and implementation of the trail system. The plan was prepared by ABAG pursuant to Senate Bill 100, which mandated that the Bay Trail:

- provide connections to existing park and recreational facilities,
- create links to existing and proposed transportation facilities, and
- avoid adverse effects on environmentally sensitive areas.

### ***San Francisco Recreation and Parks Department Project Standards and Design Guidelines***

RPD’s Project Standards and Design Guidelines were created in 2009 to provide standards for design and maintenance practices to preserve local ecosystems. The guidelines synthesize current practices and new investigations into sustainable design and maintenance, which RPD considers to be mutually interdependent activities (Avril, pers. comm., 2016).

### ***San Francisco Recreation and Parks Department Strategic Plan 2016–2020***

RPD’s Strategic Plan (RPD, n.d.) discusses the five strategies RPD will take for planning activities between 2016 and 2020. The strategies include inspiring public space, play, investment, stewardship, and the RPD team. The following strategies are applicable to the proposed project and variant:

- **Strategy One: Inspire Public Space** includes objectives to develop more open space to address population growth in high-needs areas and emerging neighborhoods, strengthen the quality of existing parks and facilities, promote good park behavior, and preserve and celebrate historic and cultural resources. Objective 1.1 b) specifically includes a key initiative to “plan, design, construct, and open new parks at India Basin.”
- **Strategy Four: Inspire Stewardship** includes objectives to conserve and strengthen natural resources, increase biodiversity and interconnectivity on City parkland, and increasing eco-literacy of park users and park maintenance staff.

### ***San Francisco Recreation and Parks Department Management Plan (Significant Natural Resource Areas)***

RPD completed the Significant Natural Resource Areas Management Plan for designated significant natural areas in San Francisco (RPD, 2006). The purpose of the plan, now known as the Natural Resource Management Plan (NRAMP), is to establish a maintenance and preservation program for the protection and enhancement of natural resource values. The Final EIR for the project was certified by the Planning Commission on December 15, 2016, and this certification was upheld by the Board of Supervisors on February 28, 2017. The plan includes a variety of recommendations for improvements in the park, such as restoration, enhancement, and maintenance work.

Chapter 2.0, "Project Description," and Section 3.14, "Biological Resources," describe the habitat improvements proposed by the proposed project and variant for the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties. These proposed habitat improvements would be consistent with the recommendations contained in the NRAMP.

#### **3.11.3 Impacts and Mitigation Measures**

##### **Significance Thresholds**

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Recreation. Implementation of the proposed project or the variant would have a significant effect on Recreation if the proposed project or variant would:

- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities may occur or be accelerated,
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment, or
- physically degrade existing recreational facilities.

##### **Approach to Analysis**

The aforementioned significance thresholds were applied to determine impact significance using a qualitative approach. The following evaluation discusses whether the proposed project or variant would result in direct impacts on recreational resources, such as City parks and related facilities and privately owned publicly accessible recreational resources. Specifically, the evaluation focuses on whether the proposed project or variant would have detrimental impacts on recreational parks and facilities such that the construction of new parks and/or facilities would be necessary.

In determining whether the proposed project or variant would have a significant adverse impact on parks and recreational facilities, this analysis considers the facilities, users, and use level of parks and recreation facilities within an approximately 1-mile radius of the project area; existing facilities, users, and use levels of recreation

facilities in the project area; foreseeable future recreational facilities to be built in the surrounding area; and recreation facilities to be provided as part of the proposed project or variant.

Regarding the demand for future recreation facilities, the analysis assumes that the residential populations associated with the proposed project or variant are the primary demand generators because residents tend to be more intensive users of open space than workers. This is primarily because workers have limited time for engaging in passive and active recreational pursuits, e.g., an office worker is more likely to use open space for passive recreation during lunch periods and has limited opportunities to use open space that is not easily accessible from the workplace. Therefore, it is assumed that new residents under the proposed project would result in higher intensity park usage than the combined effect of both workers and residents under the variant.

## **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. The residential, commercial, institutional/educational, and research and development uses would generate demand for recreational facilities and open space. Both the proposed project and the variant would include the expansion of existing recreational facilities and open space and creation of new facilities and open space.

## **Impact Evaluation**

**Impact RE-1: The proposed project or variant would not increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facilities may occur or be accelerated. (*Less than Significant*)**

### ***Construction***

#### **India Basin Shoreline Park Property**

Recreational facilities at India Basin Shoreline Park currently include a picnic area, playground, parking area, and basketball court, and a portion of the Bay Trail. Under the proposed project or variant, the facilities at India Basin Shoreline Park would be removed during Phase 2 of construction. During construction, which is conservatively assumed to last 1 year, portions of the park would be closed to recreation, including use of the boat launch facility for the Bay Water Trail and use of the portion of the Bay Trail that passes through the property. Therefore, park visitors would be displaced to other area parks and trails. RPD intends to start construction at India Basin Shoreline Park after implementing Phase 1 of the project at the 900 Innes property, which would provide some passive recreational open space during Phase 2 construction.

The recreational facilities at India Basin Shoreline Park (playground, picnic area, and basketball court) and the user groups for these facilities are similar to the facilities and user groups for six other recreation sites located within 0.5 to 0.7 mile of the project site (Table 3.11-1). The use of India Basin Shoreline Park is light to moderate (on weekends); several alternative sites are available for the park's recreation activities (using the playground, picnicking, and playing basketball); and those other sites are only moderately used. Therefore, the nearby recreation sites would likely be able to accommodate users temporarily displaced from India Basin Shoreline Park

without resulting in substantial physical deterioration and would be accessible to the public during construction of the proposed project or variant.

During closure of the Bay Trail in India Basin Shoreline Park, visitors desiring a similar trail experience would be displaced to other portions of the Bay Trail, such as farther north between China Basin and Heron's Head Park or farther south at Candlestick Point. No other bicycle trails exist in the project vicinity, although there is a bicycle lane along Hunters Point Boulevard and a bicycle route along Innes Avenue (SFMTA, 2016). The portion of the Bay Trail within India Basin Shoreline Park does not experience a high level of use. Thus, temporary displacement of Bay Trail use to other Bay Trail segments would not be likely to result in substantial physical deterioration of other recreational facilities.

Closing India Basin Shoreline Park to boat launching for the Bay Water Trail or to other boating use would cause visitors to be displaced to other launching areas, such as Islais Creek, the nearest Bay Water Trail launch site. India Basin Shoreline Park does not experience substantial boating use. Thus, temporary displacement of boaters to other publicly accessible launch sites would not be likely to result in substantial physical deterioration of other recreational facilities.

### **India Basin Open Space Property**

Construction of the proposed project or variant could begin as early as spring 2018 and is conservatively anticipated to last 5 years. During this time, the portion of the Bay Trail within the India Basin Open Space property would be closed. Similar to impacts described above for India Basin Shoreline Park, Bay Trail visitors would be displaced to other segments of the Bay Trail in the greater southern shoreline area. Like the Bay Trail segment at India Basin Shoreline Park, the Bay Trail segment within the India Basin Open Space property does not experience a high level of use; the entire open space area is lightly used on weekdays and weekends (Avril, pers. comm., 2016). Therefore, temporary displacement of visitors to other Bay Trail segments would not be likely to result in substantial physical deterioration of other recreational facilities.

The India Basin Open Space property is also lightly used by bird-watchers/naturalists and dog walkers. Heron's Head Park is the closest area also used by both of these user groups and would be the likely area to receive displaced users from the open space area. Heron's Head Park is moderately used (Avril, pers. comm., 2016). Thus, Heron's Head Park would likely be able to accommodate the low number of visitors temporarily displaced from the India Basin Open Space property without resulting in substantial physical deterioration of facilities and would be accessible to the public during construction of the proposed project or variant.

### **900 Innes and 700 Innes Properties**

Because the 900 Innes and 700 Innes properties do not have any existing public recreational facilities and are not used for recreation, construction of the proposed project or variant would not result in the displacement of recreational visitors to these properties or increase the use of existing neighborhood or regional parks or other recreational facilities.

### **Overall Construction Impact Conclusion**

Because of the lack of recreation facilities on the 900 Innes and 700 Innes properties, no effects on recreation would occur at these sites. The temporary displacement of recreationists from the India Basin Shoreline Park and

India Basin Open Space area would not result in substantial physical deterioration of other recreation facilities. Therefore, construction of the proposed project or variant would have a *less-than-significant* impact related to recreation. No mitigation measures are necessary.

### ***Operation***

#### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

The proposed project and variant would not involve any development at these three sites, such as residential or commercial development, that would generate demand for recreational facilities or lead to increased use of existing neighborhood parks or other recreational facilities. New and/or additional recreational facilities and amenities developed at these three sites would include trails (for walking, skating, and biking), basketball courts, beaches, piers, restrooms, a play area, floating dock, and buildings, which would lead to increased use of these facilities and amenities as well as the shoreline. However, the new facilities are anticipated to accommodate and would be designed for this use (see Figures 3.11-2 and 3.11-3) consistent with the Recreation and Open Space Element of the General Plan and the RPD Strategic Plan.

Once the proposed project or variant is complete, the missing segment of the Bay Trail in this area would be complete, allowing for a continuous connection between areas to the north and south. Bicycle paths would also flow through the new development (Figures 2-13a and 2-13b). Substantial physical deterioration of facilities would not be expected to occur at the India Basin Shoreline Park, 900 Innes, or India Basin Open Space property.

#### **700 Innes Property**

Either the proposed project or the variant would result in a large increase in the population of potential visitors to existing neighborhood and regional parks and other recreational facilities. However, recreational facilities would be developed on all four project site properties, and would be suitable for all age groups and provide opportunities for a variety of activities. At the 700 Innes property, the Big Green would provide an open area with play areas, a fitness loop, and small gathering spaces (Figure 3.11-3). Because all four project site properties would provide recreational facilities, recreational use of the 700 Innes property by the new population would likely focus primarily on facilities within this property. Recreational use would then radiate out from the site to existing neighborhood and regional parks and other recreational facilities to a lesser extent, given the distance to these other facilities and parks, and the redundancy with facilities provided on the project site. As stated above, the new recreational facilities on the project site would accommodate and be designed for use by the new population of the 700 Innes property, as well as existing users. The proposed project or variant would be designed to allow access and use by the public from nearby or from other parts of the City.

#### **Overall Operation Impact Conclusion**

The proposed project or variant would not be anticipated to increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. Therefore, operation of the proposed project or variant would have a *less-than-significant* impact. No mitigation measures are necessary.

**Impact RE-2: The proposed project and variant would include recreational facilities, the construction of which would cause significant environmental effects but would not require the construction or expansion of other recreational facilities that might have an adverse effect on the environment. (*Less than Significant with Mitigation*)**

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

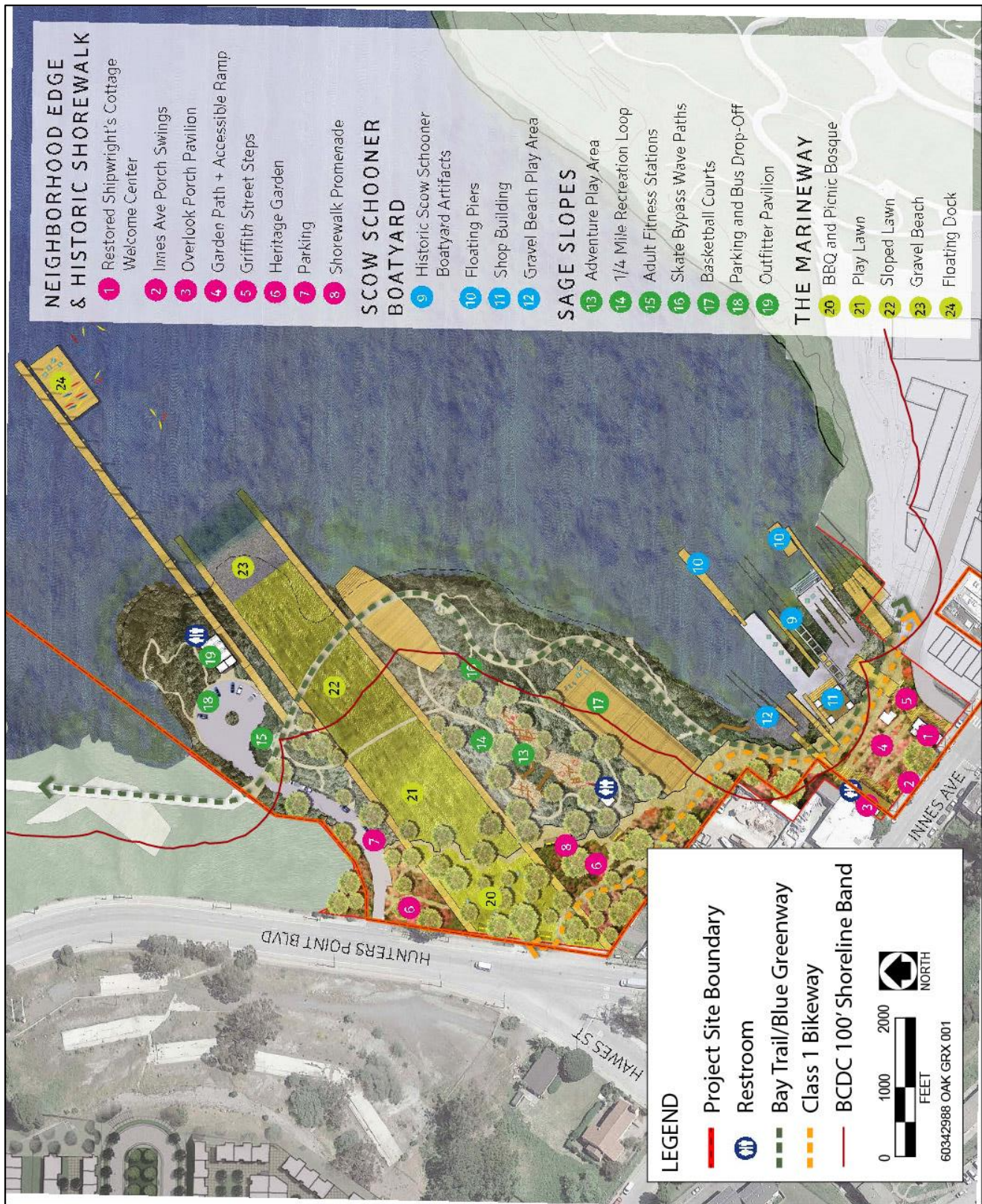
The proposed project and variant would involve developing open spaces and recreational facilities on all four project site properties (see Figures 3.11-2 and 3.11-3). This development would increase recreation opportunities, while improving existing opportunities such as experiencing nature, bird-watching, kayaking, using trails, picnicking, and using playgrounds. The new facilities would enable a broader range of activities including beach use, fishing, biking, skating, boating and other on-water uses, and fitness activities. Construction of these recreational facilities would be phased so that some recreational amenities would be available on the project site throughout implementation of the proposed project or variant. The construction of these facilities would be beneficial, rather than resulting in adverse changes, because the project would improve existing recreational facilities and add new facilities to the site. The proposed project and variant would not require construction of new recreational facilities beyond those included as part of the project.

Temporary physical environmental impacts necessary to construct the recreational facilities that would be part of the proposed project and variant are considered in the analyses of construction-related impacts presented elsewhere in this EIR. These impacts are discussed in Section 3.5, “Transportation and Circulation”; Section 3.6, “Noise”; Section 3.7, “Air Quality”; Section 3.14, “Biological Resources”; and Section 3.15, “Hydrology and Water Quality.” Mitigation measures identified in those sections would reduce any significant impacts specifically related to the construction of recreational facilities that are part of the project or variant. Therefore, this construction-related impact would be *less than significant with mitigation*.

### *Operation*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

As discussed above, the proposed project and variant would involve expanding existing recreational facilities and open space and creating new facilities and open space. Operation of the proposed project or variant would not generate the need to construct recreational facilities beyond those proposed as part of the project or variant. Therefore, *no impact* would occur related to constructing recreational facilities beyond those that are proposed as part of the project or variant. No mitigation measures are necessary.



Sources: Data from RPD, 2016, compiled by AECOM in 2016

**Figure 3.11-2. Proposed Recreational Facilities at the India Basin Shoreline Park and 900 Innes Properties**





Source: Data from BUILD, Inc., compiled by AECOM in 2016

**Figure 3.11-3: Proposed Recreational Facilities at the India Basin Open Space and 700 Innes Properties**

**Impact RE-3: The proposed project or variant would not physically degrade existing recreational facilities.**  
*(Less than Significant)*

***Construction and Operation***

**India Basin Shoreline Park Property**

The existing recreational facilities at India Basin Shoreline Park would be physically removed during Phase 2 of construction, but would be replaced with new recreational facilities that would enable the same activities (using a playground, picnicking, playing basketball, using skate trails, using the Bay Trail, and kayaking) in a natural setting. The design of the new facilities would be more sustainable (e.g., considering the potential for flooding, sea level rise, maintenance, and connections to other facilities). Adding new facilities would provide recreational activities and opportunities that are not currently available at India Basin Shoreline Park. Therefore, the construction-related impact of physically removing the existing recreational facilities would be offset by the introduction of new facilities that would be in better physical condition than the existing facilities, resulting in a beneficial effect, rather than an adverse change. During project operations, physical degradation of existing recreational facilities would not occur because the existing recreational facilities would no longer be present and would be replaced.

**India Basin Open Space Property**

The Bay Trail is the only recreational facility on the India Basin Open Space property. The trail segment within the open space would be removed during construction on the India Basin Open Space and 700 Innes properties. However, as at India Basin Shoreline Park, the trail would be replaced with a trail featuring a more sustainable design and amenities that would also be in better physical condition than the existing facility. The existing wetlands and other habitats would be improved, providing a more landscaped, scenic experience. Therefore, the impact of physically removing the existing recreational facility within the India Basin Open Space would be offset by the introduction of new facilities that would be in better physical condition than the existing facilities, resulting in a beneficial effect, as opposed to an adverse change.

During project operations, physical degradation of existing recreational facilities would not occur because the existing recreational facilities would no longer be present and would be replaced.

**900 Innes and 700 Innes Properties**

Because no recreational facilities currently exist at the 900 Innes and 700 Innes properties, the proposed project and variant would not result in changes to the physical state of recreational facilities on these properties.

**Overall Impact Conclusion**

Because of the lack of recreation facilities at the 900 Innes and 700 Innes properties, no effects on recreation would occur at these sites. The construction-related impact of physically removing the existing recreational facilities at the India Basin Shoreline Park and India Basin Open Space properties would be offset by introducing new replacement facilities that would be in better physical condition than the existing facilities; this would result in a beneficial effect, rather than an adverse change. As such, construction of the proposed project or variant would have a less-than-significant impact related to physical degradation of existing recreation facilities. During

project operations, no impact would occur at the India Basin Shoreline Park and India Basin Open Space properties related to physical degradation of existing recreational facilities because the recreational facilities would be enhanced with new replacement amenities. Therefore, the overall impact related to physical degradation of existing recreation facilities would be *less than significant*. No mitigation measures are necessary.

### 3.11.4 Cumulative Impacts

**Impact-C-RE-1: The proposed project or variant, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would not substantially contribute to cumulative impacts related to recreation. (*Less than Significant*)**

The geographic scope for cumulative impacts on recreation is the project vicinity, which includes proposed development projects within approximately 1 mile of the project site and existing and proposed recreational facilities on and within approximately 1 mile of the project site.

Implementation of the cumulative development projects would increase the residential and employment-related populations in the project vicinity. This population increase would increase the demand for recreational facilities and would necessitate the construction of new or expansion of existing recreational facilities, including those on the project site. Transportation improvements in the project vicinity could also encourage visitors to travel to the project site and increase the use of the recreational facilities on the project site. Construction of additional Bay Trail segments would provide longer trail opportunities for residents and employees of and visitors to the project site. In addition, a new 12.8-acre public park, Northside Park, would provide recreational facilities and open space in the general area as part of the Candlestick Point–Hunters Point Shipyard Phase II Development Plan Project (San Francisco, 2010).

The new recreational facilities on the project site would accommodate and be designed for use by residents and employees of the project site, as well as visitors from surrounding neighborhoods and other parts of San Francisco. The City has accounted for such growth as part of the Recreation and Open Space Element of the General Plan (San Francisco, 2014). In addition to the new Northside Park, San Francisco voters passed two bond measures, in 2008 and 2012, to fund the acquisition, planning, and renovation of the City’s network of recreational resources, which will provide additional recreation facilities and opportunities in the City. Therefore, the proposed project or variant would not combine with past, present, or reasonably foreseeable future projects to create a significant cumulative impact related to recreation. This impact would be *less than significant*. No mitigation measures are necessary.

### 3.11.5 References

American Legal Publishing Corporation. 2017. San Francisco Planning Code. Available:

<https://law.resource.org/pub/us/code/city/ca/SanFrancisco/0-snapshots/Original-File/Planning.html>.  
Accessed March 20, 2017.

Association of Bay Area Governments (ABAG). 2015. Bay Trail Plan summary. Available:

[http://baytrail.org/wp-content/uploads/2015/12/San-Francisco-Bay-Trail\\_-Bay-Trail-Plan-Summary.pdf](http://baytrail.org/wp-content/uploads/2015/12/San-Francisco-Bay-Trail_-Bay-Trail-Plan-Summary.pdf).  
Accessed June 30, 2016.

- Avril, Nicole. Capital Projects Project Director, San Francisco Recreation and Parks District, San Francisco, CA. September 8, 2016—personal communication (e-mail) with Kelsey Bennett of AECOM regarding recreation at San Francisco Recreation and Parks District parks in the project area.
- Boys and Girls Clubs of San Francisco. 2016. Willie Mays Clubhouse at Hunters Point. Available: <https://www.kidsclub.org/support/capital-campaign-projects/willie-mays/>. Accessed October 18, 2016.
- California State Coastal Conservancy (CSCC). 2011 (March 17). *Enhanced San Francisco Bay Area Water Trail Plan*. Based on the San Francisco Bay Area Water Trail Plan Final Environmental Impact Report. Oakland, CA.
- San Francisco, City and County of (San Francisco). 2010. *Bayview Hunters Point Area Plan*. As last amended by Resolution 18098 on June 3, 2010. San Francisco, CA.
- . 2014 (April). *San Francisco General Plan*, Recreation and Open Space Element. Final Draft. San Francisco, CA.
- . 2016. Board of Supervisors District Information: Tenth Supervisorial District Boundary. Available: <http://sfbos.org/supervisor-cohen-district-information>. Accessed October 19, 2016.
- San Francisco, Port of (SF Port). 2016. Heron’s Head Park. Available: <http://sfport.com/herons-head-park>. Accessed June 29, 2016.
- San Francisco Bay Area Water Trail (SFBAWT). 2016. Islais Creek. Available: <http://sfbaywatertrail.org/map/designated-water-trail-sites/islais-creek/>. Accessed June 30, 2016.
- San Francisco Bay Conservation and Development Commission (BCDC). 2006. *San Francisco Bay Plan*, Recreation Findings. Amended September 2006. Available: [http://www.bcdc.ca.gov/plans/sfbay\\_plan#25](http://www.bcdc.ca.gov/plans/sfbay_plan#25).
- . 2012 (April). *San Francisco Waterfront Special Area Plan*. April 1975, as amended through April 2012. San Francisco, CA.
- . 2016a. BCDC Jurisdiction and Authority. Available: <http://www.bcdc.ca.gov/bcdc-jurisdiction-authority.html>. Accessed June 30, 2016.
- . 2016b (July 15). Scoping comments letter to Brett Bollinger, City and County of San Francisco. San Francisco, CA.
- . 2016c. *San Francisco Bay Plan*. Originally adopted in 1968, as amended through 2016. San Francisco, CA. Available: [http://www.bcdc.ca.gov/plans/sfbay\\_plan.html](http://www.bcdc.ca.gov/plans/sfbay_plan.html). Accessed September 8, 2016.
- San Francisco Bay Trail. 2016. San Francisco Southern Waterfront map. Available: <http://baytrail.org/get-on-the-trail/map-by-number/san-francisco-southern-waterfront/>. Accessed June 29, 2016.
- San Francisco Municipal Transportation Agency (SFMTA). 2016. San Francisco Bikeway Network Map. Available: <https://www.sfmta.com/sites/default/files/maps/One%20Page.pdf>. Accessed October 18, 2016.

- San Francisco Parks Alliance. 2016. India Basin/Shoreline Park. Available: <http://www.sfparksalliance.org/our-parks/parks/india-basinshoreline-park>. Accessed June 30, 2016.
- San Francisco Recreation and Parks District (RPD). n.d. *San Francisco Recreation and Parks Department Strategic Plan 2016–2020*. San Francisco, CA.
- . 2006 (February). *Significant Natural Resource Areas Management Plan*. Final Draft. San Francisco, CA. Available: <http://sfrecpark.org/parks-open-spaces/natural-areas-program/significant-natural-resource-areas-management-plan/snramp/>. Accessed February 20, 2017.
- . 2016a. Adam Rodgers Park. Available: <http://sfrecpark.org/destination/adam-rodgers-park/>. Accessed June 29, 2016.
- . 2016b. Ridgetop Plaza. Available: <http://sfrecpark.org/destination/ridgetop-plaza/>. Accessed June 29, 2016.
- . 2016c. Youngblood Coleman Playground. Available: <http://sfrecpark.org/destination/youngblood-coleman-playground/>. Accessed June 29, 2016.
- . 2016d. Hilltop Park. Available: <http://sfrecpark.org/destination/hilltop-park/>. Accessed June 29, 2016.
- . 2016e. Hilltop Park Renovation—Trust for Public Land Partnership. Available: <http://sfrecpark.org/project/hilltop-park-renovation-trust-for-public-land-initiative/>. Last updated December 2, 2016. Accessed March 16, 2017.
- . 2016f. India Basin Shoreline Park. Available: <http://sfrecpark.org/destination/india-basin-shoreline-park/>. Accessed June 30, 2016.

This page intentionally left blank.

## 3.12 UTILITIES AND SERVICE SYSTEMS

This section describes the existing environmental and regulatory setting related to utilities and service systems and addresses the potential impacts of the proposed project and variant. Additional information supporting the analysis of utilities and service systems is presented in Appendix J of this EIR. Comments regarding utilities, trash, recycling, and composting were received during the public scoping period in response to the Notice of Preparation. These comments are addressed in this section.

### 3.12.1 Environmental Setting

#### Water

##### *Water Source and Supply*

###### *San Francisco*

The San Francisco Public Utilities Commission's (SFPUC's) Hetch Hetchy Regional Water System (RWS) currently provides an average of approximately 198 million gallons per day (mgd) of water to 2.6 million users in San Francisco, Tuolumne, San Joaquin, Alameda, Santa Clara, and San Mateo counties (SFPUC, 2016a). Approximately 85 percent of the water delivered by SFPUC comes from the Tuolumne River watershed, collected in Hetch Hetchy Reservoir in Yosemite National Park. Water from Hetch Hetchy Reservoir travels through the Hetch Hetchy Water and Power Project and represents the majority of the water supply available to San Francisco. The remaining 15 percent of the water for the RWS is obtained from local surface waters in the Alameda and Peninsula watersheds and is stored in San Francisco Bay Area reservoirs (Calaveras, San Antonio, Crystal Springs, San Andreas, and Pilarcitos reservoirs). These local watershed facilities are operated to conserve local runoff for delivery.

In addition to providing water from the RWS, SFPUC also supplies to its San Francisco customers a small portion of locally-produced groundwater, which is used primarily for irrigation at local parks and on highway medians. San Francisco is located atop all or part of seven unadjudicated groundwater basins. All of the basins except the Westside and Lobos basins are generally inadequate to supply a significant amount of groundwater for municipal supply because their yields are low (SFPUC, 2016a).

The Westside Groundwater Basin is the largest groundwater basin in San Francisco. This basin is currently used to meet water demands for some irrigation and nonpotable water needs in Golden Gate Park and the San Francisco Zoo; it has not been adjudicated or identified as overdrafted by the California Department of Water Resources (DWR) (SFPUC, 2016a). The San Francisco Groundwater Supply Project, for which construction was completed in early 2017, involved constructing six deep well pumping stations to extract up to 4 mgd of water from the Westside Groundwater Basin, as well as more than 5 miles of pipelines to distribute the groundwater to in-City reservoirs for blending with the municipal drinking water supply and emergency drinking water supplies (SFPUC, 2016a and 2017a).

A small percentage of San Francisco's water. Recycled water supply is sourced from recycled water. Recycled water is currently used primarily for golf course irrigation in some parts of San Francisco. In addition, recycled water produced by the Southeast Treatment Plant (also known as the Southeast Water Pollution Control Plant) is

used for wash-down operations at the Plant, as well as for soil compaction, dust control, landscape irrigation, street cleaning, and sewer flushing throughout the City. Actual use of recycled water in 2015 was approximately 0.3 mgd (SFPUC, 2016a). The Westside Recycled Water Project will provide irrigation water to replace the existing groundwater and RWS sources used on the west side of the City. This project is expected to begin making deliveries in 2020 and will provide an annual average of 1.6 mgd. In addition, the Eastside Recycled Water Project will provide up to 2 mgd (annual average) of recycled water to portions of the east side of the City for nonpotable irrigation, commercial, and industrial users.

Alternate water sources also now may be used in San Francisco for approved nonpotable use. The Nonpotable Water Ordinance calls for the onsite collection, treatment, and use of alternate water sources for nonpotable applications and for district-scale water systems to share nonpotable water. In July 2015, the ordinance was amended to mandate the installation of on-site water systems to treat and reuse available alternate water sources for toilet flushing and irrigation in new developments that meet specified criteria. The use of onsite alternate water sources serves to offset demands for potable water, with a cumulative projected potable-water offset of 0.4 mgd by 2040 (SFPUC, 2016a). This potable-water offset is part of SFPUC's water supply portfolio in the 2015 Urban Water Management Plan (UWMP) for the City.

During normal precipitation years, the RWS is projected to have adequate water supplies to meet service area demands through 2040. In a single dry year, SFPUC projects to have sufficient supplies to meet demands for potable water through 2040; however, during a multiple-year drought, SFPUC would experience shortages in deliveries in 2040 without development of additional water supplies (SFPUC, 2016a).

Each year, SFPUC evaluates the amount of total water storage expected to occur throughout the RWS. SFPUC may impose delivery reductions or rationing in accordance with its Retail Water Storage Allocation Plan, if projected total water storage is less than what has been identified as necessary to provide sustained deliveries during drought conditions. SFPUC implemented customer water rationing during the 1987–1992 drought and more recently on irrigation customers in 2015–2016 during the recent drought. At the beginning of 2014, SFPUC called on all customers to voluntarily reduce water use by at least 10 percent system-wide. Later in the year, SFPUC called for mandatory reductions of retail potable-water use for outdoor irrigation by 10 percent and then by 25 percent in the summer of 2015. The voluntary 10 percent system-wide water use reduction (compared to 2013 use) in place because of continued drought conditions was lifted in April 2017 (SFPUC, 2017b).

### **Project Site**

Potable water supply is currently available from and supplied by SFPUC via a domestic water main in Innes Avenue. Recycled water is not a current source of nonpotable water at any of the project site properties.

### ***Water Treatment***

#### **San Francisco**

All San Francisco water derived from sources other than Hetch Hetchy Reservoir is treated at one of two water treatment plants: the Sunol Valley or Harry Tracy Water Treatment Plant. The Sunol Valley Water Treatment Plant treats water primarily from the Alameda System reservoirs and has both a peak capacity and a sustainable



capacity of 160 mgd. The Harry Tracy Water Treatment Plant treats water from the Peninsula System reservoirs and has a peak capacity of 180 mgd and a sustainable capacity of 140 mgd.

### **Project Site**

No water treatment currently occurs at the project site.

### ***Water Distribution***

#### **San Francisco**

Water from the RWS is distributed in San Francisco through a local low-pressure distribution system that is owned by SFPUC and maintained by San Francisco Public Works (SFPW). The water distribution system includes 10 reservoirs and eight water tanks that store the water delivered by the RWS. Its 17 pump stations and approximately 1,250 miles of pipelines deliver water to residences and businesses throughout San Francisco. Water provided to the east side of the City is fed by two pipelines, one that terminates at Sunset Reservoir and the other at Merced Manor Reservoir. The Water System Improvement Program is nearly complete and includes improvements to the local distribution system, including seismic improvements to many of the pump stations and upgrades to reservoirs.

### **Project Site**

Potable water supply is currently distributed by SFPUC in the project vicinity via a 16-inch main in Innes Avenue. Two fire hydrants are located along the Innes Avenue frontage, at the intersections of Innes Avenue with Arelious Walker Drive and Earl Street.

### ***Water Demand***

#### **San Francisco**

The California Urban Water Management Act of 1983 (Water Code Sections 10610–10657) requires that all urban water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare a UWMP. These plans were first submitted to DWR in 1985; updated plans must be submitted to DWR every 5 years. On June 14, 2016, SFPUC adopted the 2015 UWMP for the City. SFPUC is committed to meeting its contractual obligation to its wholesale customers of 184 mgd and its delivery reliability goal of 265 mgd, with no greater than 20 percent rationing in any 1 year of a drought (SFPUC, 2016a). The UWMP forecasts an increase in in-City water demand as a result of San Francisco's estimated 1.0 percent average growth rate per year through 2040 in addition to the growth of nonresidential users (SFPUC, 2016a).

Actual water demands in 2015 in San Francisco included 14.5 mgd for single-family residential uses, 22.2 mgd for multifamily residential uses, 23.6 mgd for nonresidential uses, and 5.3 mgd of water loss,<sup>1</sup> for a total of 65.6 mgd citywide (SFPUC, 2016a:4–5). That total is projected to increase to 84.9 mgd by 2040. The overall

---

<sup>1</sup> Water loss is the difference between the quantity of water supplied to customers and the quantity of water actually consumed by customers. It consists of apparent losses (e.g., firefighting, pipe flushing, street cleaning, inaccuracies associated with customer metering, and theft or illegal use) and water that is physically lost as a result of distribution system leaks, breaks, overflows, and other unbilled, unauthorized consumption (i.e., real losses).

water demand in San Francisco has continued to decline, in large part because of increasingly more efficient plumbing fixtures. However, water demand projections indicate that by around 2018, total potable-water demand will reach a point at which conservation savings will no longer outpace anticipated population and job growth. Thus, demand is forecasted to increase steadily through 2040 for a total projected increase of 29 percent. (SFPUC, 2016a.)

SFPUC's demand management measures range from financial incentives for plumbing devices to improvements in the efficiency of system distribution. The conservation programs implemented by SFPUC are based on the California Urban Water Conservation Council's list of 14 best management practices (BMPs) identified by signatories of the *Memorandum of Understanding Regarding Urban Water Conservation in California*, executed in 1991. The 14 BMPs have since been updated and reorganized.

SFPUC recently completed the *2015 Retail Water Conservation Plan* (Water Report) (SFPUC, 2015). The Water Report presented an analysis performed to project SFPUC's daily per capita water use, taking into consideration the impact of population and employment growth, as well as passive and active conservation efforts. The analysis projected that, with its continued water conservation program, SFPUC's per capita water use in 2020 would be approximately 86 gallons per capita per day (GPCD), indicating that it is also on track to meet the final 2020 target of 96 GPCD.

### **Project Site**

Table 3.12-1 summarizes existing water demands at the four project site properties. The total potable-water demand is 2,747 gallons per day (gpd) (3 gallons per minute); there is currently no demand for recycled water.

**Table 3.12-1: Existing Water Demands**

<b>Land Use</b>	<b>Average Daily Demand (gpd)</b>	<b>Average Daily Demand (gpm)</b>
Residential	750	1
Commercial/Retail	1,997	2
<b>Total Existing Water Demand</b>	<b>2,747</b>	<b>3</b>

Notes:

gpd = gallons per day; gpm = gallons per minute

Source: BKF, 2016

### *India Basin Shoreline Park Property*

The India Basin Shoreline Park property utilizes domestic water service for landscape irrigation. No other existing water demands are associated with this property (MKA, 2016).

### *900 Innes Property*

No current water demands are associated with the 900 Innes property.

### *India Basin Open Space Property*

No current water demands are associated with the India Basin Open Space property.

### *700 Innes Property*

Based on the existing square footage and uses of the buildings at the 700 Innes property (residential and commercial/retail), there is an assumed low level of existing potable-water demand, 2,747 gpd (BKF, 2016).

## **Wastewater and Stormwater**

### ***Wastewater and Stormwater Generation***

#### **San Francisco**

When rain flows over land or impervious surfaces such as paved streets, parking lots, and building rooftops and does not soak into the ground, it creates stormwater runoff. Paved surfaces such as streets, buildings, and parking lots cover most of San Francisco, thus preventing rainwater from slowly infiltrating into the ground. Instead, stormwater runoff travels rapidly over these paved areas, and picks up pollutants like oil, bacteria, and debris before entering the combined sewer system (San Francisco, 2017).

#### **Project Site**

Stormwater is generated at the project site when it rains and water flows over impervious surfaces (e.g., the parking lot at India Basin Shoreline Park, streets), over the land (e.g., India Basin Open Space), and on building rooftops, such as those at the 900 Innes and 700 Innes properties, and either flows into the combined sewer system or overland flows to San Francisco Bay (Bay).

### ***Wastewater and Stormwater Collection***

#### **San Francisco**

San Francisco wastewater service is provided by SFPUC. Although the City is served almost exclusively by combined sewers that handle both wastewater and stormwater runoff in a single system, small areas of the City are served by separate storm sewer systems.

#### **Project Site**

The India Basin Shoreline Park property, the northern tip of the 900 Innes property, and the portion of the 700 Innes property centered around Arelious Walker Drive are located in the municipal separate storm sewer system (MS4) area of the City (see Figure 3.15-1, “Project Site Hydrologic Features,” in Section 3.15, “Hydrology and Water Quality”). The India Basin Open Space property is not identified by the City as being located in the separate sewer area, as it does not have any wastewater generation or existing utility infrastructure.

Wastewater that flows from the project site is transported via gravity connections to Innes Avenue sewer facilities (Wistrom, pers. comm., 2016). Sewer pipes in the project vicinity run along Hunters Point Boulevard, along Innes Avenue, and up through the 700 Innes property along Arelious Walker Drive (SFPUC, 2013). Although known sewer infrastructure exists within Arelious Walker Drive, there are no known connections to this infrastructure. The Hudson Avenue Pump Station and combined sewer discharge outfall No. 38 (Hudson Avenue) are located along Hudson Avenue at Hunters Point Boulevard.

Most (90 percent) of San Francisco is served by a combined sewer system, but the project site is served mainly by a separate storm sewer. Stormwater that enters storm drains flows directly to receiving waters—the Bay in this case. The project area is under SFPUC’s jurisdiction for wastewater and stormwater (Wistrom, pers. comm., 2016).

#### *India Basin Shoreline Park Property*

There is no direct sanitary sewer connection to the City’s combined sewer system on the India Basin Shoreline Park property. Restroom service is provided via portable toilets.

The India Basin Shoreline Park property is located in the City’s separate storm sewer area. There is one existing storm drain inlet within the road turnaround on the property. Stormwater that enters this drain inlet is conveyed to an outfall that discharges to the Bay. Some portions of the property direct overland flow<sup>2</sup> toward this inlet, while the remainder of the property directs overland flow directly to the shoreline of the Bay. A combined sewer overflow pipe runs under Hudson Avenue and beneath the property, but the property is not connected to it (MKA, 2016).

#### *900 Innes Property*

There are no current sanitary sewer demands on the 900 Innes property. However, the Shipwright’s Cottage (and potentially other buildings) may have utilized municipal sewer service when they were in service in the past. A City wastewater line that runs through a portion of the 900 Innes property seems to be in a location that could have allowed for gravity collection from the Shipwright’s Cottage and some of the other nearby on-site buildings (MKA, 2016).

Drainage from the 900 Innes property directs sheet water flow to the shoreline and discharges into the Bay. Although this property is not currently mapped in the City’s Geographic Information System as part of the separate sewer area, SFPUC has indicated that this is because it has no inlet/outlet infrastructure (MKA, 2016). As described for the India Basin Shoreline Park property, a combined sewer overflow pipe in Hudson Avenue crosses the property and then outfalls within the 900 Innes property. The 900 Innes property, however, is not connected to the pipe.

#### *India Basin Open Space and 700 Innes Properties*

The India Basin Open Space and 700 Innes properties are currently serviced by the City’s combined sewer system for wastewater generated on the properties. There is an existing combined sewer in Innes Avenue with a flow direction of southeast to northwest. The size of the pipe varies: southeast of Arelious Walker Drive, it is a 21-inch-diameter trunk line, and northwest of Arelious Walker Drive, the pipe is 30 inches in diameter. Laterals of varying size (6–12 inches) connect to the trunk line via manholes from adjacent properties along the street.

The combined sewer system on the 700 Innes property was installed for a prior development plan on the site that was never built. Subsequently, the City never accepted this infrastructure and it remains private (i.e., not maintained by SFPW). Nothing is known to connect to the sewer infrastructure within Arelious Walker Drive. Existing sewer infrastructure includes a combined 12-inch gravity sewer running beneath Arelious Walker Drive

---

<sup>2</sup> Overland flow is runoff that exceeds the infiltration capacity of the soil and flows over the land surface downward toward a river or a local depression in the topography.

that flows southwest to northeast, the remains of a combined sewer pump station at the northeast end of the Arelious Walker Drive cul-de-sac, and two combined sewer force mains (6-inch and 14-inch) running back up to the City's sewer main on Innes Avenue. Details of pipe inverts and connections are unknown, but the infrastructure is not currently in use.

The 700 Innes property is located in the separate sewer area and has its own existing stormwater outfall to the Bay. The only stormwater improvements at the site are a series of catch basins and a 12-inch storm drain line in Arelious Walker Drive, which flows downhill to an assumed pump station inside a locked/fenced area adjacent to the Bay (the existence of the pump station was not confirmed). It is assumed that a 14-inch force main conveys stormwater up to the Innes Avenue sewer at the intersection with Arelious Walker Drive. Any stormwater flows that cannot be accommodated by the pump station likely exit via an overflow structure and spill-down structure and would flow toward the nearby shoreline embankment and into the Bay. Because the Arelious Walker Drive storm drain system is currently the only existing stormwater facility at the site, most rainfall either is absorbed into the soil or runs off the site as overland sheet water flow into the Bay (Sherwood, 2016a). In addition to the storm drain infrastructure within Arelious Walker Drive, two small culvert outfalls flow toward the Bay, draining through the undeveloped portions of the India Basin Open Space and 700 Innes properties.

### ***Wastewater and Stormwater Treatment***

#### **San Francisco**

SFPUC owns and operates three wastewater treatment facilities for San Francisco: the Southeast Treatment Plant, the Oceanside Treatment Plant, and the North Point Wet-Weather Facility. These treatment facilities collect and treat an average of 80 mgd of combined wastewater and stormwater runoff on non-rainy days and can collect and treat up to 575 mgd when it rains (SFPUC, 2014a).

The Southeast Treatment Plant, built in 1952, receives 80 percent of the City's combined sewer flows, treating an average of 60 mgd and up to 250 mgd during rainstorms (SFPUC, 2014a). The Southeast Treatment Plant has a dry-weather design capacity of 85.4 mgd (San Francisco Bay RWQCB, 2013:F-5). As part of the Sewer System Improvement Program (SSIP), a 20-year, multibillion-dollar citywide investment to upgrade failing infrastructure and ensure the reliability and performance of the sewer system, the Southeast Treatment Plant is undergoing operational improvements and seismic upgrades.

Dry-weather effluent flows from the Southeast Treatment Plant undergo secondary treatment before being discharged to the Bay through the Pier 80 Outfall. During wet-weather conditions, the Bayside Wet-Weather Facilities (storage/transport structures, outfalls, pump stations) provide storage and treatment that is equivalent to wet-weather primary treatment. During wet weather, the underground transport tunnels provide a total storage capacity of approximately 120 million gallons, while pumps continue to transfer combined wastewater and stormwater to the Southeast Treatment Plant. If the capacities of the Southeast Treatment Plant, North Point Wet-Weather Facility, and Bayside Wet-Weather Facilities storage/transport structures are exceeded, the combined stormwater and sewage receives the equivalent of wet-weather primary treatment in the transport structures/boxes, then is discharged into the Bay through any one of the 29 shoreline combined sewer overflow (CSO) structures. The outfalls associated with these CSO structures are very-wide-diameter pipes or box culverts. All solids that settle out in the storage/transport structures are flushed to the Southeast Treatment Plant after the rainstorm

subsidies. The level of treatment provided throughout San Francisco meets the minimum treatment specified by the U.S. Environmental Protection Agency (EPA) CSO Control Policy (San Francisco Bay RWQCB, 2013).

### **Project Site**

Wastewater flows from the project site are limited to the India Basin Open Space and 700 Innes properties. Wastewater from these properties is transported to SFPUC's combined sewer system via gravity connections to Innes Avenue sewer facilities and then to the Southeast Treatment Plant, located on Phelps Street near Third and Evans streets in the Bayview District (Wistrom, pers. comm., 2016).

### ***San Francisco Emergency Firefighting Water System***

#### **San Francisco**

The San Francisco Emergency Firefighting Water System, referred to in this section as the Auxiliary Water Supply System (AWSS), is used for the suppression of multiple-alarm fires and for fire suppression during a major earthquake. The system delivers water at high pressure and consists of a storage reservoir, tanks, cisterns, water mains and hydrants, emergency saltwater pump stations, and fireboats (SFPUC, 2014b and 2017c). The AWSS is an independent system, owned and operated by SFPUC, that is used exclusively by the San Francisco Fire Department for firefighting (SFPUC, 2014b). The system is currently being seismically upgraded with funding from the Earthquake Safety and Emergency Response Bond that was approved in June 2010 (SFPUC, 2017c).

#### **Project Site**

Existing AWSS infrastructure is currently not available along Innes Avenue within the project site. The adjacent Candlestick Point–Hunters Point Shipyard Development plans to install AWSS infrastructure in Innes Avenue to Earl Street in the future.

## **3.12.2 Regulatory Framework**

### **Federal**

#### ***Clean Water Act (National Pollutant Discharge Elimination System)***

The Clean Water Act (CWA) was enacted in 1972 to regulate the discharge of pollutants to receiving waters such as oceans, bays, rivers, and lakes. The objective of the act is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” by regulating discharges of pollutants into the waters of the United States. The major federal legislation governing stormwater quality, the CWA established a two-phase plan to regulate runoff of polluted stormwater under the National Pollutant Discharge Elimination System (NPDES). EPA is the lead federal agency responsible for water quality management and is authorized to implement pollution control programs such as setting wastewater standards for industry. The CWA also requires that water quality standards be set for all contaminants in surface waters.

### ***Safe Drinking Water Act***

Originally enacted in 1974, the Safe Drinking Water Act aimed to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. The Safe Drinking Water Act authorizes EPA to set national health-based standards for drinking water to protect against both naturally occurring and human-made contaminants that may be found in drinking water. Implementation and enforcement of both the federal and California Safe Drinking Water Acts are under the jurisdiction of the California Department of Public Health, Division of Drinking Water and Environmental Management. Drinking water regulations are set forth in the California Code of Regulations, Titles 17 and 22.

### ***Federal Combined Sewer Overflow Control Policy***

In 1994, EPA adopted the CSO Control Policy (50 *Federal Register* 18688, April 11, 1994), which established a two-phase control program for communities with combined sewer systems. In the first phase of this program, communities receiving permits from EPA for their combined sewer systems must implement a series of nine technology-based controls designed to reduce the frequency of CSOs and limit their effects on receiving waters. In the second phase, permit recipients also must either:

- ensure that, on average, no more than four CSO events will occur per year;
- provide primary treatment (remove floatables and settleable solids) for at least 85 percent of the total discharge; or
- remove enough pollutants before they enter the sewer system to prevent degradation of receiving waters.

In 1997, San Francisco completed the improvements identified in the City's wastewater master plan, bringing the City into compliance with EPA's CSO Control Policy. These improvements consisted mainly of constructing storage culverts and installing discharge weirs (e.g., screens) and skimmers at all CSO outlets. The added storage reduced the frequency of CSOs, and the discharge facilities allow the City to provide at least primary treatment for 100 percent of its stormwater and wastewater discharges. Therefore, although the City averages approximately 10 CSOs each year, it is currently in compliance with the CSO Control Policy as a result of the removal of solids and the primary treatment provided.

## **State**

### ***Urban Water Management Planning Act***

The Urban Water Management Planning Act (California Water Code, Section 10610 et seq.) was originally enacted in 1983 with the passage of Assembly Bill 797 (Chapter 1009, Statutes of 1983) and was subsequently amended. This law applies to urban water suppliers that serve 3,000 or more customers or provide more than 3,000 acre-feet of water annually. The Urban Water Management Planning Act states that such water suppliers should endeavor to ensure that their water service is reliable enough to meet the needs of their various categories of customers during normal, dry, and multiple dry years. The law also describes how urban water suppliers should adopt and implement urban water management plans. On June 14, 2016, SFPUC adopted the 2015 UWMP for the City and County of San Francisco, which includes the project site.

### ***State Water Resources Control Board***

The State Water Resources Control Board (SWRCB) and nine regional water quality control boards (RWQCBs) address water quality and regulate water rights. Created by the California Legislature in 1967, the five-member SWRCB protects water quality by setting statewide policy, coordinating and supporting RWQCB efforts, and reviewing petitions that contest RWQCB actions. The SWRCB is also solely responsible for allocating surface water rights. Each RWQCB makes critical water quality decisions for its region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. The proposed project and variant would fall under the wastewater treatment requirements of San Francisco Bay RWQCB. On April 7, 2015, the State Water Board adopted what are referred to as the ‘trash amendments’ to provide statewide consistency for the SWRCB’s “regulatory approach to protect aquatic life and public health beneficial uses, and reduce environmental issues associated with trash in state waters, while focusing limited resources on high trash generating areas” (SWRCB, 2017). The ‘trash amendments’ include an Amendment to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) to Control Trash and Part 1 Trash Provision of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE Plan).

### ***California Health and Safety Code***

Section 64562 of the California Health and Safety Code establishes water supply requirements for service connections to public water systems. Before additional service connections can be permitted, enough water must be available to the public water system from its water sources and distribution reservoirs to adequately, dependably, and safely meet the total requirements of all water users under maximum-demand conditions.

### ***Senate Bill 610 and Senate Bill 221***

Through Senate Bill 610 (California Water Code, Sections 10910–10915), the State of California requires that a jurisdiction prepare a water supply assessment (WSA) for development projects that meet certain criteria, including projects that create demand for 500 or more housing units, have more than 500,000 square feet (sq. ft.) of shopping center/business establishment floor space, or have more than 250,000 sq. ft. of commercial office building floor space. SFPUC prepared a WSA for the proposed project and variant (see Appendix J).

### ***Water Conservation Act (Senate Bill X7-7)***

The Water Conservation Act of 2009, also known as Senate Bill X7-7, requires the State to set a goal of reducing urban water use by 20 percent by the year 2020. Each retail urban water supplier must determine baseline water use during its baseline period, as well as its target water use for the years 2015 and 2020 to help the State achieve the 20 percent reduction. SFPUC has an interim per capita water use target of 101 GPCD and a 2020 target of 96 GPCD.



## **Local**

### ***San Francisco Green Building Ordinance***

To minimize the use and waste of energy, water, and other resources in the construction and operation of buildings, to provide a healthy indoor environment, and to reduce greenhouse gas emissions, in 2008 the Board of Supervisors adopted the Green Building Ordinance, which applies to newly constructed residential and commercial buildings and renovations to existing buildings. The ordinance specifically requires a minimum reduction of 30 percent in potable-water use for high-rise residential, mid-size commercial, and large commercial buildings, and a minimum reduction of 50 percent in the use of potable water for landscaping for all of these building types.

### ***San Francisco Sewer System Master Plan***

An update to the San Francisco Sewer System Master Plan (SSMP), a comprehensive plan that charts the long-term vision and strategy for the City's management of wastewater and stormwater for the next 20 years, was completed in 2009. Rather than considering the sewer system in isolation, the plan states that "Integrated Urban Watershed Management" should be used as the basis for implementation, which means using the drainage basin as the central planning unit and incorporating opportunities for sustainable solutions such as through the use of Low Impact Development (LID). The guiding principles for the SSMP are to:

- protect public health and safety, and the environment;
- ensure the long-term sustainability of the sewer system;
- strive to ensure that all sectors of the community are protected from nuisances associated with the sewer system and that no community bears a disproportionate share of the negative environmental consequences resulting from system operations; and
- promote environmental stewardship that includes the sustainable use of natural resources.

Through implementation of the SSIP, major capital projects are being planned, designed, and constructed to address the challenges presented in the SSMP.

### ***San Francisco Health Code Article 12C (Nonpotable Water Ordinance)***

The Onsite Water Reuse for Commercial, Multi-family, and Mixed Use Development Ordinance, commonly known as the Nonpotable Water Ordinance was adopted in September 2012. This ordinance added Article 12C to the San Francisco Health Code. The Nonpotable Water Ordinance allows the collection, treatment, and use of alternate water sources (e.g., rainwater, stormwater, gray water, foundation drainage, black water) for nonpotable applications and for sharing of nonpotable water by district-scale water systems.

Article 12C was amended in July 2015 to mandate that beginning November 1, 2015, all new development projects of 250,000 sq. ft. or more of gross floor area located in San Francisco's designated recycled-water-use areas, as defined by the Recycled Water Ordinance, must install on-site water systems to treat and reuse available alternate water sources for toilet and urinal flushing and irrigation. This requirement expanded to the entire City

the following year, on November 1, 2016. The 2015 UWMP considered this potable-water offset to be part of SFPUC's water supply portfolio (SFPUC, 2016a:6-17). The project site is located in the recycled-water-use area.

### ***San Francisco Stormwater Management Plan***

The City developed a stormwater management plan (SWMP) in 2004 to comply with the NPDES General Permit for Small MS4s (Order No. 2003-0005-DWQ, as amended by 2013-0001-DWQ), which enables the City to comply with the CWA in those areas of the City that are served by separate storm sewer systems. The SWMP describes specific programs to be implemented to minimize stormwater pollution in these areas.

Waterfront properties on the east side of San Francisco that are owned and operated by the Port of San Francisco (SF Port) are also served by separate storm sewer systems. SF Port has developed its own SWMP to address MS4 areas on SF Port properties. However, stormwater from the project site is currently managed under SFPUC's SWMP (SFPUC, 2010:3 [Figure 1]; Wistrom, pers. comm., 2016). SFPUC and SF Port staff work closely and coordinate where feasible on development and implementation of SWMP programs. To set up a framework for coordination between SFPUC and SF Port, the agencies have developed a memorandum of understanding for interagency coordination on stormwater management issues (SFPUC, 2010:2).

A stormwater management program for small MS4s must consist of six elements that, when implemented in concert, are expected to result in substantial reductions of pollutants discharged into receiving water bodies. These six elements, termed "minimum control measures," are as follows:

- Public education
- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site runoff control
- Postconstruction stormwater management in new development and redevelopment
- Pollution prevention/good housekeeping for municipal operations

The SWMP requires control of stormwater runoff from construction sites to reduce pollutants in storm sewer systems from construction sites. The NPDES Phase II General Permit for Small MS4s requires the City to:

- adopt, maintain, and enforce an ordinance, policy, or other regulatory mechanism to require erosion and sediment controls at the construction sites, as well as sanctions to ensure compliance;
- develop and implement requirements for construction site operators to implement appropriate erosion and sediment control BMPs;
- develop and implement requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts on water quality;
- develop and implement procedures for site plan review, which incorporate consideration of potential water quality impacts;
- develop and implement procedures for receipt of and response to information submitted by the public regarding stormwater runoff impacts of construction projects; and

- develop and implement procedures for site inspection and enforcement of control measures.

The SWMP also requires postconstruction stormwater management for new development and redevelopment to reduce, long term, the type and quantity of pollutants in urban stormwater runoff, and the quantity of water delivered to water bodies during storms after construction. The NPDES Phase II General Permit for Small MS4s requires the City to:

- develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb areas greater than or equal to 1 acre, including projects less than 1 acre that are part of a larger common plan of development or sale, that discharge into a small MS4 by ensuring that controls are in place that would prevent or minimize water quality impacts;
- adopt and enforce an ordinance, policy, or other regulatory mechanism that requires projects to include long-term operation and maintenance of appropriate BMPs to address postconstruction runoff;
- develop and implement strategies that include a combination of structural and/or nonstructural BMPs appropriate for the community; and
- ensure adequate long-term operation and maintenance of BMPs.

Finally, the SWMP sets forth a process to be applied to the review of development site plans to address long-term water quality issues and postconstruction impacts of proposed land uses. The entire project site is proposed to be operated in the separate sewer-stormwater area.

### ***San Francisco Stormwater Management Ordinance***

SFPUC administers a stormwater management program developed in accordance with the CWA. Effective May 22, 2010, and updated in May 2016, the San Francisco Stormwater Management Ordinance requires new projects and redevelopment projects to manage stormwater using green infrastructure (i.e., stormwater controls or BMPs) and to maintain that green infrastructure for the lifetime of the project. As stated in the Stormwater Management Ordinance, the *San Francisco Stormwater Management Requirements and Design Guidelines* (SMR), updated in May 2016, apply to development or redevelopment projects that would:

- create and/or replace 5,000 sq. ft. or more of impervious surface in combined and separate sewer areas (considered large projects) or
- create and/or replace 2,500–5,000 sq. ft. or more of impervious surface in separate sewer areas only (considered small projects).

Applicable performance requirements differ for projects in the separate sewer system (Chapter 6 of the SMR) relative to those in the combined sewer system. Small projects must implement at least one site design measure, as described in the SMR (e.g., permeable pavement, green roof, vegetated swale, rainwater harvesting) and submit the estimated runoff reduction volume using the SWRCB Stormwater Multiple Application and Report Tracking System calculator. Large projects in the separate sewer area must meet the following stormwater performance requirement:

- Projects within SFPUC jurisdiction must manage the 90th-percentile, 24-hour storm.

Large projects must submit a preliminary and final stormwater control plan to SFPUC for review and approval, demonstrating how the project will meet the performance requirements, and must complete, sign, and record a maintenance agreement committing to ongoing stormwater management maintenance in perpetuity. The proposed project or variant would need to comply with the City's Stormwater Management Ordinance.

### ***San Francisco Public Works Code (Temporary Construction Dewatering)***

Under Article 4.1 of the San Francisco Public Works Code, discharges to the combined sewer system from temporary dewatering of construction sites are regulated by the Batch Wastewater Discharge Permit issued by SFPUC. As such, project applicants must obtain a batch wastewater discharge permit from SFPUC before the start of groundwater dewatering to the combined sewer system. SFPUC imposes specific permit terms and conditions to maintain its compliance with its wastewater discharge permit issued by the San Francisco Bay RWQCB. Under the batch wastewater discharge permit, the discharge must meet specific numeric effluent limitations for toxic and conventional pollutants, and monitoring is required to ensure compliance. Any construction dewatering during the project would be discharged to the existing combined sewer system. Therefore, the proposed project or variant would require a batch wastewater discharge permit.

### ***San Francisco National Pollutant Discharge Elimination System Permit***

The City has an NPDES permit (RWQCB Order No. R2-2013-0029, NPDES No. CA0037664) that was adopted by San Francisco Bay RWQCB on August 14, 2013. The permit covers treated effluent discharges from the Southeast Treatment Plant, North Point Wet-Weather Facility, and Bayside Wet-Weather Facilities, including combined sewer discharges to the Bay. The permit specifies a permitted flow of 85.4 mgd and includes discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving-water limitations, sludge management practices, and monitoring and reporting requirements. Areas that drain to the City's combined sewer system are subject to this permit. The proposed project or variant would contribute only wastewater to the Southeast Treatment Plant; stormwater would be managed in a separate stormwater system.

### ***Landscape Irrigation***

Projects that will install or modify 500 square feet or more of landscape area are required to comply with San Francisco's Water Efficient Irrigation Ordinance, adopted as Chapter 63 of the San Francisco Administrative Code and SFPUC Rules and Regulations Regarding Water Service to Customers. The project's landscape and irrigation plans shall be reviewed and approved by SFPUC prior to installation.

### ***Non-potable Water Use for Soil Compaction and Dust Control***

City Ordinance 175-91 restricts the use of potable water for soil compaction and dust control activities undertaken in conjunction with any construction or demolition project occurring within the boundaries of San Francisco, unless permission is obtained from SFPUC. Non-potable water must be used for soil compaction and dust control activities during project construction or demolition. Recycled water is available from SFPUC for dust control on roads and streets. However, per State regulations, recycled water cannot be used for demolition, pressure washing, or dust control through aerial spraying. The SFPUC operates a recycled water truck-fill station at the Southeast Water Pollution Control Plant that provides recycled water for these activities at no charge.

### ***Recycled Water Use***

This project is required to comply with San Francisco's Recycled (or Reclaimed) Water Use Ordinance, adopted as Article 22 of the San Francisco Public Works Code. The project shall include all necessary plumbing for the future use of recycled water for non-potable applications including, but not limited to, toilet flushing and irrigation. In a mixed-used residential building where a recycled water system is installed, any restaurant or other retail food-handling establishment must be supplied by a separate potable water system to ensure public health and safety. The SFPUC's City Distribution Division and the Department of Building Inspection's Plumbing Division shall review all technical aspects of the water and recycled water infrastructure (mains, piping, valves, etc.) design plans.

### ***Residential Water Submetering***

This project is required to comply with residential water submetering requirements set forth in the California Water Code (Division 1, Chapter 8, Article 5, Section 537-537.5) by Senate Bill 7 and enforced in San Francisco by SFPUC. New construction of a multi-family residential structure or mixed-use residential and commercial structure must indicate on its site plans that each dwelling unit will be submetered as a condition of the site permit and water service. The SFPUC will review plans for compliance only for projects that apply for a site permit from the Department of Building Inspection and for new water service from SFPUC after January 1, 2018. Projects that submit either application before January 1, 2018 do not need to comply.

### ***Groundwater Resources***

If wells are to be used for groundwater dewatering during construction, the project would be required to comply with San Francisco's Soil Boring and Well Regulation Ordinance, adopted as Article 12B of the San Francisco Health Code. The use of a groundwater well may affect the beneficial uses of San Francisco's aquifers, and shall be reviewed and approved by the San Francisco Department of Public Health and SFPUC.

### ***San Francisco Housing Code***

The intent of Chapter 12A of the San Francisco Housing Code, also known as the Residential Water Conservation Ordinance, is to conserve existing water supplies by reducing overall demand for water in residential buildings. The ordinance requires that water conservation devices be installed in all residential buildings, except tourist hotels and motels, when a specific event occurs such as a major building improvement, a meter conversion, a condominium conversion, or a transfer of title.

### ***Sustainability Plan for the City and County of San Francisco***

The *Sustainability Plan for the City and County of San Francisco* establishes sustainable development as a fundamental goal of municipal public policy, and approval of the plan's goals and objectives as ends that the City will strive to attain. The San Francisco Building Code was amended in 2008 to add Chapter 13C, "Green Building Requirements," which partially implements the energy provisions of the sustainability plan. The proposed project or variant would comply with applicable Green Building requirements, including those for water and stormwater. The proposed development at the India Basin Shoreline Park and 900 Innes properties would be developed to

Leadership in Energy and Environmental Design (LEED) Gold standards, and the proposed development at the India Basin Open Space and 700 Innes properties would be developed to a LEED Silver rating or equivalent.

### 3.12.3 Impacts and Mitigation Measures

#### Significance Thresholds

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Utilities and Service Systems. Implementation of the proposed project or the variant would have a significant effect on Utilities and Service Systems if the proposed project or variant would:

- exceed wastewater treatment requirements of the applicable RWQCB;
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- have insufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements; or
- result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

#### Approach to Analysis

A quantitative approach was used to determine the significance of the impacts of the proposed project or variant based on the aforementioned significance thresholds. Wastewater production was calculated and compared to City treatment capacity to determine whether wastewater treatment requirements would be exceeded. In addition, the demand for potable water (both with and without use of recycled water) was calculated to assist in determining whether sufficient water supply would be available. SFPUC has completed a water supply assessment of the project and determined that sufficient water supply is available (SFPUC, 2016b). The City's wastewater discharge permitting and stormwater requirements were also reviewed.

The following evaluation discusses whether the proposed project or variant would result in direct impacts on utilities and service systems such as existing wastewater and stormwater drainage facilities, water supply, or water treatment facilities. The evaluation also discusses whether the proposed project or variant would result in indirect impacts on utilities and services systems, such as construction impacts from new stormwater drainage systems. The analysis involved reviewing published data and material provided by the City, SFPUC, RPD's and BUILD's designs, and other available information.

The Initial Study (included in Appendix A of this EIR) found that the proposed project or variant would not result in significant adverse impacts associated with solid waste generation and disposal and compliance with statutes and regulations related to solid waste. Therefore, these topics are not discussed further in this section.

## Project Features

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. All of these uses except parking would generate demand for utilities, including potable and nonpotable water, wastewater treatment, and solid waste disposal.

## Impact Evaluation

**Impact UT-1: The proposed project or variant would not exceed wastewater treatment requirements of the applicable RWQCB or result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the projected demand in addition to the provider's existing commitments.**

*(Less than Significant)*

All water discharged from the project site—construction-related wastewater, wastewater generated at the proposed new housing and facilities during project operation, and stormwater runoff—would be subject to NPDES permitting requirements, as administered by San Francisco Bay RWQCB and the City.

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Construction-related wastewater runoff would be subject to NPDES permitting requirements, as administered by San Francisco Bay RWQCB and the City. Wastewater generated during construction would consist of dewatering effluent and wastewater from construction work.

Construction-related wastewater flows from the project site would be discharged to the combined sewer system. Wastewater from the project site would be treated at the Southeast Treatment Plant and the Bayside Wet-Weather Facilities. SFPUC, which operates the Southeast Treatment Plant, is required to comply with NPDES Order R2-2013-0029, which specifies a permitted flow and includes discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving-water limitations, sludge management practices, and monitoring and reporting requirements. Discharges are also subject to the City's Industrial Waste Ordinance. This ordinance is found in Article 4.1 of the Public Works Code, as supplemented by Order No. 158170, which regulates the quantity and quality of discharges to the combined sewer system. In accordance with Article 4.1 and Order No. 158170, the project would require a batch wastewater discharge permit, which would contain appropriate discharge standards and may require installation of meters to measure the volume of the discharge.

Any groundwater dewatered from the site may contain contaminants related to past site activities, as well as sediment and suspended solids; however, the construction contractors would be required to treat the groundwater as necessary to meet permit requirements before discharge to the combined sewer system, and discharge rates would be controlled to avoid exceeding the capacity of the sewer system. (For additional information, see Impact HY-1 in Section 3.15, "Hydrology and Water Quality.") In addition, if a well is used for groundwater dewatering, the project would be required to comply with San Francisco's Soil Boring and Well Regulation Ordinance,

whereby the use of a groundwater well would be reviewed and approved by the San Francisco Department of Public Health and SFPUC.

Because the project would comply with the City's Industrial Waste Ordinance and the requirements of the batch wastewater discharge permit, construction-related wastewater generation would not cause the City to exceed the requirements of the NPDES permit. Thus, this impact would be *less than significant*. No mitigation measures are necessary.

### ***Operation***

The entire project site is proposed to be operated in the separate sewer-stormwater area; therefore, only wastewater would flow to the wastewater treatment plant. For the overall project site, any wastewater generated by the proposed project or variant would be discharged to the City's sewer system, treated at the Southeast Treatment Plant and/or on-site, and used as recycled water.

### **India Basin Shoreline Park and 900 Innes Properties**

Wastewater from the India Basin Shoreline Park and 900 Innes properties would be generated by restroom use (flows and flushes) and food vendor concession operations. Anticipated water use at these facilities is estimated to be 3,180 gpd or 0.0032 mgd (2,789 gpd or 0.003 mgd at the India Basin Shoreline Park property and 391 gpd or 0.0004 mgd at the 900 Innes property). Another infrequent sanitary-sewer demand would be for the twice-yearly draining of the water feature for routine maintenance, which would entail draining 3,330 cubic feet of water each time. Water from irrigation, drinking fountains, and the water feature (top-off) would not generate wastewater that would enter the City's combined sewer system (BKF, 2016; MKA, 2016).

During wet weather (typically October 15–April 30), the Southeast Treatment Plant has a total design flow capacity of 250 mgd, whereas during dry weather (typically May 1–October 15), the Southeast Treatment Plant currently has available dry-weather treatment capacity of about 25 mgd. The increase in wastewater generated by the India Basin Shoreline Park and 900 Innes properties would not be enough to exceed the capacity of the Southeast Treatment Plant for worst-case wastewater discharges.

### **India Basin Open Space Property**

Because of the lack of facilities proposed for the India Basin Open Space property, no wastewater would be generated (Sherwood, 2016b).

### **700 Innes Property**

Because of the residential development proposed for the 700 Innes property, this property would produce an estimated 155,511 gpd or 0.16 mgd of wastewater, more than 80 percent from residential development. Wastewater would also be generated by commercial/retail and institutional/educational uses (Sherwood, 2016b).

With a reduction in residential development, the variant would generate an estimated 123,575 gpd of wastewater, less than under the proposed project. About 50 percent of the wastewater generated at the site would be from commercial/retail uses, and about 42 percent would be from residential development (Sherwood, 2016b). Operation of the proposed project or variant would increase wastewater generation at the project site, as very little



wastewater currently flows through the site. Two potential scenarios for wastewater management are being considered under the proposed project or variant at this time:

- *Wastewater Scenario 1:* Connect to the municipal combined sewer system and discharge all sewer flows generated on the property to the municipal system.<sup>3</sup>
- *Wastewater Scenario 2:* Construct a wastewater treatment facility on-site to treat a portion of the wastewater for reuse on-site as recycled water.

### *Proposed Project*

Assuming no on-site water treatment, the proposed project would generate an estimated total of 0.1634 mgd of sewage annually (Sherwood, 2016b; BKF, 2016). This does not include any foundation dewatering that may be needed during operation of the proposed project.

During construction of the proposed project, new wastewater lines would be constructed within the project site to connect to the existing SFPUC combined sewer system. Because stormwater from the project site would be collected in a separate stormwater system, only wastewater flows from the project site would contribute to flows requiring treatment at the Southeast Treatment Plant.

All wastewater generated from the project site during dry weather (typically May 1–October 15) would be conveyed to and treated at the Southeast Treatment Plant, which currently has available dry-weather treatment capacity of about 25 mgd.<sup>4</sup> During dry weather, with the proposed project under the more conservative scenario, Wastewater Scenario 1 (no on-site wastewater treatment), the worst-case discharge of wastewater from the project site would contribute toward 0.19 percent of the total design treatment capacity (0.27 percent of the average dry-weather treatment capacity) of the Southeast Treatment Plant. Thus, during dry weather, there would be adequate capacity to handle the 0.1634 mgd of wastewater flows from the proposed project.

During wet weather (typically October 15–April 30), the Southeast Treatment Plant has a total design flow capacity of 250 mgd. The volume of flow to the combined sewer system varies widely during wet weather because of the addition of stormwater flows from areas of the City that lack separate stormwater systems. During large storm events, the capacity of the Southeast Treatment Plant, North Point Wet-Weather Facility, and Bayside Wet-Weather Facilities can be exceeded, and the City's NPDES permit (Order No.R2-2013-0029, NPDES No. CA0037664) allows the City to discharge into the Bay via CSO structures. Stormwater from the proposed project would be diverted to a separate stormwater system and would not require treatment at the Southeast Treatment Plant.

Wastewater from the project site would be conveyed to the combined sewer system during both wet and dry weather at a constant rate of 0.1634 mgd under the most conservative, worst-case scenario in which no on-site wastewater treatment plant would be constructed (Wastewater Scenario 1). Even during wet weather, there would be no contribution of stormwater from the project site to the combined sewer system and Southeast Treatment Plant, because that stormwater would be treated on-site and discharged directly to the Bay following the MS4

<sup>3</sup> The City requires developments with 250,000 sq. ft. of gross floor area to treat water on-site and reuse it for nonpotable applications. If Wastewater Scenario 1 is chosen, a building-by-building system would be installed to use all available graywater, rainwater and foundation drainage to meet the toilet flushing and irrigation nonpotable-water demands.

<sup>4</sup> During dry weather, the Southeast Treatment Plant treats an average of 60 mgd, although the treatment plant has a dry-weather design capacity of 85.4 mgd.

requirements. The 0.1634 mgd of wastewater flows generated from the proposed project would be 0.07 percent of the wet-weather flows to the Southeast Treatment Plant, an incremental increase in wastewater volume from the project site compared to existing conditions. This incremental increase would not contribute to a violation of current wastewater treatment and discharge requirements. The proposed project's wastewater flows during wet weather are not anticipated to exceed the wastewater treatment requirements of San Francisco Bay RWQCB.

#### *Variant*

Like the proposed project, the variant would contribute only wastewater to the City's combined sewer system and treatment plants. All stormwater would be captured and treated on-site and discharged directly to the Bay following the MS4 requirements. The same two potential scenarios for wastewater management described for the proposed project are also applicable to the variant: Wastewater Scenario 1, connecting to the municipal combined sewer system and discharging all sewer flows generated on the property to the municipal system; and Wastewater Scenario 2, assuming the construction of a wastewater treatment facility on-site to treat a portion of the wastewater for reuse on-site as recycled water. Assuming no on-site water treatment, the variant would generate an estimated total of 0.1234 mgd of sewage annually.

During dry weather, there would be adequate capacity for the 0.1234 mgd of wastewater flows from the variant under the more conservative, worst-case scenario (Wastewater Scenario 1), in which no on-site wastewater treatment plant would be constructed. That represents 0.14 percent of the total design treatment capacity (0.20 percent of the average dry-weather treatment capacity) of the Southeast Treatment Plant. During dry weather, the variant's wastewater flows are not anticipated to exceed the wastewater treatment requirements of San Francisco Bay RWQCB.

During wet weather, the 0.1234 mgd of wastewater flows generated from the variant would be 0.05 percent of the wet-weather flows to the Southeast Treatment Plant, representing an incremental increase in wastewater volume from the project site compared to existing conditions. This incremental increase would not contribute to a violation of current wastewater treatment and discharge requirements. The variant's wastewater flows during wet weather are not anticipated to exceed the wastewater treatment requirements of San Francisco Bay RWQCB.

#### *Overall Operational Impact Conclusion*

The incremental increase in wastewater flows to the City's combined sewer system and treatment plants resulting from the proposed project or variant would not be anticipated to exceed the wastewater treatment requirements of San Francisco Bay RWQCB. Therefore, the operational impact of the proposed project or variant related to exceedance of wastewater treatment requirements would be *less than significant* for all four properties. No mitigation measures are necessary.

**Impact UT-2: The proposed project or variant would require or result in the construction of new water, wastewater, or stormwater drainage treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (*Less than Significant with Mitigation*)**

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

The proposed project or variant would create additional residential and retail/commercial uses, which could substantially increase water demand as well as wastewater generation and stormwater runoff from the project site. Installing and upgrading water, wastewater, and stormwater infrastructure would require excavation, trenching, soil movement, and other activities typical of the construction of development projects. Constructing an on-site wastewater treatment facility would also require excavation, soil movement, and other activities similar to those pursued during construction of development projects. During construction, non-potable water would be used for dust control and other construction activities per Ordinance 175-91.

The activities required to install water, wastewater, and stormwater utility infrastructure would be similar to the activities required to construct the proposed project or variant (e.g., excavation, trenching). Thus, such activities would not result in environmental impacts beyond those related to cultural resources, noise, air quality, biological resources, water quality, and hazardous materials that are discussed in this EIR. (See Section 3.4, “Cultural Resources”; Section 3.6, “Noise”; Section 3.7, “Air Quality”; Section 3.14, “Biological Resources”; Section 3.15, “Hydrology and Water Quality”; and Section 3.16, “Hazards and Hazardous Materials,” respectively.) Mitigation measures identified in those sections would reduce any significant impacts specifically related to the construction of water, wastewater, or stormwater facilities to less-than-significant levels. Therefore, this impact would be *less than significant with mitigation*.

### *Operation*

For the overall project site, either the proposed project or the variant would require new on-site infrastructure for stormwater, potable water, and wastewater collection and recycling.

New stormwater conveyance infrastructure (pipes, channels, swales) would be required at the project site and would comply with the City’s 2015 Subdivision Regulations. The proposed project or variant would include a stormwater management system that would also meet the City’s Stormwater Management Ordinance and SWRCB’s ‘trash amendments’. The project site would be designed with LID concepts and stormwater management systems to comply with the SMR. Compliance with the SMR would ensure that stormwater generated at the project site is managed on-site to meet the performance requirements. Stormwater runoff from the proposed project or variant would not be connected to the combined sewer system, and therefore, would not contribute stormwater runoff to the City’s combined sewer system.

New potable-water infrastructure that would connect to existing SFPUC potable-water infrastructure would be installed on-site to convey potable water throughout the project site. As discussed below in Impact UT-3, the India Basin WSA, approved by SFPUC on December 13, 2016, concluded that SFPUC has adequate short-term and long-term water supplies for the project to operate through 2040.

The combined sewer in Arelious Walker Drive, including all manholes and appurtenances, would be demolished as part of the proposed project or variant. The combined sewer in Innes Avenue would remain in place and would be used as the point of connection for wastewater associated with the project. New wastewater collection and treatment infrastructure would be installed on-site to serve project uses. Proposed wastewater lines would connect to existing City combined sewer lines located beneath adjacent streets. As discussed in Impact UT-1, wastewater flows for the proposed project or variant are not anticipated to exceed the wastewater treatment requirements of San Francisco Bay RWQCB, and existing wastewater facilities are anticipated to be able to accommodate the projected wastewater flows.

Among the four properties, there would be differences in both stormwater collection and treatment and wastewater treatment and recycling facilities. These differences are discussed below.

#### **India Basin Shoreline Park Property**

Stormwater conveyance infrastructure for the India Basin Shoreline Park property would comply with SFPUC requirements and SWRCB's 'trash amendments'. Runoff from new impervious surfaces would be managed using swales and/or bioretention areas. The current design would require two subbasins that would manage stormwater runoff via bioretention ponds and swales. The northern subbasin would utilize the existing stormwater outfall near the turnaround and the southern subbasin would require a new stormwater outfall (MKA, 2016).

Nonpotable water used for park irrigation and potentially toilet flushing could be created by mining wastewater from the combined sewer pipeline in Hunters Point Boulevard and treating it in an on-site wastewater treatment system (MKA, 2016) if approved by SFPUC and the City. Any treated wastewater in excess of the amount needed for on-site recycled-water demand would be discharged into the combined sewer via the Hunters Point Boulevard connection.

#### **900 Innes Property**

Stormwater conveyance infrastructure for the 900 Innes property would comply with SFPUC requirements and SWRCB's 'trash amendments'. Runoff from new impervious surfaces would be managed using swales and/or bioretention areas. The current design would include a single constructed basin within the 900 Innes property to manage stormwater runoff for the property. This property would utilize a new outfall that would be jointly used by the 900 Innes and 700 Innes properties.

Nonpotable water used for park irrigation and potentially toilet flushing could be created by mining wastewater from the combined sewer pipeline in Hunters Point Boulevard and treating it in an on-site wastewater treatment system at the India Basin Shoreline Park property, and then piping that water for use at the 900 Innes property (MKA, 2016) if approved by SFPUC and the City.

#### **India Basin Open Space Property**

It is assumed that the India Basin Open Space property would be self-treating in terms of stormwater and would enable water to overland flow into the Bay. An existing drainage outfall extending from the India Basin Open Space property into the Bay would be removed. No wastewater would be generated at the India Basin Open Space property.

### **700 Innes Property**

#### *Proposed Project*

As stated above in Impact UT-1, two potential scenarios are being considered for wastewater management at the 700 Innes property:

- *Wastewater Scenario 1:* Connect to the municipal combined sewer system and discharge all sewer flows generated on the property to the municipal system.<sup>5</sup>
- *Wastewater Scenario 2:* Construct a wastewater treatment facility on-site to treat a portion of the wastewater for reuse on-site as recycled water.

Wastewater would be diverted to this plant for treatment and reuse, as needed, to comply with the City's Nonpotable Water Program. A nonpotable recycled-water distribution system would also be installed at the project site as required by the City's Recycled Water Ordinance. The distribution system would be installed under streets (New Hudson Avenue, Hudson Avenue, Griffith Street, Arelious Walker Drive, Earl Street, and an unnamed proposed street) and would connect to Innes Avenue. If Wastewater Scenario 1 was chosen, a building-by-building system would be installed to use all available graywater, rainwater and foundation drainage to meet the toilet flushing and irrigation nonpotable-water demands.

A stormwater management system would be implemented on the 700 Innes property as part of the proposed project or variant, with the goal of retaining and reusing some of the stormwater captured on-site. Stormwater conveyance infrastructure (pipes, channels, swales) for the 700 Innes property would comply with the City's 2015 Subdivision Regulations and would be sized for the 5-year event, and the 100-year event would be routed safely overland through the properties to the Bay (Sherwood, 2016c). Storm drain trunk lines of 12-inch-minimum diameter and ranging up to 24 inches in diameter are proposed on the property, with 12-inch-minimum trunk lines in all public rights-of-way, 6-inch-minimum-diameter pipes in private streets, and roof leaders of 6 inches typical (Sherwood, 2016c). Although a section of the 700 Innes property is located in a separate sewer area, the entire project would be regulated as a separate sewer area and follow the MS4 requirements for stormwater, which would require a preliminary concurrence from SFPUC before submission and approval by San Francisco Bay RWQCB. Stormwater infrastructure for 700 Innes would also be designed to meet SWRCB's 'trash amendments' requirements.

Stormwater would be treated in centralized and decentralized bioretention areas and/or swales before being discharged to the Bay. The treatment areas would be sized to meet SFPUC and RWQCB requirements. Additionally, stormwater capture, treatment, and reuse may be utilized as a means of providing nonpotable water to meet the regulatory requirements of the Nonpotable Water Ordinance.

The stormwater management system on the 700 Innes property is anticipated to include the following components:

---

<sup>5</sup> The City requires developments with 250,000 sq. ft. of gross floor area to treat water on-site and reuse it for nonpotable applications. If Wastewater Scenario 1 is chosen, a building-by-building system would be installed to use all available graywater, rainwater and foundation drainage to meet the toilet flushing and irrigation nonpotable-water demands.

- Streetscape runnels for conveyance of stormwater in hardscape areas to various bioretention areas, and to feed the reservoirs in the open space.
- Vegetated swales for treatment and conveyance of stormwater in softscape areas. The swales would accommodate seasonal and large-storm-event water flow, and would be capable of withstanding inundation.
- Local treatment, including the use of rain gardens and flow-through planters in the public realm, stormwater bioretention ponds and swales, and biotreatment landscapes in the open space areas.
- Retention ponds to store runoff for reuse.
- A circulation system to aerate and move water between facilities.
- Use of treated stormwater for on-site reuse, and on-site recycling of gray water and black water for on-site irrigation, toilet flushing, and other purposes, including potential export for off-site irrigation.
- Spring cutoff drain to recapture water flow from a spring below the project site, to contribute to meeting nonpotable-water demands and for use in water features and/or stormwater infrastructure (requires approval from SFPUC and the City).

#### *Variant*

Utility infrastructure requirements associated with the variant would be similar to those analyzed and discussed for the proposed project. The on-site wastewater treatment plant would need a nominally larger footprint because the variant is anticipated to result in increased demand for recycled water, and thus, increased demand for water treatment (Sherwood, 2016b).

#### **Overall Operational Impact Conclusion**

As discussed above, operation of the proposed project or variant would not require the construction of new or expansion of existing off-site stormwater, water, or wastewater treatment facilities. Installing water, wastewater, and stormwater infrastructure on-site would not result in environmental impacts beyond other resource impacts discussed in this EIR. Mitigation measures listed in Section 3.5, “Transportation and Circulation”; Section 3.6, “Noise”; and Section 3.7, “Air Quality,” would reduce any significant impacts specifically related to expanded water, wastewater, and stormwater facilities to less-than-significant levels. Therefore, the impact from the construction of new water, wastewater, or stormwater drainage treatment facilities for the proposed project or variant would be *less than significant with mitigation*.

**Impact UT-3: The proposed project or variant would not require new or expanded water supply resources or entitlements. (*Less than Significant*)**

#### ***Construction***

##### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

The use of water during construction would be temporary and less than the long-term operational demand. In addition, during construction, non-potable water would be used for dust control and other construction activities per Ordinance 175-91; recycled water is available from SFPUC for dust control on roads and streets. Therefore, construction under either the proposed project or the variant would not require water supplies in excess of existing

entitlements or result in the need for new or expanded entitlements. Collectively, the impact on water supply resources or entitlements resulting from construction of the proposed project or variant would be *less than significant*. No mitigation measures are necessary.

### ***Operation***

The proposed project includes up to 1,240 residential units and 275,300 gross square feet of retail, commercial, or flex space. These uses would create increased demand for potable water. Two potential scenarios were analyzed to determine the associated potable- and nonpotable-water demands (BKF, 2016):

- demands with no recycled water available at the start of the project, and
- demands with recycled water available for the project.

In the second scenario, a wastewater treatment facility would be constructed on-site to treat a portion of the wastewater for reuse on-site as recycled water. The project would be able to recycle enough water on-site to supply all demands for nonpotable water (Sherwood, 2016b). Additionally, because the sewage flows would be greater than the nonpotable-water demands, the proposed project has the opportunity to operate in an ecodistrict capacity and provide nonpotable water to adjacent properties for irrigation, flushing, and/or cooling demands.

Residential potable-water unit demand was based on 90 gpd per dwelling unit. This unit demand assumes 45 GPCD and 2.0 residents per dwelling unit. These unit demands are consistent with the SFPUC Water Enterprise's Water Report, prepared by RMC. The Water Report provides projections of potable-water demand for the years through 2040 and projects that, through normal replacement of plumbing fixtures and appliances, most or all residences will have plumbing fixtures and appliances that meet the current plumbing code by that time. A unit demand of approximately 43–45 GPCD is provided in the Water Report through the year 2040. The India Basin Water Demands Memorandum analysis (BKF, 2016) used 45 GPCD, which is slightly conservative. Residential recycled-water unit demand for toilet flushing was based on 6.4 GPCD (assuming five flushes per day per person at 1.28 gallons per flush) and 2.0 residents per dwelling unit.

Commercial and retail potable-water unit demand was based on 0.07 gallon per day per square foot (gpd/sq. ft.). This demand rate was calculated by the following methodology. Before 2008 and adoption of the California Green Building Standards, 0.10 gpd/sq. ft. was a generally accepted water demand used for office/commercial space. Currently, the California Green Building Standards require calculation of a baseline demand and then a 25 percent reduction from baseline. To account for conservation and implementation of the California Green Building Standards, the 25 percent reduction was applied to 0.10 gpd/sq. ft., resulting in a unit demand of 0.075 gpd/sq. ft. Additionally, the November 2004 Demands Report provides an estimated historical demand of 18.3 gallons per employee per day. Using an assumption of 200 sq. ft. per employee for retail and commercial uses results in a unit demand of 0.92 gpd/sq. ft. This is similar to the 0.10 gpd/sq. ft. noted previously, and with the 25 percent reduction applied, yields 0.07 gallon per square foot (gal/sq. ft.). Commercial and retail recycled-water unit demand for toilet flushing was assumed to be 50 percent of the total water demand; 0.035 gpd/sq. ft. was used for the analysis.

Institutional/education potable-water unit demand is 0.07 gal/sq. ft. and was assumed to be consistent with commercial and retail potable-water unit demand. Similar to the commercial and retail recycled-water unit

demand, institutional/education recycled-water unit demand for toilet flushing was assumed to be 50 percent of the total water demand; 0.035 gpd/sq. ft. is used for this analysis (BKF, 2016).

Irrigation demand was included for the properties, public streets, and open spaces. Cooling demands were calculated from a site mass model using eQuest, an energy simulation program. A nominal unit demand of 1.37 gallons per ton-hour was used to convert the ton-hour output from the model. Cooling demands for the India Basin Shoreline Park and 900 Innes properties was expected to be small compared to the overall project demand and was noted as zero for the analysis. The net potable-water demand resulting from the proposed project at full buildout would be approximately 0.17 mgd without recycled water, or 0.11 mgd with recycled water, after subtracting the existing potable water demand of 0.0027 mgd (see Table 3.12-1). Because of decreased residential development, the variant would have a lower net potable-water demand without recycled water than the proposed project. The net potable-water demand resulting from the variant at full buildout would be approximately 0.16 mgd without recycled water, or 0.08 mgd with recycled water, after subtracting the existing potable-water demand. Table 3.12-2 summarizes demands for potable and recycled (nonpotable) water for the proposed project and variant.

**Table 3.12-2: Summary of Overall Project Site Water Demands**

	Average Daily Potable-Water Demand (mgd)			Average Daily Recycled-Water Demand (mgd)		
	2015	2020	2025	2015	2020	2025
Proposed Project (without recycled water)	0	0.12	0.17	0	0	0
Variant (without recycled water)	0	0.10	0.16	0	0	0
Proposed Project (with recycled water)	0	0.07	0.11	0	0.05	0.06
Variant (with recycled water)	0	0.04	0.08	0	0.07	0.08

Notes:

mgd = million gallons per day

Source: BKF, 2016

Using this information, SFPUC developed a WSA for the India Basin Mixed-Use Project (SFPUC, 2016b). Under the WSA law (Sections 10910–10915 of the California Water Code), urban water suppliers such as SFPUC must provide a WSA to the city/county that has jurisdiction to approve environmental documentation for projects qualifying under Water Code Section 10912(a) subject to CEQA. The proposed project is a qualifying project under Water Code Section 10912. The India Basin WSA, approved by SFPUC on December 13, 2016, concluded that SFPUC has adequate short-term and long-term water supplies to operate the project through 2040. Because the proposed project would require the more conservative (higher) water demand, and thus would encompass the variant’s lower water demand, the WSA assessed only the proposed project. Because the WSA concluded that adequate water supplies would be available for the proposed project, adequate water supplies would also be available for the variant.

Detailed information about the potable-water demand of individual properties under the proposed project and variant scenarios is provided below and is followed by an overall impact conclusion.



**India Basin Shoreline Park and 900 Innes Properties**

The India Basin Shoreline Park and 900 Innes properties would have potable-water demand under the proposed project or variant of 0.006 mgd without recycled water (0.0052 mgd for the India Basin Shoreline Park property and 0.00078 mgd for the 900 Innes property). Potable water would be needed for irrigation, restrooms, food vendor concessions, water features, drinking fountains, the kayak building, and a fish station. With recycled water available, the potable-water demand at the India Basin Shoreline Park and 900 Innes properties would be reduced dramatically, to just 0.0032 mgd (0.0028 mgd for the India Basin Shoreline Park property and 0.00034 mgd for the 900 Innes property). Recycled water generated from wastewater mining would be used to fulfill all demand for irrigation and restroom (flush) water if approved by SFPUC and the City. Operation at the India Basin Shoreline Park and 900 Innes properties would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements as concluded by SFPUC in the India Basin WSA.

**India Basin Open Space Property**

The potable-water demand at the India Basin Open Space Property under the proposed project or variant would be low, at 0.0098 mgd without recycled water. The water demand would be used entirely for irrigation. With recycled or other non-potable water available, there would be no demand for potable water at the India Basin Open Space property under the proposed project or variant; recycled or other non-potable water would be used to fulfill the entire irrigation water demand at the project site. Operation at the India Basin Open Space property would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements as concluded by SFPUC in the India Basin WSA.

**700 Innes Property***Proposed Project*

Of the four properties, the 700 Innes property would have the highest potable-water demand under the proposed project, consuming more than 90 percent of the potable water needed for all four properties without recycled water available and 97 percent of potable-water demand for all four properties using recycled water. The potable-water demand at the 700 Innes property would be attributable in large part to residential development, which would account for 71 percent of the demand (without recycled water), with additional demands for commercial/retail, institutional/educational, irrigation, and cooling-water uses.

The total potable-water demand for the 700 Innes property as a result of the proposed project at full buildout would be approximately 0.16 mgd without recycled water. With recycled water, the potable-water demand would decrease to 0.11 mgd. Recycled water would be used for all irrigation and cooling-water uses and for half of the commercial/retail and institutional/educational water demand. Operation of the 700 Innes property development under the proposed project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements as concluded by SFPUC in the India Basin WSA.

*Variant*

The potable-water demand at the 700 Innes property would be less under the variant than under the proposed project. Under the variant, the potable-water demand at this property would be 0.14 mgd without recycled water, compared to 0.16 mgd under the proposed project, because less water would be needed with fewer residential

users. With recycled water available, the potable-water demand for the 700 Innes property under the variant would be 0.07 mgd, compared to 0.11 mgd under the proposed project. Operation of the 700 Innes property development under the variant would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements, as concluded by SFPUC in the India Basin WSA.

#### *Overall Operational Impact Conclusion*

The WSA concluded that adequate water supplies would be available for the proposed project; thus, adequate water supplies would also be available for the variant. Therefore, the impact of operation of the proposed project or the variant related to the need for new or expanded water supply resources or entitlements would be *less than significant*. No mitigation measures are necessary.

### **3.12.4 Cumulative Impacts**

**Impact-C-UT-1: The proposed project or variant, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would not substantially contribute to cumulative impacts related to utilities and services systems. (*Less than Significant*)**

The geographic scope for cumulative impacts related to utilities and service systems is the service area for SFPUC's water and wastewater facilities, particularly the Southeast Treatment Plant.

#### ***Construction***

In conjunction with the cumulative projects identified in Table 3-1, the proposed project or variant would alter the amount of impermeable surface, resulting in the need for modifications and improvements to stormwater facilities, and would result in increased demand for potable water and wastewater treatment as the site is fully developed.

All of the developments on the cumulative project list within the City and County of San Francisco would be subject to the City's stormwater management program, the Stormwater Management Ordinance, batch wastewater discharge permit requirements, and the NPDES permit. Construction of the proposed project or variant would not cause a substantial amount of water consumption or wastewater to reach the City's wastewater treatment facilities. Thus, implementation of the cumulative projects would not require or result in the construction of new, or the expansion of existing, SFPUC water distribution infrastructure or wastewater/stormwater facilities, the construction of which would cause significant environmental effects. Therefore, the cumulative impact related to construction of new or expanded water or wastewater/stormwater infrastructure or facilities would be *less than significant*. No mitigation measures are necessary.

#### ***Operation***

##### **Water Supply**

As part of its planning for future water supply needs, SFPUC has conducted comprehensive planning studies to assess water demands for its service area, including the entire City, through the year 2040. SFPUC has adequate water supplies to meet service area demands through 2040. SFPUC approved the India Basin WSA (SFPUC,

2016b), which concluded that SFPUC has adequate short-term and long-term water supplies for the operation of the proposed project (and variant) in combination with projected demand throughout the service area through 2040. Pursuant to the Nonpotable Water Ordinance, the proposed project or variant would use nonpotable water to reduce the overall water demand at the project site. Pursuant to the nonpotable-water requirements, the WSA, and SFPUC's planning efforts, implementing the proposed project or variant and the cumulative projects would not require or result in the construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects. Thus, the cumulative operational water supply impact would be *less than significant*. No mitigation measures are necessary.

### **Stormwater**

The cumulative projects would be required to appropriately manage stormwater, which may include discharge into the City's combined sewer system or into separate stormwater and wastewater infrastructure. Pursuant to the City's Stormwater Management Ordinance, cumulative projects would be required to prepare stormwater control plans, including using LID strategies.

The proposed project or variant would not result in increased stormwater flows from the project site and would not contribute any stormwater to the Southeast Treatment Plant because a separate stormwater system would be developed on-site. In addition, the Candlestick Point–Hunters Point development would construct a separate stormwater sewer on its own development site; therefore, similar to the proposed project, the Candlestick Point–Hunters Point development would contribute only wastewater to the combined sewer system. Moreover, the May 2014 addendum to the Visitacion Valley Redevelopment Program EIR determined that the modified development program would result in less-than-significant project-level and cumulative impacts on utilities and service systems, including stormwater facilities.

Therefore, cumulative projects in combination with the proposed project or variant would not exceed the capacity of existing, or require the construction of new, off-site stormwater drainage infrastructure. The cumulative operational stormwater impact would be *less than significant*. No mitigation measures are necessary.

### **Wastewater**

The cumulative projects would contribute additional wastewater to the existing Southeast Treatment Plant, which would reduce the available capacity for additional wastewater flows to be treated at the plant. The incremental increase in wastewater flows from the proposed project or variant would not contribute to a violation of current wastewater treatment and discharge requirements. In addition, SFPUC is implementing the SSIP, which anticipates long-term development in the City pursuant to planned growth (SFPUC, 2014c). These improvements include, for example, the Biosolids Digester Facilities Project, which will improve treatment and management of biosolids at the Southeast Treatment Plant; and the Sunnydale Auxiliary Sewer Project, which will reduce local wastewater and stormwater flooding during peak storm events, including wastewater flows from the Visitacion Valley/Schlage Lock Special Use District.

Therefore, implementation of the cumulative projects would not require or result in the construction of new, or the expansion of existing, wastewater facilities. The cumulative operational wastewater impact would be *less than significant*. No mitigation measures are necessary.

### **Auxiliary Water Supply System**

The San Francisco Emergency Firefighting Water System (i.e., AWSS) is proposed to be extended to the Candlestick Point–Hunters Point development by installing AWSS infrastructure along Innes Avenue. Such an extension would benefit the proposed project or variant by providing additional firefighting water infrastructure to the project area that could be available for use at the four project site properties. Thus, the cumulative operational AWSS impact would be *less than significant*. No mitigation measures are necessary.

#### **3.12.5 References**

BKF Engineers (BKF). 2016 (November 2). *India Basin—Water Demands*. Memorandum.

Magnusson Klemencic Associates (MKA). 2016 (August 19). *India Basin Park Concept Design Technical Memorandum*. Seattle, WA.

San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB). 2013 (August). Order No. R2-2013-0029, NPDES No. CA0037664, *Waste Discharge Requirements for the City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities, and Wastewater Collection System*. Adopted August 13, 2013.

San Francisco, City and County of (San Francisco). 2017. Stormwater Overview. Available: <http://www.sfbetterstreets.org/find-project-types/greening-and-stormwater-management/stormwater-overview/>. Accessed March 31, 2017.

San Francisco Public Utilities Commission (SFPUC). 2010 (March 30). *San Francisco Stormwater Management Plan Annual Report 2009 (Year 6)*. Prepared by SFPUC Wastewater Enterprise Collection System Division.

———. 2013. *Sewer System Improvement Program: Bayside Drainage Basin Urban Watershed Characterization*. Final Draft Technical Memorandum. San Francisco, CA. Prepared by Urban Watershed Assessment Team, San Francisco, CA.

———. 2014a (June). *San Francisco's Wastewater Treatment Facilities*. Fact Sheet, updated June 2014. Available: <http://www.sfwater.org/modules/showdocument.aspx?documentid=5801>. Accessed June 21, 2016.

———. 2014b (February). *CS-199 Planning Support Services for Auxiliary Water Supply System (AWSS), Project Report*. San Francisco, CA. Prepared by AECOM and AGS, San Francisco, CA.

———. 2014c. *Sewer System Improvement Program 2014 Annual Report: Building Momentum*. San Francisco, CA.

———. 2015 (June). *2015 Retail Water Conservation Plan*. San Francisco, CA. Prepared by RMC Water and Environment.

———. 2016a (June). *2015 Urban Water Management Plan for the City and County of San Francisco*. San Francisco, CA.

- . 2016b (December). Agenda Item—Approval of Water Supply Assessment for the India Basin Mixed Use Project. December 13, 2016, Meeting Agenda Item 10a.
- . 2017a. San Francisco Groundwater Supply Project. Available: <http://sfwater.org/index.aspx?page=1136>. Accessed March 31, 2017.
- . 2017b. Drought Over: Efficient Water Use Remains Critical. Available: <http://sfwater.org/index.aspx?page=872>. Accessed June 16, 2017.
- . 2017c. Emergency Firefighting Water System. Available: <http://www.sfwater.org/index.aspx?page=467>. Accessed February 13, 2017.
- Sherwood Design Engineers (Sherwood). 2016a (September 28). *India Basin 700 Innes & India Basin Open Space—Storm Drain Design*. Memorandum to AECOM on behalf of Build SF. San Francisco, CA.
- . 2016b (October 13). *India Basin 700 Innes & India Basin Open Space—Sanitary Sewer Design* Memorandum. San Francisco, CA.
- . 2016c (July 20). *India Basin—Storm Drain Infrastructure* Memorandum. Prepared for BUILD. San Francisco, CA.
- State Water Resources Control Board (SWRCB). 2017. *Statewide Water Quality Control Plans for Trash* webpage. Available: [http://www.waterboards.ca.gov/water\\_issues/programs/trash\\_control/](http://www.waterboards.ca.gov/water_issues/programs/trash_control/). Accessed: August 21, 2017.
- Wistrom, Froste. Designer. Sherwood Design Engineers, San Francisco, CA. September 28, 2016—personal communication (e-mail) with Kelsey Bennett of AECOM regarding utilities questions.

This page intentionally left blank

### 3.13 PUBLIC SERVICES

This section describes the existing environmental and regulatory setting related to fire protection, police protection, schools, and library services and addresses the potential impacts of the proposed project and variant. Park-related public services are addressed in Section 3.11, “Recreation.” No comments related to public services were received during the public scoping period for the Notice of Preparation.

#### 3.13.1 Environmental Setting

##### Fire Protection

###### *San Francisco*

The San Francisco Fire Department (SFFD) provides fire protection and emergency medical services (EMS) in San Francisco. SFFD resources include 43 engine companies, 19 truck companies, a dynamically deployed fleet of ambulances, two heavy rescue squad units, two fireboats, and multiple special-purpose units (SFFD, 2016a). SFFD responds to more than 130,000 incidents each year, including fire and EMS (San Francisco Fire Commission, 2016). As of 2013 (the most recent date for which staffing data were available), SFFD employed a uniformed staff of 1,392 (SFFD, 2013). For each shift, fire engines require four staff members, ladder trucks require five staff members, and the battalion chief requires one staff member. An engine carries one officer and three firefighters, one of whom is qualified to provide EMS.

SFFD seeks to meet a response time of 5 minutes or less for the arrival of the first fire engine company (Rivera, pers. comm., 2017). SFFD’s target for ambulance response for EMS is 10 minutes. SFFD does not have a response-time goal for nonemergency requests for EMS (Rivera, pers. comm., 2017). In June 2016, the monthly average response for EMS within 10 minutes was 91.5 percent (SFOC, 2016).

The San Francisco Emergency Firefighting Water System, referred to in this section as the Auxiliary Water Supply System (AWSS), is used for the suppression of multiple-alarm fires and for fire suppression during major seismic events. The system delivers water at high pressure and consists of a storage reservoir, tanks, cisterns, water mains and hydrants, emergency saltwater pump stations, and fireboats (SFPUC, 2014 and 2017). The AWSS is an independent system that is owned and operated by the San Francisco Public Utilities Commission and used exclusively by SFFD for firefighting (SFPUC, 2014). The system is currently being seismically upgraded with funding from the Earthquake Safety and Emergency Response Bond 2010, which San Francisco voters approved in June 2010 (SFPUC, 2017).

###### *Project Site*

There are no fire stations at the project site. All four properties at the site—India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes—receive first-alarm fire protection primarily from Station 17 (1295 Shafter Avenue) and Station 25 (3305 Third Street), located approximately 0.7 mile southwest and 1.3 miles northwest of the project site, respectively. Station 9 (2245 Jerrold Avenue) and Station 42 (2430 San Bruno Avenue), located less than 3 miles west and southwest of the project site, respectively, also serve the site.

Emergency vehicles near the project site typically use major streets when heading to and from emergencies and emergency facilities. Arterial roadways allow the emergency vehicles to travel at higher speeds and permit other traffic to maneuver out of the path of these vehicles. Nonemergency vehicles are required to yield to emergency vehicles headed to the project site (California Vehicle Code, Section 21806). Emergency vehicles travel from these nearest fire stations to the project site via Third Street, Evans Avenue, Hunters Point Boulevard, Innes Avenue, and Ingalls Street. (San Francisco, 2017.)

Potable water is currently available in the project vicinity from a 16-inch main in Innes Avenue. Two existing fire hydrants are located along the Innes Avenue frontage, at the intersections with Arelious Walker Drive and Earl Street. Existing AWSS infrastructure is not available along Innes Avenue on the project site. The adjacent Candlestick Point–Hunters Point Phase II Shipyard Development plans to install AWSS infrastructure in Innes Avenue to Earl Street.

## **Police Protection**

### ***San Francisco***

The San Francisco Police Department (SFPD) provides police protection services throughout San Francisco. Police protection services primarily involve responding to calls for service, providing law enforcement and deterrence of criminal behavior, completing administrative tasks, and engaging in community policing (which involves working with community groups, businesses, schools, and other government agencies on crime prevention and law enforcement matters). SFPD catalogs criminal incidents by the severity of the crime. Part I crimes consist of homicide, rape, robbery, aggravated assault, burglary, larceny/theft, auto theft, and arson (SFPD, 2014) and Part II crimes are generally nonviolent crimes. SFPD has 10 district stations throughout the City.

SFPD's target for response to high-priority calls is 4 minutes or less. The monthly average police response time from May 1 to July 31, 2016, was 5 minutes (SFOC, 2016). As of 2015, SFPD had a sworn staffing level of 239 officers per 100,000 residents (SFOC, 2015a). SFPD does not have an adopted staffing ratio and allocates police resources based on factors such as calls for service, incident rates, response times, population, and land uses.

As required by the San Francisco Board of Supervisors, SFPD must publish a district station boundary analysis report every 10 years, with the intention of proposing boundaries for each SFPD district that more evenly distribute police resources and respond to community input. The most recent district station boundary analysis report, prepared in 2015, proposed moving the boundary of the Southern District farther south and reducing the size of the Bayview District (SFOC, 2015b). The report estimated that, with the new Bayview District boundaries, both calls for service and the number of incidents in the Bayview District would decrease (SFOC, 2015b). The new district boundaries were implemented in July 2015.

### ***Project Site***

There are no police stations at the project site. The project site is located within SFPD's Bayview District, which had a population of approximately 65,000 in 2014 (SFOC, 2015b). All four properties at the project site are served by the Bayview Station, located at 201 Williams Avenue, approximately 1.3 miles southwest of the site. The Bayview Station serves southeastern San Francisco, covering approximately 18 percent of the City's land area. In 2012, 3,802 Part I crimes (violent and property crimes) were reported in the Bayview District; this



accounted for 8.5 percent of the 44,884 total Part I crimes reported Citywide (SFPD, 2012). Part II crimes are not reported by district.

## Schools

### *San Francisco*

San Francisco Unified School District (SFUSD) provides public elementary and secondary education throughout the City. Students are placed in SFUSD schools through a preference-based application program rather than a location-based assignment system, which means that not all SFUSD students attend the schools nearest to their homes (SFUSD, 2012).

SFUSD has experienced a gradual increase in enrollment since 2009, from 55,140 enrolled in kindergarten through 12th grade (K-12) in 2009–2010 to 58,865 K-12 students enrolled in 2015–2016 (CDE, 2016). Project yield rates for SFUSD depend heavily on the types of housing units proposed, with market-rate units generally generating fewer students than inclusionary (affordable) units. According to the most recent version of *Demographic Analyses and Enrollment Forecasts for the San Francisco Unified School District* (SFUSD, 2015), using a student generation ratio of 0.25 for new inclusionary units and 0.10 for market-rate units is appropriate to forecast the number of students generated by new residential development. This analysis uses the more conservative figure of 0.25 student per unit, regardless of unit type or affordability.

### *Project Site*

There are no public schools on the project site. Public elementary schools near the site include Dr. George Washington Carver Elementary School, 0.5 mile away at 1360 Oakdale Avenue; and Malcolm X Academy, 0.6 mile away at 350 Harbor Road. Public middle schools in the near vicinity include Willie L. Brown Jr. Middle School, 1.1 miles away at 2055 Silver Avenue; KIPP Bayview Academy, 1.6 miles away at 1060 Key Avenue; and Martin Luther King Jr. Academic Middle School, 1.7 miles away at 350 Girard Street. The closest public high school is KIPP San Francisco College Preparatory, 0.4 mile away at 1195 Hudson Avenue. Thurgood Marshall Academic High School is located approximately 1.6 miles southwest of the project site at 45 Conkling Street.

Table 3.13-1 shows enrollment and capacity at these nearby public schools for the 2015–2016 school year.

**Table 3.13-1: Enrollment at Public Schools near the Project Site, 2015–2016**

School	Total Enrollment <sup>a</sup>	Capacity <sup>b</sup>
Dr. George Washington Carver Elementary School	220	500
Malcolm X Academy	85	500
Willie L. Brown Jr. Middle School	201	325
KIPP Bayview Academy	288	N/A
Martin Luther King Jr. Academic Middle School	509	525
KIPP San Francisco College Preparatory	312	N/A
Thurgood Marshall Academic High School	444	1,275

Notes: N/A = not available

<sup>a</sup> CDE, 2016

<sup>b</sup> SFUSD, 2009

Source: Data compiled by AECOM in 2016

## Library

### *San Francisco*

San Francisco Public Library (SFPL) provides library services in San Francisco, operating the Main Branch at Civic Center and 27 neighborhood branches. As of 2016, SFPL had a collection of 3,809,319 items, consisting of books, CDs, DVDs, sheet music, periodicals, government documents, and software. During the 2015–2016 fiscal year, SFPL had a total of 6,362,573 library visits; branch libraries averaged 150,945 library visits (SFPL, 2016a). Neighborhood branches provide reading rooms, book lending, information services, technological resources, and public programs, including youth-oriented programs (SFPL, 2016b). The average collection size across the branches for the 2015–2016 fiscal year was 44,393 items, although any SFPL branch can receive materials from the overall SFPL collection. A total of 10,778,428 items across all libraries circulated in 2015–2016.

In November 2000, San Francisco voters approved a \$106 million bond measure to upgrade San Francisco's branch library system, and in November 2007, voters approved Proposition D, which authorized additional funding to improve the branches. The improvement program seeks to address seismic safety, access, code impacts, condition repairs, modernization, and hazardous materials (SFPL, 2016c).

### *Project Site*

There are no public libraries at the project site. The SFPL branch nearest to all four properties on the project site is the Bayview Linda Brooks-Burton Branch, located 0.9 mile southwest of the site at 5075 Third Street. This branch is the only library in the Bayview Hunters Point neighborhood. Branch libraries in Portola and Visitacion Valley also serve the neighborhood's residents.

The Bayview Linda Brooks-Burton Branch library is open 7 days a week. The library building occupies 9,527 square feet, with two study rooms that are available on a first-come, first-served basis. The library has a community room that seats 35 people. Print and media collections are provided in English, Chinese, and Spanish. During the 2015–2016 fiscal year, this branch library had a collection of 45,085 items (including print and electronic) and circulated 110,811 items during 93,258 library visits (SFPL, 2016a).

The Bayview Linda Brooks-Burton Branch library opened in 2013 as part of the Branch Library Improvement Program. The new branch library, which received Leadership in Energy and Environmental Design (i.e., LEED) certification, was an expansion of the previous building, with more computers and room for an expanded collection to meet community needs (SFPL, 2016c).

### **3.13.2 Regulatory Framework**

#### **Federal**

No federal plans, policies, regulations, or laws pertaining to public services are applicable to the proposed project or the variant.

## State

### *California Fire Code*

State fire regulations are set forth in California Health and Safety Code Section 13000 et seq., which include regulations governing construction and operation of buildings for fire safety. The code covers fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazard safety, storage and use of hazardous materials, provisions to aid fire responders, industrial processes, and other fire safety requirements for new and existing buildings.

### *California Vehicle Code Section 21806*

Section 21086 of the California Vehicle Code requires that vehicles yield right-of-way to emergency vehicles and remain stopped until the emergency vehicles have passed. This allows emergency vehicles priority access along the right-of-way to facilitate emergency response.

### *California Government Code Section 65995 and California Education Code Section 17620*

Section 17620 of the California Education Code authorizes school districts to levy a fee, charge, dedication, or other requirement against any development project for the construction or reconstruction of school facilities, provided that the district can justify the need for the fee.

Senate Bill (SB) 50 (Chapter 407, Statutes of 1998) instituted a program by which school districts can apply for State construction and modernization funds for new school facilities. SB 50 restricts the ability of cities and counties to require mitigation of impacts related to school facilities as a condition of approving new development. SB 50 also afforded school districts the authority to levy fees against new residential and commercial development to support the construction or reconstruction of school facilities that would support new development.

### *CEQA Section 21151 and California Education Code Section 17213*

The *Guide to School Site Analysis and Development* was prepared by the California Department of Education (CDE) to provide criteria for locating school sites in California (CDE, 2000). With CDE approval, school districts can receive State funds for the acquisition of new school sites. CDE recommends school sites based on acreage, health and safety, environmental constraints, and land use concerns.

CDE recommends that a school district selecting a school site consider proximity to airports or to high-voltage power transmission lines, presence of toxic and hazardous substances or high-pressure gas lines, hazardous air emissions and facilities within one-quarter mile, and proximity to railroads. CEQA Section 21151.8 and Section 17213(b) of the Education Code identify environmental requirements for school projects that supplement CEQA's standard environmental analysis requirements. These additional requirements are intended to ensure that, before a school district approves a school project at a given site, the site is evaluated to identify the potential health effects of exposure to hazardous materials, wastes, emissions, and substances.

The school district as lead agency must consult with other agencies on the potential impacts of school siting before it considers a school project for approval. CEQA Section 21151.2 also requires that a school district notify the appropriate planning commission in writing regarding its intent to acquire title to property for a new school site or an addition to an existing school site. The planning commission would investigate the proposed site and submit its recommendations to the school district's governing board within 30 days of receiving notice. After the required consultation, the governing board must make written findings when taking action on the proposed school project.

CEQA does not restrict school districts from constructing schools in areas where they would be exposed to certain hazards. Construction of a school on such a site is subject to certain design and mitigation requirements, and the governing board of the school district must make findings to this effect. Even in an instance where certain hazards cannot be avoided or fully mitigated, a district can still approve construction of a school that would be subject to certain hazard exposure if alternative sites are similarly constrained or not available.

## **Local**

### ***San Francisco Fire Code***

The San Francisco Fire Code was revised in 2013 to regulate and govern the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials, and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises; to provide for the issuance of permits, inspections, and other SFFD services; and to provide for the assessment and collection of fees for those permits, inspections, and services. SFFD reviews building plans to ensure that fire and life safety is provided and maintained in buildings that fall under its jurisdiction.

In coordination with the San Francisco Department of Building Inspection, SFFD conducts plan checks to ensure that all structures, occupancies, and systems outlined below are designed in accordance with the San Francisco Fire Code before a building permit is issued (SFFD, 2016b):

- assembly occupancies (including restaurants and other gathering places for 50 or more occupants);
- educational occupancies (including commercial day care facilities);
- hazardous occupancies (including repair garages, body shops, fuel storage, and emergency generator installation);
- storage occupancies where the potential exists for high-piled storage as defined by the Fire Code;
- institutional occupancies;
- high-rise buildings of all occupancies;
- residential occupancies, such as hotels, motels, lodging houses, residential care facilities, apartment houses, small- and large-family day care homes, and R-1 artisan buildings (excluding minor residential repairs such as kitchen and bath remodeling and dry-rot repair);
- certified family-care homes, out-of-home placement facilities, halfway houses, and drug and/or alcohol rehabilitation facilities;
- tents, awnings, or other fabric enclosures used in connection with any occupancy; and
- fire alarm and fire suppression systems.

## ***San Francisco Police Code***

The San Francisco Police Code includes regulations for various types of activities such as automobile use, permitting and licensing, use of ports, and disorderly conduct.

### **3.13.3 Impacts and Mitigation Measures**

#### **Significance Thresholds**

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Public Services. Implementation of the proposed project or the variant would have a significant effect on Public Services if the proposed project or variant would:

- result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as:
  - fire protection,
  - police protection,
  - schools,
  - parks, or
  - other services.

#### **Approach to Analysis**

To determine whether the proposed project or variant would result in impacts on public services, the project's demands for police, fire, school, and library services were evaluated. The impact analysis considers only operation of the proposed project or variant, as routine demands for public services during the construction period would be similar to existing demands.

Demand for police and fire protection services was evaluated in the context of the addition of residents, employees, and property to the site, as well as project-related changes in access to and around the site. To determine the proposed project's or variant's demand for school services, SFUSD student-generation ratios for new households were utilized to determine the number of students expected to reside at the project site. Similarly, demand for library services was considered to be proportional to the number of project site residents.

The demand for services associated with the proposed project or variant was then compared to the appropriate service provider's planned capacity or service standard. For this analysis, SFUSD capacity was analyzed at the schools nearest to the project site. Although SFUSD prioritizes families' preferences for enrollment, students can be assigned to the school nearest their residences if the preferred schools do not have capacity (SFUSD, 2012). Where the project's demand for services would exceed the capacity of a service provider or would cause a service

standard to drop to unacceptable levels, the project was considered to result in a significant impact. Sources considered included annual reports, capital plans, and personal communications with service providers.

Park-related public services are addressed in Section 3.11, “Recreation.”

## **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. Implementation of the proposed project or variant would increase the residential and employment populations on the project site, resulting in a corresponding increase in demand for public services (e.g., fire protection, EMS, police protection, schools, and library services).

## **Impact Evaluation**

**Impact PS-1: The proposed project or variant would not increase demand for fire services in a manner that would result in the need for construction or alteration of fire protection facilities. (*Less than Significant*)**

### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

Operation of the recreational, commercial, and institutional facilities proposed for the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties under either the proposed project or the variant would not result in a substantial increase in demand for fire protection services. As in all areas within the City’s jurisdiction, SFFD would respond to calls for service from these properties.

Although increased visitation to the properties may increase the number of calls for service, it is not anticipated that the proposed project or variant would substantially increase the need for fire protection and other emergency services to the point that construction of new fire department facilities would be needed. Many visitors to the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties would be residents of the 700 Innes property, employees on the project site, or existing residents or employees of the surrounding neighborhood. Moreover, fire protection and emergency medical resources are regularly redeployed based on the need to maintain acceptable service ratios.

Both the proposed project and the variant are subject to the California and San Francisco Fire Codes, which include necessary utility and access requirements for fire protection and emergency services. The components of the proposed project or variant would be constructed according to State and local fire codes. Dilapidated structures that currently exist on-site were not built to State and local fire codes. The structures that would be restored or removed would reduce the potential on-site fire hazards relative to existing conditions. The proposed project or variant would not require providing new or altered fire protection facilities.

### **700 Innes Property**

Development of the 700 Innes property would support approximately 3,400 residents and 924 employees under the proposed project, or 1,371 residents and 3,530 employees under the variant. The addition of residents and employees at this property would increase the demand for fire protection services.

SFFD seeks to meet response-time requirements of 5 minutes for fire suppression and 10 minutes for EMS. Approximate driving times to the project site from the nearest SFFD stations range from 4 minutes (Stations 17 and 25) to 9 minutes (Station 42). These times represent travel time for an ordinary driver and are conservative estimates of travel time for emergency service vehicles. SFFD would be able to serve the project in conformance with response standards (Rivera, pers. comm., 2017). Moreover, fire protection and emergency medical resources are regularly redeployed based on need to maintain acceptable service ratios.

State and local fire codes, including the 2010 California Building Standards Code and Fire Code, regulate the design of buildings, streets, parks, and landscaping. The proposed project or variant would be built in conformance with the San Francisco Fire Code, which requires providing adequate emergency access at the intersections that the proposed project or variant would improve, through the project site, and within the proposed buildings so that SFFD can comply with standard response times. The water volume and pressure needed for on-site fire suppression and the locations of hydrants would be determined during the final design phase, pursuant to SFFD's review and guidance. BUILD would work with SFFD to determine utility and access requirements for fire protection and emergency services for the proposed project or variant during operation.

The project site is located in an area that is accessible by existing SFFD personnel within desired response times, the components of the proposed project or variant would be constructed according to the California and San Francisco fire codes, and the proposed project or variant would not require providing new or altered fire protection facilities.

#### **Overall Impact Conclusion**

The proposed project and variant's operational impacts related to provision of fire protection services would be *less than significant*. No mitigation measures are necessary.

**Impact PS-2: The proposed project or variant would not increase demand for police services in a manner that would result in the need for construction or alteration of law enforcement facilities. (*Less than Significant*)**

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Recreational, commercial, and institutional facilities are proposed for the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties. Development of the 700 Innes property would support approximately 3,400 residents and 924 employees under the proposed project, or 1,371 residents and 3,530 employees under the variant. Development of the 700 Innes property would also result in a new kindergarten through 8th grade (K-8) school. An increase in use by recreationists, employees, students, and residents would increase the demand for police protection at the project site.

Police protection resources are regularly redeployed within each district and, as necessary, between districts based on the need to maintain acceptable service ratios. If necessary, a school resource officer or other police resources would be allocated to a new school (Sainez, pers. comm., 2017). The district station boundary analysis report considered altering the boundaries of SFPD's 10 districts so that the allocation of police resources would be more consistent with the needs of each district. The Southern District was expanded, reducing the size of the Bayview District. The new Bayview District boundaries reduced the district's population and housing, partially to account

for the future increase in population and housing projected for the Bayview District and the associated increase in future police demand. The new boundaries reduced the projected housing growth in the Bayview District from 33 percent of citywide housing growth to 26.5 percent (SFOC, 2015b). By reducing the existing population and housing in the Bayview District, the boundary changes proposed in the district station boundary analysis report allow the Bayview District to provide adequate service to the district's future population and land uses. No new facilities or physical alterations to the Bayview Police District's existing facilities would be expected to be needed to meet the increased demand generated by the proposed project or variant.

### **Overall Impact Conclusion**

Under either the proposed project or the variant, operational impacts related to provision of police protection services would be *less than significant*. No mitigation measures are necessary.

**Impact PS-3: The proposed project or variant would not increase demand for school services in a manner that would result in the need for construction or alteration of school facilities. (*Less than Significant*)**

### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

The India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties would not contain any residential or school uses and would not increase demand on SFUSD's school system once in operation.

### **700 Innes Property**

SFUSD has adopted a student generation rate of 0.25 student per dwelling unit (SFUSD, 2015). A total of 1,240 residential units would be developed under the proposed project, resulting in the need to accommodate approximately 310 K-12 students in local schools. By contrast, 500 residential units would be developed under the variant, and at least 125 K-12 students would need to be accommodated in local schools. This analysis conservatively assumes that none of the school-age residents associated with the proposed project or variant are already enrolled in an SFUSD school and that none would enroll in private school.

A 50,000-square-foot K-8 school that could serve approximately 450 students is proposed as part of both the proposed project and the variant. The proposed school is anticipated to serve both the residents of the project site and school-age children from the surrounding community. Because the total combined number of elementary, middle, and high school students generated by the proposed project or variant would be less than the capacity of the proposed K-8 school, the capacity of the proposed school would be adequate to serve all elementary and middle school students generated by the proposed project or variant.

High school students residing on the project site would be located closest to KIPP San Francisco College Preparatory, 0.4 mile from the project site, and Thurgood Marshall Academic High School, 1.6 miles from the project site. Thurgood Marshall Academic High School is currently at 35 percent of the school's capacity and has room for 831 students. KIPP San Francisco College Preparatory is accepting applications. These schools would have capacity available to serve the high school students residing on the 700 Innes property.

The proposed project or variant would increase the residential population and SFUSD enrollment; however, BUILD would be required to pay fees to SFUSD (through the Department of Building Inspection) pursuant to



Section 17620 of the California Education Code. Section 65995(h) of the California Government Code determines that such fees are considered full and complete mitigation of the impacts of development on local school systems.

### **Overall Impact Conclusion**

Because a new school could serve all K-8 students associated with the proposed project or variant, and because the project sponsor would be required to pay fees to SFUSD, the operational impacts related to provision of school services under the proposed project or variant would be *less than significant*. No mitigation measures are necessary.

**Impact PS-4: The proposed project or variant would not increase demand for library services in a manner that would result in the need for construction or alteration of library facilities. (*Less than Significant*)**

### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

The India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties would not support any residents. As such, none of these properties would generate library users.

### **700 Innes Property**

The Bayview Linda Brooks-Burton Branch of the SFPL is located approximately 0.9 mile from the project site. This branch opened in 2013 as part of the Branch Library Improvement Program. The program included an expansion of facilities to meet increased service demand in the Bayview neighborhood (SFPL, 2008). The total number of library visits to the Bayview Linda Brooks-Burton Branch during the 2015–2016 fiscal year was approximately 62 percent of the average number of visits to an SFPL branch. In addition, circulation was lower at this branch library than at other branches with similar collection sizes (SFPL, 2016a), suggesting that this branch could accommodate further growth.

The additional residents generated by the proposed project or variant would likely be accommodated by the Bayview Linda Brooks-Burton Branch Library and other branch libraries in the vicinity (Hayes, pers. comm., 2016). Funding for library services and facilities comes from voter-approved bond measures and the General Fund, which receives revenue from a range of sources, including property taxes and development fees. The proposed project or variant would contribute to library funding through property taxes and development fees that would be proportionate to the increased demand in library services.

### **Overall Impact Conclusion**

The proposed project or variant would not require new or expanded library facilities. The operational impacts related to provision of library services under the proposed project or variant would be *less than significant*. No mitigation measures are necessary.

### 3.13.4 Cumulative Impacts

**Impact-C-PS-1: The proposed project or variant, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would not substantially contribute to cumulative impacts related to public services. (*Less than Significant*)**

The geographic scope for cumulative impacts on public services is the southeast quadrant of the City, within which the SFPD stations, SFFD stations, schools, and libraries that would serve the project site are located.

The proposed project or variant, when combined with the cumulative development projects listed in Table 3-1 in Section 3.0.3, “Format of the Environmental Analysis,” would add approximately 11,000 residential units and 500,000 square feet of commercial/institutional uses to the project vicinity. This scale of development would increase demand for fire protection services, police protection services, schools, and libraries.

SFFD, SFPD, SFUSD, and SFPL would be able to accommodate the additional demand for public services that would be generated by the cumulative projects. The Candlestick Point–Hunters Point Phase II Shipyard Development Project EIR considered construction of a new SFFD station and reconfiguration of the existing SFPD Bayview Station and/or construction of a new SFPD facility as part of that project. Because of the proximity of the Hunters Point Shipyard to the project site, it is likely that staff members from these SFFD and SFPD facilities, when constructed, would also serve the project site (Rivera, pers. comm., 2017; Sainez, pers. comm., 2017). If the AWSS is extended to the Candlestick Point–Hunters Point development, and in doing so provides infrastructure along Innes Avenue, such an extension would benefit the proposed project or variant by providing additional firefighting water infrastructure available for use at the project site. This source of firefighting water infrastructure would supplement the on-site fire suppression infrastructure at the project site constructed as part of the proposed project or variant. The proposed project or variant would include a new school that would serve the future residents of the 700 Innes property as well as existing and future San Francisco residents. In addition, RPD and BUILD would be required to pay development impact fees to fund staffing and facilities at SFUSD schools and SFPL branches. For these reasons, the cumulative impact related to public services would be *less than significant*. No mitigation measures are necessary.

### 3.13.5 References

- California Department of Education (CDE). 2000. *Guide to School Site Analysis and Development*. 2000 Edition. Developed in 1999 in compliance with the Administrative Procedures Act. Prepared by CDE School Facilities Planning Division, Sacramento, CA.
- . 2016. K-12 Public School Enrollment: 3757478—San Francisco Unified. CDE Data Reporting Office. Available: <http://dq.cde.ca.gov/dataquest/DQ/EnrTimeRpt.aspx?Level=District&cYear=2015-16&cname=San%20Francisco%20Unified&cCode=3868478>. Accessed June 29, 2016.
- Hayes, Beverly. Branch Manager. Bayview Linda Brooks-Burton Branch Library, San Francisco, CA. August 16, 2016—personal communication (e-mail) with Christine Wolfe of AECOM regarding ability of the Bayview Linda Brooks-Burton Branch Library and other branch libraries in the vicinity to accommodate the addition of residents associated with the project.

- Rivera, Anthony. Assistant Deputy Chief, San Francisco Fire Department, San Francisco, CA. March 6, 2017—letter to Christine Wolfe of AECOM regarding fire protection services in the City of San Francisco and in the project area.
- Sainez, Hector. Assistant Chief, San Francisco Police Department, San Francisco, CA. February 15, 2017—personal communication (telephone call) with Christine Wolfe of AECOM regarding police protection services in the City of San Francisco and in the project area.
- San Francisco, City and County of. 2017 (March). *India Basin Development, Transportation Impact Analysis*. San Francisco, CA. Case Number: 2014.2541E. Prepared for San Francisco Planning Department by Fehr & Peers, San Francisco, CA.
- San Francisco Fire Commission. 2016 (September). *Resolution 2016-08: Resolution Recommending that the Board of Supervisors Authorize the San Francisco Fire Department to Accept and Expend a Grant in the Amount of \$8,533,872 from the Federal Emergency Management Agency to Hire Thirty-Six Firefighters*. Available: <http://sf-fire.org/sites/default/files/COMMISSION/Documents/FC%20Resolution%202016-08%20staffing%20%28FEMA%20Safer%20Grant%29.pdf>.
- San Francisco Fire Department (SFFD). 2013. *San Francisco Fire Department Annual Report, 2012–2013 (FY)*. San Francisco, CA.
- . 2016a. About SFFD Operations. Available: <http://sf-fire.org/about-sffd-operations>. Accessed September 1, 2016.
- . 2016b. Plan Check. Available: <http://sf-fire.org/plan-check>. Accessed July 1, 2016.
- San Francisco Office of the Controller (SFOC). 2015a (June 10). *City Services Benchmarking: Police Staffing*. San Francisco, CA.
- . 2015b (March). *District Station Boundary Analysis Report*. Prepared by Public Safety Strategies Group, LLC. San Francisco, CA.
- . 2016. City Performance Scorecards: Public Safety. Available: <http://sfgov.org/scorecards/public-safety>. Accessed September 24, 2016.
- San Francisco Police Department (SFPD). 2012. *San Francisco Police Department 2012 Annual Report*. Office of the Chief of Police, San Francisco, CA.
- . 2014. *San Francisco Police Department 2014 Annual Report*. Office of the Chief of Police, San Francisco, CA.
- San Francisco Public Library (SFPL). 2008 (November 19). *New Bayview/Anna E. Waden Branch Library Frequently Asked Questions*. Available: <http://sfpl.org/pdf/about/commission/bayviewfaq.pdf>. Accessed September 13, 2016.
- . 2016a (June). *Statistics by Location 2015–2016*. Available: <http://sfpl.org/pdf/about/administration/statistics-reports/Statisticsbylocation2015-16.pdf>. Last updated June 30, 2016. Accessed October 17, 2016.

- . 2016b (September). System-wide Statistics FY 2015–2016. Available: <http://sfpl.org/pdf/about/administration/statistics-reports/systemwideFY15-16.pdf>. Accessed October 17, 2016.
- . 2016c. Bayview Library New Construction. Available: <http://sfpl.org/?pg=2000087501>. Accessed September 13, 2016.
- San Francisco Public Utilities Commission (SFPUC). 2014 (February). *CS-199 Planning Support Services for Auxiliary Water Supply System (AWSS) Project Report*. Prepared by AECOM and AGS, San Francisco, CA.
- . 2017. Emergency Firefighting Water System. Available: <http://www.sfwater.org/index.aspx?page=467>. Accessed February 13, 2017.
- San Francisco Unified School District (SFUSD). 2009 (September). *San Francisco Unified School District Capital Plan FY 2010–2019*. San Francisco, CA.
- . 2012 (March 26). SFUSD Fact Sheet: How Does the Student Assignment Computer Program Work? Available: <http://www.sfusd.edu/en/assets/sfusd-staff/enroll/files/2012-13/Assignment-Transfer%20process%20explained.pdf>. Accessed October 17, 2016.
- . 2015 (November 23). *Demographic Analyses and Enrollment Forecasts for the San Francisco Unified School District*. San Francisco, CA. Prepared by Lapkoff & Gobalet Demographic Research, Inc. Berkeley, CA.

## **3.14 BIOLOGICAL RESOURCES**

This section describes the existing environmental and regulatory setting and addresses the potential impacts of the proposed project or variant related to biological resources. Information supporting the biological resources analysis is presented in Appendix K of this EIR. Comments regarding biological resources, including impacts on breeding shorebirds, migratory shorebirds, fish, and native plants, were received during the public scoping period in response to the Notice of Preparation. These comments are addressed in this section.

### **3.14.1 Environmental Setting**

#### **Soils, Hydrology, and Climate**

The entire India Basin Open Space property and much of the land on the India Basin Shoreline Park, 900 Innes, and 700 Innes properties were created using fill. Soils in the study area are primarily urban complex (cut and fill) of 0–2 percent and 5–75 percent slopes (USDA SCS, 2010; USDA NRCS, 2010 and 2016). The study area contains two types of soils as mapped by the U.S. Department of Agriculture’s Natural Resources Conservation Service: Urban land complex–Orthents, cut and fill, 5–75 percent slopes; and Urban land–Orthents, reclaimed complex, 0–2 percent slopes.

For further discussion of relevant soils in the region and on the project site, see Section 14, “Geology and Soils,” of the Initial Study (Appendix A). For a discussion of relevant regional and project site hydrology, see Section 3.15, “Hydrology and Water Quality,” and for a discussion of climate, see Section 3.7, “Air Quality,” in this EIR.

#### **Physical Habitat/Vegetation**

Habitat is an area consisting of a combination of resources (e.g., food, cover, water) and environmental conditions (e.g., temperature, precipitation, presence or absence of predators and competitors) that promotes occupancy by individuals of a species and enables those individuals to survive and reproduce. Thus, habitat arises from interaction among soils, hydrology, climate, and vegetation. Soils, hydrology, and climate are addressed in other sections of this EIR; this habitat discussion includes information regarding vegetation.

#### ***San Francisco Bay Area***

Habitat communities in the San Francisco Bay Area (Bay Area) consist primarily of Mediterranean plant associations, but vary depending on microclimate. Tidal marshland and open water habitat dominate the aquatic portions of San Francisco Bay (Bay), while nonnative grassland and oak savanna are the primary habitats in the East Bay. The Peninsula is dominated by urban, developed, landscaped, and ruderal habitats, while the North Bay is a mosaic of nonnative grassland, oak savanna, mixed forest, and redwood forest.

#### ***San Francisco***

San Francisco is primarily developed. Undeveloped areas scattered throughout the City consist primarily of parks, stands of ornamental trees, and ruderal vegetation. Natural communities are limited in San Francisco, but small portions of coastal scrub habitat exist in undeveloped areas, inland of the City’s western and eastern shorelines.

In addition, open water habitat surrounds San Francisco, and tidal marsh habitat begins to appear along the eastern shoreline of the City, heading toward the South Bay.

### ***Project Site***

Habitat communities on the project site consist of open water, tidal marsh, seasonal wetland, wetland swale, native coastal scrub, beach, and landscaped areas. Vegetation is discussed by project site property below.

Table 3.14-1 summarizes the area of each habitat community observed at the project site. Detailed descriptions of these communities are provided in the biological resources assessments for the project site (San Francisco, 2017a and 2017b) (Appendix K). Figures 3.14-1 and 3.14-2 show the locations of each of these habitat communities on each project site property.

**Table 3.14-1: Habitat Acreages at the Project Site**

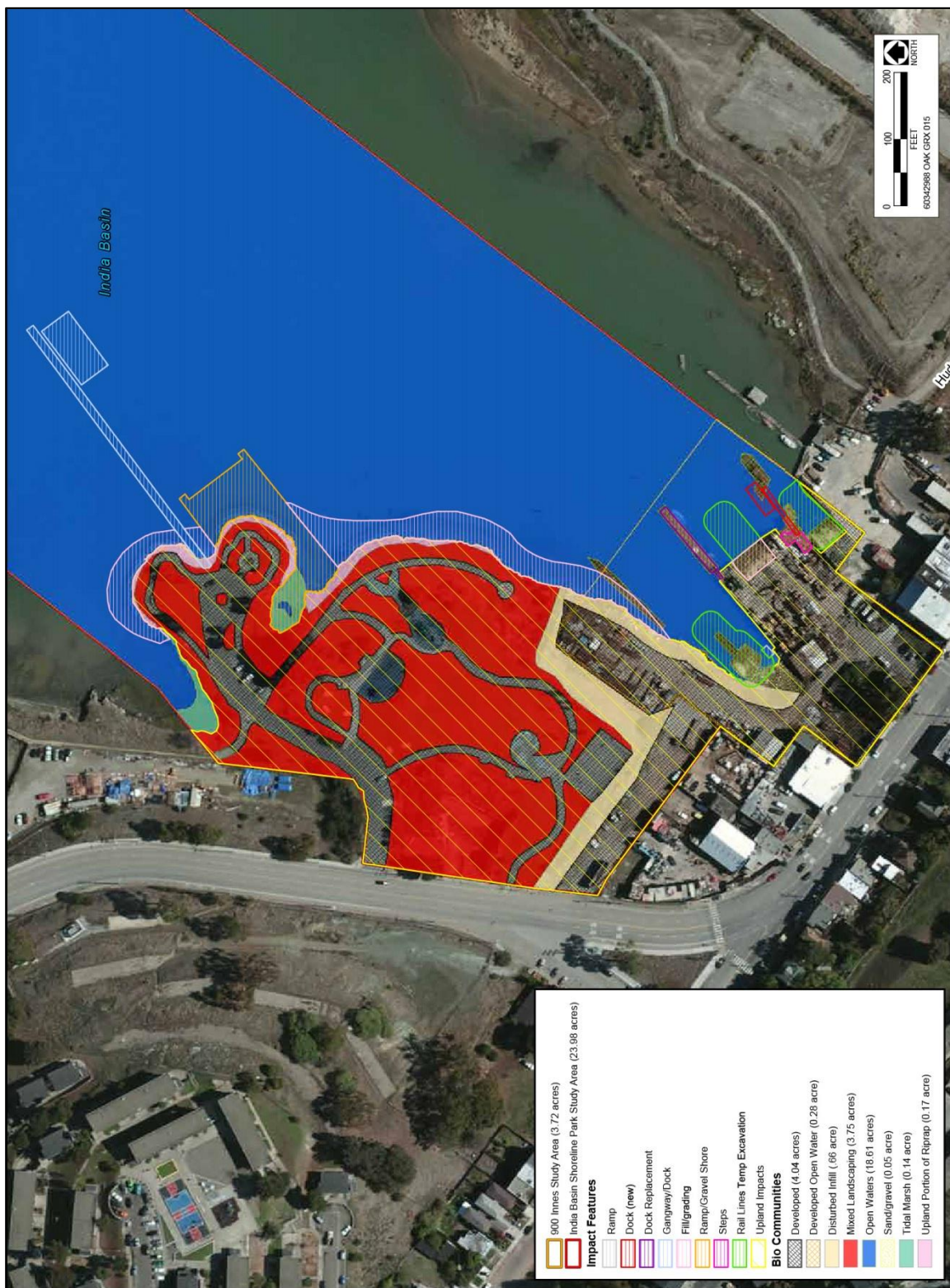
Habitat Type	Area of Project Site Property (acres)				Total
	India Basin Shoreline Park	900 Innes	India Basin Open Space	700 Innes	
Bare (above HTL)	0	0	0.01	0	0.01
Bare (below HTL)	0	0	0.52	0	0.52
Beach	0	0	0.11	0	0.11
Concrete debris (above HTL)	0	0	0.05	0	0.05
Concrete debris (below HTL)	0	0	0.13	0	0.13
Developed	2.11	1.93	0.47	5.39	9.90
Developed open water	0.01	0.27	0.01	0.03	0.32
Disturbed infill	0.45	0.21	0.23	14.72	15.61
Maintained landscaping	0	0	2.33	0.74	3.07
Mixed landscaping	3.75	0	0	0.58	4.33
Native coastal scrub	0	0	0.21	0.33	0.54
Open waters	17.35	1.26	22.59	0.39	41.59
Riprap (upland)	0.17	0	0	0	0.17
Sand (above HTL)	0	0	0.24	0	0.24
Sand (below HTL)	0	0	0.31	0	0.31
Sand/gravel	0	0.05	0	0	0.05
Seasonal wetland	0	0	0	0.26	0.26
Tidal marsh	0.14	0	1.91	0.02	2.07
Waters	0	0	0	0.01	0.01
Wetland swale	0	0	0	0.04	0.04
<b>Total</b>	<b>23.98</b>	<b>3.72</b>	<b>29.12</b>	<b>22.51</b>	<b>79.33</b>

Notes:

HTL = high-tide line

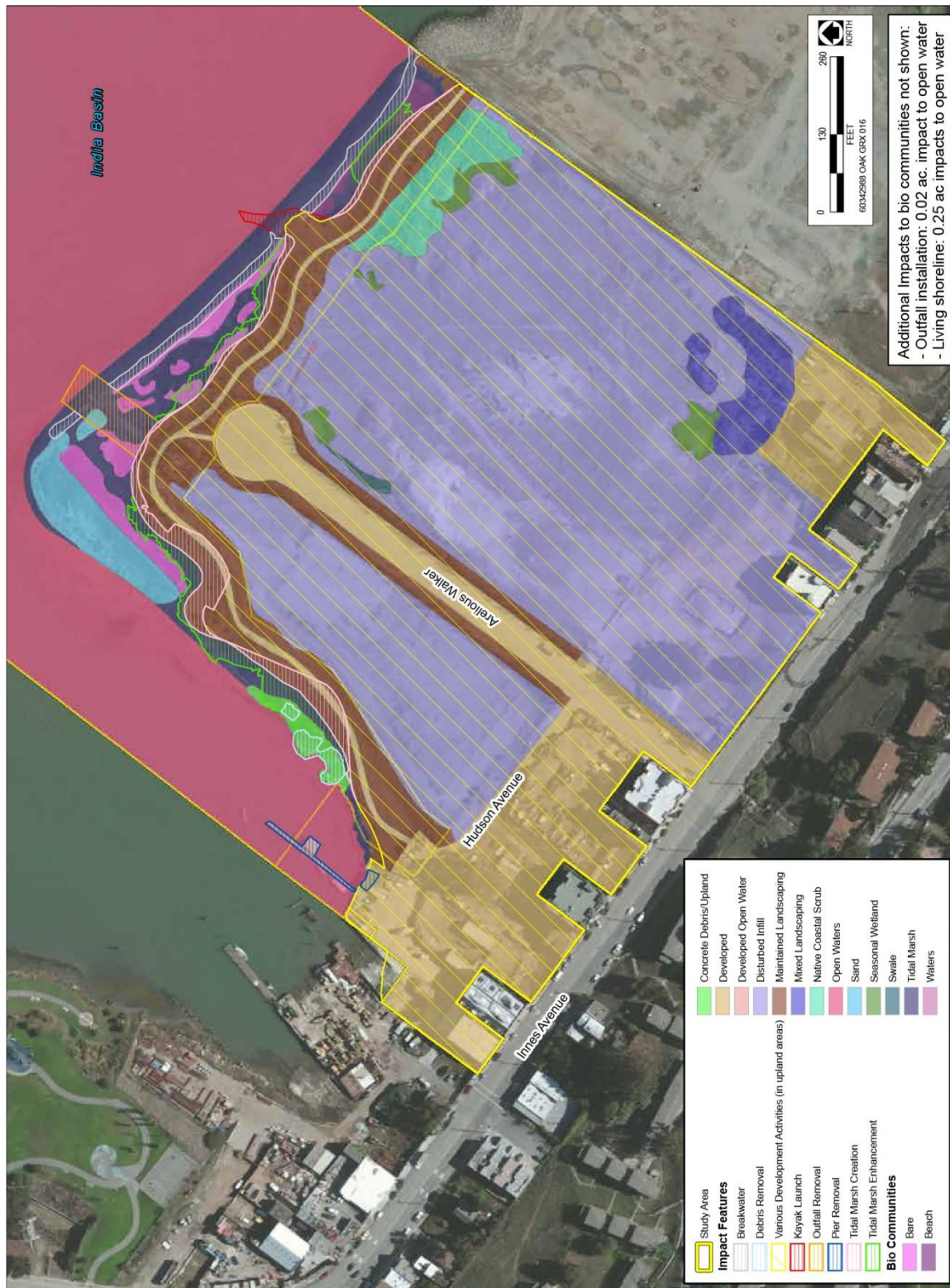
<sup>1</sup> Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987), are identified by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.

Sources: San Francisco, 2017a and 2017b



Source: San Francisco, 2017a; adapted by AECOM in 2017

**Figure 3.14-1: Habitat Map of the India Basin Shoreline Park and 900 Innes Properties**



Source: San Francisco, 2017b; adapted by AECOM in 2017

**Figure 3.14-2: Habitat Map of the India Basin Open Space and 700 Innes Properties**



### **India Basin Shoreline Park Property**

The India Basin Shoreline Park property consists primarily of mixed landscaping, developed land, and disturbed infill. Mixed landscaping on the property is regularly mowed. Mixed landscaping and disturbed infill areas are dominated by ruderal, nonnative grass and herbaceous species with some shrubs and trees. Dominant grass and herbaceous species observed during site visits include wild oats (*Avena* sp., Not Listed [NL]<sup>1</sup>), ripgut brome (*Bromus diandrus*, NL), foxtail chess (*B. madritensis*, Upland [UPL]), soft chess (*B. hordeaceus*, Facultative Upland [FACU]), milk thistle (*Silybum marianum*, NL), fennel (*Foeniculum vulgare*, NL), wild radish (*Raphanus sativus*, NL), and Himalayan blackberry (*Rubus armeniacus*, FACU), among other species.

Dominant trees and shrubs include silver wattle (*Acacia dealbata*, NL), California buckeye (*Aesculus californica*, NL), toyon (*Heteromeles arbutifolia*, NL), bush lupine (*Lupinus* sp., NL), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*, Facultative Wetland [FACW]), and coast live oak (*Quercus agrifolia*, NL), among other species.

Smaller portions of tidal marsh, open water, and riprap occur along the shoreline of the India Basin Shoreline Park property. Riprap consists of boulder-sized rocks piled along the edge of the shoreline. Tidal marsh is dominated by salt grass (*Distichlis spicata*, Facultative [FAC]), alkali sea-heath (*Frankenia salina*, FACW), marsh jaumea (*Jaumea carnosa*, Obligate [OBL]), and pickleweed (*Salicornia pacifica*, OBL) (USACE, 2016).

In total, 42 trees were mapped on the India Basin Shoreline Park property. These trees included blackwood acacia (*Acacia melanoxylon*), blue gum (*Eucalyptus globulus*), Catalina ironwood (*Lyonothamnus floribundus*), Melaleuca (*Melaleuca* sp.), Lombardy poplar (*Populus nigra*), and California pepper (*Schinus molle*).

### **900 Innes Property**

The 900 Innes property consists primarily of developed land and disturbed infill, with smaller portions of developed open water and open water habitat offshore. With the exception of a few ornamental trees, no vegetation exists on this property

### **India Basin Open Space Property**

The India Basin Open Space property consists primarily of mixed landscaping onshore, as well as tidal marsh and open water offshore. As at India Basin Shoreline Park, tidal marsh is dominated by saltgrass, alkali sea-heath, marsh jaumea, and pickleweed. Species present in the mixed landscaping are the same as those described for the India Basin Shoreline Park property. In between portions of mixed landscaping, the India Basin Open Space property contains a more diverse mosaic of habitat types than the other project site properties, with small areas of native coastal scrub, sand, and beach habitats. Vegetation in the coastal scrub communities and along the edges of sand and beach habitats consists predominantly of yellow bush lupine (*Lupinus arboreus*, NL), silver bush lupine (*L. albifrons* var. *albifrons*, NL), telegraph weed (*Heterotheca grandiflora*, NL), and arroyo willow (*Salix lasiolepis*, FACW). Six arroyo willows are present on the India Basin Open Space property.

<sup>1</sup> The abbreviations used here refer to the indicator statuses of plants listed in the Arid West 2016 Regional Wetland Plant List (USACE, 2016). OBL = Obligate, always found in wetlands (> 99 percent frequency of occurrence); FACW = Facultative Wetland, usually found in wetlands (67–99 percent frequency of occurrence); FAC = Facultative, equal occurrence in wetlands or nonwetlands (34–66 percent frequency of occurrence); FACU = Facultative Upland, usually occurs in nonwetlands (67–99 percent frequency of occurrence), but occasionally found in wetlands (1–33 percent frequency of occurrence); and UPL = Upland, almost never occurs in water or saturated soils. Use of the abbreviation “NL” means that the plant is not listed.

### **700 Innes Property**

The 700 Innes property consists primarily of disturbed infill and developed land. Scattered throughout the property, especially along the edges, are mixed and maintained landscaping, seasonal wetland, wetland swale, open water, native coastal scrub, and human-made water features. Species present in landscaped areas and coastal scrub communities are similar to those described above under “India Basin Open Space Property.” Typical plant species observed in seasonal wetlands on the 700 Innes property include cut leaf plantain (*Plantago coronopus*, FAC), water starwort (*Callitriche heterophylla* var. *heterophylla*, OBL), curly dock (*Rumex crispus*, FAC), and salt grass (FAC).

In total, 52 trees were mapped on the 700 Innes property. Surveyed trees on this property consist of 16 species: silver wattle, narrow-leaf peppermint (*Eucalyptus nicholii*), blue gum, Monterey cypress (*Hesperocyparis macrocarpa*), toyon, jacaranda (*Jacaranda mimosifolia*), southern magnolia (*Magnolia grandiflora*), myoporum (*Myoporum laetum*), Canary Island pine (*Pinus canariensis*), Monterey pine (*P. radiata*), Japanese cherry (*Prunus serrulata*), arroyo willow, Coast redwood (*Sequoia sempervirens*), queen palm (*Syagurus romanzoffianum*), water gum (*Tristaniopsis laurina*), and Siberian elm (*Ulmus pumila*).

### **Sensitive Biological Communities**

Biological communities are assemblages of organisms that live within or use a variety of habitats for their range-of-life functions. Of the habitat communities discussed above, some are further identified as sensitive biological communities. Sensitive biological communities include habitats that fulfill special functions or have special values (e.g., greater biological diversity), such as wetlands, streams, and riparian habitat. Because wildlife is a major aspect of a biological community, this discussion of sensitive biological communities describes wildlife present in such communities.

### ***San Francisco Bay Area***

Sensitive biological communities in the Bay Area consist primarily of features associated with a water source, such as streams, wetlands, tidal marshes, and open water habitat. In addition, because of the prevalence of special-status species in the greater Bay Area, certain biological communities such as oak savanna, scrub, coastal scrub, or dune habitat may be considered sensitive for the regional or local presence of special-status species.

### ***San Francisco***

San Francisco is dominated by developed land, and its water features on land are primarily culverted streams and creeks that drain to the Bay and Pacific Ocean. Therefore, sensitive biological communities in San Francisco consist of limited tidal marsh and wetlands along the southeastern shoreline and open water habitat surrounding the City, which provide habitat for numerous species of birds, fish, and marine mammals. Numerous common and special-status species inhabit these wetland and open water features. Species that make tidal marshland particularly sensitive include the salt marsh harvest mouse (*Reithrodontomys raviventris*), Ridgway’s rail (*Rallus obsoletus*), and California black rail (*Laterallus jamaicensis coturniculus*). Species that make open water habitat particularly sensitive include green sturgeon (*Acipenser medirostris*), steelhead (*Oncorhynchus* spp.), longfin smelt (*Spirinchus thaleichthys*), and numerous other endangered, threatened, or otherwise protected fish and marine mammal species.

**India Basin Shoreline Park Property**

The India Basin Shoreline Park property contains open water and tidal marsh habitats, which are both considered sensitive biological communities. Open water within this project site property includes India Basin, a tidal inlet connected to the Bay that forms the eastern boundary of the project site. Tidal marsh and mudflats are generally bounded by riprap. This is not a remnant tidal marsh community, as the site was previously open water. The tidal marsh onsite appears to have established subsequent to the deposition of a large quantity of fill material placed for the creation of the present-day India Basin Shoreline Park. Referred to by the California Department of Fish and Wildlife (CDFW) (DFG 1986) as northern coastal salt marsh, this community comprises herbaceous hydrophytes. Typically found along sheltered inland margins of bays and estuaries, this marsh type is subject to regular tidal inundation by saltwater for at least part of the year.

Tidal marsh vegetation observed on the India Basin Shoreline Park property was dominated by alkali sea-heath (FACW), marsh jaumea (OBL), and pickleweed (OBL). Substrates in this community were composed of fine sandy sediments but also contained large quantities of mixed fill consisting of brick, concrete, and other debris. No special-status wildlife species were observed on this property; wildlife and plant species observed on this property are listed in the biological resources assessment (Appendix K).

**900 Innes Property**

The 900 Innes property contains open water and developed open water habitats, which are both considered sensitive biological communities. Open water habitat is described above under “India Basin Shoreline Park Property.” Developed open water within this project site property consists of two dilapidated piers and approximately 32 creosote-treated piles located in the Bay, offshore from this property near the terminus of Hudson Avenue and the San Francisco Bay Trail. Vegetation is only present in disturbed infill areas and developed areas; however, no wildlife was observed on this property during the site visit.

**India Basin Open Space Property**

The India Basin Open Space property contains open water, developed open water, and tidal marsh habitats. These sensitive biological communities are described above under “India Basin Shoreline Park Property” and “900 Innes Property.” The India Basin Open Space property has much more tidal marsh habitat than India Basin Shoreline Park (Table 3.14-1). In addition, the India Basin Open Space property contains one drainage outfall.

**700 Innes Property**

The 700 Innes property is located close to the Bay shoreline and is mostly separated by the India Basin Open Space, which is under the jurisdiction of RPD and fronts the property and connects to the Bay. However, a small portion of the 700 Innes property located in the northwest corner and adjacent to the 900 Innes property connects the 700 Innes property to the Bay, as shown in Figure 2-2 of Chapter 2.0, “Project Description.” This part of the property contains one dilapidated, wood-framed storage structure sitting on the concrete wharf that fronts a wooden dock that once was part of the Allemand Brothers Boat Yard. From this location, a pier and approximately eight associated creosote-treated piles extend into the Bay from the property. The 700 Innes property contains seasonal wetland, wetland swale, and waters, as described below. Four seasonal wetlands and one seasonal wetland swale are present on this project site property.

### *Seasonal Wetland and Wetland Swale*

Seasonal wetland plant communities occur in swales and depressions that are ponded during the rainy season for a long enough time to support vegetation adapted to wetland conditions. Seasonal wetlands in California are highly variable in plant composition, depending on the length of ponding or inundation. They also generally lack the plant community assemblage typical of defined marshes and vernal pools. Seasonal wetlands on the 700 Innes property consist of depressions that have resulted from past construction and earthmoving activities; these areas lack the species assemblage of vernal pools. Typical plant species observed in seasonal wetlands on the 700 Innes property include cut leaf plantain (FAC), water starwort (OBL), curly dock (FAC), and salt grass (FAC). A great blue heron (*Ardea herodias*) was observed in one of the ponded seasonal wetlands during the site visit.

### *Waters*

One unvegetated water features (waters) is present within the 700 Innes property. This feature is a linear drainage ditch that runs perpendicular to Arelious Walker Drive and leads into a seasonal wetland near the cul-de-sac. This feature appears to be connected to the Bay either directly (via culvert) or indirectly (via surface and/or subsurface flows). No wildlife species were observed in ponded waters or the drainage ditch within the project site during the site visit.

## **Wetlands and Waters of the United States**

Wetlands and waters of the United States and waters of the State are protected as hydrological resources, but also often provide habitat for common and special-status species. The following discussion describes the five types of water features present in the project site, as listed in Table 3.14-1: open water, developed open water, tidal marsh, seasonal wetland, wetlands swale, and waters.

### ***San Francisco***

Most of San Francisco's creeks are buried underground in culverts or filled, so most waters are linked to the City's combined sewer system, which flows to the Pacific Ocean or into the Bay. Wetlands and waters of the United States and waters of the State in San Francisco that are not connected to this system occur primarily on the edges of the Bay because of the hydrologic characteristics there.

### ***Project Site***

A jurisdictional delineation was conducted to determine whether any wetlands and waters potentially subject to jurisdiction by the U.S. Army Corps of Engineers (USACE), the San Francisco Bay Regional Water Quality Control Board (RWQCB), BCDC, or CDFW were present on the project site. The assessment was based on the presence of wetland plant indicators, observed indicators of wetland hydrology, and/or wetland soils. Any potential wetland areas were identified as areas dominated by plant species with a wetland indicator status of OBL, FACW, or FAC as presented on the USACE National Wetlands Plant List (San Francisco, 2015a and 2015b).

Wetlands and waters of the United States and waters of the State include all areas listed under "Sensitive Biological Communities" above, including developed open water, open waters, seasonal wetland, wetland swale,

tidal marsh (including areas of bare ground and beach), and waters. Table 3.14-1 shows the amount of wetlands and waters of the United States and waters of the State located within the four project site properties. Figure 3.14-2 shows the locations of wetlands on the project site.

### **Special-Status Species**

Habitat, whether aquatic or terrestrial, supports ecological functions and processes to preserve biological communities (i.e., wildlife) that live within it for all or a portion of their life cycle. Special-status species, whether plants, wildlife, or fish, are considered sufficiently rare that they require special consideration and/or protection and have been or should be listed as rare, threatened, or endangered by the federal and/or State governments. The following discussion focuses on the occurrence or potential for occurrence of special-status species at the project site.

#### ***Special-Status Plants on the Project Site***

##### **India Basin Shoreline Park Property**

Sixty-one special-status plant species have been documented in the vicinity of the India Basin Shoreline Park property. The biological resources assessment for the India Basin Shoreline Park and 900 Innes sites (Appendix K) summarizes the potential for each of these species to occur at this property.

Seven of the 61 special-status plant species have a low potential to occur within tidal marsh habitats (San Francisco, 2016a). The existing tidal marsh on the India Basin Shoreline Park property is relatively young and low quality, given its location on fill soils placed in the Bay over the past 50 years; as such, special-status plants typically found in salt marshes are unlikely to occur on the low-quality fill soils in this on-site community. A total of 35 special-status plant species documented in the vicinity have the potential to occur within coastal scrub and/or sand dune habitat; however, India Basin Shoreline Park does not contain this habitat type. The remaining 19 species were determined to have no potential to occur at India Basin Shoreline Park. No special-status plant species have a moderate or high potential to occur.

The India Basin Shoreline Park property is unlikely to support any of the special-status plant species documented in the vicinity, primarily because of a lack of suitable habitat. For instance, this property does not support serpentine soils, coniferous forest, or valley and foothill grassland, which are required habitats for several of the special-status species documented nearby. Habitats at the project site are based on fill soils and are highly disturbed; both of these features lower the potential for the India Basin Shoreline Park property to support sensitive plant species.

The site assessment at the India Basin Shoreline Park property occurred during the blooming period for 28 of the 61 special-status plant species with a potential to occur in these areas, but none of the potentially blooming species were observed. No special-status plant species were observed during the surveys.

In addition, on May 24, 2016, WRA Environmental Consultants (WRA) conducted a rare-plant survey targeting the California seablite (*Suaeda californica*), which is federally listed as endangered. This survey was conducted following input received from the U.S. Fish and Wildlife Service (USFWS) and USACE. WRA did not locate any California seablite plants.

### **900 Innes Property**

The site assessment at the 900 Innes property occurred during the blooming period for 28 of the 61 special-status plant species with a potential to occur in the area, but none of the potentially blooming species were observed. No special-status plant species were observed during the surveys. Because of the lack of suitable habitat at the 900 Innes property, which consists of developed land, disturbed infill, sand/gravel, open water, and developed open water, no special-status plant species have the potential to occur on this property.

### **India Basin Open Space and 700 Innes Properties**

In total, 51 special-status plant species have been documented in the vicinity of the India Basin Open Space property. The biological resources assessment for the India Basin Open Space and 700 Innes properties (Appendix K) summarizes the potential for each of these species to occur on this property.

Seven of the 51 special-status plant species have low potential to occur within tidal marsh habitats (San Francisco, 2016a). The existing tidal marsh on the India Basin Open Space property is relatively young and low quality, given its location on fill soils placed in the Bay over the past 50 years; therefore, special-status plants typically found in salt marshes are unlikely to occur on the low-quality fill soils in this on-site community. A total of 35 special-status plant species documented in the vicinity have the potential to occur within coastal scrub and/or sand dune habitat. The existing native coastal scrub habitat present at the India Basin Open Space property is relatively young and low quality, having only formed over approximately 20 years as a result of construction-related soil deposition on the project site. Therefore, these 35 special-status plant species are unlikely to occur on this project site property. The remaining nine species were determined to have no potential to occur on the India Basin Open Space property. No special-status plant species have a moderate or high potential to occur. As stated previously, the India Basin Open Space property is unlikely to support any of the special-status plant species documented in the vicinity, primarily because of a lack of suitable habitat.

The site assessment at the India Basin Open Space property occurred during the blooming period for 42 of the 51 special-status plant species with a potential to occur in the area, but none of the potentially blooming species were observed. No special-status plant species were observed during the surveys. In addition, on May 24, 2016, WRA conducted a rare-plant survey targeting the California seablite, which is federally listed as endangered and has been previously documented on the IBOS property. This survey was conducted following input received from USFWS and USACE. WRA did not locate any California seablite plants.

### **Special-Status Wildlife at the Project Site**

#### **Special-Status Terrestrial Species**

Twenty-three terrestrial special-status species of wildlife have been recorded in the vicinity of the project site. The respective biological resources assessments for the India Basin Shoreline Park and 900 Innes properties and the India Basin Open Space and 700 Innes properties (Appendix K) summarize the potential for each of these species to occur at the project site. No special-status wildlife species were observed on the project site during the site assessment. None of the special-status wildlife species have high potential to occur at the site; however, two species, Ridgway's rail (*Rallus obsoletus*) and Alameda (South Bay) song sparrow (*Melospiza melodia pusillula*), have a moderate potential to occur at the project site.

Of the 23 special-status species, 21 species are precluded from occurring within the project site because the site lacks suitable tidal marsh, eelgrass, or vegetated water habitats and experiences high levels of human disturbance. The two special-status wildlife species that has a moderate potential to occur at the project site is discussed below.

### Ridgway's Rail

Ridgway's Rail is a federally endangered, state endangered, and CDFW Fully Protected species that nests in low portions of coastal wetlands and tidal sloughs dominated by cordgrass (*Spartina* spp.) and gumweed. Factors important for breeding include well-developed sloughs and secondary tidal channels, extensive cordgrass stands, intertidal mudflats, and dense salt marsh vegetation for cover, nest sites, and brooding areas. Tidal mudflats for foraging are largely nonexistent within the Study Area, and pickleweed and gumplant is not of sufficient height or extent to provide cover for nesting. The nearest potential nesting habitat is at Heron's Head Park approximately 500 feet north of the planned Marineway associated with India Basin Shoreline Park. Typical disturbance buffers surrounding Ridgway's rail nesting habitat are approximately 700 feet.

#### *India Basin Shoreline Park Property*

Tidal marsh along the eastern shore of the India Basin Shoreline Park property does not provide suitable nesting or foraging habitat for Ridgway's rail; however, the Marineway associated with the India Basin Shoreline Park Property will be located within 700 feet (typical disturbance buffer for Ridgway's rail) of Heron's Head Park, which provides nesting and foraging habitat for Ridgway's rail.

#### *India Basin Open Space, 900 Innes, and 700 Innes Properties*

No nesting or foraging habitat is present at the India Basin Open Space, 900 Innes, and 700 Innes properties, and these properties are located more than 700 feet from Heron's Head Park.

### Alameda Song Sparrow

The Alameda song sparrow is a CDFW Species of Special Concern and USFWS Bird of Conservation Concern that nests in tidal marsh vegetation and adjacent weedy vegetation on levees. This bird occurs primarily in salt marshes of the southern Bay and requires low, dense vegetation such as gumweed (*Grindelia* spp.) for cover and nesting. Alameda song sparrow is known to nest at Heron's Head Park, which is located approximately 0.25 mile north of the project site and contains suitable tidal marsh habitat.

#### *India Basin Shoreline Park Property*

Tidal marsh along the eastern shore of the India Basin Shoreline Park property may provide suitable nesting and foraging habitat for Alameda song sparrow.

#### *900 Innes and 700 Innes Properties*

No nesting or foraging habitat is present at the 900 Innes or 700 Innes property; however, this species may forage or nest in surrounding tidal marsh vegetation.

### *India Basin Open Space Property*

Tidal marsh along the shore of the India Basin Open Space property may provide suitable foraging habitat for Alameda song sparrow; however, tidal marsh in this area does not contain vegetation of suitable height or density to provide nesting habitat.

### **Special-Status Fish Species**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Nine special-status species of fish have been recorded in the vicinity of the proposed project. The biological resources assessments for the proposed project (Appendix K) summarize the potential for each of these species to occur on the proposed project.

No special-status fish species were observed in the tidal portions of the proposed project during the site assessment. None of the special-status fish species have a high potential to occur on project site, but three have a moderate potential to occur: green sturgeon, Central California Coast steelhead Evolutionarily Significant Unit (ESU) (*Oncorhynchus mykiss irideus*), and longfin smelt. Pacific herring (*Clupea pallasii*) also has a moderate potential to occur in open water at the project site, but does not have a special-status designation. However, Pacific herring is a fishery/ecosystem component managed under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and is managed under a CDFW Fishery Management Plan. Therefore, Pacific herring is referred to in this biological resources section as a special-status fish species.

Open water habitat within the project site is Essential Fish Habitat (EFH) and designated critical habitat for green sturgeon (74 *Federal Register* [FR] 52300–52351, October 9, 2009) and salmonids (70 FR 52488–52586, September 2, 2005) including Central California Coast steelhead and Chinook salmon (*Oncorhynchus tshawytscha*). Although no other special-status fish species have the potential to spawn at the project site, this area may be used for foraging, cover, migration, and rearing. In addition, designated critical habitat and EFH are present. The National Marine Fisheries Service (NMFS) regulates both EFH and federally listed anadromous species, including green sturgeon and salmonids.

Six of the nine special-status fish species recorded in the vicinity are precluded from occurring the project site because the area lacks suitable tidal marsh, eelgrass, or vegetated water habitats and experiences high levels of human disturbance. The three special-status fish species (and Pacific herring, considered special-status for purposes of this EIR) that have a moderate potential to occur within the project site and EFH are discussed below.

#### **Green Sturgeon**

The green sturgeon is federally listed as threatened. The southernmost spawning population of green sturgeon is in the Sacramento River, with the principal spawning area located in the lower Feather River (Moyle, 2002). Spawning populations of green sturgeon in the San Joaquin River are presumed to have been lost in the past 25–30 years. Green sturgeon are primarily marine species, entering freshwater rivers mainly to spawn, although early life stages may be spent in freshwater for up to 2 years (Moyle, 2002). Adults typically migrate into freshwater from late February through late July. Spawning occurs from March to July, reaching peak levels from mid-April to mid-June (Emmett et al., 1991). Green sturgeon prefer deep pools in large, turbulent, freshwater river



mainstreams to spawn (Moyle et al., 1992). Juvenile green sturgeon emigrate to the sea primarily during the summer and fall before the end of their second year (Emmett et al., 1991).

The project site does not contain green sturgeon spawning habitat and is out of the species' spawning range; however, sturgeon may be present in Bay waters throughout the year and may use open water habitat on the project site for cover, foraging, or pass-through during migration. The project site is also designated critical habitat for this species (71 FR 17757, April 7, 2006).

#### Central California Coast Steelhead Evolutionarily Significant Unit

The Central California Coast steelhead ESU is federally listed as threatened. It includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo bays eastward to the Napa River (inclusive), excluding the Sacramento–San Joaquin River Basin. Steelhead typically migrate to marine waters after spending 2 years in freshwater, although they may stay up to 7 years. They then reside in marine waters for 2–3 years before returning to their natal streams to spawn as 4- or 5-year-olds. Steelhead adults typically spawn between December and June. In California, females typically spawn twice before they die. Preferred spawning habitat for steelhead is in perennial streams with cool to cold water temperatures, high levels of dissolved oxygen, and fast-flowing water. Abundant riffle areas (shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.

The project site does not contain spawning habitat; however, steelhead may be present in Bay waters throughout the year and may use open water habitat within the project site for cover, foraging, or pass-through during migration to spawn in creeks and rivers of the South Bay. Eelgrass has been observed on the project site during previous years; however, no eelgrass has been observed during recent surveys. The project site is also designated critical habitat for the Central California Coast steelhead ESU (70 FR 52630, September 2, 2005).

#### Longfin Smelt

Longfin smelt is a federal candidate for listing, State listed as threatened, and a CDFW Species of Special Concern. This pelagic, estuarine fish ranges from Monterey Bay northward to Hinchinbrook Island, Prince William Sound, Alaska. As this species matures in the fall, adults found throughout the Bay migrate to brackish water or freshwater in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin rivers. Spawning is believed to take place in freshwater. In April and May, juveniles are believed to migrate downstream to San Pablo Bay. Juveniles tend to inhabit the middle and lower portions of the water column. This species tends to be abundant near freshwater outflow, where higher quality nursery habitat occurs and potential feeding opportunities are greater.

The project site does not contain spawning habitat and is out of the spawning range of longfin smelt. However, smelt may be present in Bay waters throughout the year and may use open water habitat within the project site for cover and foraging or pass-through during migration.

#### Pacific Herring

Pacific herring, a Magnuson-Stevens Act–managed species, as well as a CDFW-managed species, is a coastal marine fish that uses large estuaries for spawning and early rearing habitat. Although this species is not listed as a

sensitive species, it is of note because it is an important commercial fishery species in the Bay. Based on spawning biomass (an estimate of the number of spawning fish), the Bay estuary is the most important spawning area for eastern Pacific populations of the species and is the largest herring fishery in California (CDFW, 2015). Pacific herring supports a commercial fishery, primarily for roe (herring eggs) but also for fresh fish, bait, and pet food. In the Bay, the Pacific herring fishery is the last remaining commercial finfish fishery (BIES, 2003). The peak spawning period in San Francisco and Tomales bays is from January to March (Miller and Schmidtke, 1956), and CDFW regulates in-water work that may negatively affect spawning.

The concrete debris and piles present in developed open water at the project site may provide suitable spawning habitat for Pacific herring. Based on past data (CDFW, 2015; San Francisco, 2015a), spawning appears to be unlikely in most years; however, spawning may occur within the project site when conditions are suitable.

### **Marine Mammals**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

No haul-outs for marine mammals are located at the India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes properties. However, there is a low potential for marine mammals, such as Pacific harbor seal (*Phoca vitulina richardii*) and California sea lion (*Zalophus californianus*), to use open water habitats at the project site for foraging.

Pacific harbor seal is a permanent Bay resident, routinely seen in the Bay and at haul-out sites on islands and on the mainland throughout the Bay. Pacific harbor seals are protected under the Marine Mammal Protection Act (MMPA). Pacific harbor seal has established colonies at Castro Rocks in San Pablo Bay, Yerba Buena Island in the Central Bay, and Mowry Slough in the South Bay (NMFS, 2007). There is a year-round seal haul-out on Yerba Buena Island's southeastern corner. Pupping season for Pacific harbor seals in the Bay spans from approximately March 15 through May 31, with pup numbers generally peaking in late April or May. The current Pacific harbor seal population in the San Francisco Bay/Sacramento–San Joaquin Delta (Bay-Delta) is estimated at between 500 and 700 individuals (NMFS, 2007). Pacific harbor seal feeds in the deepest waters of the Bay, with the region from the Golden Gate Bridge to Treasure Island and south to the San Mateo Bridge being the principal feeding site (Kopec and Harvey, 1995).

Like the harbor seal, the California sea lion is a permanent resident in the Bay-Delta and is protected by the MMPA. A common, abundant marine mammal, it is found all along the western coastline, generally within 10 miles of shore. California sea lion occurs in the Bay-Delta in its highest numbers while migrating to and from its primary breeding areas on the Farallon and California Channel islands, and when Pacific herring and salmon inhabit Bay-Delta waters to spawn or migrate to upriver spawning areas. California sea lions haul out on offshore rocks and sandy beaches, and onto floating docks, wharves, vessels, and other human-made structures in the Bay and coastal waters of the State. In the Bay, California sea lion is known to occur at Angel Island and is common on the San Francisco waterfront, occupying the docks of Pier 39 (USACE, 2011). No pupping has been observed in the Bay and there are no known rookeries in the Bay (USACE, 2011).

## **Wildlife Movement Corridors**

### ***San Francisco Bay Area***

Terrestrial habitat throughout the Bay Area ranges from high to low quality and varies in accessibility and continuity for wildlife movement. Aquatic habitat in the form of tidal marshes and wetland habitats along the Bay shoreline and waters offshore provides wildlife movement corridors for numerous fish and bird species. In addition, the Pacific Flyway encompasses the entire West Coast, and migrating bird species utilize the tidal marshland in the Bay Area for foraging and resting.

### ***San Francisco***

Terrestrial habitat in San Francisco is limited and generally of low quality, accessibility, and continuity for wildlife movement. However, aquatic habitat in the form of tidal marshes and wetland habitats along San Francisco's eastern and northern shorelines and waters offshore provides wildlife movement corridors for fish and bird species.

### ***Project Site***

#### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

The quality of tidal marsh and open water habitat at the project site is poor compared to other tidal marsh and open water habitat in the region, such as Heron's Head Park approximately 0.25 mile to the north. However, these properties likely still function as wildlife corridors for fish and bird species. In addition, landscaped areas and ornamental trees in these areas may provide foraging and resting habitat for migrating birds. No eelgrass beds have been observed during recent surveys within the open water habitat at the project site.

## **Regulated Trees**

### ***Project Site***

#### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

San Francisco regulates certain trees through a permit process. Regulated trees are those in or near the public right-of-way under the jurisdiction of San Francisco Public Works (SFPW) and trees that it has designated as landmarked (Article 16 of the Public Works Code). The only trees subject to regulation in the project area are located on the 700 Innes property; trees on RPD and Port of San Francisco (SF Port) property are not regulated. Of the 52 trees on the 700 Innes property, 10 trees are considered "significant trees" (e.g., trees of particular size within 10 feet of the public right-of-way) and 26 are considered "street trees," trees located within the public right-of-way.

### 3.14.2 Regulatory Framework

#### Federal

##### *Federal Endangered Species Act*

The federal Endangered Species Act (FESA) protects the fish and wildlife species and habitats that have been identified by USFWS or NMFS as threatened or endangered. The term “endangered” refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their ranges. The term “threatened” refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

The FESA is administered by USFWS and NMFS. In general, NMFS is responsible for protecting FESA-listed marine species and anadromous fishes, whereas listed, proposed, and candidate wildlife, plant species, and freshwater fish species are under USFWS jurisdiction. “Take” of listed species is prohibited to protect endangered and threatened species, but can be authorized through either the Section 7 consultation process (for actions by federal agencies) or the Section 10 permit process (for actions by nonfederal agencies). The FESA defines “take” as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

Federal agency actions include activities that are located on federal land or are conducted by, funded by, or authorized by a federal agency (including issuance of federal permits and licenses). Under Section 7 of the FESA, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult USFWS and/or NMFS, as appropriate, to ensure that the proposed action would not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. In response, USFWS or NMFS issues a biological opinion determining whether the proposed action:

- (1) may either jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding), or
- (2) would not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

Green sturgeon (federally listed as threatened), Central California Coast steelhead ESU (federally listed as threatened), and longfin smelt (federal candidate species) all have the potential to occur at the project site.

##### *Critical Habitat*

Under the FESA, the Secretary of the Interior (or the Secretary of Commerce, as appropriate) formally designates critical habitat for certain federally listed species and publishes these designations in the *Federal Register*. Critical habitat is not automatically designated for all federally listed species; thus, many listed species have no formally designated critical habitat. Critical habitat is defined as the specific areas that are essential to the conservation of a federally listed species, and that may require special management consideration or protection.

Critical habitat is determined using the best available scientific information about the physical and biological needs of the species. These needs, or primary constituent elements, include:

- space for individual and population growth and for normal behavior;
- food, water, light, air, minerals, or other nutritional or physiological needs;
- cover or shelter;
- sites for breeding, reproduction, and rearing of offspring; and
- habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

Critical habitat occurs on the project site in the form of open water and developed open water habitat for green sturgeon and steelhead.

### **Essential Fish Habitat**

EFH is regulated through NMFS, a division of the National Oceanic and Atmospheric Administration. Protection of EFH is mandated through changes to the Magnuson-Stevens Act that were implemented in 1996 to protect the loss of habitat necessary to maintain sustainable fisheries in the United States. The Magnuson-Stevens Act defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (Title 16, Section 1802[10] of the U.S. Code [16 USC 1802(10)]). NMFS further defines EFH as areas that “contain habitat essential to the long-term survival and health of our nation’s fisheries” (NMFS, 2007). EFH can include the water column, certain bottom types such as sandy or rocky bottoms, vegetation such as eelgrass or kelp, or structurally complex coral or oyster reefs. Under regulatory guidelines issued by NMFS, any federal agency that authorizes, funds, or undertakes action that may affect EFH is required to consult with NMFS (Title 50, Section 600.920 of the Code of Federal Regulations [50 CFR 600.920]). EFH occurs on the project site in the form of open water and developed open water habitat.

### ***Federal Migratory Bird Treaty Act***

The federal Migratory Bird Treaty Act (16 USC 703, Supplement I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Migratory birds have the potential to nest and forage at the project site.

### ***Marine Mammal Protection Act***

The MMPA was enacted on October 21, 1972. This law prohibits, with certain exceptions, the “take” of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. Marine mammals have the potential to occur at the project site.

### ***Code of Federal Regulations (Wetlands and Waters Definition)***

The term “waters of the United States,” as defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]), includes:

- (1) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. All interstate waters including interstate wetlands. (Wetlands are defined by the federal government [33 CFR 328.3(b)] as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.)
- (2) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters which are or could be used by interstate or foreign travelers for recreational or other purposes; or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or which are used or could be used for industrial purposes by industries in interstate commerce.
- (3) All impoundments of waters otherwise defined as waters of the United States under the definition.
- (4) Tributaries of waters identified in paragraphs (1) through (4).
- (5) Territorial seas.
- (6) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).

Wetlands are a subset of waters of the United States and receive protection under Section 404 of the Clean Water Act (CWA). The federal definition of wetlands is the following:

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Open water, developed open water, seasonal wetland, wetland swale, and other waters exist within the project site.

The regulations and policies of various federal agencies—such as USACE, the U.S. Environmental Protection Agency, USFWS, and NMFS—mandate that filling wetlands be avoided unless it can be demonstrated that no practicable alternatives exist. USACE has primary federal responsibility for administering regulations that concern waters and wetlands. In this regard, USACE acts under two statutory authorities: Sections 9 and 10 of the Rivers and Harbors Act, and CWA Section 404.

### ***Rivers and Harbors Act Sections 9 and 10***

The Rivers and Harbors Act (Sections 9 and 10) governs specified activities in “navigable waters.” Sections 9 and 10 have been used to preserve wetlands and limit unrestricted waterfront development. Section 9 requires a permit from USACE for the construction of any bridge, dam, dike, or causeway in or over any navigable water of the United States. Section 10 bars any unauthorized obstruction to the navigable capacity of “any of the waters of the

United States,” and makes it unlawful to excavate or fill “or in any manner to alter or modify” any navigable water without USACE approval.

#### ***Clean Water Act Section 404***

Section 404 of the CWA governs the fill of waters of the United States, including wetlands. USACE requires that a permit be obtained if a project proposes to place fill in navigable waters and/or to alter waters of the United States below the ordinary high-water mark in nontidal waters.

#### ***Clean Water Act Section 401***

Section 401 of the CWA requires compliance with State water quality standards for actions within State waters. Compliance with the water quality standards required under Section 401 is a condition for issuance of a Section 404 permit. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain a State water quality certification that the proposed activity would comply with State water quality standards.

#### ***Executive Order 11990: Protection of Wetlands***

The federal government also supports a policy of minimizing the destruction, loss, or degradation of wetlands. Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. As primary screening, the U.S. Department of Housing and Urban Development or grantees must verify whether the project is located within wetlands identified on the National Wetlands Inventory or else consult directly with USFWS staff.

### **State**

#### ***California Endangered Species Act***

Under the California Endangered Species Act (CESA), CDFW has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code, Section 2070). CDFW also maintains a list of “candidate species,” which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, CDFW maintains lists of “species of special concern,” which serve as watch lists.

The CESA prohibits the take of plant and animal species designated by the California Fish and Game Commission as either threatened or endangered in California. “Take” in the context of the CESA means to hunt, pursue, kill, or capture a listed species, as well as any other action that may result in adverse impacts when attempting to take individuals of a listed species. The take prohibitions also apply to candidates for listing under the CESA. However, Section 2081 of the CESA allows CDFW to authorize exceptions to the State’s take prohibition for educational, scientific, or management purposes.

Under the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species could be present on the project site and whether the project could

have a significant impact on the species. In addition, CDFW encourages informal consultation on any proposed project that could affect a candidate species. Finally, CDFW asserts jurisdiction over wetlands when they are subject to streambed alteration agreements (California Fish and Game Code Sections 1600–1616) or they support State-listed endangered species. Longfin smelt (State-listed as threatened) has the potential to occur at the project site.

### ***California Native Plant Protection Act***

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed CDFW to carry out the Legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The CESA expanded on the original NPPA and enhanced legal protection for plants. The CESA established categories for threatened and endangered species, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, the State of California employs three listing categories for plants: rare, threatened, and endangered. Several special-status plant species have a low potential to occur at the project site.

### ***Special-Status Natural Communities***

Special-status natural communities, as identified by CDFW’s Natural Heritage Division, are those that are naturally rare and those whose extent has been greatly diminished through land use changes. The California Natural Diversity Database tracks 135 such natural communities in the same way that it tracks occurrences of special-status species: by maintaining information about each site’s location, extent, habitat quality, level of disturbance, and current protection measures. CDFW is mandated to seek the long-term perpetuation of the areas in which these communities occur. Although no statewide laws require protection of all special-status natural communities, CEQA requires consideration of the potential impacts of a project on biological resources of statewide or regional significance.

### ***California Fish and Game Code***

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code or any regulation made pursuant thereto. Raptors, also referred to as “birds of prey,” are a valuable resource to the State of California, and therefore are protected under California Fish and Game Code Sections 3503, 3503.5, 3505, and 3513, and California Code of Regulations Title 14, Sections 251.1, 652, and 783 through 786.6. California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) allow the designation of a species as “Fully Protected.”

The classification of Fully Protected was the State’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish (California Fish and Game Code Section 5515), amphibians and reptiles (Section 5050), birds (Section 3511), and mammals (Section 4700). Most fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations.



Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except to collect these species for necessary scientific research or to relocate the bird species for the protection of livestock. Thus, a greater level of protection is afforded to Fully Protected species than is afforded by the CESA. Nesting birds have the potential to occur at the project site.

### ***California Code of Regulations (Wetlands and Waters Definition)***

The State Water Resources Control Board indicates that no single accepted definition of wetlands exists at the State level, and that RWQCBs may have different requirements and levels of analysis with regard to the issuance of water quality certifications. Generally, an area is a wetland if, under normal circumstances:

- (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;
- (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and
- (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Water Quality Control Act is the principal law governing water quality in California. The State Water Resources Control Board and RWQCBs have permitting and enforcement authority to prevent and control waste discharges that could affect waters of the State by issuing National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements. The project site is located in the San Francisco Bay Basin and subject to regulatory requirements of the San Francisco Bay RWQCB.

### ***Coastal Zone Management Act***

The Coastal Zone Management Act applies to any proposed activity affecting areas covered by an approved coastal zone management plan. It requires that projects be consistent with coastal zone programs. The San Francisco Bay Conservation and Development Commission, as the issuing authority for the Coastal Zone Management Act, also requires the acquisition of a permit before filling, dredging, or sediment disposal in the Bay or whenever a development project occurs within the Coastal Zone.

### ***California Department of Fish and Wildlife Lake or Streambed Alteration Agreement***

CDFW comments on USACE permit actions under the Fish and Wildlife Coordination Act. Moreover, under Sections 1600–1616 of the California Fish and Game Code, CDFW regulates activities that would substantially divert, obstruct the natural flow of, or change rivers, streams, and lakes. Section 1602 defines the jurisdictional limits of CDFW as the bed, channel, or bank of any river, stream, or lake.

## Local

### *San Francisco Planning Code (Standards for Bird-Safe Buildings)*

The San Francisco Board of Supervisors unanimously approved, and the Mayor subsequently signed, legislation amending the San Francisco Planning Code (Planning Code) to incorporate bird-safe building standards into the code. The Planning Commission has also approved the Standards for Bird-Safe Buildings. The amendments, reviewed and recommended by the Planning Commission, introduced Planning Code Section 139, “Standards for Bird-Safe Buildings.” (San Francisco, 2011.)

The Standards for Bird-Safe Buildings guide the use and types of glass and façade treatments, wind generators and grates, and lighting treatments. The standards impose requirements for bird-safe glazing and lighting in structures or at sites that represent a hazard to birds and provide information on educational and voluntary programs related to bird hazards.

The standards define two types of bird hazards. “Location-related hazards” are buildings located inside of, or within a clear flight path of less than 300 feet from, an Urban Bird Refuge. Such buildings require treatment when new buildings are constructed, additions are made to existing buildings, or existing buildings replace 50 percent or more of the glazing within the “bird collision zone.” The standards require the following treatments for façades facing, or located within, an Urban Bird Refuge:

- No more than 10 percent untreated glazing is allowed on building façades within the bird collision zone.
- Lighting must be shielded, and no uplighting is permitted. No event searchlights are permitted.
- Sites are not permitted to use horizontal-access windmills or vertical-access wind generators that do not appear solid.

“Feature-related hazards” include building-related or structural features that are considered potential “bird traps” regardless of location (e.g., glass courtyards, transparent building corners, or clear glass walls on rooftops or balconies). Structures that include these elements must treat 100 percent of these elements in the building with bird-safe glazing.

### *San Francisco Recreation and Parks Department Management Plan (Significant Natural Resources Areas)*

RPD has approved the Natural Resource Management Plan (NRAMP), formerly known as the Significant Natural Areas Management Plan, for designated significant natural areas in the City and County of San Francisco. The purpose of this management plan is to establish a maintenance and preservation program to protect and enhance natural resource values. The Final EIR for the project was certified by the Planning Commission on December 15, 2016, and this certification was upheld by the Board of Supervisors on February 28, 2017. The plan includes a variety of recommendations for improvements within India Basin Shoreline Park, such as restoration, enhancement, and maintenance work.

### ***San Francisco Public Works Code (Urban Forestry Ordinance)***

San Francisco's Urban Forestry Ordinance (Article 16 of the Public Works Code) regulates San Francisco's street trees, significant trees, and landmark trees regardless of species. The ordinance subjects the following three categories of trees to a permit process before removal and requires protection of the trees during nearby construction:

- A "street tree" is "any tree growing within the public right-of-way, including unimproved public streets and sidewalks, and any tree growing on land under the jurisdiction of the Department [of Public Works]" as defined in Section 802 of the ordinance. Section 806(b) requires entities (other than SFPW) to obtain a permit from the department before removing any street trees.
- A "significant tree" is defined in Section 810A of the ordinance as any tree:
  - (1) located on property under the jurisdiction of the Department of Public Works or on privately owned property with any portion of its trunk within 10 feet of the public right-of-way, and
  - (2) that satisfies at least one of the following criteria:
    - a) a diameter at breast height in excess of 12 inches,
    - b) a height in excess of 20 feet, or
    - c) a canopy in excess of 15 feet.

Any entity other than SFPW must obtain a permit to remove significant trees according to the process described in Section 806(b).

- A "landmark tree" is any tree that:
  - (1) has been nominated as such by a member of the public, a landowner, the San Francisco Planning Commission, the Board of Supervisors, or the Historic Preservation Commission;
  - (2) the Urban Forestry Council (within the San Francisco Department of the Environment) has subsequently recommended as a landmark tree; and
  - (3) is designated a landmark tree by ordinance approved by the Board of Supervisors.

According to Section 810 of the ordinance, nominated trees undergoing review are protected according to the same standards as designated landmark trees until the review process is completed. Permits are required for planting or removing street trees and significant trees, and protection measures are required for these trees if construction work would occur within the trees' dripline.

### **3.14.3 Impacts and Mitigation Measures**

#### **Significance Thresholds**

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether

implementing the proposed project or the variant would result in a significant impact related to Biological Resources. Implementation of the proposed project or the variant would have a significant effect on Biological Resources if the proposed project or variant would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.

### **Approach to Analysis**

Impacts on biological resources were evaluated based on the likelihood that special-status species, sensitive habitats, wildlife corridors, and protected trees are present on the project site, and the likely effects of project construction or operation on these resources. For the purposes of this EIR, the word “substantial” as used in the significance thresholds above is defined by the following three principal components:

- magnitude and duration of the impact (e.g., substantial/not substantial),
- uniqueness of the affected resource (rarity), and
- susceptibility of the affected resource to disturbance.

In this biological resources analysis, the project site is defined as all areas directly affected by project development, including the India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes properties.

### **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. The project site includes wildlife habitat in the form of tidal marshland, open water, wetlands, and vegetated areas, and construction and operation of the proposed project or variant would affect these areas.

## Impact Evaluation

### **Impact BI-1: The proposed project or variant would have an adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation on candidate, sensitive, and special-status species as identified in regional plans, policies, or regulations, or by CDFW or USFWS. Separate impact analyses are provided for impacts associated with special-status fish, Ridgway's rail, Alameda song sparrow, nesting birds, and marine mammals. Individual impact conclusions and, where appropriate, mitigation measures are listed for the respective construction-related or operational impacts at each project site property. The respective impacts described below would occur under either the proposed project or the variant. An "overall" impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion.

This impact discussion analyzes potential project-related impacts on special-status fish and wildlife species that have a moderate or greater potential to occur in the project area. No impacts on special-status species with low or no potential to occur in the project area are anticipated; therefore, such special-status species are not discussed. In addition, no special-status plant species are anticipated to occur on the project site; therefore, special-status plant species are not discussed.

### ***Special-Status Fish Species***

#### **Construction**

##### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Project construction at the India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes properties under either the proposed project or variant has the potential to affect four special-status fish species: green sturgeon, Central California Coast steelhead ESU, longfin smelt, and Pacific herring. Potential impacts on special-status fish species resulting from construction activities would be similar at all four properties; however, impacts at the 900 Innes, India Basin Open Space, and 700 Innes properties would be less than those discussed for the India Basin Shoreline Park property, given the park's direct proximity to the Bay and the amount of potential habitat that fronts the shoreline. The primary differences between impacts at these properties are outlined in the "Habitat Removal" discussion below.

Project construction may result in habitat removal, increased turbidity, accidental spills, shading of habitat, and underwater noise. Construction impacts would be similar for each species of fish, except that the life history of each of these species differs; therefore, certain species have the potential to be present on the India Basin Shoreline Park property only during certain portions of the year. These impacts and their timing are discussed below.

**Habitat Removal.** In-water work at the India Basin Shoreline Park property (adding a new 480-foot-long by 12-foot-wide pier, removing and replacing 12 piles, removing current shoreline/riprap, and replacing it with tidal marsh habitat) would result in permanent removal of approximately 0.07 acre of tidal marsh habitat for special-

status fish species. Permanent removal indicates that the habitat or developed area would not be restored to near preconstruction conditions, and temporary removal indicates that the habitat or developed area would be restored to near preconstruction conditions after construction. Table 3.14-2 details, by property, the proposed project's and variant's temporary and permanent removal of all affected habitat types and developed land in the project area. Permanent removal of approximately 1.20 acres of open water habitat would also occur.

Remediation actions and removal of two dilapidated piers and approximately 32 creosote-treated piles located in the Bay at the 900 Innes property would result in habitat removal, increased noise and human presence, increased turbidity, and the potential for accidental spills. Two new piers would be constructed in the generally the same location and an attempt would be made to replace the piles in place, if possible. For the 900 Innes property, these construction activities would result in the temporary removal of approximately 0.26 acre and permanent removal of approximately 0.09 acre of open water habitat.

For the India Basin Open Space property, construction activities would result in the temporary removal of approximately 0.53 acre and permanent removal of approximately 0.27 acre of tidal marsh, as well as the temporary removal of approximately 0.28 acre and permanent removal of approximately 0.03 acre of open water habitat. A portion of these impacts would result from the removal of an existing drainage outfall and the installation of a new kayak launch supported by fill. In addition, other intertidal communities located below the high tide line, such as beach, bare, and developed open water areas will be impacted. All of these areas are considered critical habitat for green sturgeon and steelhead, as well as EFH. Table 3.14-2 details the project's temporary and permanent impacts.

For the 700 Innes property, removal of an existing pier and piles would result in the permanent removal of 0.03 acre of developed open water which would result in the creation of 0.03 acre of open water habitat. These areas are considered critical habitat for green sturgeon and steelhead, as well as EFH.

Turbidity. In-water construction activities would likely cause temporary increases in turbidity in the surrounding areas, which could reduce the quality of habitat for special-status fish species at the project site. Elevated turbidity levels could negatively affect vegetation in the area, and therefore, foraging ability. Stormwater runoff from the project site may also increase turbidity in the Bay.

Accidental Spills. Accidental spills of materials used during construction (e.g., oils, transmission and hydraulic fluids, fuel) could result from either runoff or in-water work. These materials could enter open water or tidal marsh areas. As with turbidity, adverse effects of pollutants in the Bay could reduce the quality of habitat for special-status fish species. The introduction of pollutants may also result in the death or injury of special-status fish.

**Table 3.14-2: Temporary and Permanent Removal of Habitat and Developed Areas at the Project Site<sup>2</sup>**

Habitat Type	Permanent Removal, by Project Site Property (acres)				Temporary Removal, by Project Site Property (acres)			
	India Basin Shoreline Park	900 Innes	India Basin Open Space	700 Innes	India Basin Shoreline Park	900 Innes	India Basin Open Space	700 Innes
Bare (below HTL)	0	0	0.03	0	0	0	0.1	0
Beach	0	0	0.01	0	0	0	0.03	0
Concrete debris (above HTL)	0	0	0	0	0	0	0.05	0
Concrete debris (below HTL)	0	0	0	0	0	0	0.13	0
Developed	2.11	1.93	0.47	5.39	0	0	0	0
Developed open water	0	0.09	0.01	0.03	0	0.13	0	0
Disturbed infill	0.45	0.21	0.23	14.72	0	0	0	0
Maintained landscaping	0	0	2.33	0.74	0	0	0	0
Mixed landscaping	3.75	0	0	0.58	0	0	0	0
Native coastal scrub	0.23	0	0.21	0.33	0	0	0	0
Open waters	1.20	0.09	0.03	0	0	0.26	0.28	0
Riprap (upland)	0.17	0	0	0	0	0	0	0
Sand (above HTL)	0	0	0	0	0	0	0	0
Sand (below HTL)	0	0	0	0	0	0	0.01	0
Sand/gravel	0	0	0	0	0	0.05	0	0
Seasonal wetland	0	0	0	0.26	0	0	0	0
Tidal marsh	0.07	0	0.27	0	0	0	0.53	0
Waters	0	0	0	0.01	0	0	0	0
Wetland swale	0	0	0	0.04	0	0	0	0
<b>Total</b>	<b>7.78</b>	<b>2.32</b>	<b>3.59</b>	<b>22.1</b>	<b>0</b>	<b>0.44</b>	<b>1.13</b>	<b>0</b>

Note: HTL = high-tide line

Sources: San Francisco, 2017a and 2017b

<sup>2</sup> Impact acreage estimates are approximate, and subject to change based on project design refinements.

**Shading.** Barges would be used to construct the overwater pier at India Basin Shoreline Park. The barges would result in shading of open water habitat temporarily during construction. The shading could reduce the amount of energy available for photosynthesis by phytoplankton for a limited time frame. However, tidal fluctuations and currents would move the water mass through the area. Planktonic organisms associated with the water mass would also move through the area and are not expected to reside beneath the barges for a great amount of time. The small potential for reduction of photosynthesis during a limited construction period is not expected to measurably reduce phytoplankton densities in this area or to result in food-chain effects on zooplankton species upon which juvenile special-status fish species may feed.

Shading from barges can also create “behavioral barriers” that can deflect or delay fish movement, reduce the production and availability of prey resources, and increase the predation rates of certain fishes. The temporary area of shade that would be created by project elements is small relative to the size of the surrounding open water habitat; therefore, species’ behavior is not anticipated to be affected because the fish could move to another location in the Bay that is not under shade.

**Underwater Noise.** Underwater sound and acoustic pressure generated during in-water construction activities and installation of piles for overwater piers could affect special-status fish species by causing behavioral avoidance of the construction area, injury, or both. Underwater sound may be generated by in-water work such as replacement of the existing shoreline and riprap with tidal marsh. However, the most potentially harmful sound-generating activity would likely be pile driving for pier installation.

On July 8, 2008, the Fisheries Hydroacoustic Working Group<sup>3</sup> issued an agreement establishing interim threshold criteria to determine the effects of high-intensity sound on fish (FHWG, 2008). These criteria are not formal regulatory standards, but they are generally accepted as viable criteria. The criteria were established after extensive review of the most recent analysis of the effects of underwater noise on fish. The agreed-on threshold criteria for impulse-type noise to harm fish have been set at 206 decibels (dB) peak, 187 dB accumulated sound exposure level (SEL) for fish weighing more than 2 grams, and 183 dB for fish weighing less than 2 grams (Table 3.14-3).

**Table 3.14-3: National Marine Fisheries Service Underwater Noise Thresholds for Fish**

	Peak Noise (dB)	Accumulated Noise (SEL) (dB)
<i>Impulse and Continuous Sound</i>		
Fish less than 2 grams in weight	>206	>183
Fish more than 2 grams in weight	>206	>187

Notes:

> = greater than; dB = decibels; SEL = sound exposure level

Source: FHWG, 2008

The Fisheries Hydroacoustic Working Group has determined that the potential onset of injury to fish may occur from exposure to noise at or above the 206-dB peak, 187 SEL (for fish > 2 grams) or 183 SEL (for fish less than

<sup>3</sup> Among the members of the Fisheries Hydroacoustic Working Group are NMFS’ Southwest and Northwest Divisions; USFWS; the California, Washington, and Oregon Departments of Transportation; CDFW; and the Federal Highway Administration.



2grams) level. Behavioral effects are not covered by these criteria but could occur at these levels or lower. Behavioral effects may include fleeing and the temporary cessation of feeding or spawning behaviors.

Seasonality. As discussed previously, certain species have the potential to be present within marine habitat associated with all project site properties only during certain portions of the year:

- *Green sturgeon* are known to occur in the Bay in low densities year-round during their early life stages. NMFS indicates a work window for green sturgeon of June 1 to November 30. Therefore, impacts related to behavior, injury, and mortality of green sturgeon may occur year-round, but can be minimized by working during the recommended work window.
- *Steelhead* do not spawn in the project vicinity, but may migrate through the site between December 1 and May 31. NMFS indicates a preferred work window for steelhead during the same time as for green sturgeon, June 1 to November 30. Therefore, impacts related to behavior, injury, and mortality of steelhead may occur between December 1 and May 31. Outside of this window, impacts would be limited to habitat loss and habitat degradation.
- *Longfin smelt* occur in the Bay year-round, but are not known to spawn south of the Bay Bridge. Impacts related to longfin smelt behavior, injury, or direct mortality, and temporary habitat loss and degradation may occur year-round.
- *Pacific herring* have the potential to be present in the project site's open water habitats year-round; however, impacts on Pacific herring, a Magnuson-Stevens Act–managed species, are generally limited to impacts on spawning. Therefore, although the project may affect Pacific herring year-round, impacts deemed significant would be limited to December 1 to February 29.

In summary, construction activities planned at all four project site properties under the proposed project or variant could result in injury or mortality of special-status fish species, loss of habitat, increased turbidity, accidental spills, shading of habitat, and underwater noise. Therefore, under either the proposed project or the variant, the impact of construction at all four properties on special-status fish species could be significant.

The following mitigation measures would be implemented to reduce this significant construction impact of the proposed project or variant:

- Mitigation Measure M-BI-1a, “Prepare and Implement a Hydroacoustic Monitoring Program for Special-Status Fish and Marine Mammals”
- Mitigation Measure M-BI-1b, “Implement Avoidance and Minimization Measures for Special-Status Species”
- Mitigation Measure M-BI-1c, “Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation”
- Mitigation Measure M-HY-1a, “Monitor Turbidity during Construction”
- Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices”

Mitigation Measures M-BI-1a, M-BI-1b, and M-BI-1c are presented below; Mitigation Measures M-HY-1a and M-HY-1b are presented in Section 3.15, “Hydrology and Water Quality.”

Mitigation Measure M-BI-1a would involve avoiding and minimizing acoustical impacts of underwater work (e.g., pile driving) on special-status species. Mitigation Measure M-BI-1b would include but not be limited to providing an environmental education program to all project personnel, limiting construction to approved work areas, and cleaning up all trash from the project site. Mitigation Measure M-BI-1c requires that sensitive natural communities be created or restored at a ratio of no less than 1:1. In addition, the project would create 0.64 acre of tidal marsh habitat along the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties (Table 3.14-4). This would exceed the mitigation requirement to offset temporary and permanent impacts on tidal marshland. This additional tidal marshland would add foraging and cover habitat for special-status fish species by creating new tidal marshland and enhancing existing tidal marshland.

**Table 3.14-4: Net Changes in Tidal Marshland and Seasonal Wetland Acreages with the Project**

Biological Community by Property	Biological Community Acreages		
	Existing Acreage	Postproject Acreage	Net Change
<i>India Basin Shoreline Park</i>			
Tidal marsh	0.14	0.44	+0.30
<i>900 Innes</i>			
Tidal marsh	0.00	0.11	+0.11
<i>India Basin Open Space</i>			
Tidal marsh	1.91	2.06	+0.15
Seasonal wetland	0.00	0.48	+0.48
<i>700 Innes</i>			
Tidal Marsh	0.02	0.10	+0.08
Seasonal wetland	0.26	0.0	-0.26

Sources: San Francisco, 2017a and 2017b

Erosion control measures and best management practices (BMPs) (as detailed in Section 3.15, “Hydrology and Water Quality”) would also be implemented to reduce the potential for increased water turbidity from project runoff or accidental spills. These measures would include but not be limited to:

- The projects construction contractor preparing a storm water pollution prevention plan (SWPPP), as required by the NPDES construction general permit, to identify potential pollutant sources, appropriate BMPs and ensure the placement of effective erosion control materials (e.g., fiber rolls, silt fences) during construction for acceptance by the RWQCB;
- inspecting vehicles daily for leaks; and
- establishing a designated fueling area.

To protect against spills that could occur during in-water work, the SWPPP would require that spill containment booms be kept on-site at all times.

As stated previously, in-water work has the potential to increase turbidity in open water environments in the project area temporarily. In-water work would be restricted to the minimum amount necessary to complete the project; however, turbidity increases associated with this work cannot be avoided. Turbidity from in-water work is

expected to result in temporary degradation of and/or removal of habitat for special-status fish species for a limited period. However, a full water mass exchange in the project area is expected every 12 hours or less, which would return turbidity to preexisting levels. In addition, Mitigation Measure M-HY-1a in Section 3.15, "Hydrology and Water Quality," requires the development and implementation of a turbidity monitoring plan, which would establish baseline conditions for turbidity and light levels, daily turbidity monitoring during construction, and require that work cease when water quality criteria are exceeded. Further, Mitigation Measure M-HY-1b in Section 3.15 describes procedures that would be utilized to remove piles based on information related to local sediment condition.

Lastly, if the project would be likely to have an adverse effect on listed fish species, the project sponsor would coordinate with the federal action agency, the USACE, to initiate consultation with NMFS pursuant to Section 7 of the FESA. Through consultation, the project would obtain any necessary incidental take authorization and ensure that the proposed actions would not jeopardize the continued existence of any listed species or result in adverse modification of critical habitat.

**Mitigation Measure M-BI-1a: Prepare and Implement a Hydroacoustic Monitoring Program for Special-Status Fish and Marine Mammals**

*Before the start of construction, the project sponsors shall prepare a hydroacoustic monitoring plan and obtain approval from NMFS. The plan shall be provided to NMFS for review and approval before construction.*

*The plan shall provide details regarding the estimated underwater sound levels expected, sound attenuation methods, methods used to monitor and verify sound levels during pile-driving activities, and management practices to be taken to reduce pile-driving sound in the marine environment to below NMFS thresholds for injury to fish, as feasible, and below NMFS thresholds for marine mammals.*

*The plan shall include but not be limited to the following measures for special-status fish:*

- *All steel pilings shall be installed with a vibratory pile driver to the deepest depth practicable. An impact pile driver may be used only where necessary to complete installation of the steel pilings, in accordance with seismic safety or other engineering criteria.*
- *The smallest pile driver and minimum force necessary shall be used to complete the work.*
- *The hammer shall be cushioned using a 12-inch-thick wood block during all impact hammer pile-driving operations to the extent feasible.*
- *A bubble-curtain, air barrier, or similar technology shall be employed during all impact pile-driving activities.*
- *A "soft start"<sup>4</sup> technique shall be employed upon initial pile-driving activities every day to allow fish an opportunity to vacate the area.*
- *During impact pile driving, the contractor shall limit the number of strikes per day to the minimum necessary to complete the work.*

---

<sup>4</sup> Soft starts require an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period between subsequent three-strike sets. Soft starts for vibratory hammers initiate noise at 15 seconds at reduced energy, followed by a 1-minute waiting period between subsequent starts. This process should continue for a period of no less than 20 minutes.

- *No pile driving shall occur at night.*
- *During impact pile driving, a qualified fish biologist shall monitor the project site for fish that exhibit signs of distress. If fish are observed rising to the surface, work shall be halted by the biologist, and the cumulative SEL up to that point shall be examined. If the cumulative SEL is close to or exceeds the threshold, then pile-driving activities will cease until the next day.*
- *All pile-driving and pile-removal activity shall be monitored by a NMFS-approved biological monitor before and during all pile driving. The biological monitor shall maintain a monitoring log of daily pile-driving activities, any field sound measurements, fish sightings, and implementation of soft-start and shutdown requirements. A monitoring report shall be prepared for submission to NMFS (submitted monthly and at the completion of all pile-driving/pile removal activities).*
- *The hydroacoustic monitoring program shall incorporate NMFS-recommended work windows to avoid impacts on special-status fish species that have the potential to occur at the project site during only certain portions of the year. This includes limiting work between December 1 and May 31 to avoid impacts on steelhead and green sturgeon, and monitoring for herring spawning events in the vicinity of the project site between December 1 and February 29. In the event that monitoring identifies a herring spawning event that could be affected by project-related construction activities, all in-water work shall be temporarily halted. In-water work shall not resume until a qualified biologist determines that no additional impact on spawning herring would occur.*

*The project sponsors shall coordinate with the NMFS Office of Protected Resources pursuant to the Marine Mammal Protection Act to develop an appropriate plan and monitoring program for potential effects to species during noise generating work. The plan shall include but not be limited to the following measures for marine mammals:*

- *Zones of influence shall be based on the estimated NMFS injury threshold contours for the different marine mammals. These zones of influence may be modified, based on subsequent analysis of the actually proposed piles, equipment, and activity before construction, but only with the approval of NMFS.*
- *Hydroacoustic monitoring according to the hydroacoustic monitoring plan shall be completed during initial pile driving to verify projected isopleths for pile driving and removal. The plan shall require real-time hydroacoustic monitoring for a sufficient number of piles to determine and verify modeled noise isopleths. The safety zones established before construction may be modified, based on field measurements of different pile-driving activity, if the field measurements indicate different threshold contours than estimated before construction, but only with the approval of NMFS.*
- *During pile-driving and pile-removal activity, a NMFS-approved marine mammal observer would monitor the work area for marine mammal presence. If a marine mammal is observed in or swimming into an unauthorized zone of influence, work would stop until the animal was observed, or determined to be, outside of the area of potential injury.*

- A “soft start”<sup>5</sup> technique shall be employed each day upon commencement of pile-driving activity, any time after pile-driving activity ceases for more than 1 hour, and any time after pile-driving activity shuts down because a marine mammal has entered a safety zone.
- All pile-driving and pile-removal activity shall be monitored by an NMFS-approved biological monitor before and during all pile driving to inspect the work zone and adjacent Bay waters for marine mammals and implement the safety zone requirements described above. The biological monitor shall maintain a monitoring log of daily pile-driving activities; any field sound measurements; marine mammal sightings; and implementation of soft-start, shutdown, and safety-zone requirements. A monitoring report shall be prepared for submission to NMFS (submitted monthly and at the completion of all pile-driving/pile-removal activities).

### **Mitigation Measure M-BI-1b: Implement Avoidance and Minimization Measures for Special-Status Species**

*The project sponsors and the project construction contractor(s) they procure shall implement the following avoidance and minimization measures for special-status species:*

- **Implement a Worker Environmental Awareness Program (WEAP):** An education program shall be developed and implemented by a qualified biologist and attended by all construction personnel performing demolition or ground-disturbing work before such work commences on-site. Upon completion of the program, employees shall sign a form stating that they attended the training session and understand all conservation and protection measures. All future construction personnel shall be required to attend the presentation (either an in-person presentation or a recording of the prior presentation) and sign the form before beginning work on the project site. The signed forms shall be kept on file for the duration of construction and provided to the City and County of San Francisco upon request. The WEAP shall include but not be limited to education on:
  - applicable State and federal laws, environmental regulations, project permit conditions, and penalties for noncompliance;*
  - special-status plant and animal species with the potential to be encountered on or in the vicinity of the project site during construction;*
  - avoidance measures and a protocol for encountering special-status species, including a communication chain;*
  - preconstruction surveys and biological monitoring requirements associated with each phase of work and at specific locations within the project site (e.g., shoreline work), as biological resources and protection measures will vary depending on the location of work on the site, the time of year, and the type of construction activity;*
  - known sensitive resource areas in the project vicinity that are to be avoided and/or protected, as well as approved project work areas, access roads, and staging areas; and*
  - BMPs (e.g., straw wattles or spill kits) and their locations around the project site for erosion and species exclusion, in addition to general housekeeping requirements.*

<sup>5</sup> Soft starts require an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period between subsequent three-strike sets. Soft starts for vibratory hammers will initiate noise at 15 seconds at reduced energy, followed by a 1-minute waiting period between subsequent starts. This process should continue for a period of no less than 15 minutes.

- **Avoid Attracting Predators:** *To eliminate attractions for predators, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in solid, closed containers (trash cans) and removed from the entire construction site at the end of each working day.*
- **Avoid Entanglement:** *Tightly woven fiber netting or similar material shall be used at the project site for erosion control or other purposes to ensure that individuals are not trapped. This limitation shall be communicated to the contractor through use of special provisions included in the bid solicitation package. Plastic monofilament netting (erosion control matting) or similar material shall not be used at the project site because special-status species may become entangled or trapped in it.*

### **Mitigation Measure M-BI-1c: Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation**

- *To restore temporarily affected habitat, the project sponsors shall prepare and implement a vegetation restoration plan with detailed specifications for minimizing the introduction of invasive weeds and restoring all temporarily disturbed areas, and shall ensure that the contractor successfully implements the plan. The plan shall indicate the best time of year for seeding to occur.*

*To facilitate preparation of the plan, the project sponsors shall ensure that, before construction, a botanist (experienced in identifying sensitive plant species in the project area) performs additional preconstruction surveys of the areas to collect more detailed vegetation composition data, including species occurrence, vegetation characterization (e.g., tree diameter size), and percent cover of plant species. Photo documentation shall be used to show preproject conditions.*

*The minimum weed control and restoration measures and the success criteria to be included in the vegetation restoration plan are described below.*

#### ***Invasive Weed Control Measures***

*Invasive weeds readily colonize soils that have been disturbed by grading or other mechanical disturbance. The project sponsors shall incorporate the following measures into the construction plans and specifications to prevent the spread of invasive weeds into nearby areas:*

- (a) Construction equipment shall arrive at the project area free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species.*
- (b) Any imported fill material, soil amendments, gravel, etc., required for construction and/or restoration activities that would be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material.*
- (c) Certified, weed-free, imported erosion-control materials (or rice straw in upland areas) shall be used exclusively, as applicable (this measure concerns biological material and does not preclude the use of silt fences and other measures).*
- (d) The environmental awareness training program for construction personnel shall include an orientation regarding the importance of preventing the spread of invasive weeds.*

- (e) *To reduce the seed bank in weed-dominated ruderal areas, the contractor shall mow, disk, apply spot-applications of herbicide to weeds, and/or remove weeds, as appropriate (i.e., before seed set and dispersal) and before surface clearing and site preparation.*
- (f) *Before tracked and heavy construction equipment leaves the project area, any accumulation of plant debris, soil, and mud shall be washed off the equipment or otherwise removed on-site, and air filters shall be blown out.*
- (g) *No invasive species shall be used in any restoration seeding.*
- (h) *Implementation of these measures during construction and site restoration activities shall be verified and documented by a biological or environmental monitor.*

#### ***Minimum Restoration Measures***

*Restoration areas are portions of the project area that would be disturbed during project-related construction activities but would subsequently be restored to their preconstruction conditions, or better. No soil containing plant materials may be used for revegetation to avoid inadvertent introduction of nonnative plant pathogens like phytophthora (*Phytophthora* sp.). To restore temporarily disturbed areas, the project sponsors shall ensure the following:*

- (a) *Native coastal scrub and tidal marshland areas shall be reseeded with a native seed mix or replanted with native stock.*
- (b) *For any tree to be removed, RPD and BUILD shall ensure that replacement trees are planted within or in the vicinity of the project area as follows:*
  - *Trees shall be replaced within the first year after the completion of construction or as soon as possible in an area where construction is completed, during a favorable time of year as determined by an arborist or biologist with experience in restoration.*
  - *Selection of replacement sites and installation of replacement plantings shall be supervised by an arborist or biologist with experience in restoration. Irrigation of tree plantings during the initial establishment period shall be provided as deemed necessary by an arborist or biologist with experience in restoration.*
  - *An arborist or biologist with experience in restoration shall monitor new plantings at least once a year for 5 years or as otherwise determined by the applicable resource agencies.*
  - *Any replacement plantings installed as remediation for failed plantings shall be planted as stipulated here for original plantings, and shall be monitored for 5 years after installation, or as otherwise determined by the applicable resource agencies.*

#### ***Minimum Success Criteria***

*Unless the applicable resource agencies determine that different but equivalent or more stringent criteria should be applied, the success criteria for restoring temporarily disturbed areas shall be as follows:*

- (a) *All temporarily disturbed areas shall be restored to approximately their baseline condition. Vegetation cover shall be at least 70 percent of the baseline; that is, absolute cover of the revegetation site shall be no less than 70 percent of the baseline absolute cover of native and*

- naturalized species (i.e., excluding target invasives). Cover in the revegetation site shall contain no more than 10 percent absolute cover of target invasives or no more cover of invasives than the baseline, whichever is greater.*
- (b) Vegetation in restoration areas shall be functional, fully established, and self-sustaining as evidenced by successive years of healthy vegetative growth; observed increase in vegetative cover, canopy cover, and/or plant height; and successful flowering, seed set, and/or vegetative reproduction over the 5-year monitoring period.*
  - (c) Revegetation work shall start within 1 year of construction completion.*
  - (d) Revegetation shall be monitored at least once a year for 5 years or as otherwise determined by the applicable resource agencies.*
  - (e) Individual native trees shall have 65 percent survivorship by the fifth monitoring year.*
  - (f) Restoration areas shall be monitored for target invasive plants quarterly in the first 5 years after replanting. If invasive plants are found during the 5-year monitoring period, they shall be removed as necessary to support meeting the cover and vegetation composition success criteria.*
  - (g) Monitoring and maintenance shall continue until the minimum success criteria specified in parts (a) through (e) are met, or as otherwise determined by the applicable resource agencies.*

### ***Compensatory Mitigation***

*The project sponsors shall fully compensate for permanent losses of developed open water, open water, seasonal wetland, wetland swale, tidal marsh including areas of bare ground and beach, and nonwetland waters (2.11 acres total) as defined in Table 3.1-5. In addition, the project sponsors shall fully compensate the permanent loss of native coastal scrub (0.77 acre). Compensatory mitigation may occur through the creation of habitat on-site at any of the four project site properties, or through purchase of credits at an off-site mitigation bank. Permanently affected areas shall be mitigated at a ratio of no less than 1:1, unless otherwise approved by USFWS and/or CDFW.*

Under either the proposed project or the variant, implementation of Mitigation Measures M-BI-1a, M-BI-1b, and M-BI-1c listed above, along with Mitigation Measures M-HY-1a and M-HY-1b and development of a SWPPP and other erosion control measures as detailed in Section 3.15, "Hydrology and Water Quality," would reduce impacts of construction at all project site properties on special-status fish species to *less than significant with mitigation*.

### **Operation**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Operational impacts of the proposed project or variant on special-status fish species would be limited to in-water shading from new features added in open water habitat and the generation of stormwater from long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters.

Adding a new 480-foot-long by 12-foot-wide pier at India Basin Shoreline Park would result in the permanent shading of open water habitat. The shading could reduce the amount of energy available for photosynthesis by phytoplankton. However, the tidal fluctuations and currents would move the water mass through the area.



Planktonic organisms associated with the water mass would also move through the area and are not expected to reside beneath the platform for a lengthy amount of time. The small potential for a reduction in photosynthesis is not expected to measurably reduce phytoplankton densities in this area, or to result in food-chain effects on zooplankton species upon which juvenile special-status fish species may feed.

Shading from the pier, an overwater structure, can also create “behavioral barriers” that can deflect or delay fish movement, reduce the production and availability of prey resources, and increase the predation rates of certain fishes. The area of shade that would be created by project elements is small relative to the size of the surrounding available open water habitat in the Bay to which species could move; therefore, species behavior is not anticipated to be affected.

Stormwater generated on the project site has the potential to introduce pollutants and increase turbidity in tidal marsh and open water habitat in the Bay. Long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters would increase with the proposed project or variant, as compared to existing conditions. As discussed in Section 3.15, “Hydrology and Water Quality,” compliance with several existing regulations applicable to the proposed project and variant would reduce or avoid impacts related to long-term erosion, sedimentation, and water quality degradation. Stormwater discharges from the project site to a separate stormwater system would be subject to the regulatory requirements of the NPDES Phase II MS4 Permit, the City’s Stormwater Management Ordinance, and the City’s SMR. The NPDES MS4 Phase II General Permit for stormwater discharge (Order No. 2003-0005-DWQ as amended by 2013-0001-DWQ) requires the use of Low Impact Development (LID) and green infrastructure BMPs to comply with stormwater management requirements. The NPDES Phase II MS4 Permit requires the City and SF Port to develop, administer, implement, and enforce stormwater management plans to protect and improve stormwater quality. Implementing the City’s stormwater management plan requires postconstruction stormwater management for new development and redevelopment to protect stormwater quality and the quantity of water delivered to water bodies.

For these reasons, at all four project site properties, operational impacts of the proposed project or variant on special-status fish species would be *less than significant*. No mitigation measures are necessary.

### ***Ridgway’s Rail***

#### **Construction**

##### *India Basin Shoreline Park Property*

No foraging or nesting habitat for Ridgway’s rail occurs within the India Basin Shoreline Park Property. Potential impacts to Ridgway’s rail would be limited to human presence and noise disturbance associated with the construction of the Marineway attached to India Basin Shoreline Park, which could impact nesting rails at Heron’s Head Park. The northern terminus of the Marineway is approximately 500 feet from Heron’s Head Park, and construction activities to build the Marineway may occur even closer to Heron’s Head Park. Heron’s Head park provides marginal and low quality nesting habitat for Ridgway’s rail; however, observation of Ridgway’s rail were made at Heron’s Head Park between 2010 and 2015, and one breeding pair was successful at Heron’s Head Park in 2011. No Ridgway’s rails have been observed at Heron’s Head Park in 2016 or 2017; however, the potential exists for Ridgway’s rail to nest at Heron’s Head Park during construction of the Marineway (Jen McBroom, personal conversation, August 21, 2017).

Noise and Human Presence. Typical disturbance buffers surrounding Ridgway's rail nesting habitat are approximately 700 feet, upon which construction of the Marineway could encroach. Noise disturbance and human presence during construction has the potential to negatively affect Ridgway's rail breeding behavior and success.

Accidental Spills. Materials used during construction (e.g., oils, transmission and hydraulic fluids, fuel) could be spilled accidentally and could enter the Bay and be transported to Heron's Head Park. Pollutants entering the Bay could reduce the quality of habitat for Ridgway's rail, thereby reducing foraging or nesting potential. The introduction of pollutants also may harm Ridgway's rail temporarily if birds consume the contaminated items.

In summary, under either the proposed project or the variant, the impact of construction at India Basin Shoreline Park on the Ridgway's rail could be significant.

The following mitigation measure would be implemented to reduce this significant construction impact on the Ridgway's rail:

- Mitigation Measure M-BI-1b, "Implement Avoidance and Minimization Measures for Special-Status Species"

As described in Mitigation Measure M-BI-1d, Ridgway's rail habitat would be avoided during the nesting season. If construction must occur during the Ridgway's rail nesting season, a USFWS-approved protocol-level Ridgway's rail survey (following the June 2015 USFWS Survey Protocol) will be conducted in Ridgway's rail habitat (Heron's Head Park) within 700 feet of planned construction activities. If Ridgway's rail activity centers are detected, the findings will be reported to USFWS and project activities occurring within 700 feet of Ridgway's rail activity centers will be limited to the period from September 1 through January 31, outside of the Ridgway's rail nesting season.

Additional measures include preparing and providing an environmental training program for project personnel (Mitigation Measure M-BI-1b); restricting construction activities to approved work areas; and installing erosion control materials and BMPs as described in Section 3.15, "Hydrology and Water Quality." Mitigation Measure M-HY-1a, "Monitor Turbidity during Construction," presented in Section 3.15, "Hydrology and Water Quality," would be implemented to reduce this significant impact during construction.

Under either the proposed project or the variant, implementation of Mitigation Measure M-BI-1d would reduce construction impacts at India Basin Shoreline Park on the Ridgway's rail.

#### *900 Innes, India Basin Open Space, and 700 Innes Properties*

The 900 Innes, India Basin Open Space, and 700 Innes properties are not located within 700 feet of Ridgway's rail habitat and no construction-related impacts are anticipated.

#### **Overall Construction Impact conclusion for Ridgway's Rail**

As stated above, the potential exists for Ridgway's rail to nest at Heron's Head Park during construction of the India Basin Shoreline Park Marineway (Jen McBroom, personal conversation, August 21, 2017). Under either the proposed project or the variant, implementation of Mitigation Measure M-BI-1d would reduce construction impacts at all properties on the Ridgway's Rail.

**Mitigation Measure M-BI-1d: Avoid Ridgway's Rail Habitat During the Nesting Season**

*To the extent feasible, the start of construction activities within 700 feet of Heron's Head Park shall be scheduled to avoid the Ridgway's rail nesting season. The nesting season for Ridgway's rail extends from February 1 through August 31. If construction must occur during the Ridgway's rail nesting season, the following measures shall be implemented:*

- (a) A USFWS-approved protocol-level survey for Ridgway's rail (following the June 2015 USFWS Survey Protocol) shall be conducted in Ridgway's rail habitat (Heron's Head Park) within 700 feet of planned construction activities.*
- (b) If Ridgway's rail activity centers are detected, the findings shall be reported to USFWS and project activities occurring within 700 feet of Ridgway's rail activity centers shall be limited to the period from September 1 through January 31, outside of the Ridgway's rail nesting season.*

With implementation of Mitigation Measure M-BI-1d, impacts to the Ridgway's Rail would be *less than significant with mitigation*.

**Operation***India Basin Shoreline Park and India Basin Open Space Properties*

There are two proposed kayak launches, one in the Marineway associated with India Basin Shoreline Park and the other on the India Basin Open Space property. If recreational users kayak to Heron's Head Park from these kayak launches, their presence could affect foraging and nesting Ridgway's rails. Human presence in the form of kayakers is not anticipated to result in immediate nest failure; but an increased human presence in the open water habitat surrounding Heron's Head Park could deter Ridgway's rails from inhabiting the site or affect Ridgway's rail behavior, thereby reducing breeding success.

However, the existing conditions of nesting habitat at Heron's Head Park are of marginal and low quality. The project proposes to replace approximately 0.64 acre of existing shoreline at the project site with tidal marshland (Table 3.14-4). This additional tidal marshland acreage would add foraging and nesting habitat for Ridgway's rail. Creating this habitat would be the primary method by which the project would offset impacts from recreational kayak use in India Basin. Adding 0.64 acre of tidal marsh habitat along this section of shoreline would improve habitat connectivity between Heron's Head Park to the north, and would strengthen the southeastern shoreline of San Francisco as a movement corridor for Ridgway's rail.

*900 Innes and 700 Innes Properties*

The 900 Innes and 700 Innes Properties are not located within 700 feet of Ridgway's rail habitat, and no operations impacts are anticipated.

### **Overall Operation Impact Conclusion for Ridgway's Rail**

Under either the proposed project or the variant, with creation and enhancement of habitat for Ridgway's rail, operational impacts on Ridgway's rail at the India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes properties would be *less than significant*.

### ***Alameda (South Bay) Song Sparrow***

#### **Construction**

##### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

The tidal marsh on the India Basin Shoreline Park property contains vegetation of suitable height and density to provide nesting habitat for the Alameda song sparrow. Alameda song sparrows are also known to nest at Heron's Head Park, approximately 0.25 mile to the north, which contains suitable tidal marsh habitat. Therefore, construction at the India Basin Shoreline Park property under either the proposed project or variant could result in impacts on nesting or foraging Alameda song sparrows.

The tidal marsh on the India Basin Shoreline Park property does not contain vegetation of suitable height and density to provide nesting habitat for Alameda song sparrows, but it could provide foraging habitat for this species.

No nesting or foraging habitat is present on the 900 Innes and 700 Innes properties; therefore, impacts of project construction on the Alameda song sparrow at either of these properties would be limited to increased noise and human presence near foraging habitat and increased turbidity and pollutants from stormwater runoff from the project site.

Habitat Removal. Because of the proximity of the project site to suitable habitat for this species, Alameda song sparrows may use the tidal marsh in the northern part of the India Basin Shoreline Park property for foraging or nesting. In-water project work on this property (removing the current shoreline/riprap and replacing it with tidal marsh habitat) would result in permanent removal of approximately 0.07 acre of potential nesting and foraging habitat, which could adversely affect Alameda song sparrows.

Construction at the India Basin Open Space property would result in temporary removal of approximately 0.53 acre and permanent removal of approximately 0.27 acre of tidal marsh, potential foraging habitat for Alameda song sparrows.

Noise and Human Presence. Construction activities at all project site properties would generate noise and increase human presence, potentially resulting in temporary harassment of foraging Alameda song sparrows. However, the tidal marsh habitat in India Basin is of low quality, and higher quality habitat is present at Heron's Head Park. Alameda song sparrows are thus expected to spend more time foraging at Heron's Head Park, which is approximately 0.25 mile north of the project site. Therefore, project-related noise and human presence are not anticipated to have a significant impact on foraging Alameda song sparrows.

Turbidity. Temporary, short-term increases in turbidity would likely result from in-water work at all four project site properties to remove the current shoreline/riprap and replacing it with tidal marsh habitat. These effects would

likely also result from conducting remediation actions, replacing two piers, and removing 20 piles at the 900 Innes property; enhancing tidal marsh, constructing an elevated boardwalk, removing an existing drainage outfall, and installing a new kayak launch at the India Basin Open Space property; and removing a pier and eight associated piles at the 700 Innes property.

Such turbidity increases have the potential to reduce the quality of foraging habitat for Alameda song sparrows on the project site. Elevated levels of turbidity could negatively affect the area's vegetation, and therefore foraging ability, which could adversely affect Alameda song sparrows temporarily.

Accidental Spills. Materials used during construction (e.g., oils, transmission and hydraulic fluids, fuel) could be spilled accidentally and could enter the Bay or tidal marsh areas. As with turbidity, pollutants entering the Bay could reduce the quality of habitat for Alameda song sparrows, thereby reducing foraging potential. The introduction of pollutants also may harm Alameda song sparrows temporarily if birds consume the contaminated items.

In summary, under either the proposed project or the variant, the impact of construction at all four project site properties on the Alameda song sparrow could be significant.

The following mitigation measures would be implemented to reduce this significant construction impact on the Alameda song sparrow:

- Mitigation Measure M-BI-1b, "Implement Avoidance and Minimization Measures for Special-Status Species"
- Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation"
- Mitigation Measure M-BI-1e, "Avoid Nests during Bird Nesting Season"

Mitigation Measures M-BI-1b and M-BI-1c are presented above; Mitigation Measure M-BI-1e is presented below.

As described in Mitigation Measure M-BI-1e, preconstruction nesting bird surveys would be conducted during nesting bird season and an appropriate avoidance buffer would be implemented if an active nest is identified. Additional measures include preparing and providing an environmental training program for project personnel (Mitigation Measure M-BI-1b); restricting construction activities to approved work areas; and installing erosion control materials and BMPs as described in Section 3.15, "Hydrology and Water Quality." Mitigation Measure M-HY-1a, "Monitor Turbidity during Construction," presented in Section 3.15, "Hydrology and Water Quality," would be implemented to reduce this significant impact of construction. Mitigation Measure M-BI-1c requires that sensitive natural communities be created or restored at a ratio of no less than 1:1.

In addition, the project proposes to replace approximately 0.64 acre of existing shoreline at the project site with tidal marshland (Table 3.14-4). This additional tidal marshland acreage would add foraging and nesting habitat for Alameda song sparrow. Creating this habitat would be the primary method by which the project would offset the reduction in habitat for this species as a result of construction. Adding 0.64 acre of tidal marsh habitat along this section of shoreline would improve habitat connectivity between Heron's Head Park to the north and tidal marshland to the south, and would strengthen the Bay's shoreline as a movement corridor for this species.

**Mitigation Measure M-BI-1e: Avoid Nests during Bird Nesting Season**

*To the extent feasible, the start of construction activities shall be scheduled to avoid the nesting season. The nesting season for most birds, including most raptors, extends from February 1 through August 31. If construction must occur during the nesting season, the following measures shall be implemented:*

- (b) *Preconstruction surveys for nesting birds shall be conducted by a qualified biologist no more than 14 days before the initiation of construction and demolition activities. During these surveys, the qualified biologist shall inspect all potential nesting habitats (e.g., trees, shrubs, grasslands, and buildings) within 300 feet of impact areas for raptor nests and within 100 feet of impact areas for nests of nonraptors. If an active nest (i.e., a nest with eggs or young, or any completed raptor nest attended by adults) is found sufficiently close to work areas to be disturbed by these activities, the qualified biologist shall determine the extent of a disturbance-free buffer zone to be established around the nest until the young are fledged or the nest is otherwise abandoned as determined by a qualified biologist (typically 250 feet for raptors and 50–100 feet for other species), to ensure that no nests of species protected by the Migratory Bird Treaty Act and California Fish and Game Code would be disturbed during project implementation.*
- (c) *If construction activities are not initiated until after the start of the nesting season, potential nesting substrate (e.g., bushes, trees, grasses, and other vegetation) that is scheduled to be removed by the project may be removed before the start of the nesting season (e.g., before February 1) to reduce the potential for initiation of nests.*

Under either the proposed project or the variant, implementation of Mitigation Measures M-BI-1b, M-BI-1c, and M-BI-1e would reduce construction impacts at all four project site properties on the Alameda song sparrow to *less than significant with mitigation*.

**Operation***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Operational impacts of the proposed project or variant on the Alameda song sparrow would be primarily limited to the generation of stormwater on the project site, and the resulting potential to introduce pollutants and increase turbidity in tidal marsh and open water habitat in the Bay. Long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters would increase relative to existing conditions. As discussed in Section 3.15, “Hydrology and Water Quality,” the project would comply with regulatory requirements, including the implementation of permanent stormwater BMPs, to avoid contributing to an increase in stormwater pollutants discharged to the Bay.

In addition, human presence in the project vicinity may increase with the development of new commercial and institutional buildings and dwellings. The increase in human presence would be primarily offset by the creation and restoration of tidal marsh habitat along the shoreline of the India Basin Shoreline Park and India Basin Open Space properties. Therefore, at all four project site properties, operational impacts of the proposed project or variant on the Alameda song sparrow would be *less than significant*. No mitigation measures are necessary.

## ***Nesting Birds***

### **Construction**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Although no special-status bird species have the potential to nest on or near the four project site properties, common nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Code may find suitable nesting habitat on and adjacent to the project site. Common birds may find nesting habitat in trees, shrubs, grasses, emergent wetland vegetation, and human-made structures. Ground-nesting birds may also find nesting habitat on dry, open, unvegetated ground. Construction noise and activity could disturb avian species during nesting, creating the potential for reduced fecundity or nest abandonment.

Increased human presence, noise, and removal of nesting habitat could affect active nests on the project site, resulting in nest failure. Therefore, at all four project site properties, construction-related impacts of the proposed project or variant on nesting birds could be significant.

Mitigation Measure M-BI-1b, “Implement Avoidance and Minimization Measures for Special-Status Species,” and Mitigation Measure M-BI-1e, “Avoid Nests during Bird Nesting Season,” described above, would be implemented to reduce this significant impact of construction at any of the four project site properties on nesting birds.

These measures include conducting preconstruction nesting bird surveys during nesting bird season (February 1–August 31), as described in Mitigation Measure M-BI-1e. Should an active nest be identified, a disturbance-free buffer zone would be established around any active nest until the young have fledged or the nest is otherwise abandoned as determined by a qualified biologist. Additional measures include preparing and providing an environmental training program for project personnel (Mitigation Measure M-BI-1b) and restricting project activities to approved work areas. In addition, habitat for bird species would be created and enhanced as part of the proposed project or variant. These enhancements could include sand dunes, bird islands, brackish lagoons, scrub upland planting, tree stands for wind buffering, and new wetlands and ponds.

Under either the proposed project or the variant, implementation of Mitigation Measures M-BI-1b and M-BI-1e and creation and enhancement of habitat for nesting birds would reduce construction impacts on nesting birds at any of the four project site properties to *less than significant with mitigation*.

### **Operation**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

The generation of stormwater on the project site under the proposed project or variant may result in operational impacts on nesting birds, and has the potential to introduce pollutants and increase turbidity in tidal marsh and open water habitat for migratory bird species in the Bay. Long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters would increase relative to existing conditions. As discussed in Section 3.15, “Hydrology and Water Quality,” the project would comply with regulatory requirements, including the implementation of permanent stormwater BMPs, to avoid contributing to an increase

in stormwater pollutants discharged to the Bay. This would minimize any increases in turbidity in tidal marsh and open water habitat for migratory bird species in the Bay.

In addition, the two proposed kayak launches, one in the Marineway and the other on the India Basin Open Space property, would attract recreational users whose presence could affect foraging, roosting, and nesting shorebirds. Human presence in the form of kayakers is not anticipated to result in immediate nest failure; but such an increased human presence in tidal marsh and open water habitat at India Basin could affect shorebird behavior, thereby reducing breeding success.

The existing conditions of foraging and nesting habitat at India Basin are poor quality, however, and the project proposes to restore existing tidal marshland and create an additional 0.64 acre of tidal marshland. This increased quality and quantity of potential foraging and nesting habitat at India Basin is anticipated to offset any potential impacts on nesting birds from recreational users.

Under either the proposed project or the variant, with creation and enhancement of habitat for nesting birds, operational impacts on nesting birds at any of the four project site properties would be *less than significant*. No mitigation measures are necessary.

## ***Marine Mammals***

### **Construction**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

No known haul-outs<sup>6</sup> for marine mammals are located in the project vicinity and marine mammals are not likely to traverse the India Basin Shoreline Park, 900 Innes, India Basin Open Space, or 700 Innes properties. However, in the unlikely event that a marine mammal enters any of these locations during in-water work such as pile driving, it could be affected by project construction activities. The project-related impacts and mitigation measures for marine mammals discussed in this section would be primarily limited to the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties and a small portion of the 700 Innes property that connects to the Bay.

The MMPA defines two levels of harassment of marine mammals (70 FR 1871–1875, January 11, 2005). Level A harassment results in potential physical injury to a marine mammal or marine mammal stock in the wild, and Level B harassment results in potential behavioral disruption. The following thresholds have been established by the MMPA and the National Oceanic and Atmospheric Administration 2005 Guidelines:

- For “Level A” harassment:
  - 190 dB root mean square (RMS) for physical injury of pinnipeds, such as Pacific harbor seal and California sea lion.

---

<sup>6</sup> A marine mammal haul-out is a location where marine mammals (generally pinnipeds such as seals and sea lions) rest on shore for varying lengths of time.



- For “Level B” harassment:
  - 120 dB RMS for behavioral harassment of marine mammals from “continuous” or nonimpulsive source vibrations, and
  - 160 dB RMS for behavioral harassment of marine mammals from “impulse” or impact-source vibrations.

Noise effects from hydraulic impact hammers are considered “impulse” or impact-source vibrations. Impulsive sources are transient, brief (less than 1 second), and broadband, and they typically consist of high peak pressure with rapid rise time and rapid decay. “Continuous” or nonimpulsive-source vibrations include such methods as using vibratory hammers for pile driving. Under either the proposed project or the variant, the construction impact on marine mammals from using either of these methods at any of the project site properties could be significant.

Mitigation Measure M-BI-1a, “Prepare and Implement a Hydroacoustic Monitoring Program for Special-Status Fish and Marine Mammals,” would be implemented to reduce the impact of construction at any of the project site properties on marine mammals. Under this mitigation measure, a marine mammal monitoring plan would be implemented as described above. Implementation of Mitigation Measure M-BI-1a and coordination with NMFS would reduce impacts on marine mammals at the four project site properties to *less than significant with mitigation*.

### **Operation**

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

No known haul-outs for marine mammals are present at any of the project site properties. Therefore, operational impacts on marine mammals could occur only if habitat restoration on these properties were to attract marine mammals, and those marine mammals were negatively affected by noise or human presence from visitors to the project site. The creation of foraging habitat or, potentially, of haul-out sites for marine mammals in the Bay adjacent to these properties would be considered beneficial; however, marine mammals have not been historically present in this area of the Bay. Although portions of the project site are adjacent to the Bay, the site’s users are not anticipated to have direct interaction with marine mammals or to be involved in activities that would affect marine mammals. *No impact* on marine mammals is anticipated at any of the project site properties during project operation under either the proposed project or the variant.

### ***Overall Impact Conclusion***

The overall impact of the proposed project or variant related to having an adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS would be *less than significant with mitigation*.

**Impact BI-2: The proposed project or variant would have an adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS. (*Less than Significant with Mitigation*)**

***Construction***

Six sensitive biological communities have the potential to be affected by the project: developed open water, open waters, seasonal wetland, wetland swale, tidal marsh (including areas of bare ground and beach), and nonwetland waters. Expected permanent and temporary removal of all vegetation communities and developed areas are detailed by property in Table 3.14-2. Table 3.14-5 summarizes removal of the six sensitive natural communities.

***India Basin Shoreline Park Property***

In-water work at the India Basin Shoreline Park property (adding a new 480-foot-long by 12-foot-wide pier, removing current shoreline/riprap, and replacing it with tidal marsh habitat) would result in permanent removal of approximately 0.07 acre of tidal marsh. Approximately 1.20 acres of open water would also be permanently removed. Other temporary and permanent impacts below high tide line (e.g. beach, developed open water, bare, etc.) are detailed in Table 3.14-2, and summarized in Table 3.14-5.

In addition, sensitive biological communities may be affected by project-related runoff that would increase water turbidity and introduce pollutants. These impacts would be similar to those described in Impact BI-1. Because temporary and permanent loss of sensitive natural communities is anticipated, the impact of construction at the India Basin Shoreline Park property under the proposed project or variant on biologically sensitive habitats could be significant.

**Table 3.14-5: Temporary and Permanent Removal of Sensitive Natural Communities, including Clean Water Act Section 404 Jurisdictional Waters**

<b>Property</b>	<b>Permanent Impacts (acres)</b>	<b>Temporary Impacts (acres)</b>	<b>Total (acres)</b>
India Basin Shoreline Park	1.27		1.27
900 Innes	0.18	0.39	0.57
India Basin Open Space	0.32	1.08	1.4
700 Innes	0.34	0	0.34
<b>Total</b>	<b>2.11</b>	<b>1.47</b>	<b>3.58</b>

Note: This table summarizes removal of specific communities included in Table 3.14-2: developed open water, open waters, seasonal wetland, wetland swale, tidal marsh including areas of bare ground and beach, and nonwetland waters.

Sources: San Francisco, 2017a and 2017b

Mitigation Measure M-BI-1c, “Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation,” presented above would be implemented to reduce this significant impact of construction at the India Basin Shoreline Park property under the proposed project or variant on biologically sensitive habitats. This measure would be implemented to preserve or create on-site wetland features at the project site through the permitting process with USACE, the San Francisco Bay RWQCB, and BCDC.

*900 Innes Property*

Remediation actions and the removal and construction of two replacement piers at the 900 Innes property would result in the temporary removal of approximately 0.26 acre and the permanent removal of approximately 0.09 acre of open water. Other temporary and permanent impacts below high tide line (e.g. beach, developed open water, bare, etc.) are detailed in Table 3.14-2, and summarized in Table 3.14-5. In addition, sensitive biological communities may be affected by project-related runoff that would increase water turbidity and introduce pollutants. These impacts would be similar to those described in Impact BI-1. Because temporary and permanent loss of sensitive natural communities is anticipated, the impact of construction at the 900 Innes property under the proposed project or variant on biologically sensitive habitats could be significant.

Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation," presented above would be implemented to reduce this significant impact of construction at the 900 Innes property under either the proposed project or variant on biologically sensitive habitats. This measure would be implemented to preserve or create on-site wetland features at the project site through the permitting process with USACE, the San Francisco Bay RWQCB, and BCDC.

*India Basin Open Space Property*

Construction at the India Basin Open Space property (restoring and creating tidal marshland, constructing boardwalks, constructing a pier, and relocating a historic house along the shoreline) would result in the temporary removal of approximately 0.53 acre and permanent removal of approximately 0.27 acre of tidal marsh. Construction activities under the proposed project or variant would also result in the permanent removal of approximately 0.28 acre and permanent removal of 0.03 acre of open water. Other temporary and permanent impacts below high tide line (e.g. beach, developed open water, bare, etc.) are detailed in Table 3.14-2, and summarized in Table 3.14-5. In addition, sensitive biological communities may be affected by project-related runoff that would increase water turbidity and introduce pollutants. These impacts would be similar to those described in Impact BI-1. Because a temporary and permanent loss of sensitive natural communities is anticipated, the impact of construction at the India Basin Open Space property under the proposed project or variant on biologically sensitive habitats could be significant.

Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation," presented above would be implemented to reduce this significant impact of construction at the India Basin Open Space property under the proposed project or variant on biologically sensitive habitats. This measure would be implemented to preserve or create on-site wetland features at the project site through the permitting process with USACE, the San Francisco Bay RWQCB, and BCDC.

*700 Innes Property*

At the 700 Innes property, the proposed project and the variant would have similar construction impacts on sensitive natural communities. The variant would involve constructing up to 1 million gross square feet (gsf) of commercial/institutional uses and 500 dwelling units, fewer dwelling units but a larger amount of commercial uses than under the proposed project. Construction at the 700 Innes property under the proposed project or variant would result in the permanent removal of 0.26 acre of seasonal wetland, 0.04 acre of wetland swale, and 0.01 acre of waters (ponded area located on disturbed infill and a linear drainage ditch). A small portion of work would

occur in the Bay for the removal of the pier and piles, which would replace 0.03 acre of developed open waters with open water habitat. No removal of tidal marsh would occur at this property.

Construction activities at the 700 Innes property may also result in runoff-related impacts on adjacent sensitive natural communities in the Bay. Runoff-related impacts would be similar to those detailed for the other three project site properties, including increased turbidity and introduction of pollutants.

Impacts of construction at the 700 Innes property under the proposed project or variant on sensitive natural communities could be significant.

Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation," presented above would be implemented to reduce this significant impact of construction at the 700 Innes property under the proposed project or variant on biologically sensitive habitats. Because these sensitive natural communities are also Section 404/401 jurisdictional waters, permits would be obtained from USACE and the San Francisco Bay RWQCB, and a mitigation strategy would be refined and approved through this permitting process.

### **Overall Construction Impact Conclusion**

Mitigation Measure M-BI-1c requires the creation or restoration of sensitive natural communities at a ratio of no less than 1:1. In addition, the project proposes to replace approximately 0.64 acre of existing shoreline of the project site with tidal marshland (Table 3.14-4). Implementation of Mitigation Measure M-BI-1c and development and implementation of a project SWPPP as detailed in Section 3.15, "Hydrology and Water Quality," would reduce the impact of construction at all four project site properties under the proposed project or variant on sensitive natural communities to *less than significant with mitigation*.

### ***Operation***

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Under either the proposed project or the variant, operational impacts on sensitive natural communities at all four project site properties would be limited to the generation of stormwater on the project site, and the resulting potential to introduce pollutants and increase turbidity in tidal marsh and open water habitat in the Bay. Long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters would increase relative to existing conditions. The variant would involve constructing up to 1 million gsf of commercial/institutional uses and 500 dwelling units, fewer dwelling units but a larger amount of commercial uses than under the proposed project.

As discussed in Section 3.15, "Hydrology and Water Quality," the project would comply with regulatory requirements, including the implementation of permanent stormwater BMPs, to avoid contributing to an increase in stormwater pollutants discharged to the Bay. This would minimize any increases in turbidity in tidal marsh and open water habitat in the Bay. Therefore, at all four project site properties, operational impacts of the proposed project or variant on sensitive natural communities would be *less than significant*. No mitigation measures are necessary.

**Impact BI-3: The proposed project or variant would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. (*Less than Significant with Mitigation*)**

### ***Construction***

#### *India Basin Shoreline Park Property*

In-water work at the India Basin Shoreline Park property (adding a new 480-foot-long by 12-foot-wide pier, removing current shoreline/riprap, and replacing it with tidal marsh habitat) would result in the permanent removal of approximately 0.07 acre of tidal marsh. Approximately 1.20 acres of open water would also be permanently removed. Other temporary and permanent impacts below high tide line (e.g. beach, developed open water, bare, etc.) are detailed in Table 3.14-2, and summarized in Table 3.14-5. These features are considered potentially jurisdictional and subject to federal protection under Section 404 of the CWA. Impacts on Section 404 jurisdictional waters are detailed in Table 3.14-2 and summarized in Table 3.14-5.

RPD would obtain permits from USACE, BCDC, and the San Francisco Bay RWQCB for the discharge of fill material to waters of the United States and waters of the State. Both in-water and shoreline construction work at the India Basin Shoreline Park property could increase turbidity and pollutants in these water features, similar to the impacts discussed for species habitat in Impact BI-1. In-water work and stormwater runoff from the project site may temporarily increase the Bay's turbidity, which has the potential to degrade the water quality of the Bay and potentially jurisdictional features (e.g., existing tidal marshland) on the project site. Materials used during construction (e.g., oils, transmission and hydraulic fluids, fuel) could be spilled accidentally and enter the Bay or tidal marsh areas, degrading the quality of these features.

Given the ecological significance of open water habitat and tidal marsh habitat in the Bay, this impact of construction at the India Basin Shoreline Park property under the proposed project or variant on federally protected wetlands could be significant.

Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation," presented above and Mitigation Measure M-HY-1b, "Implement Pile Removal BMPs," presented in Section 3.15, "Hydrology and Water Quality," would be implemented to reduce this significant impact of construction at the India Basin Shoreline Park property under the proposed project or variant on federally protected wetlands.

Creating and enhancing tidal marsh habitat along the edges of India Basin Shoreline Park and India Basin Open Space is the primary method by which permanent and temporary impacts on Section 404 jurisdictional waters would be offset. Enhancing habitat on the project site and along the shoreline may also involve installing sand dunes, bird islands, brackish lagoons, scrub upland plantings, and new wetlands and ponds. Because the habitat present on the project site is of low quality, creating new tidal marsh, wetland, and pond features on the project site would likely serve as the mechanism for mitigating impacts on potentially jurisdictional waters. Mitigation Measure M-BI-1c requires the creation or restoration of sensitive natural communities at a ratio of no less than 1:1. In addition, the project proposes to replace approximately 0.64 acre of existing shoreline of the project site with tidal marshland (Table 3.14-4). As stated previously, permits would be obtained from USACE, BCDC, and

the San Francisco Bay RWQCB. In addition, mitigation measures would be implemented to minimize impacts on tidal wetlands and the Bay: Mitigation Measure M-BI-1c, “Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation,” and Mitigation Measure M-HY-1b, which requires implementing water quality BMPs.

#### *900 Innes Property*

Remediation actions and the replacement of two piers at the 900 Innes property would result in the temporary removal of approximately 0.26 acre and permanent removal of approximately 0.09 acre of open water. Construction activities would also result in the temporary removal of approximately 0.13 acre and permanent removal of 0.09 acre of developed open water. Other temporary and permanent impacts below high tide line (e.g. beach, developed open water, bare, etc.) are detailed in Table 3.14-2, and summarized in Table 3.14-5. These features are considered potentially jurisdictional and subject to federal protection under Section 404 of the CWA.

As detailed previously for the India Basin Shoreline Park property, RPD would obtain permits from USACE, BCDC, and the San Francisco Bay RWQCB for the discharge of fill material to waters of the United States and waters of the State. Both in-water and shoreline construction work at the 900 Innes property could increase turbidity and pollutants in these water features, similar to those impacts discussed for species habitat in Impact BI-1. In-water work and stormwater runoff from the project site may temporarily increase the Bay’s turbidity, which has the potential to degrade the water quality of the Bay and potentially jurisdictional features (e.g., existing tidal marshland) on the project site. Materials used during construction (e.g., oils, transmission and hydraulic fluids, fuel) could be spilled accidentally and enter the Bay or tidal marsh areas, degrading the quality of these features.

Given the ecological significance of open water habitat in the Bay, this impact of construction at the 900 Innes property under the proposed project or variant on federally protected wetlands could be significant.

Mitigation Measure M-BI-1c, “Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation,” presented above and Mitigation Measure M-HY-1b, “Implement Pile Removal BMPs,” presented in Section 3.15, “Hydrology and Water Quality,” would be implemented to reduce this significant impact of construction at the 900 Innes property under either the proposed project or variant on federally protected wetlands.

Creating and enhancing tidal marsh habitat along the edges of the India Basin Shoreline Park and India Basin Open Space properties is the primary method by which permanent and temporary impacts on Section 404 jurisdictional waters would be offset. Enhancing habitat on the project site and along the shoreline may also involve installing sand dunes, bird islands, brackish lagoons, scrub upland plantings, and new wetlands and ponds. Because the habitat present on the project site is of low quality, creating new tidal marsh, wetland, and pond features and enhancing existing features on the project site would likely serve as the mechanism for mitigating impacts on potentially jurisdictional waters. As stated previously, permits would be obtained from USACE, BCDC, and the San Francisco Bay RWQCB. Mitigation Measure M-BI-1c requires the creation or restoration of sensitive natural communities at a ratio of no less than 1:1. In addition, the project proposes to replace approximately 0.64 acre of existing shoreline of the project site with tidal marshland (Table 3.14-4). Mitigation measures would be implemented to minimize impacts on tidal wetlands and the Bay. Mitigation Measures M-BI-1c and M-HY-1b require implementing water quality BMPs.

*India Basin Open Space Property*

Construction at the India Basin Open Space property (restoring and creating tidal marshland, constructing boardwalks, removing an existing drainage outfall, installing a new kayak launch supported by fill, and relocating a historic house along the shoreline) would result in the temporary removal of approximately 0.53 acre and permanent removal of approximately 0.27 acre of tidal marsh. Construction activities would also result in the temporary removal of approximately 0.28 acre and permanent removal of 0.03 acre of open water, as well as 0.01 acre of permanent removal of developed open water. Other temporary and permanent impacts below high tide line (e.g. beach, bare, etc.) are detailed in Table 3.14-2, and summarized in Table 3.14-5. These features are considered potentially jurisdictional and subject to federal protection under Section 404 of the CWA.

As detailed previously for the India Basin Shoreline Park property, BUILD would obtain permits from USACE, BCDC, and the San Francisco Bay RWQCB for the discharge of fill material to waters of the United States and waters of the State. Both in-water and shoreline construction work at the India Basin Open Space property could increase turbidity and pollutants in these water features, similar to those impacts discussed for species habitat in Impact BI-1. In-water work and stormwater runoff from the project site may temporarily increase the Bay's turbidity, which has the potential to degrade the water quality of the Bay and potentially jurisdictional features (e.g., existing tidal marshland) on the project site. Material used during construction (e.g., oils, transmission and hydraulic fluids, fuel) could be spilled accidentally and enter the Bay or tidal marsh areas, degrading the quality of these features.

Given the ecological significance of open water habitat in the Bay, this impact of construction at the India Basin Open Space under the proposed project or variant on federally protected wetlands could be significant.

Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation," presented above and Mitigation Measure M-HY-1b, "Implement Pile Removal BMPs," presented in Section 3.15, "Hydrology and Water Quality," would be implemented to reduce this significant impact of construction at the India Basin Open Space property under the proposed project or variant on federally protected wetlands.

Creating and enhancing tidal marsh habitat along the edges of the India Basin Shoreline Park and India Basin Open Space properties is the primary method by which permanent and temporary impacts on Section 404 jurisdictional waters would be offset. Enhancing habitat on the project site and along the shoreline may also involve installing sand dunes, bird islands, brackish lagoons, scrub upland plantings, and new wetlands and ponds. Because the habitat present on the project site is of low quality, creating new tidal marsh, wetland, and pond features and enhancing existing features on the project site would likely serve as the mechanism for mitigating impacts on potentially jurisdictional waters. As stated previously, permits would be obtained from USACE, BCDC, and the San Francisco Bay RWQCB. Mitigation Measure M-BI-1c requires the creation or restoration of sensitive natural communities at a ratio of no less than 1:1. In addition, the project proposes to replace approximately 0.64 acre of existing shoreline of the project site with tidal marshland (Table 3.14-4). Mitigation Measure M-HY-1b requires implementing water quality BMPs.

### *700 Innes Property*

At the 700 Innes property, the proposed project and the variant would have similar construction impacts on sensitive natural communities. The variant would involve constructing up to 1 million gs of commercial/institutional uses and 500 dwelling units, fewer dwelling units but a larger amount of commercial uses than under the proposed project. Construction at the 700 Innes property under either the proposed project or the variant would result in the permanent removal of 0.26 acre of seasonal wetland, 0.04 acre of wetland swale, and 0.01 acre of waters (ponded area located on disturbed infill and a linear drainage ditch). These features are considered potentially jurisdictional and subject to federal protection under Section 404 of the CWA. Impacts on Section 404 jurisdictional waters are detailed in Table 3.14-2 and summarized in Table 3.14-5.

A small portion of the project work would occur in the Bay for the removal and replacement of the pier and piles, which would replace 0.03 acre of developed open water within open water habitat. No tidal marsh would be removed at the 700 Innes property. Construction activities at this property may also result in runoff-related impacts on adjacent Section 404 jurisdictional waters in the Bay.

Runoff-related impacts at the 700 Innes property would be similar to those detailed for the other three project site properties, including increased temporary turbidity and introduction of pollutants. The impact of construction at the 700 Innes property under the proposed project or variant on Section 404 jurisdictional waters could be significant.

Mitigation Measure M-BI-1c, "Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation," presented above and Mitigation Measure M-HY-1a, "Monitor Turbidity during Construction," presented in Section 3.15, "Hydrology and Water Quality," would be implemented to reduce this significant impact of construction at the 700 Innes property under either the proposed project or variant on federally protected wetlands.

### **Overall Construction Impact Conclusion**

Mitigation Measure M-BI-1c requires the creation or restoration of sensitive natural communities at a ratio of no less than 1:1. In addition, the project proposes to replace approximately 0.64 acre of existing shoreline of the project site with tidal marshland (Table 3.14-4). As stated previously, permits would be obtained from USACE, BCDC, and the San Francisco Bay RWQCB. Implementation of Mitigation Measures M-BI-1c and M-HY-1a and development and implementation of a project SWPPP as detailed in Section 3.15, "Hydrology and Water Quality," would reduce the impact of construction at all four project site properties under the proposed project or variant on Section 404 jurisdictional waters to *less than significant with mitigation*.

### ***Operation***

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Operational impacts of the proposed project at all four project site properties on Section 404 jurisdictional waters would be limited to stormwater generated within the project site, and its potential to introduce pollutants and increase turbidity in tidal marsh and open water habitat in the Bay. Long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters would increase relative to



existing conditions. As discussed in Section 3.15, “Hydrology and Water Quality,” the project would comply with regulatory requirements, including the implementation of permanent stormwater BMPs, to avoid contributing to an increase in stormwater pollutants discharged to the Bay. This would minimize any increases in turbidity in tidal marsh and open water habitat in the Bay. Therefore, operational impacts of the proposed project at all four project site properties on Section 404 jurisdictional waters would be *less than significant*. No mitigation measures are necessary.

**Impact BI-4: The proposed project or variant would interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (*Less than Significant with Mitigation*)**

### ***Construction***

*India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

#### Migratory Birds

Because the project site and surrounding areas are highly developed and disturbed, the San Francisco shoreline in the project area does not provide a movement corridor for terrestrial wildlife. Open water and tidal habitats along the shoreline provide stopovers for migratory birds along the along the Pacific Flyway, a major migration route in North America. Despite this important habitat for migratory birds, the current condition of the project area is primarily developed and disturbed, offering only low-quality habitat for birds to forage and nest. As discussed previously in Impact BI-1a, construction of the project may affect the ability of migratory birds to forage, nest, or stop over in the project vicinity, because habitat would be temporarily removed and both noise levels and human presence would increase. The construction impact of the proposed project or variant on migratory birds and their corridors could be significant.

Mitigation Measure M-BI-1e, “Avoid Nests during Bird Nesting Season,” presented above would be implemented under either the proposed project or variant to reduce this significant impact of construction at any of the project site properties on migratory birds nesting in the project area. This measure would require nesting bird surveys and construction buffers for active nests. Temporary removal of habitat for migratory birds would be primarily offset by the creation or restoration of sensitive natural communities at a ratio of no less than 1:1 and the additional replacement of approximately 0.64 acre of existing shoreline of the project site with tidal marshland. Adding this tidal marsh habitat along this section of shoreline would improve habitat connectivity between patches of tidal marshland to the north and south, and would strengthen the Bay’s shoreline as a corridor for migratory birds. Implementing Mitigation Measure M-BI-1e would reduce the construction-related impact of either the proposed project or the variant on migratory birds nesting in the project area to *less than significant with mitigation*.

#### Migrating Marine Mammals, Fish, and Their Corridors

As discussed previously, underwater noise from construction could result in temporary removal of open water and tidal marsh habitat for marine mammals and fish species. Harbor seals, California sea lions, and various fish species forage throughout the Bay. Therefore, underwater noise from construction could cause marine mammals to avoid the project area while migrating to or from haul-out sites or during foraging, and could cause fish to avoid the project area during foraging. The construction impact of the proposed project or variant on migrating marine mammals, fish, and their corridors could be significant.

Although in-water work has the potential to affect the behavior of migrating species, construction activities and structures in the water would not act as physical barriers to migration. With Mitigation Measure M-BI-1a, “Prepare and Implement a Hydroacoustic Monitoring Program for Special-Status Fish and Marine Mammals,” a hydroacoustic monitoring program for special-status fish and marine mammals would minimize impacts of underwater noise on these species. In addition, because the existing habitat on these properties is degraded and a relatively large amount of surrounding open water habitat is available, the temporary removal of aquatic habitat for fish and marine mammals in the project vicinity is unlikely to impede fish or marine mammal movement up or down the shoreline. Furthermore, as discussed for migratory birds, temporary removal of habitat for marine mammals and fish would be primarily offset by the creation or restoration of sensitive natural communities at a ratio of no less than 1:1 and the additional replacement of approximately 0.64 acre of existing shoreline of the project site with tidal marshland.

Implementation of Mitigation Measures M-BI-1a and M-BI-1e, the restoration of temporarily affected habitats at a 1:1 ratio, and the additional creation of 0.64 acre of tidal marshland would reduce the construction-related impact of either the proposed project or the variant on wildlife corridors to *less than significant with mitigation*.

### ***Operation***

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Birds have the potential to collide with the newly constructed buildings on the project site. Adding open space areas adjacent to developed areas would create bird habitats near proposed buildings and other facilities, potentially increasing risks of bird collisions. Newly constructed buildings would be in compliance with the adopted Standards for Bird-Safe Buildings, as required by Section 139 of the Planning Code. The Standards for Bird-Safe Buildings include requirements for façades, glazing, and lighting to prevent bird collisions. Therefore, operation of the proposed project or variant would not adversely affect resident or migratory birds by increasing the risk of collisions with new buildings or structures. At all four project site properties, operational impacts of either the proposed project or the variant on wildlife corridors would be *less than significant*. No mitigation measures are necessary.

**Impact BI-5: The proposed project or variant would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance or the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. (*Less than Significant*)**

### ***Construction***

Proposed construction of the new development at the project site would necessitate tree removal. Under the City’s Urban Forestry Ordinance (Article 16 of the Public Works Code), street trees, significant trees, and landmark trees must go through a permit process before removal. These trees must also be protected during nearby construction activities if they are not being proposed for removal. This ordinance does not apply to trees located on RPD property or SF Port property. For areas where the ordinance applies, either the tree must be replaced or an in-lieu fee must be paid to SFPW to support its Urban Forestry Program.

*India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

In total, 42 trees were mapped on the India Basin Shoreline Park property; one tree, a blue gum, was mapped on the 900 Innes property; and six arroyo willows are located on the India Basin Open Space property (San Francisco, 2016b). All of the aforementioned trees are on RPD or SF Port property and are not regulated under the Urban Forestry Ordinance. All of these trees would be removed. Other trees would be planted on the 900 Innes property, which may include species such as coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), Pacific madrone (*Arbutus menziesii*), and California walnut (*Juglans californica*).

In total, 52 trees were mapped on the 700 Innes property. Of these, 10 trees are considered significant trees, 26 are considered street trees, and 16 are not considered protected under SFPW categorizations (San Francisco, 2014). The proposed project or variant would remove all trees on each project site property as part of the regrading of the site and the realignment of the street rights-of-way.

On the 700 Innes property (including right-of-way and private property located outside of SF Port jurisdiction), removal of the on-site trees would require a permit from SFPW under the Urban Forestry Ordinance. The permit would include conditions that would govern the replacement planting of trees as part of the 700 Innes property development. Planning Code Section 138.1 requires one street tree for every 20 feet of street frontage. The replacement species would be coordinated with the Bureau of Urban Forestry, which has jurisdiction over the street trees on the 700 Innes property. The proposed project or variant would also be required to comply with SFPW regulations and the Urban Forestry Ordinance.

Permitting and coordination with the agencies described above would ensure that the replacement of trees would not conflict with local policies or ordinances. Therefore, the construction impact of either the proposed project or variant related to consistency with local biological protection plans and policies would be *less than significant*. No mitigation measures are necessary.

***Operation****India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Project operations under either the proposed project or the variant are not expected to result in the removal of trees regulated under the Urban Forestry Ordinance; therefore, project operations would not conflict with the Urban Forestry Ordinance. At all four project site properties, the operational impact of either the proposed project or the variant related to consistency with local biological protection plans and policies would be *less than significant*. No mitigation measures are necessary.

### 3.14.4 Cumulative Impacts

**Impact-C-BI-1: The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would not substantially contribute to cumulative impacts related to biological resources. (*Less than Significant*)**

#### *Construction*

The geographic scope for cumulative impacts on biological resources is primarily limited to San Francisco's eastern shoreline, where open water and tidal marsh vegetation provide habitat for the breeding, foraging, and migration of special-status species. Much of the India Basin area was created using fill. Projects from decades ago, including the filling of existing tidal marsh and open water habitat in the vicinity of Hunters Point, previously caused substantial adverse cumulative effects on biological resources.

Construction of the proposed project or variant in combination with the projects identified in Table 3-1, especially those that increase development and human presence along the shoreline by adding dwellings (e.g., Candlestick Point and Hunters Point Shipyard), could potentially result in significant cumulative impacts on special-status species and their habitats. Because the shoreline acts as a corridor for bird and fish movement, additional development along the shoreline results in cumulative impacts on the movement of common and special-status species.

The majority of the project site consists of developed land, disturbed infill, mixed and maintained landscaping, bare soil, sand, gravel, concrete debris, and riprap (Table 3.14-1). The small portions of habitat (tidal marsh and coastal scrub) that still exist at the project site were identified as being of poor quality and do not provide habitat for some of the Bay's most threatened and endangered species—Ridgway's rail, California black rail, and salt marsh harvest mouse. Projects located along the shoreline that increase development have the potential to further reduce habitat for these species. Increased human presence often causes special-status species to avoid habitat that normally would be suitable.

The creation and enhancement of tidal marsh habitat planned for the India Basin Shoreline Park and India Basin Open Space properties would increase the quality of habitat at the project site, and would result in more suitable habitat for special-status species. When considered relative to the cumulative impact on biological resources caused by past development, the proposed project or variant would restore portions of the project site that are most beneficial to species—tidal marshland. In addition, cumulative development projects would be required to follow regulations similar to those described for the proposed project and variant, including measures to protect special-status species and mitigate impacts on species habitat as well as wetlands and waters.

Overall, the proposed project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse impacts on biological resources. Therefore, the cumulative construction-related impact on biological resources would be *less than significant*. No additional mitigation measures are necessary to address cumulative impacts.

## ***Operation***

Operation of the cumulative projects listed in Table 3-1 would intensify human presence relative to existing conditions, but that intensification would occur primarily on previously developed and disturbed land and would not substantially adversely affect biological resources. In addition, the proposed project or variant would result in the enhancement and creation of tidal marshland, which is beneficial to some of the most threatened species in the Bay. The cumulative operational impact on biological resources would be *less than significant*. No mitigation measures are necessary.

### **3.14.5 References**

- Bay Institute Ecological Scorecard (BIES). 2003 (October 17). *San Francisco Bay Fish Index Indicator Analysis and Evaluation*. San Francisco, CA.
- California Department of Fish and Game (DFG). 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Prepared by R. F. Holland. Sacramento, CA.
- California Department of Fish and Wildlife (CDFW). 2015. *Pacific Herring Commercial Fishing Regulations. Draft Supplemental Environmental Document*. State Clearinghouse No. 98052052.
- Emmett, R. L., S. L. Stone, S. A. Hinton, and M. E. Monaco. 1991. *Distribution and Abundance of Fishes and Invertebrates in West Coast Estuaries*. Volume II, "Species Life History Summaries." NOAA-NOS Strategic Environmental Assessments Division, ELMR Report Number 8. Rockville, MD.
- Fisheries Hydroacoustic Working Group (FHWG). 2008 (June 12). *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities*. Memorandum to Applicable Agency Staff. Available: [http://www.dot.ca.gov/hq/env/bio/fisheries\\_bioacoustics.htm](http://www.dot.ca.gov/hq/env/bio/fisheries_bioacoustics.htm). Accessed September 15, 2016.
- Kopec, D., and J. Harvey. 1995. *Toxic Pollutants, Health Indices, and Population Dynamics of Harbor Seals in San Francisco Bay, 1989–91: A Final Report*. Technical publication. Moss Landing, CA: Moss Landing Marine Labs.
- Miller, D. J., and J. Schmidtke. 1956. Report on the Distribution and Abundance of Pacific Herring (*Clupea pallasii*) along the Coast of Central and Southern California. *California Fish and Game* 42:163–187.
- Moyle, P. B. 2002. *Inland Fishes of California*. Berkeley: University of California Press.
- Moyle, P. B., P. J. Foley, and R. M. Yoshiyama. 1992. *Status of Green Sturgeon, Acipenser medirostris, in California*. Final report submitted to National Marine Fisheries Service. Davis: University of California, Davis.
- National Marine Fisheries Service. 2007 (June). *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*. Santa Rosa, CA.
- San Francisco, City and County of (San Francisco). 2011. *Standards for Bird-Safe Buildings*. Adopted July 14, 2011. Planning Department, San Francisco, CA. Available: <http://sf-planning.org/standards-bird-safe-buildings>. Accessed September 21, 2016.

- . 2014. *Tree Survey, India Basin Shoreline Park*. San Francisco, CA. Prepared by HortScience Inc.
- . 2015a. *Delineation of Potential Jurisdictional Waters of the U.S. under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. India Basin Shoreline Park and 900 Innes Avenue*. San Francisco, CA. Prepared by WRA Environmental Consultants, San Francisco, CA.
- . 2015b. *Delineation of Potential Jurisdictional Waters of the U.S. under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. India Basin Open Space and 700 Innes Avenue*. San Francisco, CA. Prepared by WRA Environmental Consultants, San Francisco, CA.
- . 2016a. *Rare Plant Survey Memorandum—California Seablite*. San Francisco, CA. Prepared by WRA Environmental Consultants, San Francisco, CA.
- . 2016b. *Arborist Survey Report Addendum, India Basin Project*. San Francisco, CA. Prepared by WRA Environmental Consultants, San Francisco, CA.
- . 2017a. *Biological Resources Assessment. India Basin Shoreline Park and 900 Innes Avenue*. San Francisco, CA. Prepared by WRA Environmental Consultants, San Francisco, CA.
- . 2017b. *Biological Resources Assessment. India Basin Open Space and 700 Innes Avenue*. San Francisco, CA. Prepared by WRA Environmental Consultants, San Francisco, CA.
- U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetlands Delineation Manual*. Vicksburg, MS: Department of the Army, Waterways Experiment Station.
- . 2011. *Incidental Harassment Authorization Permit Application, Pier 36/Brannan Street Wharf, San Francisco, CA*. San Francisco District, San Francisco, CA.
- . 2016. Arid West 2016 Regional Wetland Plant List. Available: [http://rsgisias.crrel.usace.army.mil/nwpl\\_static/data/DOC/lists\\_2016/Regions/pdf/reg\\_AW\\_2016v1.pdf](http://rsgisias.crrel.usace.army.mil/nwpl_static/data/DOC/lists_2016/Regions/pdf/reg_AW_2016v1.pdf). Last updated May 12, 2016. Accessed September 30, 2016.
- U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2010. *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 7.0*. In cooperation with the National Technical Committee for Hydric Soils, U.S. Army Corps of Engineers.
- . 2016. Web Soil Survey. Available: <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed September 2, 2016.
- U.S. Department of Agriculture, Soil Conservation Service (USDA SCS). 2010. *Hydric Soils List for California*. Davis, CA.

## 3.15 HYDROLOGY AND WATER QUALITY

This section describes the existing environmental and regulatory setting related to hydrology and water quality and addresses the potential impacts of the proposed project and variant related to hydrology and water quality. Information supporting the analysis of hydrology and water quality is presented in Appendix L of this EIR. Comments related to hydrology and water quality, including stormwater pollution and runoff/retention, sea-level rise, areas of open water, and the role of water boards, were received during the public scoping period in response to the Notice of Preparation. These comments are addressed in this section.

### 3.15.1 Environmental Setting

#### **Climate**

San Francisco is considered semiarid with a moderate Mediterranean climate characterized by moderately wet winters, dry summers, and few days of extreme temperatures. The approximate annualized average high temperature, as taken at the Richmond weather monitoring station in San Francisco between 1948 and 2016, is 62 degrees Fahrenheit (°F); the average low temperature is 49°F (WRCC, 2016a). The project site is located in the southeastern quadrant of San Francisco. For the period from 1948 to 2016, average annual rainfall for the southern part of the city was about 20 inches per year (WRCC, 2016a and 2016b). Approximately 84 percent of the total annual rainfall occurs from November to March, with 40 percent occurring during December and January (SFPUC, 2010). During the 1948–2012 period, annual rainfall varied from 10.7 inches (1990) to 35.8 inches (1998), with a 1-day high of 3.9 inches of precipitation (WRCC, 2012).

#### **Surface Hydrology**

##### ***Regional***

San Francisco Bay (Bay) is the largest estuary on the West Coast of the United States, where freshwater from California's Central Valley mixes with the saline waters of the Pacific Ocean. The Bay's surface area is 480 square miles and approximately 70 percent of the Bay is less than 18 feet deep. There are typically two tidal cycles per day and up to 30 percent of the Bay's water volume is exchanged with the Pacific Ocean during each tidal cycle.

##### ***San Francisco***

##### **Watershed**

The topography of San Francisco naturally divides the City into two main drainage basins, the Oceanside (flowing to the Pacific Ocean) and the Bayside (flowing to the Bay). San Francisco's eight urban watersheds reflect the City's native ecology and human history. Five of these watersheds compose the Bayside Drainage Basin. The basin covers 18,411 acres, more than 60 percent of the City, and is home to a population of approximately 455,000 people (more than 65 percent of San Francisco's total population) in 21 of San Francisco's 36 neighborhoods and portions of seven others. Most of the land in the basin (71 percent) is impervious, and throughout the basin, the terrain transitions sharply from the interior hills to the flat lowlands adjacent to the shoreline (SFPUC, 2013).

One of the Bayside Drainage Basin watersheds is the Islais Creek watershed, which has a drainage area of approximately 6,692 acres (10.5 square miles) and represents 36 percent of the land area in San Francisco (SFPUC, 2013). The Islais Creek watershed is bounded by Twin Peaks to the west, Potrero Hill to the north, the Bay to the east, and San Bruno Mountain to the south (SFPUC, 2009). The primary natural waterway in the Islais Creek watershed is Islais Creek, once known as DuVrees Creek, which originally had two branches. The first branch ran from south of Twin Peaks through Glen Canyon and the second flowed eastward from present-day Cayuga Avenue and Regent Street. Historically, the mouth of Islais Creek was 2 miles wide and joined the Bay in today's Bayview and Hunters Point districts (SFPUC, 2009). Islais Creek was once the largest body of water in San Francisco, running for a total of 3.5 miles, and was located approximately 1.3 miles northwest of the project site (SFPUC, 2016a). The project site is situated in the Bayside watershed, and more specifically, in the southeastern portion of the Islais Creek urban watershed.

### **Stormwater Runoff and Sewage**

The San Francisco Public Utilities Commission (SFPUC) is the public agency charged with management and treatment of San Francisco's stormwater runoff and sewage. Combined sewers, which carry stormwater and wastewater together through San Francisco's underground pipes to one of two main wastewater treatment plants, serve most but not all of San Francisco. SFPUC's approach to managing stormwater runoff in combined sewer areas is to capture, store, and treat all wet-weather flows, thereby providing a high level of water quality protection to the Bay and the Pacific Ocean. Historically, numerous streams and creeks flowed through drainage channels from San Francisco's hills and valleys to the Bay and the Pacific Ocean. Today, most of San Francisco's creeks are buried underground in culverts or are filled, so watersheds are intimately linked to the City's stormwater runoff and sewer system.

Ninety-two percent of the runoff generated in the Islais Creek watershed flows into the combined sewer system that drains to SFPUC's Southeast Treatment Plant, located in the watershed near the historic outflow of Islais Creek (SFPUC, 2013). Transport/storage structures, sewers, and pump stations transport wastewater and stormwater to the Southeast Treatment Plant, which treats an average of 60 million gallons per day (mgd) and up to 250 mgd during rainstorms, representing 80 percent of the City's flows (SFPUC, 2014). Treated flows discharge from the Southeast Treatment Plant into the Bay through a 110-mgd deep-water outfall (Discharge Point No. 001) at Pier 80 (San Francisco Bay RWQCB, 2013). During wet weather, flows exceeding the outfall's capacity are discharged via the Quint Street shallow-water outfall into the concrete-lined Islais Creek channel (Discharge Point No. 002). During wet weather when the combined sewage-stormwater flows exceed system capacity and available storage, the combined flows on the east side of San Francisco are discharged to the Bay through 29 combined sewer overflow (CSO) structures.

The Islais Creek watershed has a total of 10 CSO structures in addition to the two outfalls from the Southeast Treatment Plant. Outfalls 037 (Evans Street) and 038 (Hudson Avenue) discharge from the 900 Innes property into the Bay within the project site; however, the model-predicted frequency of combined sewer discharges (CSDs) from these two outfalls is one discharge and zero discharges, respectively, for a typical rainfall year (SFPUC, 2013).

CSDs are subject to "flow-through treatment" consisting of the removal of settleable (i.e., settling to the bottom) and floating solids. Discharge occurs in accordance with the terms of the National Pollutant Discharge Elimination System (NPDES) permits described in Section 3.15.2, "Regulatory Framework." Discharges during



heavy rain events typically consist of 94 percent treated stormwater and 6 percent treated sanitary flow (SFPUC, 2016b). The San Francisco Bay Regional Water Quality Control Board (RWQCB) permits up to 10 CSD events per year from the CSO outfalls at and north of Islais Creek in the central basin area of San Francisco; one CSD event per year is permitted from the area of Yosemite Slough south to the San Francisco boundary; and four events per year are permitted along the City's north shore area (San Francisco Bay RWQCB, 2013).

Approximately 10 percent of the City is served by separate storm sewer systems or lacks storm sewer infrastructure. In isolated areas in the Islais Creek watershed, including the Bayview Hunters Point neighborhood, stormwater is collected separately from wastewater by a municipal separate storm sewer system (MS4) or drains directly to the Bay. Existing separate storm sewer systems do not generally provide treatment before discharge to the Bay.

### **Project Site**

The project site is located adjacent to the Bay. Large parts of the India Basin Shoreline Park, 900 Innes, and 700 Innes properties and the entire India Basin Open Space property were created between 1915 and 1929 using fill (SFPUC, 2016a) (Figure 3.15-1). Because of its location almost entirely on fill, the project site is mapped as historical tidal marsh adjacent to the Bay (SFPUC, 2013).

The project site is generally flat, with a slight slope toward the Bay. The site's highest elevation is along Innes Avenue at approximately 50 feet above mean sea level (msl), and the lowest elevation is along the shoreline at approximately 5 feet above msl. No watercourses are located within the project site, which consists of a mix of pervious open space and habitat areas and impervious buildings along the southwestern edge. Paved walkways and roads are also present across the project site.

The project site is situated in the Bayside watershed, and more specifically, in the southeastern portion of the Islais Creek urban watershed. Portions of the project site are located in the MS4 area of the City, including the India Basin Shoreline Park property, the northern tip of the 900 Innes property, and the portion of the 700 Innes property centered around Arelious Walker Drive (Figure 3.15-1).

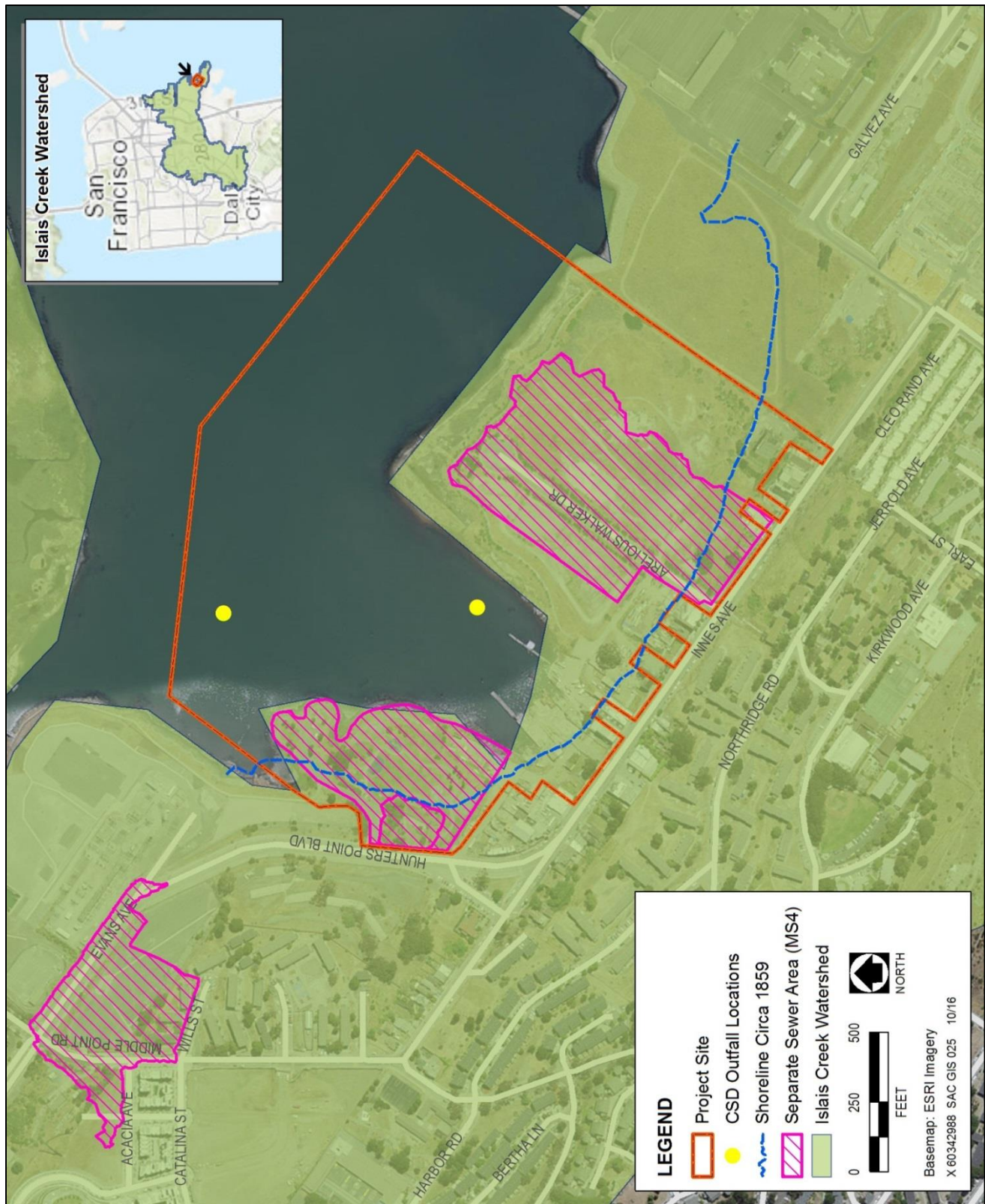
### ***India Basin Shoreline Park Property***

The India Basin Shoreline Park property generally slopes gently from Hunters Point Boulevard, at approximately 45 feet above msl, down to the Bay. The shoreline of India Basin Shoreline Park is composed of vegetated berm, with intertidal marshes and engineered revetments.<sup>1</sup> The top of the vegetated berm ranges from approximately +9 to +15 feet North American Vertical Datum of 1988 (NAVD88); the top elevation of the engineered rock revetment is at +9 to +10 feet NAVD88 (M&N, 2015). This property is located in a separate storm sewer area.

The India Basin Shoreline Park property is partially undeveloped, consisting primarily of pervious areas in the form of wetlands and upland plantings. The property also includes two play structures, a basketball court, landscaping, a portion of the Blue Greenway/San Francisco Bay Trail (Bay Trail), and restrooms. Vehicular access to the park is provided via the paved Hawes Street, which has designated parking areas and ends at a cul-de-sac and drop-off area. Graveled Hudson Avenue also provides parking on the southern edge of the property.

---

<sup>1</sup> Revetments are sloping structures placed on banks or cliffs to absorb the energy of incoming water and prevent erosion.



Sources: San Francisco Bay RWQCB, 2013; SFPUC, 2016c; U.S. Coast Survey 1859 Map

Figure 3.15-1:

Project Site Hydrologic Features

There is one existing storm drain inlet within the turnaround street on the property. Stormwater that enters this drain inlet is conveyed to an outfall that discharges to the Bay. Some portions of the property enable overland water flow to this inlet, while the remainder of the property allows for overland flow of water directly to the shoreline (MKA, 2016a). A combined sewer overflow pipe runs under Hudson Avenue and beneath the India Basin Shoreline Park property; however, this property is not connected to the pipe.

#### *900 Innes Property*

The 900 Innes property is relatively flat and consists of seven parcels totaling 2.4 acres, 0.6 acre of which is submerged. The property contains five buildings and structures totaling approximately 7,760 square feet (sq. ft.). Much of the property is developed with buildings or pavement, and the remaining area is open water. There is no existing vegetation on the property.

Drainage from the 900 Innes property allows overland flow of water to the shoreline and discharges into the Bay. This property is not currently mapped in the City's geographic information system as part of the Separate Sewer Area; SFPUC has indicated that this is because it has no inlet/outlet infrastructure (MKA, 2016a). As described for the India Basin Shoreline Park property, a combined sewer overflow pipe in Hudson Avenue crosses the 900 Innes property and then outfalls within the property. The 900 Innes property, however, is not connected to the pipe.

The shoreline along this property is composed of concrete structures along the northeast-facing shoreline and a vegetated bluff along the western (southeast-facing) shoreline that leads to a mudflat. The top of bank elevations range from +7 to +9 feet NAVD88 at the concrete structures to approximately +17 feet NAVD88 along the vegetated bluff (M&N, 2015).

#### *India Basin Open Space Property*

The 6.2-acre India Basin Open Space property contains benches, a trail, upland habitat, tidal salt marsh, mudflats, sand dunes, native vegetation, offshore eelgrass beds, and a drainage outfall.<sup>2</sup> The tidal salt marsh is the result of a 2002 wetlands mitigation project for San Francisco International Airport, and occupies 2.5 acres of the India Basin Open Space. The wetlands were engineered to be influenced by tidal flows, providing 80 percent salty marsh cover that provides important habitat for flora and fauna. The park also includes a paved portion of the Blue Greenway/Bay Trail along its shoreline. Approximately 0.3 acre (5 percent) of the property is currently impervious and approximately 5.9 acres (95 percent) are pervious and do not contain any drainage infrastructure.

In general, the Bay shoreline in this area is composed of vegetated bluffs fronted by an intertidal marsh. Offshore of the intertidal marsh (below mean tide level), a sloped foreshore extends to mudflats. A layer of rock has been placed at the toe of the vegetated bluff along the northeast shoreline to provide scour protection. Bayward of the tidal marsh, a concrete debris berm serves as a wave break. The top of bank elevations generally range from +15.5 to +19.5 feet NAVD88, with the lower elevations at the southern and northern edges of the property where it connects to the adjacent properties (M&N, 2015). The property falls within the MS4 area and is not serviced by the City's combined sewer.

---

<sup>2</sup> According to a recent site visit, no eelgrass was observed on the project site; however, there is potential for eelgrass. See Chapter 3.14 Biological Resources.

### *700 Innes Property*

The 700 Innes property is generally undeveloped, except for six buildings and structures that run along or near Innes Avenue. Approximately 1.7 acres (10 percent) of the property are impervious, including asphalt pavement on Arelious Walker Drive and Hudson Avenue and other impervious surfaces such as building roofs. The property slopes away from Innes Avenue along the western edge to the east at 5–10 percent slope to a mostly flat site of 1–2 percent slope that ultimately drains to the Bay.

Portions of the property fall within the MS4 area (Figure 3.15-1). The portions of the property that do not fall into the MS4 area are serviced by a combined sewer located within Innes Avenue. Because of the site's topography, which slopes away from Innes Avenue and toward the Bay, most of the property has difficulty draining via gravity to the existing infrastructure within Innes Avenue because it is located in the opposite direction of the slope.

Arelious Walker Drive is a paved street that runs north to south, roughly bisecting the 700 Innes property and ending in a cul-de-sac turnaround. Existing storm drain infrastructure on the 700 Innes property includes a 24- to 30-inch storm drain of unknown material within Arelious Walker Drive. Pipe flows are from southwest to northeast, and the pipe ends at the abandoned combined sewer pump station north of the existing cul-de-sac. The combined sewer system was installed for a prior development plan on the property that was never built. The City never accepted this infrastructure, which remains private. There are multiple manholes in Arelious Walker Drive with catch basins located at regular intervals in the gutters on both sides of the crowned street. In addition to the storm drain infrastructure within Arelious Walker Drive, two small culvert outfalls drain to the Bay from the undeveloped portions of the property.

## **Flooding and Inundation**

### ***San Francisco***

Water levels along the Bay shoreline of the project site are dominated by a mixed semi-diurnal tide, which has two unequal highs and lows each day. The City's datum elevation is 11.1 feet NAVD88, with a 6.37 feet NAVD88 mean higher high water (MHHW<sup>3</sup>), which include astronomical tide, storm surge, and tsunamis over the period of observation (M&N, 2015).

Flood hazard areas—those areas susceptible to flooding—are mapped by the Federal Emergency Management Agency (FEMA). FEMA maps do not take into account future conditions or reflect sea-level rise. To protect such areas from flood hazards, FEMA administers the National Flood Insurance Program (NFIP). The NFIP is a federal program created to avert future flood losses through building and zoning ordinances and to provide federally backed flood insurance protection for property owners. The City is a participant in the NFIP.

### **100-Year Flood**

To support the NFIP, FEMA publishes flood insurance rate maps (FIRMs) for participating communities, which are used for flood insurance and floodplain management purposes. The FIRMs delineate different special flood

---

<sup>3</sup> MHHW is the higher of each day's two high tides averaged over time.

hazard area zones. Special flood hazard areas associated with the 1 percent probability of annual exceedance are zones that begin with the letter “A” (e.g., Zone A, Zone AE, and Zone AO). FEMA released a preliminary FIRM for the City on November 12, 2015.

### **Seiche**

A seiche is an oscillation of a body of water. Seiches occur most frequently in enclosed or semi-enclosed basins, such as lakes, bays, or harbors, and may be triggered by strong winds, changes in atmospheric pressure, earthquakes, tsunamis, or tides. Triggering forces that set off a seiche are most effective if they operate at specific frequencies relative to the size of an enclosed basin. Coastal measurements of sea level often show seiches with amplitudes of a few centimeters and periods of a few minutes, caused by oscillations of the local harbor, estuary, or bay, superimposed on the normal tidal changes. Tidal records for the Bay have been maintained for more than 100 years; a damaging seiche has not occurred during this period. A seiche of approximately 4 inches occurred during the 1906 earthquake, an event of magnitude 8.3 on the Richter scale.

### **Tsunami**

Tsunamis (large waves in the ocean typically generated by land disturbances such as earthquakes, landslides, and volcanoes) are not common on the California coast (San Francisco, 2012). Most California tsunamis are associated with distant earthquakes originating in places like Alaska and Japan, as opposed to local earthquakes. The National Oceanic and Atmospheric Administration operates the Tsunami Warning System with centers located in Hawaii and Alaska. The California State Warning Center provides warnings to the West Coast (including California) and Alaska. These warning centers are linked to the Advanced National Seismic System that monitors earthquakes in the United States, to international seismic monitoring systems, and to a system of tide gauges and buoys. The California Integrated Seismic Network also provides information regarding the magnitude and location of California earthquakes and a quick link to the West Coast/Alaska Tsunami Warning Center.

On average, the tsunami warning system will take 7–10 minutes to identify a tsunami threat and communicate it to the media and State warning centers (San Francisco, 2011:26). Members of the public may be notified and warned of a potential tsunami threat and advised of recommended actions via the Outdoor Public Warning System, which may include the use of sirens, public address systems, and broadcast of public safety messages through the media. Once the impact/risk area has been deemed safe for reentry, the Director of the San Francisco Department of Emergency Management, in coordination with the Mayor, will authorize an issuance for an “all clear” public safety message. An Outdoor Public Warning System siren is located at Innes Avenue and Hunters Point Boulevard (SFDT, 2015).

### **Mudflow**

Mudflows typically occur on steep slopes where vegetation is not sufficient to prevent rapid erosion.

### **Sea-Level Rise**

Sea-level rise is caused by thermal expansion—the expansion of water from increased ocean temperatures—and melting of glaciers, ice caps, and ice sheets. Sea-level rise can result in the destruction of coastlines, saltwater

intrusion into freshwater sources, flooding of wetlands, and habitat loss. Sea level at the San Francisco tide gauge has risen 8 inches (or 20 centimeters) over the past century (CCC, 2015).

*Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, published by the National Research Council (NRC) of the National Academies of Sciences, Engineering, and Medicine (NRC, 2012), provides sea-level rise projections for the California, Oregon, and Washington coasts. This report provides the most recent predictions of regional sea-level rise for 2030, 2050, and 2100 relative to the year 2000 sea level. The report projects that sea levels in the San Francisco Bay Area (Bay Area) will rise 11 inches (range of 5–24 inches) by 2050 and 36 inches (range of 17–66 inches) by 2100 (NRC, 2012) (Table 3.15-1). The likelihood that sea-level rise will occur by certain time frames is described as follows (NRC, 2012):

- 12 inches of sea-level rise is “most likely” by 2050.
- 24 inches of sea-level rise by 2050 represents the upper uncertainty boundary.
- 36 inches of sea-level rise is “most likely” by 2100.
- 48 inches of sea-level rise by 2100 is within the upper 85 percent confidence interval.
- 66 inches of sea-level rise by 2100 represents the upper uncertainty boundary.

**Table 3.15-1: Estimates of Sea-Level Rise for San Francisco Bay, Relative to Baseline Year 2000**

Year	Sea-Level Rise Projection (inches)	Range	
		Low (inches)	High (inches)
2030	6 ± 2	2	12
2050	11 ± 3.6	5	24
2100	36 ± 10	17	66

Source: NRC, 2012

Sea-level rise projections presented in the 2012 NRC Report represent the permanent increase in mean sea level and the associated average daily high-tide conditions (represented by MHHW) that could result from sea-level rise. These projections do not take into account storm surge, extreme tides, or waves, all of which can result in water levels that are temporarily higher than MHHW.

The California Coastal Commission also supports using the NRC 2012 report as the best available science on sea-level rise in California (CCC, 2015). In March 2013, the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) released its *State of California Sea-Level Rise Guidance Document* based on the 2012 NRC report. CO-CAT recommends using these projections in the planning of waterfront projects and selecting sea-level rise values for planning based on risk tolerance and adaptive capacity. This guidance has been largely adopted by State agencies including the San Francisco Bay Conservation and Development Commission (BCDC) in formulating their policies for adaptation to sea-level rise.

The City and County of San Francisco Sea Level Rise Committee for the San Francisco Capital Planning Committee recommends using the projections without the standard deviation and the upper (high) end of the ranges, stating that the low end of the ranges is likely overly optimistic given current global trends (see

Table 3.15-2) (SFSLRC, 2015). In addition to sea-level rise, consideration must be given to El Niño events, storm surge, storm waves, and wave runup along the shoreline. Table 3.15-2 summarizes factors in addition to sea-level rise that affect water levels in the Bay.

**Table 3.15-2: Factors that Influence Local Water-Level Conditions in Addition to Sea-Level Rise**

<b>Factors Affecting Water Level</b>	<b>Typical Range, San Francisco Bay Shoreline</b>	<b>Period of Influence</b>	<b>Frequency</b>
Tides	5–7 feet	Hours	Twice daily
Storm Surge	0.5 foot to 3 feet	Days	Several times a year
Storm Waves	1–4 feet	Hours	Several times a year
El Niño (within the El Niño–Southern Oscillation cycle)	0.5 foot to 3 feet	Months to years	Every 2–7 years

Source: SFSLRC, 2015

In March 2016, the City released the *San Francisco Sea Level Rise Action Plan* (Action Plan). The Action Plan is based on the latest climate science presented in the *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco* (SFSLRC, 2015), which provides a foundation for a citywide sea-level rise adaptation plan. The Action Plan notes that, by the year 2100, sea level for San Francisco could rise by 66 inches (the unlikely but possible upper-range scenario). Coastal hazards that increase with sea-level rise include temporary coastal flooding, urban flooding, shoreline erosion, regular King Tide flooding, daily tidal inundation, and the frequency and intensity of coastal storms (San Francisco, 2016). The Action Plan maps show the coastal edges of the project site as lying within the sea-level rise vulnerability zone through 2100, which accounts for 66 inches of permanent sea-level rise with temporary flooding from the 100-year extreme tide, consistent with FEMA’s 2015 preliminary FIRM (San Francisco, 2016).

## ***Project Site***

### **100-Year Flood**

The preliminary FIRM designates the coastal areas of the project site as within Zone AE (FEMA, 2015) (Figure 3.15-2). Zone AE indicates areas that have a 1-percent probability of flooding every year (also known as the “100-year floodplain”), and where predicted floodwater elevations above msl have been established. Under the NFIP, properties in Zone AE are considered to be at high risk of flooding. Table 3.15-3 presents the base flood elevations<sup>4</sup> along the project site coastline. The base flood elevations are 10 feet for the India Basin Shoreline Park and 900 Innes properties and 10–12 feet for the India Basin Open Space property, depending on the shoreline direction. The 700 Innes property is separated from the Bay and does not have a FEMA base flood elevation.

<sup>4</sup> The base flood elevation is the computed elevation to which floodwater is anticipated to rise during the base flood. Base flood elevations are shown on Flood Insurance Rate Maps and on the flood profiles (FEMA, 2017).



Source: FEMA, 2015

**Figure 3.15-2: 100-Year Flood Zone Overlapped with the Project Site**



**Table 3.15-3: Preliminary FEMA Base Flood Elevation, by Project Site Property and Shoreline Reach**

<b>Project Site Property</b>	<b>Shoreline Reach</b>	<b>Preliminary FEMA Base Flood Elevation (feet NAVD88)</b>
India Basin Shoreline Park	All	10
900 Innes	All	10
India Basin Open Space	Northeast-facing shoreline	12
	Northwest-facing shoreline	10
700 Innes	None <sup>1</sup>	N/A

## Notes:

FEMA = Federal Emergency Management Agency; N/A = not applicable; NAVD88 = North American Vertical Datum of 1988

<sup>1</sup> The 700 Innes property is landlocked, separated from San Francisco Bay by the India Basin Open Space property.

Sources: M&N, 2015; FEMA, 2015

**Seiche**

No historical seiche information is available for the project site.

**Tsunami**

The northern tip and northeast shoreline of the India Basin Shoreline Park property, almost the entire 900 Innes property, the shoreline edge of the India Basin Open Space property, and the southwestern edge of the 700 Innes property are mapped within the tsunami hazard zone (Figure 3.15-3). This is similar to the area mapped by FEMA in the preliminary FIRM as within the 100-year flood hazard zone (FEMA, 2015), except that more of the 900 Innes property is included in the tsunami inundation zone. The potential “worst-case” tsunami runup for the project area has been estimated at 3.77 feet (San Francisco, 2011).

**Mudflow**

The project site is relatively flat but is located downslope from more hilly areas to the west and south. The site is not located in an identified earthquake-induced landslide zone; however, isolated areas to the west and south are mapped within earthquake-induced landslide zones, as determined by the California Geological Survey (SFDEM, 2014).

**Sea-Level Rise**

The elevation of the project site is highest along Innes Avenue, at approximately 50 feet above msl, and lowest along the shoreline, at approximately 5 feet above msl. Therefore, sea level rise would inundate shoreline areas first and then inundate areas heading uphill west/southwest toward Innes Avenue.

**Soils*****San Francisco***

Liquefaction hazard zones have been mapped in San Francisco and include much of the low-lying and historical marsh areas along the Bay. These zones are typically areas adjacent to the Bay on the eastern and northern sides of San Francisco where debris remaining after the 1906 San Francisco earthquake was added as fill.



Source: CalEMA, 2009

**Figure 3.15-3: Tsunami Inundation Zone Overlapped with the Project Site**

### ***Project Site***

The project site is located primarily on fill, and thus is in an identified liquefaction zone, except for the southeastern corner of the 700 Innes property (SFPUC, 2013; SFDEM, 2014). The northeastern edge of the 900 Innes property, the India Basin Open Space property, and the northwest portion of the 700 Innes property are classified as having Type A soils. The remainder of the project site, including all of the India Basin Shoreline Park property, is mapped as having Type D soils, with limited infiltration potential (SFPUC, 2013).

Soil and groundwater throughout the project site have been affected by historic and current activities, resulting in the presence of contamination. See Section 3.16, “Hazards and Hazardous Materials,” for a full description of existing on-site hazardous materials and contamination.

### **Surface Water Quality**

#### ***San Francisco Bay***

The Bay is on the U.S. Environmental Protection Agency (EPA) 303(d) list of impaired waters for a variety of reasons including the presence of metals, chemicals, exotic species, nutrients, and pathogens. The decline in water quality has led to the decline of many Bay species and resulted in fish and duck consumption advisories (SFPUC, 2010).

#### ***Project Site***

Past and current land uses affect the quality of surface water at the project site. Surface water pollution is expected to contain typical constituents of urban areas such as oil, grease, petroleum, metals (nickel, lead, and copper), dirt, bacteria, coliforms, solvents, trash, and other chemicals. In addition, the project site’s industrial history, the placement of fill materials at the site, and recent construction storage activities have resulted in soil contamination, which could be mobilized by wind and rain and negatively affect stormwater quality.

The project site discharges to the central Bay, which is listed as an impaired water for the following pollutants: chlordane, dichlorodiphenyltrichloroethane (better known as DDT), dieldrin, dioxin compounds, furans compounds, invasive species, mercury, mercury (sediment), polycyclic aromatic hydrocarbons, polychlorinated biphenyls (PCBs), and selenium (EPA, 2011).

Existing beneficial uses for India Basin listed in the *Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin* (Basin Plan) include commercial and sport fishing (COMM), estuarine habitat (EST), wildlife habitat (WILD), water contact recreation (REC1), noncontact water recreation (REC2), and navigation (NAV).

### 3.15.2 Regulatory Framework

#### Federal

##### *Clean Water Act*

The Clean Water Act (CWA) (Title 33, Section 1251 et seq. of the U.S. Code [33 USC 1251 et seq.]) is the major federal legislation governing the water quality aspects of construction and operation of the proposed project or variant. The CWA established the basic structure for regulating discharges of pollutants into waters of the United States (not including groundwater) and waters of the State of California. The objective of the act is “to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States.

The CWA authorizes EPA to implement pollution control programs. Under the CWA, it is unlawful for any person to discharge any pollutant from a point source into navigable waters, unless an NPDES permit is obtained. In addition, the CWA requires each state to adopt water quality standards for receiving water bodies and to have those standards approved by EPA. Water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing), along with water quality objectives necessary to support those uses.

Responsibility for protecting water quality in California resides with the State Water Resources Control Board (SWRCB) and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement water quality control plans (basin plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. Water quality standards applicable to the project are listed in the San Francisco Bay RWQCB’s Basin Plan.

##### **Section 303—Water Quality Standards and Total Maximum Daily Loads**

Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body’s designated beneficial use. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based on biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards.

CWA Section 303(d) requires states and authorized Native American tribes to develop a list of water quality–impaired segments of waterways. The list includes waters that do not meet water quality standards necessary to support a waterway’s beneficial uses even after the minimum required levels of pollution control technology have been installed. Listed water bodies are to be priority ranked for development of a total maximum daily load (TMDL). A TMDL is a calculation of the total maximum daily load (amount) of a pollutant that a water body can receive on a daily basis and still safely meet water quality standards. The TMDLs include waste load allocations for urban stormwater runoff as well as municipal and industrial wastewater discharges, with allocations apportioned for individual MS4s and wastewater treatment plants, including those in San Francisco. For stormwater, load reductions would be required to meet the TMDL waste load allocations within the 20 years required by the TMDLs.

The SWRCB, RWQCBs, and EPA are responsible for establishing TMDL waste load allocations and incorporating approved TMDLs into water quality control plans, NPDES permits, and waste discharge requirements (WDRs) in accordance with a specified schedule for completion. The San Francisco Bay RWQCB develops TMDLs for the Bay Area.

#### **Section 401—Water Quality Certification**

Section 401 of the CWA requires compliance with state water quality standards for actions within state waters. Under CWA Section 401, an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) must first obtain a certificate from the appropriate agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the SWRCB delegates authority to either grant water quality certification or waive the requirements to the nine RWQCBs. The San Francisco Bay RWQCB is responsible for the project site.

#### **Section 402—NPDES Permits**

The RWQCBs administer the NPDES stormwater permitting program, under Section 402(d) of the federal CWA, on behalf of EPA. The objective of the NPDES program is to control and reduce levels of pollutants in water bodies from discharges of municipal and industrial wastewater and stormwater runoff. CWA Section 402(d) establishes a framework for regulating nonpoint-source stormwater discharges (33 USC 1251). Under the CWA, discharges of pollutants to receiving water are prohibited unless the discharge complies with an NPDES permit. The NPDES permit specifies discharge prohibitions, effluent limitations, and other provisions, such as monitoring deemed necessary to protect water quality based on criteria specified in the National Toxics Rule (NTR), the California Toxics Rule (CTR), and the basin plan.

Discharge prohibitions and limitations in an NPDES permit for wastewater treatment plants are designed to maintain public health and safety, protect receiving-water resources, and safeguard the water's designated beneficial uses. Discharge limitations typically define allowable effluent quantities for flow, biochemical oxygen demand, total suspended matter, residual chlorine, settleable matter, total coliform, oil and grease, pH, and toxic pollutants. Limitations also typically encompass narrative requirements regarding mineralization and toxicity to aquatic life. Under the NPDES permits issued to the City to operate the treatment plants, the City is required to implement a pretreatment program. This program must comply with the regulations incorporated in the CWA and the General Pretreatment Regulations (Code of Federal Regulations [CFR] Title 40, Part 403 [40 CFR 403]). Regulations governing nondomestic discharges are contained in Article 4.1 of the City's Sewer Use Ordinance.

#### **Section 404—Discharge of Dredged or Fill Materials**

Section 404 of the CWA regulates temporary and permanent fill and disturbance of wetlands and waters of the United States. Under Section 404, the discharge (temporary or permanent) of dredged or fill material into waters of the United States, including wetlands, typically must be authorized by the U.S. Army Corps of Engineers (USACE) through either the Nationwide Permit (general categories of discharges with minimal effects) or the Individual Permit.

### ***Rivers and Harbors Act Section 10***

Section 10 of the Rivers and Harbors Act of 1899 requires that regulated activities conducted below the ordinary high-water elevation of navigable waters of the United States be approved and permitted by USACE. Regulated activities include the placement or removal of structures, work involving dredging, disposal of dredged material, filling, excavation, or any other disturbance of soils/sediments or modification of a navigable waterway. Navigable waters of the United States are those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high-water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. Section 10 also regulates tributaries and backwater areas that are associated with navigable waters of the United States and are located below the ordinary high-water elevation of the adjacent navigable waterway.

A project proponent can apply for a permit/letter of permission for work regulated under Section 404 (CWA) and Section 10 (Rivers and Harbors Act) by completing and submitting one application form. An application for a Department of the Army permit will serve as an application for both Section 404 and Section 10 permits.

### ***Federal Antidegradation Policy***

The federal antidegradation policy is designed to protect existing water uses, water quality, and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- Existing instream uses and the water quality necessary to protect those uses shall be maintained and protected.
- Where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development.
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

### ***National Toxics Rule and California Toxics Rule***

In 1992, EPA promulgated the NTR under the CWA to establish numeric criteria for priority toxic pollutants for 14 states to bring all states into compliance with the requirements of CWA Section 303(c)(2)(B). The NTR established water quality standards for 42 pollutants not covered under California's statewide water quality regulations at that time. As a result of the court-ordered revocation of California's statewide basin plans in September 1994, EPA initiated efforts to promulgate additional federal water quality standards for California. In May 2000, EPA issued the CTR, which includes all the priority pollutants for which EPA has issued numeric criteria not included in the NTR.

### ***Executive Order 11988***

Executive Order 11988, "Floodplain Management," directs all federal agencies to avoid, to the extent possible, long- and short-term adverse impacts of occupancy and modification of floodplains, and to avoid supporting development in a floodplain either directly or indirectly wherever there is a practicable alternative. Compliance

requirements are outlined in 23 CFR 650, Subpart A, “Location and Hydraulic Design of Encroachment on Floodplains.”

If a proposed project involves significant encroachment into the floodplain, the final environmental document must include:

- the reasons why the proposed action must be located in the floodplain,
- alternatives considered and the reasons they were not practicable, and
- a statement indicating whether the action conforms to applicable state or local floodplain protection standards.

### ***National Flood Insurance Program and Flood Disaster Protection Act***

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were enacted to reduce the need for flood protection structures and limit disaster relief costs by restricting development in floodplains. FEMA, established in 1979, is responsible for predicting hazards from flooding events and forecasting the level of inundation under various conditions. As part of its duty to develop standards for delineating fluvial and coastal floodplains, FEMA provides information on FIRMs about the potential for flood hazards and inundation, and where appropriate, designates regions as special flood hazard areas. Special flood hazard areas are defined as areas that have a 1 percent chance of flooding in a given year.

FEMA also administers the NFIP, a federal program that enables property owners in participating communities to purchase insurance as protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. The City participates in the NFIP, and FEMA published a preliminary FIRM for the City and County of San Francisco on November 12, 2015. Once FEMA resolves any appeals, FEMA will notify the City that the base flood elevations shown on the FIRM are final. After FEMA makes this determination, the City has 6 months to adopt the new FIRM as part of the City’s Floodplain Management Ordinance. Once the FIRM is published in final form, it will be used to rate structures for flood insurance, and the City must use it to implement the Floodplain Management Ordinance (Ordinance No. 188-08).

## **State**

### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) is California’s statutory authority for the protection of water quality. Under the Porter-Cologne Act, the State must adopt water quality policies, plans, and objectives that protect the State’s waters for the use and enjoyment of the people. Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. The RWQCBs are required to formulate and adopt basin plans for all areas in the region and establish water quality objectives in the plans. The Porter-Cologne Act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update basin plans. The San Francisco Bay RWQCB is responsible for the project site.

Basin plans are the regional water quality control plans required by both the CWA and the Porter-Cologne Act that establish beneficial uses, water quality objectives, and implementation programs for each of the nine regions in California. The act also requires waste dischargers to notify the RWQCBs of their activities by filing reports of waste discharge and authorizes the SWRCB and RWQCBs to issue and enforce WDRs, NPDES permits, CWA

Section 401 water quality certifications, or other approvals. The RWQCBs are also authorized to issue waivers to reports of waste discharge and WDRs for broad categories of “low threat” discharge activities that have minimal potential to cause adverse water quality effects when implemented according to prescribed terms and conditions.

### ***National Pollutant Discharge Elimination System***

The NPDES permits all involve similar processes, which include submitting notices of intent for discharging to water in areas under the San Francisco Bay RWQCB’s jurisdiction and implementing BMPs to minimize those discharges. The San Francisco Bay RWQCB may also issue site-specific WDRs, or waivers to WDRs, for certain waste discharges to land or waters of the State.

### **Construction Activity**

The SWRCB’s statewide stormwater general permit for construction activity (Order 2009-009-DWQ, as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ) applies to all construction activities that would disturb 1 acre of land or more. Construction activities subject to the general construction activity permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce nonstormwater discharges to storm sewer systems and other waters.

Through the NPDES and WDR processes, the SWRCB seeks to ensure that the conditions at a project site during and after construction do not cause or contribute to direct or indirect impacts on water quality (i.e., pollution and/or hydromodification) upstream and downstream. To comply with the requirements of the construction general permit, the project applicant must file a notice of intent with the SWRCB to obtain coverage under the permit; prepare a storm water pollution prevention plan (SWPPP); and implement inspection, monitoring, and reporting requirements appropriate to the project’s risk level as specified in the SWPPP. The SWPPP includes a site map, describes construction activities and potential pollutants, and identifies BMPs that will be employed to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources, such as petroleum products, solvents, paints, and cement. The permit also requires the discharger to consider using postconstruction permanent BMPs that will remain in service to protect water quality throughout the life of the project. All NPDES permits also have inspection, monitoring, and reporting requirements.

Project sites served by the combined sewer system are not required to obtain coverage under the NPDES construction general permit. A portion of the project site is located in the separate storm sewer area of the City and would therefore require coverage under the NPDES construction general permit. It has been requested that as part of the proposed project and variant that the entire project site be located in the separate storm sewer area, thus requiring coverage under the NPDES construction general permit for the entire site.

### **Industrial General Stormwater Permit**

The statewide stormwater NPDES permit for general industrial activity (Order 2014-0057-DWQ, superseding Order 97-03-DWQ) regulates discharges associated with 10 broad categories of industrial activities, such as operation of wastewater treatment works, and with recycling facilities. The industrial general permit requires the implementation of Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to achieve performance standards. The permit also requires development of a SWPPP that identifies



the site-specific sources of pollutants and describes the measures at the facility applied to reduce stormwater pollution. A monitoring plan is also required.

### **Stormwater**

In November 1990, EPA published regulations establishing NPDES permit requirements for municipal and industrial stormwater discharges. Phase I of the permitting program applied to municipal discharges of stormwater in urban areas where the population exceeded 100,000 persons. Phase II of the NPDES stormwater permit regulations, which became effective in March 2003, required that NPDES permits be issued for construction activity for projects disturbing 1–5 acres. Phase II of the municipal permit system (known as the NPDES General Permit for Small MS4s, Order No. 2003-0005-DWQ as amended by 2013-0001-DWQ) required small municipalities of fewer than 100,000 persons to develop stormwater management programs. This permit authorizes discharges of stormwater and some categories of nonstormwater that are not “significant contributors of pollutants.” The MS4 permit covers only those portions of the City where stormwater flows are conveyed by SFPUC infrastructure separately from wastewater, which have been deemed by SFPUC to be separate storm sewer areas. This represents a relatively small area of the City, including the project site.

### ***California Toxics Rule and State Implementation Policy***

The CTR, presented in 2000 in response to requirements of EPA’s NTR, establishes numeric water quality criteria for approximately 130 priority pollutant trace metals and organic compounds. The CTR criteria are regulatory criteria adopted for inland surface waters, enclosed bays, and estuaries in California that are on the CWA Section 303(c) list for contaminants. The CTR includes criteria for the protection of aquatic life and human health. Human health criteria (water- and organism-based) apply to all waters with a Municipal and Domestic Water Supply beneficial use designation as indicated in the basin plans. The *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, also known as the State Implementation Policy, was adopted by the SWRCB in 2000. It establishes provisions for translating CTR criteria, NTR criteria, and basin plan water quality objectives for toxic pollutants into:

- NPDES permit effluent limits,
- effluent compliance determinations,
- monitoring for 2,3,7,8-TCDD (dioxin) and its toxic equivalents,
- chronic (long-term) toxicity control provisions,
- site-specific water quality objectives, and
- granting of effluent compliance exceptions.

The goal of the State Implementation Plan is to establish a standardized approach for permitting discharges of toxic effluent to inland surface waters, enclosed bays, and estuaries throughout the state.

### ***Executive Order S-13-08***

Signed on November 14, 2008, Executive Order S-13-08 directed California to develop methods for adapting to climate change through preparation of a statewide plan. The executive order directed the Governor’s Office of Planning and Research, in cooperation with the California Natural Resources Agency (CNRA), to provide

land use planning guidance related to sea-level rise and other climate change impacts. The order also directed the CNRA to develop a State climate adaptation strategy and convene an independent panel to complete the first California sea-level rise assessment report. The CNRA released the third climate change assessment in 2012, and is preparing a fourth assessment that will provide critical additional information supporting decisions that will safeguard the people, economy, and resources of California.

## **Regional**

### ***Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin***

Water quality control plans, commonly known as basin plans, provide the basis for protecting water quality in California. Basin plans are mandated by both the federal CWA and the State Porter-Cologne Act. The Basin Plan was first adopted by the San Francisco Bay RWQCB and approved by the SWRCB in 1975. The current Basin Plan includes amendments adopted through March 2015. The goal of the Basin Plan is to provide a definitive program of actions designed to preserve and enhance water quality and protect “beneficial uses” of water in the Bay. State law defines beneficial uses as “domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves” (California Water Code, Section 13050[f]). The beneficial uses of any specifically identified water body generally apply to all tributary streams to that water body.

The Basin Plan contains specific narrative and numeric water quality objectives for several physical properties (e.g., temperature, dissolved oxygen, turbidity, suspended solids), biological constituents (e.g., coliform bacteria), and chemical constituents of concern, including inorganic parameters and trace metals and organic compounds. The entire program relies on the implementation of BMPs. BMPs are methods used on construction sites to limit the contact of pollutants (e.g., sediment and construction site debris) with stormwater runoff at its source; keep pollutants out of water conveyance systems and treatment plants; and remove pollutants before they are discharged into receiving waters (in this case, the Bay).

The stormwater discharge, wastewater management, drainage plan, and water quality control systems for the proposed project and variant would comply with, and generally be consistent with, the Basin Plan’s water quality regulations.

## **Local**

### ***San Francisco General Plan***

The *San Francisco General Plan* consists of 10 elements. The Environmental Protection Element is the most relevant to an assessment of the potential hydrologic impacts of implementing the proposed project or variant. The policies presented in this element aim to achieve a more sensitive balance by repairing damage already done, restoring some natural amenities, and bringing about productive harmony between people and their environment. In addition, the goals in the Environmental Protection Element of the *San Francisco General Plan* aim to provide harmony between natural and human-made resources so as to restore and maintain the natural features of the environment that are of such importance to rural areas of California.

### ***San Francisco Floodplain Management***

Chapter 2A, Sections 2A.280 through 2A.285, of the San Francisco Administrative Code describe San Francisco's floodplain management requirements. This code includes the following requirements for flood-prone areas:

- *Standards of Construction:*
  - The building must be adequately anchored to prevent flotation, collapse, or lateral movement.
  - The building must be constructed with materials and utility equipment that is resistant to flood damage, using methods and practices that minimize flood damage.
  - Electrical, heating, ventilation, plumbing, and air conditioning equipment must be designed or located to prevent water from entering or accumulating within the components during flood conditions.
- *Standards for Utilities:* All water supply and sanitary sewage systems must be designed to minimize or eliminate infiltration of floodwaters into the system as well as discharges from the systems into floodwaters.

### ***Stormwater Management Ordinance***

On May 22, 2010, the Stormwater Management Ordinance (Section 147 of Article 4.2 of the San Francisco Public Works Code) was enacted to improve San Francisco's environment by reducing stormwater runoff and runoff pollution in areas of new development and redevelopment through compliance with the Stormwater Design Guidelines. The Stormwater Design Guidelines have since been superseded by the *San Francisco Stormwater Management Requirements and Design Guidelines* (SMR) (March 2016).

SFPUC and the Port of San Francisco (SF Port) administer stormwater management programs developed in accordance with the federal CWA and a State of California NPDES permit. SFPUC's SMR details the engineering, planning, and regulatory framework for designing new infrastructure in a manner that reduces or eliminates pollutants commonly found in urban runoff. The guidelines apply to both small and large projects in the MS4 area of the City and to large projects in the combined sewer area. Small projects in the MS4 area are defined as those that create and/or replace 2,500–5,000 sq. ft. of impervious surface; large projects are development and redevelopment projects that create and/or replace 5,000 sq. ft. or more of impervious surface. Small projects must implement one or more site design measures, while large projects must implement source controls to meet the following performance requirements (SFPUC, 2016b):

- Projects within SFPUC's jurisdiction must manage the 90th-percentile, 24-hour storm.
- Projects within SF Port's jurisdiction must manage the 85th-percentile, 24-hour storm.

The SFPUC requirements are based on the stormwater requirements from Sustainable Sites Credit 6.2, "Stormwater Design: Quality Control," in Leadership in Energy and Environmental Design (LEED) Version 2.2 for New Construction and Major Renovation. The SF Port requirement is based on the 2013 NPDES Phase II MS4 Permit.

The SMR requires using preferred BMPs (infiltration-based BMPs, rainwater harvesting, and vegetated roofs, followed by lined bioretention/flow-through planters) to the maximum extent practicable before considering the

remaining BMPs and completing SFPUC's Separate Sewer Area BMP Selection Form. In cases with extreme constraints, SFPUC and SF Port may grant permission to use high-rate filtration devices such as media filters.

In addition, the SMR requires large projects to develop and submit a stormwater control plan. This plan must include a project narrative, BMP selection form, calculation summary, stormwater management plan, BMP inspection and maintenance schedules, source-control checklist, maintenance agreement (SFPUC jurisdiction only) or operations and maintenance verification documents (SF Port jurisdiction only), and supporting documentation. The stormwater control plan allows SFPUC and SF Port to review projects that are subject to the SMR and evaluate compliance. A preliminary stormwater control plan must be submitted at the design development phase of the project and must be approved by SFPUC or SF Port before the site or building permit will be issued.

### ***San Francisco Public Works Code, Article 4.2***

Article 4.2 of the San Francisco Public Works Code establishes requirements to “protect and enhance the water quality in the City and County of San Francisco’s sewer system, stormwater collection system and receiving waters pursuant to, and consistent with federal and state laws, lawful standards and orders applicable to stormwater and urban runoff control, and the City’s authority to manage and operate its drainage systems.” Article 4.2 requires development projects to submit stormwater control plans that meet guidelines adopted by SFPUC. Projects disturbing 5,000 sq. ft. or more of ground surface are subject to the guidelines.

In November 2013, the Board of Supervisors approved and the Mayor signed the Construction Site Runoff Control Ordinance (Ordinance 260-13), which amended Article 4.2 of the Public Works Code to add pollution prevention controls for construction site runoff discharges into the sewer system citywide. Under the ordinance, any construction project that disturbs 5,000 sq. ft. or more of land must apply to SFPUC for a construction site runoff control permit before the start of work and submit an erosion and sediment control plan that sets forth BMPs intended to control erosion and sediment. The erosion and sediment control plan must include:

...a vicinity map showing the location of the site in relationship to the surrounding area’s water courses, water bodies, and other significant geographic features; a site survey; suitable contours for the existing and proposed topography, area drainage, proposed construction and sequencing, proposed drainage channels; proposed erosion and sediment controls; dewatering controls where applicable; soil stabilization measures where applicable; maintenance controls; sampling, monitoring, and reporting schedules; and any other information deemed necessary by the [SFPUC] General Manager.

The ordinance requires that permittees perform daily inspections and maintain and repair all graded surfaces and erosion and sediment controls, drainage structures, or other protective devices, plantings, and ground cover installed while construction is active. The ordinance also provides for enforcement of violations. Any project requiring a SWPPP under the construction general permit may submit the SWPPP in lieu of an erosion and sediment control plan to comply with the Construction Site Runoff Control Program at SFPUC.

### ***San Francisco Health Code Article 12C (Nonpotable Water Ordinance)***

The Onsite Water Reuse for Commercial, Multi-family, and Mixed Use Development Ordinance, commonly known as the Nonpotable Water Ordinance (adopted September 2012), allows for the collection, treatment, and use of alternate water sources (e.g., rainwater, stormwater, gray water, foundation drainage, black water) for nonpotable applications and for district-scale water systems to share nonpotable water. This ordinance added Article 12C to the San Francisco Health Code.

Article 12C was amended in July 2015 to mandate that beginning November 1, 2015, all new development projects of 250,000 sq. ft. or more of gross floor area located within the boundaries of San Francisco's designated recycled-water use areas, as defined by the Recycled Water Ordinance, must install on-site water systems to treat and reuse available alternate water sources for toilet and urinal flushing and irrigation. This requirement was to expand to the entire City the following year, on November 1, 2016. The project site is located in the Recycled-Water Use area.

### ***San Francisco Construction Site Runoff Control Program***

The San Francisco Construction Site Runoff Control Program requires stormwater quality BMPs at all construction sites of any size, regardless of whether the site drains to the combined or separate sewer system. For projects in the separate sewer area, construction activities disturbing 1 or more acres of soil must obtain coverage under the construction general permit. This includes development of a SWPPP describing the BMPs that will be implemented to prevent erosion and discharge of sediment and other pollutants in stormwater runoff. A SWPPP may be submitted to SFPUC in lieu of an erosion and sediment control plan to comply with the Construction Site Runoff Control Program.

### ***Temporary Construction Dewatering***

Under Article 4.1 of the San Francisco Public Works Code, the batch wastewater discharge permit issued by SFPUC regulates discharges to the combined sewer system from temporary dewatering of construction sites. Therefore, this permit must be obtained from SFPUC before the start of groundwater dewatering to the combined sewer system. SFPUC imposes specific permit terms and conditions to maintain its compliance with its own wastewater discharge permit issued by the San Francisco Bay RWQCB. Under the batch wastewater discharge permit, the discharge must meet specific numeric effluent limitations for toxic and conventional pollutants, and monitoring must be conducted to ensure compliance.

### ***Groundwater Resources***

If wells are to be used for groundwater dewatering during construction, the project would be required to comply with San Francisco's Soil Boring and Well Regulation Ordinance, adopted as Article 12B of the San Francisco Health Code. The use of a groundwater well may affect the beneficial uses of San Francisco's aquifers, and shall be reviewed and approved by the San Francisco Department of Public Health and the SFPUC.

***NPDES Order No. R2-2013-0029***

The City has an NPDES permit (RWQCB Order No. R2-2013-0029, NPDES No. CA37664), which was adopted by the San Francisco Bay RWQCB on August 14, 2013. The permit covers treated effluent discharges from the Southeast Treatment Plant, North Point Wet Weather Facility, and Bayside Wet-Weather Facilities, including CSDs to the Bay. The permit specifies a permitted flow of 85.4 mgd and includes discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving-water limitations, sludge management practices, and monitoring and reporting requirements. Areas that drain to or contribute wastewater to the City's combined sewer system are subject to this permit.

**3.15.3 Impacts and Mitigation Measures****Significance Thresholds**

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Hydrology and Water Quality. Implementation of the proposed project or the variant would have a significant effect on Hydrology and Water Quality if the proposed project or variant would:

- violate any water quality standards or waste discharge requirements;
- substantially alter the existing drainage pattern of the project site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.

The Initial Study for this project (see Appendix A) found that the proposed project and variant would not result in significant adverse impacts related to several topics: the depletion of groundwater supplies or interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level; placement of housing within the 100-year flood hazard area; and flooding as a result of dam or levee failure. Therefore, these topics—including checklist items from State CEQA Guidelines Appendix G and City Environmental Review Guidelines Appendix B related to groundwater depletion or housing within a 100-year flood hazard area—are not discussed further in this section.

## Approach to Analysis

The aforementioned significance thresholds were applied to determine impact significance using a qualitative approach. The following evaluation discusses whether the proposed project or variant would result in direct and indirect impacts on hydrology and water quality. The evaluation of potential project impacts on hydrology and water quality is based on the comparison of existing conditions to the project's built condition, such as changes in impervious area and facilities located within flood zones. Specifically, the impact evaluation focuses on effects on surface water quality, stormwater drainage, groundwater quality, and flooding. Water quality conditions are compared to water quality standards and WDRs by identifying potential contaminants and pollution pathways, amount of impervious area, and runoff treatment requirements.

As part of the analysis, inundation and flooding on the project site from a potential seiche, tsunami, or mudflow or from projected sea-level rise were assessed by reviewing potential tsunami and sea-level-rise inundation zone elevations relative to the final grade elevations of facilities and features for the proposed project and variant.

As discussed in Section 3.15.1, "Environmental Setting," portions of the project site are located within an existing 100-year flood hazard area and within a tsunami inundation zone. Under the significance thresholds, the Planning Department considers whether projects located in areas that are prone to flooding, under existing conditions or future conditions with projected sea-level rise, would expose people or structures to significant risks due to flooding. However, in *California Building Industry Association v. Bay Area Air Quality Management District* (December 17, 2015, Case No. S213478), decided in 2015, the California Supreme Court held that CEQA does not *generally* require lead agencies to consider how existing hazards or conditions might affect a project's users or residents, except where the project would exacerbate an existing environmental hazard.<sup>5</sup>

Accordingly, hazards resulting from a project that places development in an existing or future flood hazard area are not considered impacts under CEQA unless the project would exacerbate the flood hazard. Thus, the analysis below evaluates whether the proposed project or variant would exacerbate existing or future flood hazards in the project area, resulting in a substantial risk of loss, injury or death. The impact would be considered significant if the proposed project or variant were to exacerbate future flood hazards by increasing the frequency or severity of flooding or cause flooding to occur in an area that would not be subject to flooding without the project.

## Project Features

Both the proposed project and variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, research and development, parking, and open space uses. Implementation of the proposed project or variant would increase the amount of impervious area at the project site.

---

<sup>5</sup> *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369.

## Impact Evaluation

### **Impact HY-1: The proposed project or variant would violate water quality standards or waste discharge requirements. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation related to the potential to violate water quality standards or WDRs. Separate impact analyses are provided for construction-related and operational impacts. General impacts that would affect all four project site properties are discussed first, followed by specific discussions of construction-related or operational impacts that would occur at each property. Except where noted, the respective impacts described below would occur under either the proposed project or the variant.

#### ***Construction***

##### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

###### ***Land-Based Construction***

Many construction-related wastes have the potential to degrade water quality and beneficial uses by altering the water's dissolved oxygen content, temperature, pH, suspended-sediment and turbidity levels, or nutrient content, or by causing toxic effects in the aquatic environment. Construction under either the proposed project or the variant would include substantial earth-disturbing activities (cut and fill, vegetation removal, grading, trenching, movement of soil, and remediation activities) that could expose disturbed areas and stockpiled soils to winter rainfall, stormwater runoff, and wind. Some of these construction activities would occur in soils that have a low erosion hazard because of the project site's relatively flat topography and the high soil clay content of some soils. Nevertheless, areas of exposed or stockpiled soils, some of which may have existing contamination, could be subject to wind or water erosion, allowing temporary discharges of sediment directly into the Bay. Accidental spills of construction-related contaminants (e.g., fuels, oils, paints, solvents, cleaners, and concrete) or nonstormwater discharges could also occur, resulting in releases to nearby surface water and degrading water quality. If not managed properly, water used for dust suppression during construction could also enter the Bay.

Hazardous materials remediation actions for all four project site properties (see Mitigation Measure M-HZ-1 in Section 3.16, "Hazards and Hazardous Materials") would be carried out consistent with site remediation plans approved by the San Francisco Department of Public Health and the San Francisco Bay RWQCB in accordance with requirements of the San Francisco Public Health Code and the California Water Code. Environmental quality criteria would be established for soil, sediment, and groundwater that would remain at the properties and a set of remedial goals would be developed and approved by the San Francisco Bay RWQCB.<sup>6</sup> The site remediation plans would specify procedures governing stormwater runoff controls.

Because the proposed project or variant would disturb more than 1 acre of land and the project site is located in the separate storm sewer area of San Francisco, the project would require coverage by and compliance with the requirements of the NPDES construction general permit, including preparation and implementation of a SWPPP. Remediation actions would also be considered an activity subject to the construction general permit. These

---

<sup>6</sup> Remedial action goals have been developed for the 900 Innes property but have not been reviewed or approved by the San Francisco Bay RWQCB.



actions would be included in the SWPPP, or an as amendment to the SWPPP if the remediation plans are not finalized until after the SWPPP is completed.

Through the NPDES and WDR processes, the SWRCB seeks to ensure that the conditions at a project site during and after construction do not cause or contribute to direct or indirect impacts on water quality. The construction general permit specifies minimum BMPs to be implemented to ensure that stormwater discharges and authorized nonstormwater discharges do not contain pollutants that could cause or contribute to an exceedance of any applicable water quality objective or water quality standard in the receiving water (the Bay). The applicable standards are those contained in the NTR, the CTR, and the San Francisco Bay RWQCB's Basin Plan. A SWPPP must identify the BMPs that would be employed to prevent soil erosion and discharge of other construction-related pollutants, such as petroleum products, solvents, paints, and cement, that could contaminate nearby water resources. BMPs may include but are not limited to the following measures:

- Implementing temporary erosion and sediment control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances, in compliance with State and local standards in effect at the time of construction. Among these measures are silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.
- Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.
- Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land and intercepting and diverting runoff to the Bay.

All NPDES permits also have inspection, monitoring, and reporting requirements to ensure that BMPs are implemented according to the SWPPP and are effective at controlling discharges of stormwater-related pollutants. Source controls, treatment controls, and site planning measures are typical types of BMPs. The SWPPP must be prepared by a Qualified SWPPP Developer and would be submitted to the San Francisco Bay RWQCB before the start of construction.

To comply with San Francisco's Construction Site Runoff Control Ordinance, any construction project that would disturb more than 5,000 sq. ft. of land must apply to SFPUC for a construction site runoff control permit before starting work. The project also must prepare and implement an erosion and sediment control plan, or SWPPP, describing associated BMPs to prevent erosion and discharge of sediment and other pollutants in stormwater runoff. Permittees must perform daily inspections and maintain and repair all graded surfaces and erosion and sediment controls, drainage structures, or other protective devices, plantings, and ground cover installed while construction is active. Equipment maintenance, spill containment, and establishment of designated fueling areas as part of the erosion and sediment control plan or SWPPP would protect water quality from potential spills.

#### *Groundwater Dewatering*

Groundwater generated during construction dewatering (currently expected only at the 700 Innes property) could contain contaminants related to past site activities, as well as sediment and suspended solids. Accidental spills or discharges could violate water quality standards or WDRs, or could otherwise substantially degrade water quality.

Any contaminated water generated during construction would be discharged to the combined sewer system after appropriate treatment if necessary. Discharges from dewatering activities that are released to the combined sewer

system must comply with the requirements of SFPUC's batch wastewater discharge permit, which regulates influent concentrations for various constituents. A batch wastewater discharge permit must be obtained from SFPUC before the beginning of groundwater dewatering and discharge to the combined sewer system. SFPUC imposes specific permit terms and conditions to maintain compliance with its own wastewater discharge permit issued by the San Francisco Bay RWQCB. Under the batch wastewater discharge permit, the discharge must meet specific numeric effluent limitations for toxic and conventional pollutants, and monitoring is required to ensure compliance. The groundwater could contain contaminants from past site activities, as well as sediment and suspended solids; however, the construction contractors would be required to treat the groundwater as necessary to meet permit requirements before discharging to the combined sewer system. The discharge rates would be controlled so that the capacity of the sewer system would not be exceeded. Permit conditions would depend on the quality of the water discharged and the anticipated discharge rates. In addition, if a well is used for groundwater dewatering, the project would be required to comply with San Francisco's Soil Boring and Well Regulation Ordinance, whereby the use of a groundwater well would be reviewed and approved by the San Francisco Department of Public Health and the SFPUC.

#### *In-Water Construction*

In-water activities to construct piers, docks, and coastal fortifications/restorations may adversely affect water quality by mobilizing sediment potentially containing chemicals from historic activities. Sediment disturbance during in-water work may also temporarily increase local turbidity or resuspend historic contaminants. If in-water work is necessary, a cofferdam structure would be installed to dewater the work area (Knecht, pers. comm., 2016). The removal of existing creosote piles from the Bay, if not handled and implemented properly, also could resuspend contaminated sediment. The act of pulling or cutting piles would be expected to suspend sediments in the water column for a few minutes to a few hours; however, despite these temporary water quality impacts, removing these piles would result in a long-term improvement in water quality.

In addition, using construction equipment for in-water work activities such as installation of piers or floating docks would involve using diesel-fueled equipment and could require the use of hazardous materials such as oils and lubricants. If released to the Bay, these materials would degrade water quality.

#### **India Basin Shoreline Park Property**

Recreational facilities and shore access would be constructed at the India Basin Shoreline Park property. Those efforts may involve vegetation removal, grading, trenching, and soil movement that could result in erosion and sedimentation of receiving waters. The use of construction equipment and construction-related contaminants (e.g., fuels, oils, paints, solvents, cleaners, and concrete), if not managed properly, could also cause contaminants to enter and degrade receiving waters.

In-water work would also be required at this property, to construct an approximately 12-foot-wide by 480 foot long pier on piles, and a 50-foot-wide by 100-foot-wide floating dock. Pile driving and demolition and construction over water would be required, which could result in accidental spills of fuels, chemicals, or hazardous materials; mobilize Bay sediment, thus resulting in an increase in turbidity; or otherwise degrade the Bay's water quality. A barge may also be required for construction of portions of the pier offshore in deeper waters.

Construction at the India Basin Shoreline Park property would also involve replacing riprap edging along the coast with tidal wetlands. These construction activities would have the potential to discharge sediment or construction debris, or to result in the accidental spill of construction-related oil, fuel, or lubricants into the Bay.

Implementing the construction general permit and related SWPPP would ensure that nonstormwater BMPs would be in place to prevent water quality degradation caused by accidental spills of fuels or hazardous materials, or by construction material or debris entering the Bay, as a result of in-water construction work. However, in-water construction activities could cause increased turbidity and resuspension of sediment. For this reason and the reasons described above, under either the proposed project or the variant, the construction impact at the India Basin Shoreline Park property related to a violation of water quality standards or WDRs could be significant.

### **900 Innes Property**

Development at the 900 Innes property would occur over several years. Construction could begin as early as 2018 and is conservatively anticipated to take 1 year; however, the timing would be dependent on approval and funding considerations. The maximum possible cut and off-haul from the site over the entire construction period is anticipated to be up to approximately 9,000 cubic yards. Construction staging would also occur on the project site. Before the start of any demolition, grading, or construction activities, the construction area would be clearly defined by construction fencing and staking. However, vegetation removal, grading, trenching, and soil movement could result in erosion and sedimentation. The potential also exists for accidental spills of construction-related contaminants that, if not managed properly, could also enter and degrade receiving waters.

Hazardous building materials such as lead-based paint, asbestos, or PCB-containing materials could be encountered during restoration and relocation of the historic Shipwright's Cottage. If improperly handled during restoration, these materials could degrade water quality.

Construction at the 900 Innes property would also require in-water work to replace two piers and potentially enhance an eroded marine byway. The piers are anticipated to be constructed on piles, and thus, would require pile driving and construction over water. This could cause a temporary increase in localized turbidity or accidental spills (e.g., diesel fuel, oils, lubricants), or could otherwise degrade water quality in the Bay. In addition, hazardous building materials such as lead-based paint could be encountered during demolition of the two existing piers. The historic pilings themselves typically consist of wood that has been treated with creosote, which is toxic to marine organisms. Under the proposed project or variant, creosote-treated piles would be removed to the extent feasible. New piles would consist of nontoxic materials. Sediments could be resuspended during pile removal, and using construction equipment in the water for pile removal and pier/dock construction could result in an accidental spill of hazardous materials. Therefore, under either the proposed project or the variant, the construction impact at the 900 Innes property related to a violation of water quality standards or WDRs could be significant.

Land-based dredging is proposed for the 900 Innes site as part of site remediation. Dredging activities would disturb mud and sediment, causing turbidity and resuspension of sediment that could locally degrade the water quality of the Bay and could result in a significant impact. Oxygen levels resulting from in-water construction activities would not be expected to remain low for long periods. In addition, tidal flushing would introduce oxygenated water to the dredged area. Therefore, resuspension of sediments would be temporary and would not result in long-term effects (BCDC, 1998). Based on studies conducted by the San Francisco Estuary Institute,

there is no risk to the ecosystem from increased nutrient loading caused by dredging activities, and sediment disruption caused by dredging activities does not pose an environmental risk related to decreased concentrations of dissolved oxygen (SFEI, 2008).

RPD would be required to obtain CWA Section 401 and 404 permits for dredging activities. Disposal of dredged material would be subject to the requirements of the permits and must be conducted in accordance with WDRs issued to the designated disposal site. As part of the permitting process for the dredging activity, RPD would have to submit a Consolidated Dredging-Dredged Material Reuse/Disposal Application to the USACE Dredged Material Management Office. This application is accepted for a CWA Section 404 permit from USACE, an administrative dredging permit from BCDC, and a dredging project lease from the California State Lands Commission, and is functionally equivalent to San Francisco Bay RWQCB water quality certification or WDR authorization. As part of the application, RPD would have to develop a sampling and analysis plan and submit appropriate testing data to help the USACE Dredged Material Management Office determine the suitable disposal method for dredged material.

### **India Basin Open Space Property**

Construction at the India Basin Open Space Property would primarily involve restoring habitat and improving public access. An existing drainage outfall extending into the Bay would also be removed. Restoration activities would involve vegetation removal, grading, and soil movement, which could result in erosion and sedimentation. Construction of recreation facilities and habitat improvements at the India Basin Open Space property would occur during Phase 1 of construction at the India Basin Open Space and 700 Innes properties. Construction could begin as early as 2018 and is anticipated to take between 2 and 4 years; however, the timing would be dependent on approval and funding considerations. Construction staging would occur at the 700 Innes property.

### **700 Innes Property**

#### *Proposed Project*

Project construction would be the most intense at the 700 Innes property. At this property, the proposed project would involve constructing 1,240 dwelling units and 275,330 gross square feet (gsf) of retail, commercial, or flex space, as well as a 50,000-gsf school, parking, and publicly accessible open space. Constructing these developments over several phases would involve removing vegetation, grading, trenching, and moving soil over numerous acres, all of which could result in erosion and sedimentation.

The maximum possible cut and off-haul from both the India Basin Open Space property and the 700 Innes property over construction phases 1–7 is anticipated to be up to 340,000 cubic yards. Before the start of any demolition, grading, or construction activities, the construction area would be clearly defined by construction fencing and staking. Construction staging would occur on the 700 Innes property. The use of construction equipment and the presence of construction-related contaminants, if not managed properly, could result in accidental spills, which could degrade receiving waters. Accidental spills of nonstormwater discharges from activities such as construction dewatering could also occur during construction, resulting in releases to nearby surface water and degrading water quality.

Currently, the 700 Innes property is the only project site property where construction dewatering of groundwater is expected, because of the basements of the buildings proposed for the site. The groundwater level at the 700 Innes site is anticipated to be at an elevation of -5 feet (San Francisco City Datum). Most of the proposed basement excavations would not extend below this groundwater level. However, local dewatering may be required if perched groundwater is encountered during basement excavations.

The basement excavation for the structure proposed for the northwest corner of the 700 Innes site would extend below -5 feet in elevation. At this building, the groundwater level would need to be lowered (via dewatering) to a depth of at least 3 feet below the bottom of the planned excavation and maintained at that level until sufficient weight and/or tiedown capacity is available to resist the hydrostatic uplift forces on the bottom of the foundations and slabs. Where shallow bedrock is present beneath the proposed structure, a passive dewatering system of sumps and collection trenches may be required. Where fill is present, dewatering wells may also be required.

Groundwater generated during construction dewatering could contain contaminants related to past site activities, as well as sediment and suspended solids. Accidental spills or discharges could violate water quality standards or WDRs, or could otherwise substantially degrade water quality. Any contaminated water generated during construction dewatering would be discharged to the combined sewer system after appropriate treatment if necessary. Discharges from dewatering activities that are released to the combined sewer system must comply with the requirements of SFPUC's batch wastewater discharge permit, which regulates influent concentrations for various constituents.

Construction at the 700 Innes property under the proposed project would also involve demolishing five existing buildings and structures. Hazardous building materials such as lead-based paint, asbestos, or PCB-containing materials could be encountered during demolition. If improperly handled during removal, these materials could degrade water quality. In addition, at the northwest corner of the property, BUILD would remove an existing pier and eight associated creosote-treated piles, which could cause sediments to be resuspended, and the potential would exist for an accidental release of hazardous materials from in-water construction activities and equipment.

Construction at the 700 Innes property would also include removing an existing pier and associated piles. In-water construction for removal of an existing pier and piles could cause sediments to be resuspended, and the potential would exist for an accidental release of hazardous materials from in-water construction activities and equipment. Therefore, the construction impact of the proposed project at the 700 Innes property related to a violation of water quality standards or WDRs could be significant.

#### *Variant*

Implementing the variant at the 700 Innes property would involve constructing up to 1,000,000 gsf of commercial/institutional uses and 500 dwelling units, fewer dwelling units but a larger amount of commercial and institutional uses than under the proposed project. Although land uses would be distributed differently under the variant, the potential construction-related water quality impacts would be similar to those described for the proposed project.

Like the proposed project, the variant would involve substantial earth-disturbing construction activities (cut and fill, vegetation removal, grading, trenching, soil movement) that could result in erosion and sedimentation of receiving waters. Accidental spills of construction-related contaminants or nonstormwater discharges from

activities such as construction dewatering could also occur during construction, resulting in releases to nearby surface water and degrading water quality. Removing an existing pier and eight associated creosote-treated piles could cause sediments to be resuspended, and the potential would exist for an accidental release of hazardous materials from in-water construction activities and equipment. Therefore, the construction impact of the variant at the 700 Innes property related to a violation of water quality standards or WDRs could be significant.

### ***Overall Construction Impact Conclusion***

In-water construction activities, including pile removal and pier/dock construction, could cause increased turbidity and resuspension of sediment. In addition, using construction equipment in the water could result in an accidental spill of hazardous materials. Therefore, in-water construction activities could result in a significant impact. The following mitigation measures would be implemented to ensure that water quality would be protected during in-water construction. Additionally, the proposed project or variant would be required to implement BMPs in accordance with the CWA Section 401 and 404 permits required for the project.

#### **Mitigation Measure M-HY-1a: Monitor Turbidity during Construction**

*The project sponsors shall require their construction contractor to monitor turbidity associated with construction of the pier and floating dock and removal of piles and old piers. The contractor shall prepare a turbidity monitoring plan, including product information on monitoring equipment, proposed monitoring locations, and procedures to follow if turbidity increases above background levels. The turbidity monitoring plan shall include the following provisions:*

- (1) Before beginning work, the contractor shall monitor turbidity and light levels at the level of the eelgrass, or other as deemed appropriate by the resource agencies if no eelgrass is present, to establish a baseline. The contractor shall also set buoys out to establish background water quality monitoring points upstream and downstream of the site (based on existing currents and tides at the site). The contractor shall monitor turbidity and light at low, middle, and high tides during typical work hours for several days before beginning work. The project sponsor's contract owner's representative will review and approve the background monitoring station locations before monitoring.*
- (2) During removal of the piles, the contractor shall monitor turbidity and light levels no less than daily or as required by the project's or variant's 401 water quality certification issued by the San Francisco Bay RWQCB or other applicable permits, at the same locations as required for baseline monitoring, as well as within the work area.*
- (3) The contractor shall notify the lead inspector or other on-site individual overseeing the contractor immediately when there is an exceedance of the required water quality criteria (turbidity and light levels) that have been established either in the 401 water quality certification or with the San Francisco Bay RWQCB. If the lead inspector or other identified individual determines, in coordination with the environmental compliance manager, that water quality criteria have been exceeded, demolition activities must cease until turbidity is reduced to meet the criteria. In the event an exceedance occurs, a silt curtain or floating debris booms may be deployed to contain suspended materials and prevent their broader dispersal. The deployment of these additional measures shall be*

*contingent on whether conditions (e.g., water depth, substrate materials, wave action) are appropriate, as determined by the lead inspector.*

The San Francisco Bay RWQCB adapted guidance from creosote-removal projects in Puget Sound and elsewhere as part of the permitting for construction related to America's Cup events, which is now a part of San Francisco Bay RWQCB guidance and direction for creosote piling removal projects in the Bay. The designs and specifications for this project, enforced by contractual provisions, call on the construction contractor to attempt to remove the pilings using methods that would depend on the level of contamination of the surrounding sediments or muds and on the conditions of the piles. These methods and related pile removal BMPs are included in Mitigation Measure M-HY-1b below to reduce and/or prevent water quality impacts from pile removal activities.

#### **Mitigation Measure M-HY-1b: Implement Pile Removal Best Management Practices**

*One of the following two separate procedures shall be utilized to remove piles based on information regarding local sediment conditions:*

- *If there is reason to believe that the sediment is contaminated beyond the typical ambient levels of various in-Bay pollutants other than creosote, which is inferred to be present, the construction contractor shall cut the piling at the mudline.*
- *If there is no reason to believe the sediment is contaminated beyond typical ambient levels, the contractor shall attempt to remove each piling in its entirety by pulling the piling straight out.*

*The decision regarding the method of removal also depends on the condition of the piling. Generally, the construction contractor shall be prohibited from using vibration or a back-and-forth, rocking movement intended to snap the piling because this generally increases turbidity. Moreover:*

- *If, before the contractor attempts to remove an entire piling, visual inspection of the pilings indicates that the pilings lack the necessary integrity to be pulled without splintering, crumbling, or otherwise disintegrating, the contractor shall instead cut the remaining pile to a level 2–3 feet below the surrounding existing sediment or mudline.*
- *If, during attempts to use direct pulls on the piling to remove it, the piling breaks at a level higher than 2 feet below the mudline, the contractor shall cut the remaining pile to a level 2–3 feet below the surrounding existing sediment or mudline.*

*Because the condition of the piles' structural integrity is not fully nor precisely known, RPD or, for the 700 Innes property, BUILD shall investigate pile integrity after submitting the various permitting documents to the regulatory agencies. A brief memorandum on that investigation (referred to below as the "removal memo") shall be delivered to the agencies to inform them of the pile conditions and the expectation of whether pilings can be removed by pulling without crumbling.*

*The following practices shall be followed during pile removal efforts:*

- *Pilings and other debris may be removed from land or require removal from the water using barge-mounted equipment. For non-land-based removal of piles, the following measures shall be implemented to the extent feasible:*

- *Removal of the pilings and other debris shall be carried out using an excavator mounted on a shallow-draft barge equipped with both grappling and shearing attachments. Shallow-draft barges generally require at least 5 feet of water above the sea floor or any submerged debris. Depending on specific site conditions and the construction barge chosen, it may be possible to float the barge into position at high tides, let it settle on the intertidal mudflats to continue working at low tides, and then be lifted by the next high tide.*
- *Existing eelgrass or oyster beds shall be avoided.*
- *The barge shall be designed to prohibit sediment or debris from falling back into the water. The work surface on the barge deck shall include a containment basin for piles, concrete, and any mud or sediment removed during pulling. Upon removal from substrate, the piles shall be moved expeditiously from the water into the containment basin.*
- *When depths limit access to barges or sensitive resources are present, piles may be manually cut by divers using a pneumatic or hydraulic saw or shears.*
- *Once the piles are cut, they may be towed out to deeper water to a waiting barge or to a landside staging area for loading and removal.*
- *The holes left after pile removal shall not be actively filled. Attempting to fill the holes would lead to increased sediment disturbance and unnecessary increases in turbidity. It is expected that sediment deposition will rapidly fill in any holes that are left.*
- *The removed piles, as well as any decking or other materials, shall be loaded onto a barge and/or transported back to the contractor's staging area where the concrete shall be separated from the other materials and recycled or disposed of off-site as appropriate at a permitted facility.*
- *Once the removed debris is on land, the pilings and planks shall be cut to 5-foot lengths and dried out before being hauled to a landfill for disposal.*
- *The removed piles shall be placed into containment basins that will collect the water, residual creosote, and other materials that may drain off of them. The collected water will eventually evaporate, and the residual creosote and other materials shall be placed into barrels for disposal at an appropriate Class 2 landfill.*
- *The removal method(s) utilized for each site shall be described in the removal memo.*
- *Jetting away the sediments around the piles is prohibited. Where the method selected is expected to generate concrete chips or dust in the water, a special curtain shall be deployed around the individual pile so the contractor may capture any concrete pieces for off-site disposal.*
- *Intentional breaking of timber piles above the mudline is prohibited.*
- *The piles shall not be shaken, hosed off, stripped or scraped off, or left hanging to drip, nor shall any other action be taken with the intent of cleaning or removing adhering material from the pile.*
- *Any sediment accumulated from the pile removal operations shall be assumed to contain creosote and shall be contained and eventually tested and disposed off-site in an appropriate landfill.*
- *Upon completion of demolition and removal of the pilings (and any associated wharfing or decking), the contractor shall perform a postdemolition diver survey in the project area. The survey shall*



*document the quantity and type of pilings stubs above the mudline and the condition of the Bay floor, and shall identify the quantities and types of debris from previous operations and/or from the demolition activities that remain on the Bay floor.*

- *The contractor shall submit the results of the survey to RPD or, for the 700 Innes property, to BUILD for approval, with descriptions of its approach to removal of the piling stubs and debris. RPD (or BUILD) may elect to leave some debris in place if it has established eelgrass growing on it. After this submittal is approved, the contractor can proceed with removal of piling stubs and debris.*
- *Identified piling stubs shall be cut off at 2–3 feet below the mudline if possible.*
- *Bay floor debris including fallen timber piles, steel piping, concrete, and other miscellaneous items shall be removed as they are encountered during demolition activities.*
- *All Bay floor debris within the project limits that is not treated with creosote shall be removed unless such removal would involve disturbing eelgrass. Timber piles that are not shown on the design plans but are encountered during operations shall be removed. Other items not shown on the design plans or mentioned in the specifications, but that are encountered during the contractor's operations, shall be brought to the attention of the lead engineer. The lead engineer shall determine the disposition of the items.*
- *All removed debris shall be transported to the contractor's staging area and recycled or disposed at a permitted landfill facility.*
- *The contractor owner shall confirm that Bay floor debris has been removed by conducting a postconstruction side-scan sonar study.*
- *Existing concrete slabs and concrete debris along the shoreline shall be left in place to avoid destabilizing the embankment. All other timber and metal debris along shoreline shall be removed and disposed.*
- *The following BMPs shall be used to prevent the release of hazardous wastes and minimize creosote release, sediment disturbance, and generation of total suspended solids during demolition operations:*
  - *Install a floating surface boom to capture floating surface debris.*
  - *Keep all equipment (e.g., bucket, steel cable) out of the water and grip piles above the waterline.*
  - *Slowly lift the pile from the sediment and through the water column.*
  - *Dispose of all removed timber piles, floating surface debris, sediment spilled on work surfaces, and all containment supplies at a permitted upland disposal site that accepts creosote-treated wood and materials contaminated with creosote.*
- *The following BMPs shall be implemented by the construction contractor for handling creosote-containing materials, spill prevention and containment, erosion and sedimentation prevention, and monitoring requirements:*
  - *During demolition activities, a floating boom and skirt shall be deployed around the project site and absorbent booms and pads shall be provided on marine vessels on-site.*

- *Silt fences, straw wattles, and other measures determined appropriate for erosion and sediment control shall be implemented in upland areas.*
- *Waste at the demolition site, such as discarded demolition materials, chemicals, litter, and sanitary waste, shall be properly controlled.*
- *Vessel fueling shall be required at the contractor's staging area or at an approved docking facility. No cross-vessel fueling shall be allowed.*
- *Marine vessels generally shall contain petroleum products within tankage that is internal to the hulls of the vessels. All deck equipment shall be equipped with drip pans to contain leaks and spills. All fuels and lubricants aboard the work vessels shall have a double containment system. Chemicals used in the project area and on marine vessels shall be stored using secondary containment.*

#### **Mitigation Measure M-HY-1c: Use Clamshell Dredges**

*To reduce resuspension of sediments and impacts on water quality when conducting dredging activities, clamshell dredges shall be used for all dredging activities. Using clamshell dredges causes dredged material to descend rapidly through the water column to the Bay bottom, with only a small amount of sediment remaining suspended, thus resulting in minimal turbidity impacts.*

The proposed project and variant would comply with existing water quality control measures required under the general construction permit, construction site runoff permit, batch wastewater discharge permit, and with the water quality control measures and WDRs of the permits required for dredging. This compliance, together with implementation of Mitigation Measures M-HY-1a, M-HY-1b, and M-HY-1c regarding turbidity monitoring, pile removal BMPs, and dredging equipment, would reduce potential impacts from construction of the proposed project or variant related to a violation of water quality standards or WDRs to *less than significant with mitigation*.

#### **Operation**

Project operation at all four project site properties under the proposed project or variant would result in an increase in impervious surfaces and urban stormwater runoff. The proposed project and variant is anticipated to accommodate a variety of land use changes, including intensified development at the project site and increased recreational use, including in-water human-powered boating. Each type of land use change has the potential to alter the types, quantities, and timing of contaminant discharges in stormwater runoff. Changes in land use to a more developed state, if not properly managed, can adversely affect water quality.

As runoff water flows over the landscape, it picks up dissolved chemicals, particulate material, and gross surface debris before being discharged into a water body. The effects of this runoff water on surface water quality depend on the amount and type of material being picked up and transported, and on the amount of water or flow rate in the receiving water. Constituents and concentrations in runoff water vary according to land cover, land use, topography, and the amount of impervious cover, as well as the intensity and frequency of irrigation or rainfall. Runoff from undeveloped areas will reflect the natural chemistry and ecology of the watershed. Runoff in

developed areas may typically contain oil, grease, and metals accumulated in streets, driveways, parking lots, and rooftops, as well as pesticides, litter, herbicides, particulate matter, nutrients, animal waste, and other oxygen-demanding substances from landscaped areas. Runoff from open space areas and parks typically may contain nutrients, pesticides, organic debris, bacteria, sediment, and others.

These pollutants may originate from erosion in disturbed areas, deposition of atmospheric particles derived from automobiles or industrial sources, corrosion or decay of building materials, rainfall contact with toxic substances, and accidental spills of toxic materials on surfaces that receive rainfall and generate runoff. Specifically, sediment sources include roads and parking lots. Destabilized landscapes and coastal areas bring contaminants in their own right or transport other contaminants, such as trace metals, nutrients, and hydrocarbons that adsorb to suspended sediment particles.

Urban contaminants typically accumulate during the dry season and may be washed off when adequate rainfall returns in the fall to produce a “first flush” of runoff. The amount of contaminants discharged in stormwater drainage from developed areas varies based on a variety of factors: the intensity of urban uses such as vehicle traffic, the types of activities occurring (e.g., office, commercial, industrial), types of contaminants used at a given location (e.g., pesticides, herbicides, cleaning agents, petroleum byproducts), contaminants deposited on paved surfaces, and the amount of rainfall.

With the proposed project or variant, long-term operational discharges of urban contaminants into the stormwater drainage system and ultimate receiving waters would increase relative to existing conditions. The major factor in this increase is the added amount of impervious surfaces, primarily parking lots, driveways, streets, rooftops, and sidewalks. The presence of additional commercial and urban land uses that utilize potential pollutants (e.g., cleaning agents, pesticides, oil) could also result in discharges, if such potential pollutants are not stored, applied, and disposed of properly.

Compliance with several applicable regulations would reduce or avoid impacts of the proposed project and variant related to long-term erosion, sedimentation, and water quality degradation. Stormwater discharges from the project site to a separate stormwater system would be subject to the regulatory requirements of the NPDES Phase II MS4 Permit, the City’s Stormwater Management Ordinance, and the City’s SMR. The NPDES MS4 Phase II General Permit for stormwater discharge (Order No. 2003-0005-DWQ as amended by 2013-0001-DWQ) requires the use of Low Impact Development (LID) and green infrastructure BMPs to comply with stormwater management requirements. The NPDES Phase II MS4 Permit requires the City and SF Port to develop, administer, implement, and enforce stormwater management plans to protect and improve stormwater quality. Implementing the City’s stormwater management plan requires postconstruction stormwater management for new development and redevelopment to protect stormwater quality and the quantity of water delivered to water bodies.

To obtain coverage under the NPDES Phase II MS4 permit, the proposed project or variant must comply with the City’s Stormwater Management Ordinance and SMR to reduce postconstruction runoff by incorporating prioritized infiltration-based BMPs. RPD or, for the 700 Innes property, BUILD would be required to develop and submit preliminary and final stormwater control plans to SFPUC demonstrating how the project would meet the performance requirements; record a maintenance agreement; and implement construction stormwater management controls as designed in the approved stormwater control plan. Stormwater management controls must be maintained in perpetuity and annual self-inspection forms are required to confirm compliance. Through

compliance with the City's Stormwater Management Ordinance, the proposed project or variant would manage runoff from the 90th-percentile, 24-hour storm.

Wastewater generated on the project site would be conveyed into the City's sewer system and to the Southeast Treatment Plant, where it would be treated before being discharged into the Bay. Treatment is undertaken consistent with the effluent discharge standards established by the plant's NPDES permit (Order No. R2-2013-0029, NPDES No. CA37664). In accordance with the permit, discharges of treated wastewater and stormwater into the Bay meet the requirements of the CWA, the Combined Sewer Overflow Control Policy, and associated State requirements in the Basin Plan and do not violate water quality standards. For a discussion of operational impacts of the proposed project and variant as they relate to the potential to exceed the wastewater treatment requirements of the NPDES permit for the Southeast Treatment Plant, see Impact UT-1 in Section 3.12, "Utilities and Service Systems."

The proposed project or variant would also use recycled water to reduce the project's demand for potable water. At the India Basin Shoreline Park and 900 Innes properties, nonpotable water could be created by mining wastewater from the combined sewer pipeline in Hunters Point Boulevard, then treating it in an on-site wastewater treatment system (MKA, 2016a) if approved by SFPUC and the City. At the 700 Innes property, nonpotable water could be created by constructing a wastewater treatment facility on-site to treat a portion of the wastewater for reuse on-site as recycled water (Wastewater Scenario 2); or all wastewater flows would be discharged to the combined sewer (Wastewater Scenario 1), in which case a building-by-building system would be installed to use all available graywater, rainwater and foundation drainage to meet the toilet flushing and irrigation nonpotable-water demands. No wastewater is anticipated to be generated at the India Basin Open Space property.

On-site wastewater treatment would meet requirements in Title 22 of the California Code of Regulations, as defined in the California Department of Public Health's Recycled Water Regulations. Wastewater that would pass through the on-site treatment facilities would be typical of domestic wastewater. Treatment and reuse of the wastewater would be regulated by the San Francisco Non-Potable Water Program. It is not anticipated that any treated wastewater from the project site would be discharged to a natural watercourse; rather, it would be used for irrigation, restrooms (toilet flushing), and cooling water (Leys, pers. comm., 2016; BKF, 2016).

With the kayak concessions, piers/docks, beaches, and other recreational facilities, nonmotorized boating and general recreational use of the project area would increase. Trash and litter could be released into the Bay by recreationists on the water, or from land via wind or stormwater. Trash facilities would be provided in the project area and at the project's or variant's recreation facilities in accordance with Article 6, "Garbage and Refuse," of the San Francisco Health Code. Refuse containers would be required to have tight-fitting lids or sealed enclosures and could not be filled above the top of the rim. RPD or, for the 700 Innes property, BUILD would be required to provide for adequate refuse collection service. The project would also be required to comply with several City ordinances to reduce the amount of nondegradable trash generated under the proposed project or variant. In addition, the proposed project and variant would include stormwater infrastructure designed to meet the requirements of the SWRCB's 'trash amendments' to control trash from being discharged into receiving waters. Only nonmotorized boating use would be allowed at the project's or variant's recreation facilities; therefore, water quality degradation caused by fuel spills, ballast water, or sewage discharges would not be expected. In addition, Article 6 of the Health Code prohibits dumping of refuse onto any lands in San Francisco.

The specific project components and potential water quality impacts described above that relate to each project site property are described below.

### **India Basin Shoreline Park Property**

Operation of the proposed project or variant at the India Basin Shoreline Park property would increase the property's impervious area by 0.25 acre (MKA, 2016b). Project operation may cause an increase in recreational uses that could discharge litter or urban contaminants (e.g., oil, litter) that, in turn, could accumulate in parking areas or on streets and reach receiving waters. A swale and/or bioretention pond would manage stormwater runoff from new impervious areas, in conformance with the City's stormwater requirements. The India Basin Shoreline Park property would be broken down into two subbasins for stormwater management. Runoff from the northern subbasin would utilize the existing stormwater outfall near the turnaround and the southern subbasin would require a new stormwater outfall.

Wastewater from restrooms (flow and flush), concessions, and the kayak and fish cleaning stations would enter the combined sewer (MKA, 2016a). Wastewater from the kayak and fish cleaning stations may contain sediment, bacteria, or organic debris that could enter the City's sewer system. Water from irrigation, drinking fountains, and the water feature top-off would not generate wastewater that would enter the combined sewer system (MKA, 2016a). Irrigation runoff that may contain nutrients, pesticides, herbicides, organic debris, bacteria, or sediment could enter receiving waters. As part of the proposed project or variant, recycled water would be used for park irrigation and toilet flushing, as wastewater would be mined from the combined sewer pipeline under Hunters Point Boulevard and treated in an on-site wastewater treatment system (MKA, 2016a).

Compliance with the City's regulatory requirements for stormwater would ensure that implementing the proposed project or variant at this property would not cause an increase in stormwater pollutants discharged to the Bay and would be designed to meet the requirements of the SWRCB's 'trash amendments'. Wastewater discharged to the combined sewer system would be treated in accordance with the City's NDPEs permit and recycled water generated on-site would be treated to Title 22 requirements. Compliance with Article 6 of the Health Code would reduce the potential for water quality impacts from litter transport to the Bay or stormwater facilities.

### **900 Innes Property**

As described for the India Basin Shoreline Park property, increased impervious area (0.67 acre) and the potential for increased recreational use of the 900 Innes property could result in discharges of urban contaminants and irrigation runoff into receiving waters. A swale and/or bioretention pond would manage stormwater runoff from new impervious areas, in conformance with the City's stormwater requirements. A new stormwater outfall would be jointly used by the 900 Innes property and the adjacent 700 Innes property (MKA, 2016a).

The existing condition at the 900 Innes property, however, already includes impervious area and litter. Implementing the proposed project or variant would result in some benefit because existing litter would be cleaned up and remediation activities would be completed at the site to minimize the potential for historical contamination to affect water quality. Removing two existing piers that may contain creosote would also benefit long-term water quality.

Wastewater from restrooms (flow and flush) and concessions would enter the combined sewer (MKA, 2016a). Water from irrigation, drinking fountains, and the water feature top-off would not generate wastewater that would enter the combined sewer system (MKA, 2016a). Irrigation runoff that may contain nutrients, pesticides, herbicides, organic debris, bacteria, or sediment could enter receiving waters.

Remediation, pier removal, and compliance with the City's regulatory requirements for stormwater and the SWRCB's 'trash amendments' would ensure that implementing the proposed project or variant at this property would not cause an increase in stormwater pollutants and trash discharged to the Bay, and would help reduce water quality degradation from existing contaminants. Wastewater discharged to the combined sewer system would be treated in accordance with the City's NDPES permit. Compliance with Article 6 of the Health Code would reduce the potential for water quality impacts from litter transport to the Bay or stormwater facilities.

### **India Basin Open Space Property**

The India Basin Open Space property would remain primarily as natural habitat, including wetlands. Impervious area would be added only in the form of public-access pathways and a 2,000-gsf building for commercial uses located immediately adjacent to the India Basin Open Space property. An existing drainage outfall extending into the Bay would also be removed. Overall, however, there would be no net increase in impervious area on this property. The vast majority (95 percent) of the property would remain as pervious area. Opportunities for operational water quality impacts would be minimal, given the absence of vehicles or manicured vegetation. Because of the lack of facilities proposed for the India Basin Open Space property, no wastewater would be generated (Sherwood, 2016). Compliance with Article 6 of the Health Code would reduce the potential for water quality impacts from litter transport to the Bay or stormwater facilities.

### **700 Innes Property**

#### *Proposed Project*

Residential and nonresidential development at the 700 Innes property would occur on primarily vacant, pervious lands. The proposed project is a residentially focused, mixed-use development that includes approximately 1,240 dwelling units and 275,330 gsf of ground-floor retail, commercial, or flex space. The proposed project would result in an increase in impervious area of 14.2 acres<sup>7</sup> over the 17.1-acre property, causing the property to be 93 percent impervious, compared to existing conditions in which 10 percent of the property is impervious. Implementing the proposed project would also result in intensification in uses and associated urban stormwater runoff. This change from pervious to impervious surface would cause an associated increase in urban stormwater runoff (69 percent increase in the runoff rate [Sherwood, 2016]), which can be a source of surface water pollution.

---

<sup>7</sup> Existing impervious area on the property is 1.7 acres, and the proposed project would result in 15.9 acres of impervious area [15.9 acres - 1.7 acres = 14.2-acre increase in impervious area].

The stormwater management system on the 700 Innes property is anticipated to include:

- streetscape runnels to convey stormwater in hardscape areas to various bioretention areas, and to feed the reservoirs in the open space;
- vegetated swales for stormwater treatment and conveyance in softscape areas, that would accommodate water flows from seasonal and large storm events and could withstand inundation;
- local treatment, including the use of rain gardens and flow-through planters in the public realm, stormwater bioretention ponds and swales, and biotreatment landscapes in the open space areas;
- retention ponds to store runoff for reuse;
- a circulation system to aerate and move water between facilities;
- the use of treated stormwater for on-site reuse, and on-site recycling of gray water and black water for on-site irrigation, toilet flushing, and other purposes, including potential export for off-site irrigation; and
- a spring cutoff drain to recapture water flow from a spring below the project site to contribute to meeting demands for nonpotable water and for use in water features and/or stormwater infrastructure (requires approval from SFPUC and the City).

Buildings for the proposed project would be constructed to the standards required by the San Francisco Green Building Ordinance, which establishes LEED certification levels or GreenPoint Rated systems points for various types of buildings. Specifically, at the 700 Innes property, the proposed project would be constructed to a LEED Silver rating or equivalent, which may include implementing stormwater management controls to reduce runoff volume and improve water quality by replicating the site's natural hydrology and water balance.

Commercial uses on the 700 Innes property would be required to obtain coverage under the industrial general stormwater permit, depending on the specific activities conducted on-site. The general stormwater permit requires the development and implementation of a SWPPP identifying the sources of pollutants and the ways that those pollutants would be managed to reduce the potential for stormwater pollution. Policies for the safe handling and disposal of hazardous materials would also protect water quality through the proper handling, use, and disposal of hazardous materials, as well as emergency response planning to minimize potential water quality impacts from accidental spills.

Two potential scenarios for wastewater management are being considered for the proposed project:

- *Wastewater Scenario 1:* Connect to the municipal combined sewer system and discharge all sewer flows generated on the property to the municipal system.<sup>8</sup>
- *Wastewater Scenario 2:* Construct a wastewater treatment facility on-site to treat a portion of the wastewater for reuse on-site as recycled water.

Wastewater from on-site uses (e.g., residential, commercial) would be discharged to the combined sewer system under Wastewater Scenario 1, in which case nonpotable-water demand would be met using a building-by-building system to use all available graywater, rainwater and foundation drainage to meet the toilet flushing and irrigation

<sup>8</sup> The City requires developments with 250,000 sq. ft. of gross floor area to treat water on-site and reuse it for nonpotable applications. If Wastewater Scenario 1 is chosen, a building-by-building system would be installed to use all available graywater, rainwater and foundation drainage to meet the toilet flushing and irrigation nonpotable-water demands.

nonpotable-water demands. Under Wastewater Scenario 2, recycled water would be generated from treatment of wastewater on-site. Under either scenario, irrigation and cooling water would not generate wastewater that would enter the combined sewer system or be treated at the wastewater treatment plant. Irrigation runoff that may contain nutrients, pesticides, herbicides, organic debris, bacteria, or sediment could enter receiving waters.

Compliance with the City's regulatory and permitting requirements for stormwater (NPDES Phase II MS4 permit, Stormwater Management Ordinance, SMR, and industrial general stormwater permit) and the SWRCB's 'trash amendments' would ensure that implementing the proposed project at the 700 Innes property would not result in an increase in stormwater pollutants and trash discharged to the Bay. Wastewater discharged to the combined sewer system would be treated in accordance with the City's NPDES permit and recycled water generated on-site would be treated to Title 22 requirements. Compliance with Article 6 of the Health Code would reduce the potential for water quality impacts from litter transport to the Bay or stormwater facilities.

#### *Variant*

The variant would consist of up to approximately 1 million gsf of commercial/institutional uses and 500 dwelling units. It is anticipated, however, that the pervious-to-impervious ratio would be the same for the variant as for the proposed project (Sherwood, 2016). Therefore, implementing the variant would increase the impervious area of the 700 Innes property by 14.2 acres relative to existing conditions. Even moreso than the proposed project, the variant proposes additional commercial uses that would require obtaining coverage under the industrial general stormwater permit, depending on the specific activities of the commercial use.

Compliance with the City's regulatory and permitting requirements for stormwater (NPDES Phase II MS4 permit, Stormwater Management Ordinance, SMR, and industrial general stormwater permit) and the SWRCB's 'trash amendments' would ensure that implementing the variant at the 700 Innes property would not result in an increase in stormwater pollutants and trash discharged to the Bay. Wastewater discharged to the combined sewer system would be treated in accordance with the City's NPDES permit and recycled water generated on-site would be treated to Title 22 requirements. Compliance with Article 6 of the Health Code would reduce the potential for water quality impacts from litter transport to the Bay or stormwater facilities.

#### **Overall Operational Impact Conclusion**

Compliance with the City's regulatory and permitting requirements for stormwater, treatment of wastewater in accordance with the City's NPDES permit, treatment of recycled water generated on-site to Title 22 requirements, and compliance with Article 6 of the Health Code would reduce the potential for water quality impacts from the proposed project or variant. Therefore, under either the proposed project or the variant, the operational impact related to a violation of water quality standards or WDRs would be *less than significant*. No mitigation measures are necessary.

**Impact HY-2: The proposed project or variant would alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation or flooding on- or off-site. (*Less than Significant with Mitigation*)**



The following impact discussion describes the project's or variant's impacts related to alteration of the existing drainage pattern or a substantial increase in surface runoff in a manner resulting in substantial erosion or siltation or flooding. Except where noted, the respective impacts described below would occur under either the proposed project or the variant.

### ***Construction***

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Short-term impacts of project construction under the proposed project or variant as they relate to erosion and siltation are discussed above under "Construction" in the analysis of Impact HY-1 and would be *less than significant with mitigation* for the entire project site.

Projects that disturb more than 1 acre of land must also comply with the requirements of the construction general permit (Order 2009-009-DWQ, as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ). Those requirements prohibit postconstruction conditions at a project site from causing or contributing to direct or indirect impacts on water quality. The construction general permit also identifies the need to address changes in the hydrograph (defined as hydrograph modification or hydromodification) that could result from urbanization of a watershed, and requires that LID controls more closely mimic the previously developed hydrologic condition.

### ***Operation***

No streams or rivers exist on the project site; however, with construction of new structures and other impervious surfaces, the proposed project or variant would change drainage patterns, creating the potential to increase the rate or amount of surface runoff in a manner that could result in substantial erosion or siltation or flooding on- or off-site.

The relative amount of impervious surface created under the proposed project or variant would range from low (e.g., open space) to high (e.g., residential and commercial development at the 700 Innes property). Expanding impervious surfaces on the project site would increase the peak discharge rate of stormwater runoff and could result in erosion, sedimentation, shoreline erosion, and on-site flooding. Increased peak-flow rates may exceed drainage system capacities, exacerbate erosion in overland flow and drainages, and result in sedimentation and deposition in receiving waters. Because the receiving water associated with the project site is the Bay, sedimentation would not reduce conveyance capacities or result in an increased risk of off-site flooding. However, erosion and sediment deposition typically lead to adverse changes to water quality and hydrology.

Adding impervious surfaces and drainage infrastructure during urbanization increases runoff volumes and dry-weather flows, frequency and number of runoff events, long-term cumulative duration of flows, and peak flows. These changes are referred to as "hydromodification." Although no streams or rivers are located at the project site, the proposed project or variant would result in impacts related to increases in impervious surfaces. Grading, excavation, and fill activities for the proposed project or variant could also cause changes to drainage patterns.

As described for Impact HY-1, several existing regulations would apply to the proposed project and variant and would reduce or avoid impacts related to long-term erosion and sedimentation. Stormwater discharges from the project site to a separate stormwater system would be subject to the regulatory requirements of the NPDES

Phase II MS4 permit, the City's Stormwater Management Ordinance, and the City's SMR. To obtain coverage under the NPDES Phase II MS4 permit, the proposed project or variant would be required to comply with the City's Stormwater Management Ordinance and SMR to reduce postconstruction runoff by incorporating prioritized infiltration-based BMPs. RPD or, for the 700 Innes property, BUILD would be required to submit a stormwater control plan to SFPUC demonstrating how the proposed project or variant would meet the performance requirements. Through compliance with the City's Stormwater Management Ordinance, the proposed project or variant would manage runoff from the 90th-percentile, 24-hour storm, which translates to a rainfall depth of approximately 0.75 inch and a rainfall intensity of approximately 0.24 inch per hour for projects within SFPUC's jurisdiction. Compliance with City stormwater requirements would ensure that runoff from the proposed project or variant would not cause siltation at shoreline recreation facilities.

### **India Basin Shoreline Park Property**

The India Basin Shoreline Park property currently has a picnic area, playground, a basketball court, landscaping, and a portion of the Blue Greenway/Bay Trail. Vehicular access in the park is provided via Hunters Point Boulevard. Hawes Street has designated parking areas and ends at a cul-de-sac and drop-off area. The property consists primarily of pervious areas in the form of wetlands and upland plantings. The existing surface parking, vehicular access, and drop-off and loading zones may be improved as part of the proposed project or variant. As part of the planning and design process, RPD would study the feasibility of creating new wetlands along the shoreline. Implementing the proposed project or variant would result in an increase in impervious area totaling 0.25 acre. Stormwater runoff from new impervious areas would be managed via swales and/or bioretention ponds before being discharged to the Bay and would conform to the City's stormwater management requirements and the SWRCB's 'trash amendments'.

### **900 Innes Property**

The 900 Innes property currently consists of seven parcels totaling 2.4 acres, 0.6 acre of which is submerged. The property contains six buildings and structures totaling approximately 7,760 sq. ft. With implementation of the proposed project or variant, the 900-gsf Shipwright's Cottage (900 Innes Avenue) and a structure in the location of the former Boatyard office building would remain, and the remaining structures would be demolished for development of the parcels into a waterfront park.

The proposed RPD development would be constructed to a LEED Gold rating or equivalent. Bicycle, pedestrian, and vehicular access to the shoreline would be provided, in addition to parking, for a total of approximately 0.67 acre of new impervious area. Stormwater runoff from new impervious areas would be managed via swales and/or bioretention ponds before being discharged to the Bay and would conform to the City's stormwater management requirements and the SWRCB's 'trash amendments'.

### **India Basin Open Space Property**

The 6.2-acre India Basin Open Space property currently contains benches, upland habitat, tidal salt marsh, mudflats, sand dunes, native vegetation, and offshore eelgrass beds.<sup>9</sup> The tidal salt marsh occupies 2.5 acres of the

---

<sup>9</sup> According to a recent site visit, no eelgrass was observed on the project site; however, there is potential for eelgrass. See Chapter 3.14 Biological Resources.

property. The India Basin Open Space property also includes a portion of the Blue Greenway/Bay Trail along its shoreline. With the proposed project or variant, this property would remain in a natural state with some enhancements for public access, recreation, and ecological function. Enhancements could include sand dunes, bird islands, a recreational beach area, a bioengineered breakwater, brackish lagoons, scrub upland planting, tree stands for wind buffering, and new wetlands and ponds, none of which would result in a substantial increase in impervious area. An existing drainage outfall extending into the Bay would also be removed. Pathways, in the form of boardwalks, trails, and stairways for the Blue Greenway/Bay Trail, and a 2,000-gsf building for commercial uses (cafe, maintenance facility, rentals, concessions) may result in some compaction; however, the increase in impervious area would be minimal.<sup>10</sup>

### **700 Innes Property**

#### *Proposed Project*

The 700 Innes property is currently primarily undeveloped, except for six buildings and structures located along Innes Avenue. Arelious Walker Drive is a paved street that runs north to south and roughly bisects the 700 Innes property, ending in a cul-de-sac. With implementation of the proposed project, the 700 Innes property would include the “Big Green” open space area and would provide approximately 4.66 acres of publicly accessible open space, including pedestrian-focused pathways, streets, and plazas. The proposed development would also include approximately 3.22 acres of open space for shared use by residents and private open space (courtyards, roof decks, private decks, and patios for residents), some of which would be pervious. In total, the proposed project would increase the impervious area at the 700 Innes property by approximately 14.2 acres relative to existing conditions, resulting in an estimated increase in the peak runoff rate of 69 percent (Sherwood, 2016). The proposed stormwater facilities (described in Impact UT-2 in Section 3.12, “Utilities and Service Systems”) would conform to the City’s stormwater management requirements to capture and treat the increased total runoff from this property and would be designed to meet the SWRCB’s ‘trash amendments’.

#### *Variant*

The variant would provide approximately 0.6 acre less of publicly accessible open space and 0.5 acre less of open space for shared resident use than the proposed project. The pervious-to-impervious ratio is expected to be the same for the variant as for the proposed project: Impervious area at the 700 Innes property would increase by 14.2 acres relative to existing conditions, resulting in an estimated increase in the peak runoff rate of 69 percent (Sherwood, 2016). Similar to the proposed project, the stormwater facilities proposed for the variant would conform to the City’s stormwater management requirements and would be designed to meet the SWRCB’s ‘trash amendments’.

### **Overall Operational Impact Conclusion**

Stormwater facilities under the proposed project or variant would conform to the City’s stormwater management requirements. Therefore, under either the proposed project or the variant, the operational impact related to

---

<sup>10</sup> The 2,000 India Basin Open Space concessions building would be constructed on the Big Green within the 700 Innes property boundary to serve the improved India Basin Open Space.

alteration of the existing drainage pattern or a substantial increase in the rate or amount of surface runoff would be *less than significant*. No mitigation measures are necessary.

**Impact HY-3: The proposed project or variant would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, and the project would not otherwise degrade water quality. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation related to runoff water exceeding the capacity of existing or planned stormwater drainage systems, providing substantial additional sources of polluted runoff, or otherwise degrading water quality. The respective impacts described below would occur under either the proposed project or the variant.

### ***Construction***

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Short-term impacts of project construction under the proposed project or variant as they relate to stormwater management and polluted runoff are discussed above under “Construction” in the analysis of Impact HY-1 and would be *less than significant with mitigation* for the entire project site.

### ***Operation***

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Stormwater drainage infrastructure would be installed underground throughout the project site to treat stormwater on-site for release into the Bay, and would not contribute stormwater to the City’s combined sewer system. This newly planned and sized separate stormwater infrastructure would be designed to satisfy the stormwater runoff requirements of the proposed project or variant and meet the requirements of the City’s Stormwater Management Ordinance and the SWRCB’s ‘trash amendments’. The project site would be designed with LID concepts and stormwater management systems to comply with the SMR. Compliance with the SMR would ensure that stormwater generated at the project site is managed on-site to meet the performance requirements. Stormwater runoff from the proposed project or variant would not be connected to the combined sewer system, and therefore, would not contribute stormwater runoff to the City’s combined sewer system.

#### **India Basin Shoreline Park Property**

Swales and/or bioretention ponds would manage stormwater runoff from new impervious areas on the India Basin Shoreline Park property in accordance with the SFPUC storm drainage code and in conformance with the City’s stormwater management requirements and the SWRCB’s ‘trash amendments’. The property would be broken down into two subbasins for stormwater management. Runoff from the northern subbasin would utilize the existing stormwater outfall near the turnaround and the southern subbasin would require a new stormwater outfall. These facilities would not contribute stormwater runoff to the City’s combined sewer system.

**900 Innes Property**

Swales and/or bioretention ponds would manage stormwater runoff from new impervious areas on the 900 Innes property in accordance with the SFPUC storm drainage code and in conformance with the City's stormwater management requirements. A new stormwater outfall would be jointly used by the 900 Innes property and the adjacent 700 Innes property (MKA, 2016a) and would not contribute stormwater runoff to the City's combined sewer system.

**India Basin Open Space Property**

It is assumed that the wetlands, marshes, and sand dunes on the India Basin Open Space property would be self-treating in terms of stormwater and would enable water to overland flow into the Bay.

**700 Innes Property**

The proposed project or variant would implement a stormwater management system on the 700 Innes property, with the goal of retaining and reusing some of the stormwater captured on-site. The variant would include the same stormwater management system as described for the proposed project, which would be sized for the level of development included in the variant.

The proposed project or variant would also treat and discharge stormwater via outfalls to the Bay and would be designed to meet SWRCB's 'trash amendments'. Stormwater from the 700 Innes property would be treated in centralized and decentralized bioretention areas, sized in accordance with SFPUC and San Francisco Bay RWQCB requirements, then would be discharged to the Bay. The treatment areas are expected to be located in internal courtyards and private open space and would be lined with underdrains to address geotechnical concerns (liquefaction and lateral spreading) caused by the presence of fill in the lower portions of the site. In accordance with SFPUC guidelines, the project is expected to need 1 to 1.2 acres (4–5 percent of the total project site) for biofiltration (Sherwood, 2016). In addition, as part of the proposed project or variant, stormwater may be captured, treated, and reused as a nonpotable water source on-site to meet requirements of the Nonpotable Water Ordinance.

Storm drain improvements under the proposed project or variant would comply with the City's 2015 Subdivision Regulations. Conveyance infrastructure (pipes, channels, swales) would be sized for the 5-year event and overflows would bypass treatment and would be discharged directly to the Bay. Flows from a 100-year event would be routed safely overland through the property to the Bay. Although a section of the 700 Innes property is located in a separate sewer area, the entire proposed project and variant proposes to have a system regulated as a separate storm sewer area and follow the MS4 requirements. The proposed project and variant would include new stormwater infrastructure that would treat stormwater on-site for release into the Bay and would not contribute stormwater to the City's combined sewer system. This would require a preliminary concurrence from SFPUC before submission and approval by the San Francisco Bay RWQCB. The proposed stormwater facilities would be operated in conformance with the City's stormwater management requirements and would not contribute stormwater to the City's combined sewer system.

### **Overall Operational Impact Conclusion**

The stormwater facilities under the proposed project or variant would be operated in conformance with the City's stormwater management requirements and would not contribute stormwater to the City's combined sewer system. Thus, under either the proposed project or the variant, the operational impact related to creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or otherwise degrade water quality, would be *less than significant*. No mitigation measures are necessary.

#### **Impact HY-4: The proposed project or variant would not place within a 100-year flood hazard area structures that would impede or redirect flood flows. (*Less than Significant*)**

The following impact discussion describes the potential impacts of the proposed project or variant related to placement within a 100-year flood hazard area of structures that would impede or redirect flood flows. The respective impacts described below would occur under either the proposed project or the variant.

#### ***Construction***

##### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Impacts related to placement of structures that would impede or redirect flood flows within a 100-year flood hazard area are limited to operational impacts; see the discussion below.

#### ***Operation***

Operation of the proposed project or variant would include the presence of new piers, docks, beaches, and shoreline modifications within the 100-year flood hazard area. As stated previously, there are no streams or rivers at the project site. All inhabited buildings proposed as part of the proposed project or variant would be located outside of the 100-year flood hazard area. The proposed recreation facilities (piers, docks, beaches) on and along the Bay would not be expected to impede or redirect flood flows.

##### **India Basin Shoreline Park Property**

The 100-year flood zone on the India Basin Shoreline Park property (Figure 3.15-2) extends up to 10 feet and would include the new gravel shoreline area and facilities in and over the water. An approximately 12-foot-wide by 480-foot-long pier would be constructed on piles at the India Basin Shoreline Park property. Directly adjacent to this pier, a 50-foot by 100-foot floating dock is proposed that would feature an ADA-accessible boat launch area that would allow access to the Bay by hand-powered boats. The riprap edge would also be replaced with tidal wetlands. The wetlands would be created on the land side during low tide. The piers, dock, and gravel shoreline area at the end of the Marineway lawn would be located within the 100-year flood hazard area. The piers and dock would be designed to float above the 100-year floodwaters and rise with the floodwaters (Conover, pers. comm., 2016). None of the proposed project or variant components in the 100-year flood hazard area would impede or redirect flood flows.

**900 Innes Property**

On the 900 Innes property, the 100-year flood zone extends up to 10 feet and would include the facilities in and over the water, but not the buildings proposed for the site. RPD would replace two piers, one 12 feet wide and 125 feet long and another one that is nearly collapsed into the Bay, both located within the 100-year flood hazard area. One replacement pier is proposed to be approximately 12 feet wide and 120 feet long, and the other is proposed to be approximately 18 feet wide and 50 feet long. An eroded marine byway, adjacent to the shoreline edge of the Bay, would also potentially be enhanced. The piers are anticipated to be constructed on piles, and would be used solely for pedestrian access with minor furnishings such as benches. There would be no boat access on any of the 900 Innes piers. The renovated/replaced piers, an existing concrete dock, an ADA-accessible ramp, and most of the India Basin Scow Schooner Boatyard artifact area would be located in the 100-year flood hazard area. None of these components would impede or redirect flood flows.

**India Basin Open Space Property**

The India Basin Open Space property, at up to 12 feet NAVD88, is located in the 100-year flood hazard area. BUILD may replace a portion of the riprap edge with tidal wetlands along the shoreline of this property. The wetlands would be created on the land side during low tide. A beach area, wetlands, grassy areas, and pedestrian paths would be located in the 100-year flood hazard area. These components would not impede or redirect flood flows.

**700 Innes Property**

Development of the 700 Innes property under either the proposed project or the variant would not include any structures located within the 100-year flood hazard area that would impede or redirect flood flows (see Figure 3.15-2). Only some wetland areas on the 700 Innes property would be located in the 100-year flood hazard area.

**Overall Operational Impact Conclusion**

All inhabited buildings proposed as part of the proposed project or variant would be located outside of the 100-year flood hazard area. Project operation would include the presence of new piers, docks, beaches, and shoreline modifications within the 100-year flood hazard area; however, these facilities would not be expected to impede or redirect flood flows. Therefore, under either the proposed project or the variant, the operational impact related to structures within a 100-year flood hazard area that would impede or redirect flood flows would be *less than significant*. No mitigation measures are necessary.

**Impact HY-5: The project site is subject to flooding from tsunami inundation, but the proposed project or variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project. The project site is not subject to inundation by mudflows or a seiche. (*Less than Significant*)**

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

The effects on the proposed project or variant related to flooding and inundation from seiches, tsunami, or mudflow are limited to project operation; see the discussion below.

### *Operation*

In addition to the flood hazards described below, flood hazards associated with sea-level rise are of concern near shorelines. A discussion of potential sea-level rise effects on the proposed project or variant is included below in the discussion of Impact HY-6.

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

### *Flooding*

The four properties at the project site are not vulnerable to risks from flooding caused by dam or levee failure. The project site's estimated 100-year base flood elevation, the elevation to which floodwaters are anticipated to rise during the 1-percent-annual-chance flood event, is between 10 and 12 feet NAVD88 (M&N, 2015; FEMA, 2015). The typical range estimated for the Bay's shoreline is 5–7 feet for tides, -0.5 foot to 3 feet for storm surge, and 1–4 feet for storm waves (SFSFLRC, 2015). Thus, under either the proposed project or the variant, people and habitable structures on the four project site properties would not be affected by a 100-year flood.

### *Seiche*

With regard to a potential seiche, a seiche-inducing earthquake similar to the 1906 earthquake, which registered 8.3 on the Richter scale and resulted in a 4-inch seiche, is likely on the larger end of what is anticipated to occur in the Bay Area. Consequently, a seiche larger than 4 inches is considered unlikely. A four-inch seiche would be within the normal tidal range of over 2.4 feet (between mean low or high tide and mean tide level) (M&N, 2017). Therefore, the four project site properties are not subject to inundation from a seiche. Under either the proposed project or the variant, people and habitable structures at all four project site properties would not be affected by flooding due to a seiche.

### *Tsunami*

Portions of the project site could be subject to flooding or inundation by tsunami, but no inhabited structures would be located in the tsunami inundation zone, and the finished grade elevations for project structures and their distance from the shore would protect them from flooding. At the 900 Innes property, where almost the entire existing site is within the tsunami inundation zone, the buildings associated with the proposed project or variant would be at elevations above 15 feet, well above the potential "worst-case" tsunami runup of 3.77 feet



(San Francisco, 2011) (6.97 feet if accounting for msl at the site of 3.2 feet). Facilities within the tsunami inundation zone would include piers, docks, beaches, an ADA-accessible ramp, pedestrian paths, a boardwalk, a beach deck, and the eastern end of the Bay Trail. The Tsunami Warning System would notify the public, including recreationists, of any imminent hazards from tsunami or seiche, minimizing the risk of injury or death to people involving flooding or inundation.

Several factors could exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding:

- lowering of a site's elevation or promotion of substantial shoreline erosion, both of which would expose additional areas to flooding;
- additional stormwater or other discharge of water that would provide additional floodwater; and
- construction of structures within the Bay that would alter water and wave flows and channel water towards the shoreline, which could result in flooding and erosion.

The proposed project and variant would not include additional stormwater discharges or other discharges that would increase the frequency or severity of flooding. As discussed in Impact HY-1, stormwater would be managed in compliance with the City's SMR; therefore, the proposed project or variant would not contribute additional floodwater to the project area.

The proposed project and variant include in-water improvements such as piers and docks. These facilities would have minimal in-water presence (piles only), which would not alter patterns of water or wave circulation or channel water or waves toward the shoreline, potentially causing flooding and erosion. Such changes in water and wave patterns could result from more significant in-water facilities such as a breakwater or seawall. The removal of existing piles would also not contribute to changes in water/wave circulation, as these piles are small and do not contribute significantly to water or wave flow patterns.

Shoreline improvements under the proposed project and variant include tidal wetlands and beaches. The tidal wetlands, in particular, would help reduce potential flooding and damage from a tsunami by attenuating wave energy, resulting in lower waves with less erosive force (Mount and Lowe, 2014). As noted in Mount and Lowe (2014), the presence of tidal wetlands between the developed shoreline and the open waters of the Bay improves flood risk management.

Under the proposed project and variant, proposed beaches would not be located within strong erosional currents. The beach proposed for the India Basin Shoreline Park property would be in an area where the wave-current field is dynamic and the shoreline is stable. Therefore, the beach would not be expected to experience substantial erosion during a tsunami and expose additional areas to flooding. The beach proposed for the India Basin Open Space property would be in an area with weak wave-induced erosional currents that are incapable of moving coarse (sand or gravel) sediments (M&N, 2017). Therefore, substantial erosion from tsunami waves and flooding would not be expected at this location.

Overall, the shoreline improvements under the proposed project and variant would not exacerbate flooding or expose new areas to flooding, but would help attenuate waves and reduce wave impacts from a tsunami.

### *Mudflow*

The project site is relatively flat and is isolated from adjacent, more hilly areas that are primarily landscaped, vegetated, or developed with paved roadways. In addition, lands adjacent to and upland from the project site are landscaped, vegetated, and/or developed and separated from the project site by the paved Innes Avenue and Hunters Point Boulevard.

Because the physical conditions required for a mudflow are not present, mudflow would not pose a risk to the project site. Thus, under either the proposed project or the variant, the people and habitable structures at all four project site properties would not be affected by mudflow.

### **Overall Operational Impact Conclusion**

Under the proposed project and variant, people and habitable structures would not be affected by a 100-year flood. The project site properties are not subject to inundation from a seiche or mudflow. Although the project site is subject to flooding from a tsunami, the proposed project and variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project. Therefore, under either the proposed project or variant, the operational impact would be *less than significant*. No mitigation measures are necessary.

**Impact HY-6: The project site is subject to flooding from sea-level rise, but the proposed project or variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project. (*Less than Significant*)**

### ***Construction***

Potential effects related to flooding and inundation from sea-level rise are limited to project operations; see the analysis below.

### ***Operation***

The water surface elevation of the Bay would be affected by future sea-level rise and future sea-level rise may increase the chance of flooding on the project site.

To evaluate the effect of flooding caused by sea-level rise on the project site, the following scenarios were used and are representative of the inundation that could occur by the years 2050 and 2100 based on NRC's projected and high estimates of sea-level rise, and considering a 1 percent annual flood hazard area. The sea-level rise scenarios include:

- MHHW plus 12 inches of sea-level rise (representative of NRC's projected sea-level rise by 2050);
- MHHW plus 36 inches of sea-level rise (representative of NRC's projected sea-level rise by 2100);
- 1 percent annual flood hazard area in combination with 24 inches of sea-level rise (representative of NRC's high estimate of sea-level rise by the year 2050); and
- 1 percent annual flood hazard area in combination with 66 inches of sea-level rise (representative of NRC's high estimate of sea-level rise by the year 2100).

Table 3.15-4 summarizes MHHW under current conditions and the four sea-level rise scenarios used in this analysis (described above). For the 2050 and 2100 sea-level rise scenarios that include temporary flooding in the 1 percent annual flood hazard area, the flood hazard area was developed by determining the 1-percent-annual-chance wave runup based on 25-year and 10-year return wave conditions and the Van de Meer equation, resulting in total water levels for five locations in the project area (Table 3.15-5). The calculated 1 percent annual flood hazard area is the same as the current preliminary FEMA base flood elevation for the northeastern shoreline of the India Basin Open Space and 900 Innes property, and 1–2 feet higher than the preliminary FEMA base flood elevation for the India Basin Shoreline Park property and India Basin Open Space’s northwestern shoreline (M&N, 2017).

**Table 3.15-4: Elevation of Various Sea-Level Rise Scenarios in the Project Area**

	<b>Current MHHW</b>	<b>MHHW + 12 Inches (projected sea-level rise by 2050)</b>	<b>MHHW + 36 Inches (projected sea-level rise by 2100)</b>	<b>1% Annual Flood Hazard Area + 24 Inches (high estimate of sea-level rise by 2050)</b>	<b>1% Annual Flood Hazard Area + 66 Inches (high estimate of sea-level rise by 2100)</b>
Feet	6.5	7.5	9.5	12 to 14*	15.5 to 17.5*
Inches	78	90	114	144 to 168*	186 to 210*

Notes:

MHHW = mean higher high water

\* The elevation of the 1% flood hazard area varies within the project area. See Table 3.15-5 for 1% annual flood hazard area elevations by portion of the project area.

Source: M&N, 2017

**Table 3.15-5: 1% Annual Flood Hazard Elevation by Location in the Project Area**

<b>Location in the Project Area</b>	<b>1% Annual Flood Hazard Area (feet NAVD88)</b>	<b>FEMA Base Flood Elevation (feet NAVD88)</b>
India Basin Shoreline Park northern marsh area	12	10
India Basin Shoreline Park gravel shoreline area	11	10
India Basin Shoreline Park southern marsh area	12	10
900 Innes property	10	10
India Basin Open Space northwestern shoreline	11	10
India Basin Open Space northeastern shoreline	12	12

Notes: FEMA = Federal Emergency Management Agency; NAVD88 = North American Vertical Datum of 1988

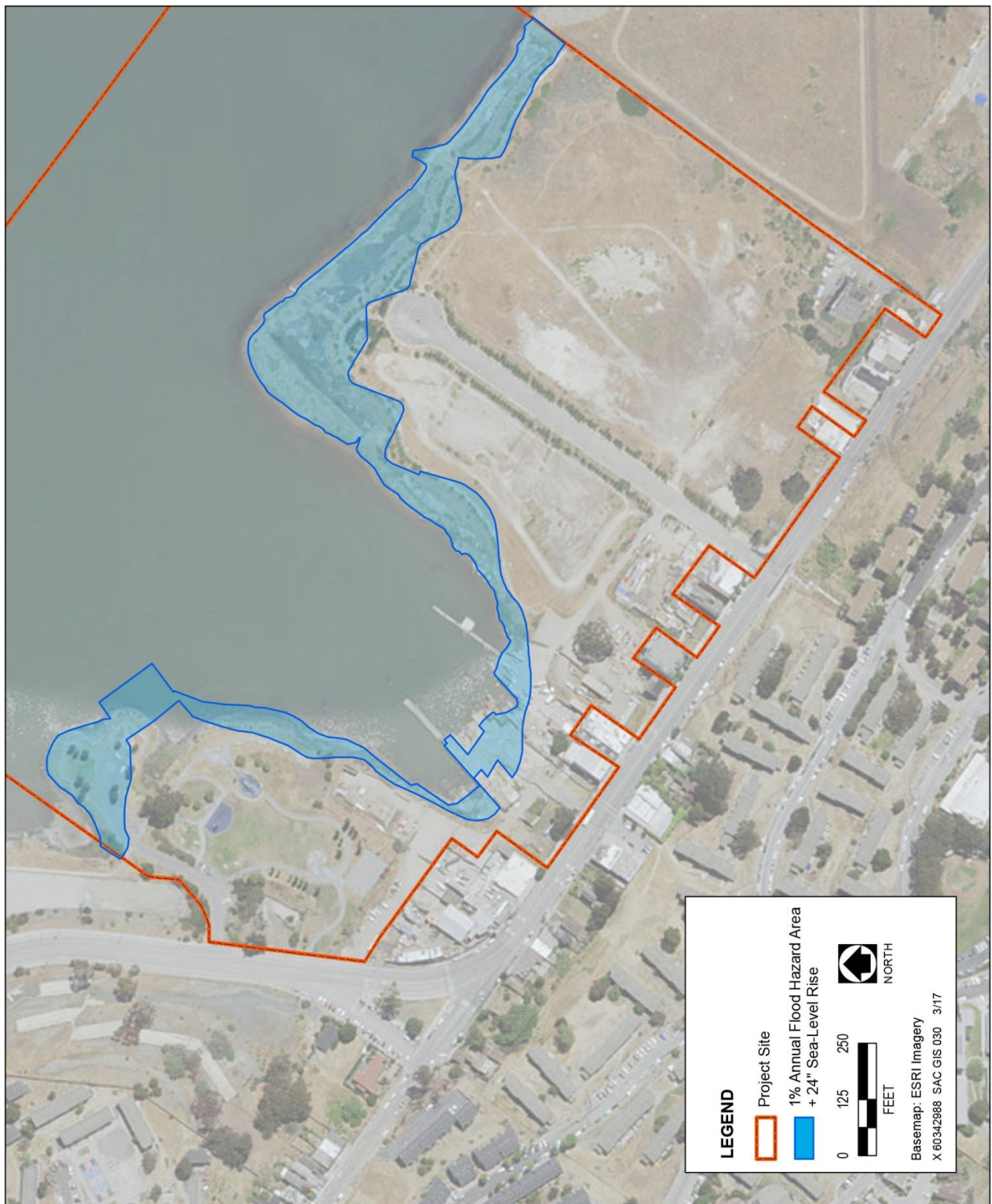
Source: M&N, 2017

Figures 3.15-4 through 3.15-7 show the four sea-level rise scenarios listed above and identify the areas of each project site property, under proposed elevations, that would be inundated with each sea-level rise scenario. Figures 3.15-6 and 3.15-7 show the worst-case scenario—the highest estimate of sea-level rise in combination with temporary flooding from a 1 percent annual flood.



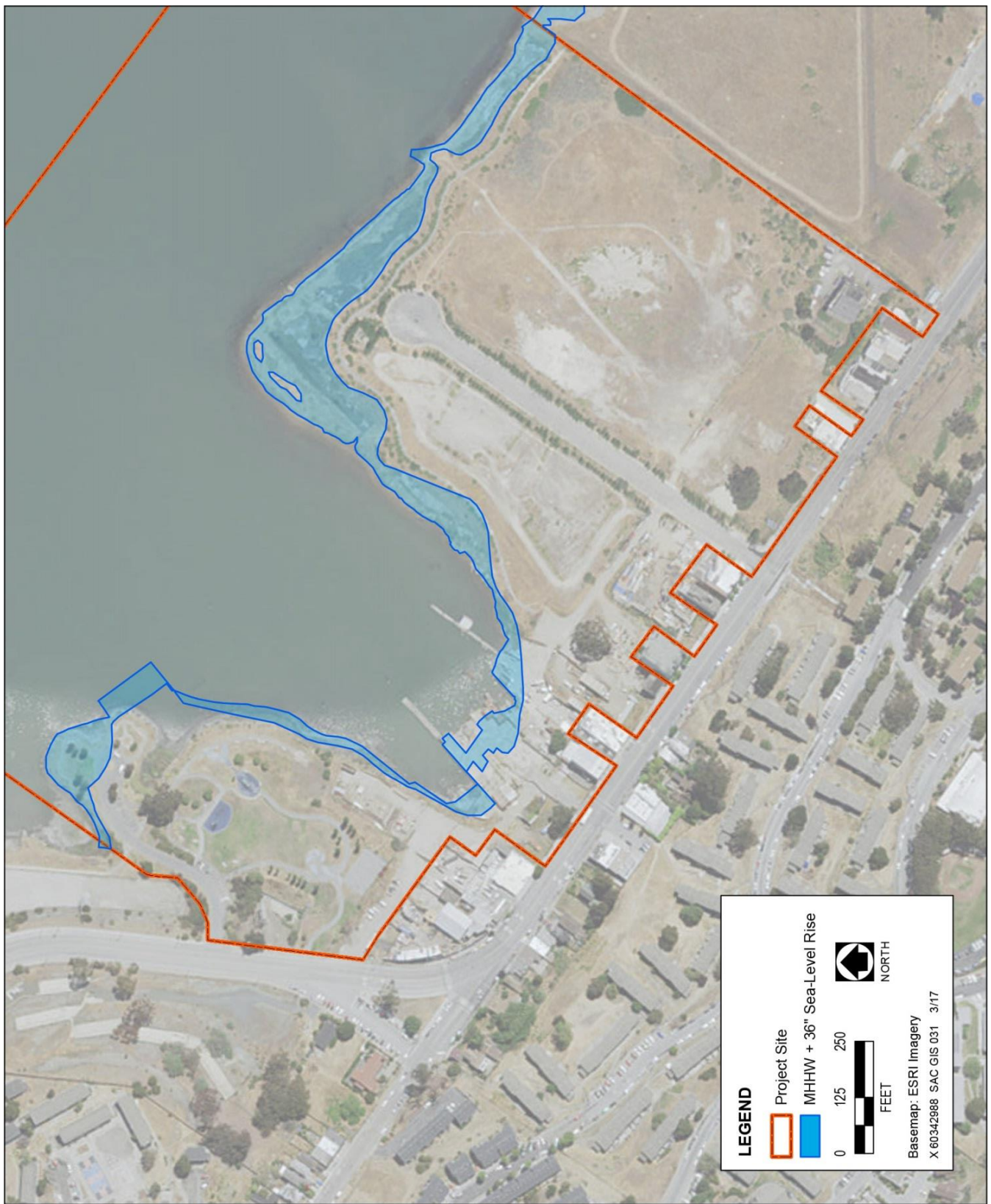
Source: M&N, 2017

**Figure 3.15-4: Projected Sea-Level Rise by 2050 (Mean Higher High Water plus 12 Inches)**



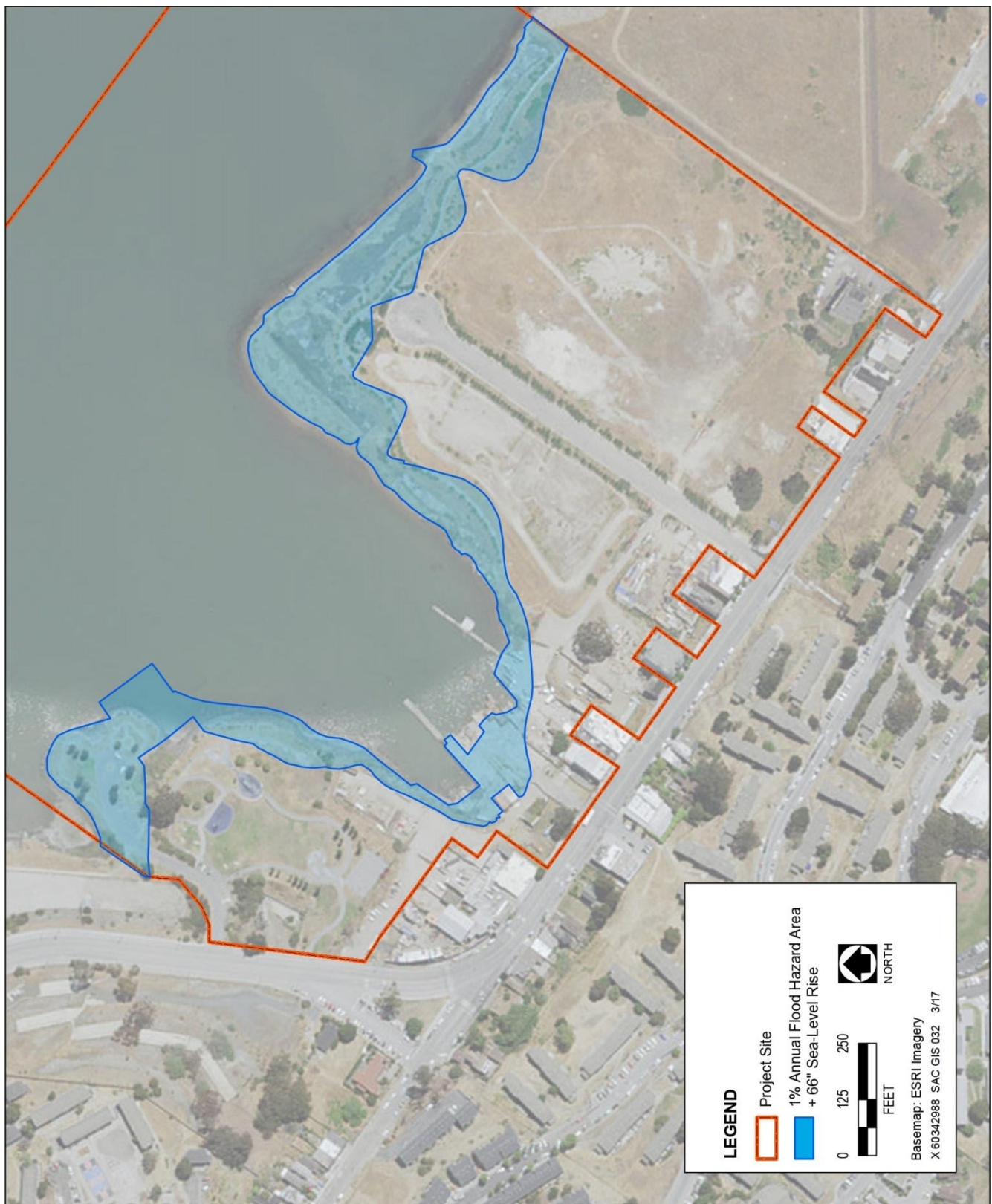
Source: M&N, 2017

**Figure 3.15-5: 1% Annual Flood Hazard Area plus 24 Inches (High Estimate of Sea-Level Rise by 2050)**



Source: M&N, 2017

**Figure 3.15-6: Projected Sea-Level Rise by 2100 (Mean Higher High Water plus 36 Inches)**



Source: M&N, 2017

**Figure 3.15-7: 1% Annual Flood Hazard Area plus 66 Inches (High Estimate of Sea-Level Rise by 2100)**

In addition to sea-level rise, other shoreline processes would affect the future sea level at the project site properties. Substantial shoaling has occurred well offshore of the present shorelines of the project site properties in response to the construction of Pier 98 and Heron's Head Park: 1–2 feet of shoaling in the nearshore areas of the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties since 1954 and 3–4 feet of shoaling since 1954 in part of the India Basin Open Space area. Long-term shoaling rates in most of India Basin generally range between 0 and 2 inches per year.

Sedimentation also occurs in India Basin, with long-term rates of 0–2 inches per year for the shallow areas and 2–4 inches per year for the deeper portions farther offshore. These sedimentation rates would be expected to continue, although sediment supply in the Bay has been greatly reduced in recent decades, so future sedimentation rates are likely on the low end of this range.

Although these other processes would also occur in conjunction with sea-level rise in the future and may lessen the increase in shoreline elevation (caused by sea-level rise), the following analysis employs an elevation-increase approach to sea-level rise flooding effects as a worst-case flooding scenario.

As described under Impact HY-5, the proposed project and variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project. Although in-water and shoreline facilities such as piers, docks, and beaches would be inundated by sea level rise, these facilities would not alter wave/water circulation and flows and would not promote substantial shoreline erosion. Other facilities would also be inundated by sea level rise, including paths, an ADA-accessible ramp, artifact area, grassy areas, wetlands, and a beach deck. These facilities are primarily flat and would not channelize sea-level rise waters and propel water further up in elevation during storm surges, resulting in additional areas of or more severe flooding.

Overall, although some project features at the project site properties may be inundated by sea-level rise, the proposed project or variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project.

For a discussion of impacts of future sea-level rise on habitats (e.g., mudflat, low marsh, high marsh, transition zone, and upland), see Section 3.14, "Biological Resources."

### **India Basin Shoreline Park Property**

Facilities at the India Basin Shoreline Park property that would be inundated by 2050 as a result of sea-level rise include the pier, the dock/platform, the beach, portions of some pedestrian paths, and a portion of the Marineway path. The pier would be both fixed and floating and the dock/platform would be floating. The fixed pier and Marineway path would be sited and designed such that sea-level rise would not affect the planned uses over their 50-year design life. Beyond the 50-year design life of the pier and path, future project designs would need to incorporate the appropriate sea level at the time into design to address these anticipated effects. The floating dock/platform would be secured via fixed guide piles, which would allow the dock/platform to float as sea level rises and during storm surges (Devick, pers. comm., 2016). Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2050, additional portions of pedestrian paths and a larger portion of the Marineway would be temporarily inundated.



Facilities at the India Basin Shoreline Park property that would be inundated by 2100 as a result of sea-level rise include the pier, the dock/platform, beach, portions of some pedestrian paths, and a portion of the Marineway path. It is presumed that, as described above, the dock/platform would float above the rising sea level/storm surge, and that the fixed pier and Marineway path may need additional design changes to accommodate sea-level rise. Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2100, the kayak concessions, portions of the Bay Trail near the southern shoreline, the parking area, a larger portion of the Marineway, and additional portions of the pedestrian paths would be temporarily inundated.

Under any of the four sea-level rise scenarios, no inhabited structures at the India Basin Shoreline Park property would be inundated by sea-level rise. However, a few recreational facilities at this property would be inundated: the Marineway path, the beach, portions of pedestrian paths, and the fixed pier.

### **900 Innes Property**

Facilities at the 900 Innes property that would be inundated by 2050 as a result of sea-level rise include the ADA-accessible ramp, the Bay Trail, the pier/floating docks, and part of the India Basin Scow Schooner Boatyard artifact area. The pier/docks would be secured via fixed guide piles, which would allow the pier/docks to float higher as sea level rises and during storm surges. The ADA-accessible ramp has been designed to accommodate sea-level rise projections over the 50-year design life and could be adapted in the future to address higher sea-level rise (Devick, pers. comm., 2016). The artifact area could be relocated uphill or into one of the buildings. The Bay Trail could also be relocated slightly uphill. Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2050, the existing concrete dock and a larger portion of the artifact area would be temporarily inundated.

Facilities at the 900 Innes property that would be inundated by 2100 as a result of sea-level rise include the pier/floating docks, the existing concrete dock, the ADA-accessible ramp, the Bay Trail, and most of the India Basin Scow Schooner Boatyard artifact area. As stated above, it is presumed that the pier and floating docks would float above the rising sea level. In conjunction, the existing concrete pier would need to be elevated, replaced, or partially removed. As described above, the artifact area could be relocated uphill or into one of the buildings and the Bay Trail could be relocated uphill. Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2100, an additional portion of the existing concrete dock and artifact area would be temporarily inundated along with some stairs, basically the area up to the base of the shop building on either side of the building.

Under any of the four sea-level rise scenarios, no inhabited structures at the 900 Innes property would be inundated by sea-level rise. However, a few recreational facilities at this property would be inundated: the ADA-accessible ramp, the Bay Trail, the artifact area, and the concrete pier.

### **India Basin Open Space Property**

Facilities at the India Basin Open Space property that would be inundated by 2050 as a result of sea-level rise include grassy areas, wetlands, the boardwalk/pedestrian paths, beach and beach deck, and the eastern end of the Bay Trail where it connects to adjacent property. Based on the elevation of the 1 percent annual flood hazard area in combination with high estimate of sea-level rise by 2050, these same facilities could be temporarily inundated,

as would most of the entire site, including a cafe, overlook, stair access to the shoreline/boardwalk, sundeck, outdoor seating, and the human-powered boat launch.

Facilities at the India Basin Open Space property that would be inundated by 2100 as a result of sea-level rise include grassy areas, wetlands, the boardwalk/pedestrian paths, beach and beach deck, and the eastern end of the Bay Trail where it connects to adjacent property. At the elevation of sea-level rise by 2100, most of the open space area would be inundated. Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2100, the entire property would be temporarily inundated, including a cafe, overlook, stair access to the shoreline/boardwalk, sundeck, outdoor seating, and the human-powered boat launch.

Under any of the four sea-level rise scenarios, no inhabited structures at the India Basin Open Space property would be inundated by sea-level rise. However, a few recreational facilities at this property would be inundated: the boardwalk/pedestrian paths, the beach deck, and the eastern end of the Bay Trail where it connects to adjacent property.

#### **700 Innes Property**

Under the proposed project or variant, no facilities at the 700 Innes property would be inundated by 2050 as a result of sea-level rise. Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2050, some pedestrian paths, wetland areas, and a portion of the Bay Trail connecting to the 900 Innes property would be temporarily inundated.

Facilities at the 700 Innes property that would be inundated by 2100 as a result of sea-level rise include some pedestrian paths. Based on the elevation of the 1 percent annual flood hazard area in combination with the high estimate of sea-level rise by 2100, additional pedestrian paths, grassy areas, and a portion of the Bay Trail connecting to the 900 Innes property would be temporarily inundated.

Under any of the four sea-level rise scenarios, no inhabited structures at the 700 Innes property would be inundated by sea-level rise. However, a few recreational facilities at this property would be inundated, including some pedestrian paths and a portion of the Bay Trail.

#### **Overall Operational Impact Conclusion**

Although the project site would be subject to flooding from sea level rise, the proposed project and variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project. Therefore, under either the proposed project or variant, the operational impact would be *less than significant*. No mitigation measures are necessary.

#### **3.15.4 Cumulative Impacts**

**Impact-C-HY-1: The proposed project and variant, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would substantially contribute to cumulative impacts related to hydrology and water quality. (*Less than Significant with Mitigation*)**

The geographic scope for cumulative impacts related to hydrology and water quality includes those areas in the project vicinity that could be subject to flooding by 2100 (MHHW plus 77 inches of sea-level rise) and drain to the Bay (the SFPUC Islais urban watershed).

### ***Flooding and Inundation***

Some of the cumulative development projects, such as the Candlestick Point–Hunters Point Shipyard project (Phases 1 and 2), would be built in areas subject to an increased risk of flooding in the future as a result of sea-level rise, resulting in a significant impact related to flooding. However, in general, existing regulations and requirements require site-specific actions for projects within the 100-year flood zone to protect against increasing flood levels and placing people or structures at risk of flood flows.

All inhabited buildings proposed as part of the proposed project or variant would be located outside of the 100-year flood hazard area. Project operation would include the presence of new piers, docks, beaches, and shoreline modifications within the 100-year flood hazard area; however, these facilities would not be expected to impede or redirect flood flows. As described above, the project site is subject to flooding from tsunami and sea-level rise; however, the proposed project and variant would not exacerbate the frequency or severity of flooding or cause flooding in areas that otherwise would not be subject to flooding without the project. Therefore, the proposed project or variant would not contribute to any potential cumulative impacts related to increased flood levels, and such cumulative impacts would be *less than significant*. No mitigation measures are necessary.

### ***Hydrology, Erosion, and Water Quality***

Development of the proposed project, combined with other reasonably foreseeable development projects in the vicinity, could increase the rate and volume of stormwater runoff if there were an overall increase in impervious surfaces. Other development could also affect water quality if the land use changes, the intensity changes, and/or drainage conditions were altered to facilitate the introduction of pollutants to surface waters. Thus, there could be a significant cumulative effect related to hydrology and water quality.

The proposed project or variant would comply with regulatory requirements and would include design measures (separate stormwater infrastructure, swales, bioretention areas) that would reduce significant hydrology and water quality impacts to be *less than significant with mitigation*.

Compliance of the proposed project or variant with construction-related water quality regulations, preparation and implementation of a SWPPP, and implementation of Mitigation Measures M-HY-1a, M-HY-1b, and HY-1c would avoid and minimize water quality impacts during construction because BMPs would be implemented as required to protect receiving water quality and hazardous materials would be handled, stored, and disposed of appropriately. Thus, cumulative impacts related to erosion and water quality during construction of the proposed project or variant would be *less than significant with mitigation*.

Either the proposed project or the variant would be required to comply with all stormwater management policies and regulations adopted by the City and the San Francisco Bay RWQCB (NPDES Construction General Permit; NPDES Phase II MS4 Permit; and the City's Stormwater Management Ordinance, 2015 Subdivision Regulations, and SMR). This would ensure that the proposed project or variant would manage runoff to avoid substantially increasing the rate or amount of surface runoff and to ensure that the discharge of stormwater pollutants to the

Bay would not increase. Compliance with the SMR would ensure that stormwater generated at the project site would be managed on-site to meet performance requirements. Stormwater runoff from either the proposed project or the variant would not be connected to the combined sewer system, and therefore, would not contribute stormwater runoff to the City's combined sewer system. All new development would also have to comply with all stormwater management policies and regulations adopted by the City and the San Francisco Bay RWQCB.

Cumulative development projects would be required to follow regulations similar to those described for the proposed project and variant, including regulations related to water quality, stormwater, wastewater, and construction dewatering. Therefore, the proposed project or variant would not contribute to any potential cumulative impacts related to hydrology or water quality, and such cumulative impacts would be *less than significant*. No mitigation measures are necessary.

### 3.15.5 References

BKF Engineers (BKF). 2016 (November 2). *India Basin—Water Demands*. Memorandum.

California Coastal Commission (CCC). 2015 (August 12). *California Coastal Commission Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*. San Francisco, CA.

California Emergency Management Agency, California Geological Survey, and University of Southern California Tsunami Research Center (CalEMA et al.). 2009 (June 15). *Tsunami Inundation Map for Emergency Planning*, San Francisco. Scale: 1:36,000. Sacramento, CA.

Conover, Levi. Project Manager. San Francisco Recreation and Parks Department, San Francisco, CA. September 29, 2016—personal communication (e-mail) with Elliott Schwimmer, Anne Ferguson, and Kelsey Bennett of AECOM regarding discharge of dewatering water.

Devick, Christopher. Coastal Engineer. Moffatt & Nichol, Walnut Creek, CA. October 7, 2016—personal communication (e-mail) with Courtney Pash of BUILD regarding design of project elements for protection against flood flows and sea-level rise.

Federal Emergency Management Agency (FEMA). 2015 (November 12). *Preliminary National Flood Insurance Program Flood Insurance Rate Maps, Map Numbers 0602980232A and 0602980251A*. Washington, DC.

———. 2017 (February 24). *Base Flood Elevation*. Available: <https://www.fema.gov/base-flood-elevation>. Accessed February 24, 2017.

Knecht, Ellie. Ecologist. WRA Environmental Consultants, Emeryville, CA. September 30, 2016—personal communication (e-mail) with Kelsey Bennett of AECOM regarding hydrology questions.

Leys, John, P.E., LEED AP. Partner, Sherwood Design Engineers, San Francisco, CA. October 3, 2016—personal communication (e-mail) with Elliott Schwimmer of AECOM regarding wastewater treatment and reuse associated with the project site.

Magnusson Klemencic Associates (MKA). 2016a (August 19). *India Basin Park Concept Design*. Technical memorandum. Seattle, WA.

- . 2016b (July 14). Survey calculations for pervious and impervious areas—India Basin Shoreline Park and 900 Innes, Existing and Proposed Project. Seattle, WA.
- Moffatt & Nichol (M&N). 2015 (September). *India Basin Waterfront Parks Project Coastal Processes Study, San Francisco, California*. Prepared for BUILD Inc. and The Trust for Public Land.
- . 2017 (March). India Basin Waterfront Parks and Open Space Coastal Processes and Shoreline Improvements report and GIS data. Prepared for BUILD Inc.
- Mount, J., and J. Lowe. 2014. Flooding in San Francisco Bay: Risks and Opportunities. Sacramento, CA: Resources Legacy Fund. Available: [http://sfbayrestore.org/docs/Sea\\_Level\\_Rise\\_report\\_Jan2014.pdf](http://sfbayrestore.org/docs/Sea_Level_Rise_report_Jan2014.pdf).
- National Research Council (NRC). 2012. *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past Present and Future*. Committee on Sea Level Rise in California, Oregon, and Washington, Board on Earth Sciences and Resources and Ocean Studies Board, Division on Earth and Life Studies. Washington, DC: The National Academies Press.
- San Francisco, City and County of (San Francisco). 2011 (March). *City and County of San Francisco Emergency Response Plan: An Element of the CCSF Emergency Management Program. Tsunami Response Annex*. San Francisco, CA.
- . 2012 (October). *San Francisco General Plan, Community Safety Element*. San Francisco, CA.
- . 2016 (March). *San Francisco Sea Level Rise Action Plan*. San Francisco, CA.
- San Francisco Bay Conservation and Development Commission (BCDC). 1998 (August). *Long-Term Management Strategy for Bay Area Dredged Material, Final Environmental Impact Statement/Environmental Impact Report*.
- San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB). 2013. Order No. R2-2013-0029 and NPDES No. CA0037664, *Waste Discharge Requirements for the City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facility, Bayside Wet Weather Facilities, and Wastewater Collection System*. Adopted August 13, 2013.
- San Francisco Department of Emergency Management (SFDEM). 2014 (November 4). *City and County of San Francisco Hazard Mitigation Plan: An Element of the CCSF Emergency Management Program*. San Francisco, CA.
- San Francisco Department of Technology (SFDT). 2015 (February 3). Outdoor Public Warning System Location Map. Available: <http://sfdem.org/sites/default/files/FileCenter/Documents/2851-OPWS%2020150205%20letter.pdf>.
- San Francisco Estuary Institute (SFEI). 2008. *Effects of Short-term Water Quality Impacts Due to Dredging and Disposal on Sensitive Fish Species in San Francisco Bay*. SFEI Contribution 560. Oakland, CA.

- San Francisco Public Utilities Commission (SFPUC). 2009 (April). *LID Basin Analysis Technical Memorandum: Islais Creek Drainage Basin*. Wastewater Enterprise, Urban Watershed Management Program. San Francisco, CA.
- . 2010 (March). *San Francisco Sewer System Master Plan*. Summary Report, Final Draft. San Francisco, CA.
- . 2013 (July). *Sewer System Improvement Program: Bayside Drainage Basin Urban Watershed Characterization*. Final Draft Technical Memorandum. San Francisco, CA. Prepared by Urban Watershed Assessment Team, San Francisco, CA.
- . 2014 (June). *San Francisco's Wastewater Treatment Facilities*. Fact Sheet. Available: <http://www.sfwater.org/modules/showdocument.aspx?documentid=5801>. Accessed June 21, 2016.
- . 2016a. Islais Creek Watershed. Available: <http://www.sfwater.org/Modules/ShowDocument.aspx?documentID=4544>. Accessed June 30, 2016.
- . 2016b (May). *San Francisco Stormwater Management Requirements and Design Guidelines*. San Francisco, CA.
- . 2016c. Beach Water Quality Monitoring Program. Available: <http://sfwater.org/index.aspx?page=87>. Accessed June 29, 2016.
- San Francisco Sea Level Rise Committee for the San Francisco Capital Planning Committee (SFSLRC). 2015 (December 14). *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco: Assessing Vulnerability and Risk to Support Adaptation*. Adopted by the Capital Planning Committee September 22, 2014; revision adopted by Capital Planning Committee December 14, 2015. San Francisco, CA.
- Sherwood Design Engineers (Sherwood). 2016a (September 28). *India Basin 700 Innes & India Basin Open Space—Storm Drain Design*. Memorandum to AECOM on behalf of Build SF. San Francisco, CA.
- U.S. Coast Survey. 1859. San Francisco & Vicinity. U.S. Coast Survey, Washington, D.C.
- U.S. Environmental Protection Agency (EPA). 2011. California 2010 303(3) combined list table. Available: [http://maps.waterboards.ca.gov/webmap/303d/files/2010\\_USEPA\\_approv\\_303d\\_List\\_Final\\_122311wsrcc.s.xls](http://maps.waterboards.ca.gov/webmap/303d/files/2010_USEPA_approv_303d_List_Final_122311wsrcc.s.xls). Accessed July 11, 2016.
- Western Regional Climate Center (WRCC). 2012 (October 31). San Francisco OCEANSD, California Period of Record General Climate Summary—Precipitation. Available: <http://www.wrcc.dri.edu/cgi-bin/cliGCStP.pl?ca7767>. Accessed June 29, 2016.
- . 2016a. General Climate Summary: San Francisco Richmond Station/OCEANSD (047767), Period of Record 07/01/1948 to 05/19/2016. Available: [www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7767](http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7767). Accessed June 29, 2016.

———. 2016b. General Climate Summary: San Francisco INTL AP, California (047769), Period of Record 07/01/1945 to 06/09/2016. Available: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7769>. Accessed June 29, 2016.

This page intentionally left blank.



## 3.16 HAZARDS AND HAZARDOUS MATERIALS

This section describes the existing environmental and regulatory setting related to hazards and hazardous materials and addresses the potential impacts of the proposed project and variant related to hazards and hazardous materials. Hazardous materials investigations completed for the project are presented in Appendix M of this EIR.

Comments regarding hazards and hazardous materials were received during and after the public scoping period in response to the Notice of Preparation. The comments received covered concerns about potential overloading of existing overhead power lines, toxic contamination, hazardous-waste cleanup, notification of future residents regarding hazardous waste, and effects on children and the high risk of cancer, asthma, and other health problems that exist in the community. These comments are discussed in this section.

Additional information regarding hazards and health risk related to emissions of toxic air contaminants (TACs) are addressed in Section 3.7, "Air Quality." Flooding and inundation hazards, including those related to sea-level rise, erosion, and mudflow, are addressed in Section 3.15, "Hydrology and Water Quality." Traffic-related safety hazards are addressed in Section 3.5, "Transportation and Circulation." Other geotechnical-related safety hazards, such as earthquakes, are addressed in the Geology and Soils section of the Initial Study (Appendix A).

### 3.16.1 Environmental Setting

#### Fundamentals

##### *Hazards*

This description of existing conditions focuses on hazards from fire and overhead power lines, as well as hazardous materials and wastes. A *hazard* is a situation that poses a level of threat to life, health, property, or the environment. Hazards can be dormant or potential, with only a theoretical risk of harm. However, once a hazard becomes active, it can create an emergency. A hazardous situation that has already occurred is called an *incident*. *Emergency response* is action taken in response to an unexpected and dangerous occurrence in an attempt to mitigate its impact on people, structures, or the environment. Emergency situations can range from natural disasters to hazardous-materials problems and transportation incidents.

##### *Hazardous Materials and Wastes*

Hazardous materials include but are not limited to hazardous materials, hazardous substances, and hazardous wastes as defined in Section 25501 and Section 25117, respectively, of the California Health and Safety Code. A *hazardous material* is any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released; and any material that a handler or an administering regulatory agency under Section 25501 has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment. Various properties may cause a substance to be considered hazardous, including toxicity, ignitibility, corrosivity, or reactivity.

*Hazardous waste* is any hazardous material that is to be abandoned, discarded, or recycled. Specifically, materials and waste may be considered hazardous if they are poisonous (toxic); can be ignited by open flame (ignitable);

corrode other materials (corrosive); or react violently, explode, or generate vapors when mixed with water (reactive). Soil or groundwater contaminated with hazardous materials above specified regulatory State or federal thresholds is considered hazardous waste if it is removed from a site for disposal.

The “Cortese List” is a list of known hazardous materials or hazardous waste facilities that meet one or more of the provisions of Government Code Section 65962.5, including:

- the list of hazardous waste and substances sites from the California Department of Toxic Substances Control’s (DTSC’s) EnviroStor database (DTSC, 2016);
- the list of leaking underground storage tank sites by county and fiscal year from the State Water Resources Control Board’s (SWRCB’s) GeoTracker database (SWRCB, 2016);
- the list of solid waste disposal sites identified by the SWRCB with waste constituents exceeding hazardous waste levels outside the waste management unit (CalEPA, 2016a);
- the list of active cease-and-desist orders and cleanup and abatement orders from the SWRCB (CalEPA, 2016b); and
- the list of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, as identified by DTSC (CalEPA, 2016c).

## **Existing Fire Related Conditions and Presence of Hazardous Materials**

### ***San Francisco and India Basin Area***

The hazards in San Francisco and the India Basin area discussed in this section are related primarily to fire hazards and hazardous materials. Fire hazards and hazards from hazardous materials are typically site-specific, so existing conditions related to fire hazards and the transport, use, and disposal of hazardous materials are discussed below under “Project Site.”

As discussed in Section 3.13, “Public Services,” San Francisco operates an Emergency Firefighting Water System, also known as the Auxiliary Water Supply System, for the suppression of multiple-alarm fires and for fire suppression during a major earthquake. The system delivers water at high pressure and consists of a storage reservoir, tanks, cisterns, water mains and hydrants, emergency saltwater pump stations, and fireboats (SFPUC, 2014 and 2017). The Emergency Firefighting Water System is an independent system, owned and operated by the San Francisco Public Utilities Commission (SFPUC) that is used exclusively by the San Francisco Fire Department (SFFD) for firefighting (SFPUC, 2014). The system is currently being seismically upgraded with funding from the Earthquake Safety and Emergency Response Bond that was approved in June 2010 (SFPUC, 2017).

Hazardous materials in San Francisco and the India Basin area consist primarily of contaminants in soil, groundwater and San Francisco Bay (Bay) sediments originating from past industrial and commercial activities and fill activities. Hazardous materials such as asbestos and lead are also likely present in building materials and paints in older structures. Some businesses in the area likely use hazardous materials or generate hazardous wastes in industrial uses and research and development (R&D), and would also transport, use, and dispose of hazardous materials.

Emergency response in San Francisco and the India Basin area is coordinated by the San Francisco Department of Emergency Management. SFFD provides response services to hazardous materials incidents, as well as fire protection and emergency medical services, as discussed further in Section 3.13, “Public Services.”

### ***Project Site***

The project site is largely unoccupied at present, but some areas are used for recreational purposes. None of the project site is within a “very high,” “high,” or “moderate” fire hazard severity zone (CAL FIRE, 2007). Portions of the site were previously used for industrial activities including boatbuilding and ship repair. The project site contains fill materials placed in the mid-20th century. Contamination is known to be present in fill soils, Bay sediments and groundwater. No known underground storage tanks (USTs) are present on the project site.

Groundwater has been measured at depths ranging from approximately 4 to 33 feet below ground surface. The groundwater level is believed to fluctuate seasonally and annually as precipitation and tidal cycles affect the water level of India Basin and the Bay (RPD, 2017a).

### **India Basin Shoreline Park Property**

The India Basin Shoreline Park property contains an established waterfront park that occupies approximately 3 acres of irregularly shaped land lying between Hunters Point Boulevard and the Bay. Overhead electrical utilities are present along Hunters Point Boulevard, and a small electrical substation is located near the intersection of Hunters Point Boulevard and Hawes Street.

This property was filled during the same general time period as the northwest portion of the 900 Innes property and the general shoreline area of Hunters Point; uncontrolled and random filling began around 1948, and fill activities continued until approximately 1981 (RPD, 1992). Local fill sources, thought to be sourced from the construction area for Candlestick Park, contain mineralized serpentine soil that is naturally high in chromium, cobalt, and nickel (San Francisco, 2014a).

The India Basin Shoreline Park property<sup>1</sup> is on the Cortese List of hazardous materials sites (SWRCB, 2016). A 1989 preliminary site assessment, prepared for the City before it acquired the land to establish the waterfront park, states that the area consists of fill material comprising construction debris and asphalt. The portions of the India Basin Shoreline Park property above the mean high-water (MHW) line are within an area subject to the City’s Maher Ordinance Program.<sup>2</sup>

This property has been subject to numerous rounds of hazardous materials investigations and reporting, including the following (see Appendix M):

- a limited Phase II soil investigation undertaken in 1999 (San Francisco, 1999);
- a Phase I Environmental Site Assessment (ESA) conducted at the India Basin Shoreline Park property for the City in 2015 (San Francisco, 2015);

<sup>1</sup> Listed as the McGarvey Property (T10000007983, San Francisco Bay Regional Water Quality Control Board [RWQCB] [Region 2] case number 38S0024) on the SWRCB’s GeoTracker database (SWRCB, 2016).

<sup>2</sup> The Maher Ordinance (San Francisco Health Code Article 22A) applies to sites seeking a permit from the San Francisco Department of Building Inspection and planning to move at least 50 cubic yards of soil in areas of Bay fill, areas of current or historical industrial use, areas within 150 feet of an elevated freeway, and areas within 100 feet of sites with current or past USTs (e.g., current and former gas stations and dry cleaners). Properties subject to the Maher Ordinance must comply with the provisions of Article 22A of the San Francisco Health Code.

- a data gap analysis, prepared in October 2016 (RPD, 2016a), identifying the information necessary to complete a site characterization of and risk assessment for the property; and
- a site characterization report for the India Basin Shoreline Park property presenting the results of onshore sampling activities undertaken in late 2016 and offshore sediment sampling undertaken in March 2017 (RPD, 2017c).

The chemicals tested for during environmental sampling were chosen based on recognized environmental conditions (RECs)<sup>3,4</sup> identified in the Phase I ESA undertaken for the property (San Francisco, 2015) and on the requirements of the Maher Ordinance. Based on the above-mentioned sampling results and reports, the previous placement of fill materials affected the India Basin Shoreline Park property and resulted in contamination of soils, groundwater, and offshore sediments at varying levels. A summary of the chemicals of potential concern (COPCs) at the property, as described more fully in the Site Characterization Report (RPD, 2017c), is presented below.

- *Soils*: Soil sampling results indicate that the property contains lead, polyaromatic hydrocarbons (PAHs), and naturally occurring asbestos in some areas.
- *Sediments*: Sediment sampling results indicate that some nearshore areas contain heavy metals (arsenic, copper, lead, mercury, nickel, selenium, zinc), polychlorinated biphenyls (PCBs), PAHs, and total petroleum hydrocarbons as motor oil (TPH-mo).
- *Groundwater*: Groundwater sampling results indicate that the quality of the groundwater is typical of shallow, near-Bay conditions in urban settings. Low levels of metals were detected, likely reflecting ambient conditions in the site vicinity.
- *Surface water*: Surface water sampling results indicate that the surface water contains modest levels of several metals (arsenic, cadmium, copper, and silver), likely reflecting ambient Bay conditions in the vicinity of India Basin.

### **900 Innes Property**

The 900 Innes property, located adjacent to and directly south of the India Basin Shoreline Park property, includes the Shipwright's Cottage, the India Basin Boatyard, and dilapidated former boatbuilding and ship repair facilities (Boatyard office building, tool shed, water tank building, outfitting dock, paint shop, and compressor house) that have partially or almost completely collapsed. Overhead power lines are located along Innes Avenue and extend onto the property in some locations. Comments provided during the public scoping period stated that these power lines are old and "severely overtaxed," and that a fire broke out in 2011 because of transformers "blowing up." This property was used for boatbuilding and ship repair activities from 1875 to 1930 and was used more recently to store construction equipment and heavy machinery. The adjacent water area (including the existing creosote-treated piles) is also associated with this property.

<sup>3</sup> RECs are defined in the American Society of Testing Materials E1527-13 standard as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not RECs." RECs are generally identified through a Phase I ESA, which includes research into current and previous uses of the site and surrounding areas to determine potential sources of contamination.

<sup>4</sup> GreenAction submitted a letter dated May 23, 2017, to the San Francisco Planning Department (Planning Department) requesting radiological materials testing (Appendix A). The Planning Department has determined that such testing is not required to assess impacts from the project for CEQA purposes. See San Francisco Recreation and Parks Department and BUILD, 2017. *Technical Memorandum, Environmental Testing Rationale at India Basin Redevelopment Project*, San Francisco, CA. Prepared by Northgate Environmental Management, Inc. and Langan Engineering & Environmental Services. (Appendix M)

The portion of the 900 Innes property known as 996 Innes Avenue<sup>5</sup> is also on the Cortese List as a leaking UST cleanup site, with a status of “case closed.” The India Basin Boatyard<sup>6</sup> (894 Innes Avenue) on the 900 Innes property is listed as a corrective action site in DTSC’s EnviroStor database. The entire 900 Innes property above the MHW line is also subject to the City’s Maher Ordinance Program.

The 900 Innes property has been subject to numerous rounds of hazardous materials investigations and reporting, including the following (see Appendix M):

- a Phase I/II targeted brownfields assessment conducted for the 900 Innes property for U.S. Environmental Protection Agency (EPA) Region 9 in September 2013 (EPA, 2013a);
- an analysis of brownfield cleanup alternatives undertaken in September 2013 (EPA, 2013b);
- a foreshore sediment sampling technical memorandum prepared for the San Francisco Department of the Environment in September 2015 (SFDE, 2015);
- a data gap analysis, prepared in October 2016 (SFDE and RPD, 2016), identifying required information necessary to complete a site characterization of and risk assessment for the property; and
- a site characterization report for the 900 Innes property, which presents results of onshore sampling activities undertaken in late 2016 and offshore sediment sampling undertaken in March 2017 (RPD, 2017d).

The chemicals tested for during environmental sampling were chosen based on RECs<sup>7</sup> identified in the Phase I ESA undertaken for the property (EPA, 2013a) and on the requirements of Maher Ordinance. Based on the above-mentioned reports, the property has been affected by the previous shipbuilding operations, placement of fill materials, and recent storage activities, which have resulted in contamination of soils, groundwater, and offshore sediments at varying levels. The COPCs at the property, as described more fully in the Site Characterization Report (RPD, 2017d), are summarized below.

- *Soils:* Soil sampling results indicate that metals (arsenic, cobalt, copper, lead, mercury, and nickel), PCBs, total petroleum hydrocarbons as diesel (TPH-d), and PAHs are present in soils at this property.
- *Sediments:* Sediment sampling results indicate that some nearshore areas contain heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, and zinc), PCBs, PAHs, TPH-d, and TPH-mo.
- *Groundwater:* Low levels of metals (barium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, and zinc), TPH-d, TPH-mo, and PAHs were detected. The presence of these metals in groundwater likely reflects ambient conditions in the site vicinity, with the exception of the relatively higher copper, lead, and zinc detections, which may be related to historical activities at the property (RPD, 2017d).
- *Surface water:* Surface water sampling results indicate that the surface water contains modest levels of several metals (arsenic, cadmium, copper, nickel, and silver), likely reflecting the ambient conditions of India Basin.

<sup>5</sup> Listed as G. Paizis Trustee (T0607500229) San Francisco County Local Oversight Program case number 10588) on DTSC’s GeoTracker database of leaking UST cleanup sites (DTSC, 2016).

<sup>6</sup> Listed as DONCO INDUSTRIES INC (80001502, CAD983608571) on DTSC’s EnviroStor database of corrective action facilities (DTSC, 2016).

<sup>7</sup> Refer to the previous footnote, cited in the discussion of India Basin Shoreline Park, that defines and explains RECs.

### **India Basin Open Space Property**

The India Basin Open Space property is an existing 6.2-acre open space area that is undeveloped, except for features related to the Blue Greenway/San Francisco Bay Trail (Bay Trail). There are no overhead power lines on this property.

This property is not on the Cortese List of hazardous materials sites, but the portion above the MHW line is subject to the City's Maher Ordinance Program,

The India Basin Open Space property has been subject to previous hazardous materials investigations and reporting, including the following (see Appendix M):

- a soil characterization report for the India Basin Open Space property dated September 2016 (RPD, 2016b);
- a Phase I ESA dated April 2017 (RPD, 2017e); and
- a site mitigation plan prepared in 2017 for the proposed project (RPD, 2017a).

The chemicals tested for during environmental sampling were chosen based on RECs<sup>8</sup> identified in the Phase I ESA undertaken for the property (RPD, 2017e) and on the requirements of the Maher Ordinance. Based on the above-mentioned reports, there is contamination in soils and offshore sediments at varying levels at the India Basin Open Space property. The COPCs at the property, as described more fully in the site characterization report for the property (RPD, 2016b), are summarized below.

- *Soils:* Soil sampling results indicate that there are occurrences of slightly elevated concentrations of metals (cobalt, lead, and nickel) and PAHs in some locations.
- *Sediments:* Sediment sampling results indicate that some nearshore areas contain heavy metals (arsenic, copper, lead, mercury, nickel, selenium, zinc), PCBs, PAHs, and TPH-mo.
- *Groundwater:* No groundwater sampling occurred at the India Basin Open Space property. Conditions are expected to be similar to those described for the India Basin Shoreline Park and 700 Innes properties.
- *Surface water:* No surface water quality sampling occurred in the vicinity of the India Basin Open Space property. Conditions are expected to be similar to those described for the India Basin Shoreline Park and 700 Innes properties.

### **700 Innes Property**

The 700 Innes property is primarily undeveloped, except for six buildings and structures. In a western portion of the property that once was part of the Allemand Brothers Boat Yard, a dilapidated, wood-framed storage structure sits on a concrete wharf that fronts a wooden dock. A second timber-framed, two-story structure is on the southwestern corner of the property at 702 Earl Street. A commercial building with one residential unit, at 840 Innes Avenue, is located on the southeastern corner of the property. The property also contains three temporary structures (two construction trailers and one shed), construction vehicle parking, and debris. A pier and approximately eight associated creosote-treated piles extend into the Bay from this property. Overhead power lines are located along Innes Avenue. Comments provided during the public scoping period stated that these lines are old and "severely overtaxed," and that a fire was caused in 2011 by transformers "blowing up."

<sup>8</sup> Refer to the previous footnote, cited in the discussion of India Basin Shoreline Park that defines and explains RECs.

This property contains significant areas of fill. It appears that the property was part of the India Basin Inlet on the Bay and was filled sometime in the 1950s and 1960s and left undeveloped except for Arelious Walker Drive, built in the early 1990s.

The 700 Innes property was incorrectly identified in an earlier Phase I ESA as being listed in a regulatory database as a State hazardous waste site and Voluntary Cleanup Program site (San Francisco, 2014b). Review of the environmental database report showed that the subject property was incorrectly identified in the report as the India Basin Boatyard at 894 Innes Avenue, which is part of the 900 Innes property. The 700 Innes property is not on the Cortese List of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (DTSC, 2016; CalEPA, 2016a, 2016b, 2016c; SWRCB, 2016). However, the portion of the site above the MHW line is subject to the City's Maher Ordinance Program.

The 700 Innes property has been subject to numerous rounds of hazardous materials investigations and reporting, including the following (see Appendix M):

- a Phase I ESA conducted in 2013 (San Francisco, 2013, cited in San Francisco, 2014b);
- a Phase II ESA conducted in 2014 (San Francisco, 2014b);
- an updated Phase I ESA conducted in 2014 (San Francisco, 2014c); and
- a site mitigation plan conducted in 2017 (San Francisco, 2017).

The chemicals tested for during environmental sampling were chosen based on RECs<sup>9</sup> identified in the Phase I ESA undertaken for the property (San Francisco, 2013 and 2014b) and on the requirements of Maher Ordinance. Based on the above-mentioned reports, there is contamination of soils, groundwater, and soil gas at varying levels. The COPCs at the property, as described more fully in the Phase II ESA (San Francisco, 2014b) and site mitigation plan (San Francisco, 2017), are summarized below.

- *Soils*: Soil sampling results indicate that there are occurrences of slightly elevated concentrations of metals (cobalt, lead, mercury, and nickel), and benzo(a)anthracene (a semivolatile organic compound).
- *Sediments*: Except for a small area directly adjacent to the 900 Innes property, the 700 Innes property is entirely above MHW. No sampling of nearshore sediments occurred at this property. Conditions are expected to be similar to those described for the adjacent portion of the 900 Innes property.
- *Groundwater*: Groundwater sampling detected metals (antimony, arsenic, barium, cobalt, molybdenum, nickel, vanadium, and zinc), TPH-d, and TPH-mo at low concentrations.
- *Surface water*: Except for a small area directly adjacent to the 900 Innes property, the 700 Innes property is entirely above MHW. No sampling of surface water occurred in the vicinity of this property. Conditions are expected to be similar to those described for the adjacent portion of the 900 Innes property.
- *Soil Gas*: Trace concentrations of several volatile organic compounds (VOCs)—including tetrachloroethylene (PCE); trichloroethylene (TCE); cis-1,2-dichloroethene (cis-1,2-DCE); benzene, toluene, ethylbenzene, and total xylenes (BTEX); tetrahydrofuran, and carbon disulfide—were present in soil gas samples.

---

<sup>9</sup> Refer to the previous footnote, cited in the discussion of India Basin Shoreline Park, that defines and explains RECs.

### **3.16.2 Regulatory Framework**

#### **Federal**

##### ***Occupational Safety and Health Act***

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor is responsible for implementing and enforcing federal laws and regulations that address worker health and safety. OSHA requires training for those using or otherwise handling hazardous materials. Training is to include procedures for personal safety, hazardous-materials storage and handling, and emergency response. Construction workers and operational employees at the project site would be subject to these requirements.

##### ***Code of Federal Regulations, Title 29***

Regulations in Code of Federal Regulations (CFR) Title 29 include requirements to manage and control exposure to lead-based paint and asbestos containing materials. In California, these requirements are implemented by the California Occupational Safety and Health Administration (Cal/OSHA) under California Code of Regulations (CCR) Title 8 (see further discussion of CCR Title 8 below). Existing structures on the project site could contain asbestos-containing materials and/or lead-based paint.

##### ***Code of Federal Regulations, Title 40***

The removal and handling of asbestos-containing materials is governed primarily by EPA regulations under CFR Title 40. The regulations require that the appropriate State agency be notified before any demolition, or before any renovations, of buildings that could contain asbestos or asbestos-containing materials above a specified threshold. Existing structures on the project site could contain asbestos-containing materials or lead-based paint.

##### ***Resource Conservation and Recovery Act of 1976 and Comprehensive Environmental Response, Compensation, and Liability Act***

EPA is responsible for implementing and enforcing federal laws and regulations pertaining to hazardous materials. The primary legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Emergency Planning and Community Right-to-Know Act (known as SARA Title III).

As permitted by the RCRA, in 1992, EPA approved California's program called the Hazardous Waste Control Law (HWCL), administered by DTSC, to regulate hazardous wastes in California, as discussed further below. The project may require transportation and off-site disposal of soils, sediments, or other materials that exceed federal and/or State hazardous waste criteria.

##### ***Hazardous Materials Transportation Act***

Under the Hazardous Materials Transportation Act of 1976, the U.S. Department of Transportation (DOT), Office of Hazardous Materials Safety, regulates the transportation of hazardous materials, and enforces guidelines



created to protect human health and the environment and reduce potential impacts to less than significant by creating hazardous-material packaging and transportation requirements. DOT provides hazardous-materials safety training programs and supervises activities involving hazardous materials. In addition, DOT develops and recommends regulations governing the multimodal transportation of hazardous materials. The proposed project or variant would include transportation of hazardous materials such as fuel during construction.

### ***Aboveground Petroleum Storage Act, and Spill Prevention, Control, and Countermeasure Rule***

The Aboveground Petroleum Storage Act of 1990, and the Spill Prevention, Control, and Countermeasure (SPCC) Rule (amended 2010) of the Oil Pollution Prevention regulation (40 CFR 112) require the owner or operator of a tank facility with an aggregate storage capacity greater than 1,320 gallons to notify the local certified unified program agency (CUPA) and prepare an SPCC plan. The SPCC plan must identify appropriate spill containment measures and equipment for diverting spills from sensitive areas, and must discuss facility-specific requirements for the storage system, inspections, recordkeeping, security, and training. The proposed project or variant would include diesel-fueled emergency generators.

### ***Clean Water Act***

The Clean Water Act (CWA) (Title 33, Section 1251 et seq. of the U.S. Code [33 USC 1251 et seq.]) is the major federal legislation governing water quality. The CWA established the basic structure for regulating discharges of pollutants into waters of the United States (not including groundwater). The objective of the act is “to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States.

Responsibility for administering the CWA resides with the SWRCB and nine RWQCBs. The San Francisco Bay RWQCB administers the CWA in the San Francisco Bay Area (Bay Area).

Section 404 of the CWA regulates temporary and permanent fill and disturbance of waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) requires that a permit be obtained if a project proposes to place fill in navigable waters and/or to alter waters of the United States below the ordinary high-water mark in nontidal waters.

Section 401 of the CWA requires compliance with State water quality standards for actions within State waters. Compliance with the water quality standards required under Section 401 is a condition for issuance of a Section 404 permit. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain a State water quality certification from the RWQCB that the proposed activity would comply with State water quality standards.

The project will require a Section 404 permit from USACE, and a Section 401 water quality certification from the San Francisco Bay RWQCB.

### ***Rivers and Harbors Act Sections 9 and 10***

Sections 9 and 10 of the Rivers and Harbors Act govern specified activities in “navigable waters.” These sections have been used to preserve wetlands and limit unrestricted waterfront development. Section 9 requires a permit

from USACE for the construction of any bridge, dam, dike, or causeway in or over any navigable water of the United States. Section 10 bars any unauthorized obstruction to the navigable capacity of “any of the waters of the United States,” and makes it unlawful to excavate or fill “or in any manner to alter or modify” any navigable water without USACE approval.

Section 10 of the Rivers and Harbors Act of 1899 requires that regulated activities conducted below the ordinary high-water elevation of navigable waters of the United States be approved and permitted by USACE. Regulated activities include the placement or removal of structures, work involving dredging, disposal of dredged material, filling, excavation, or any other disturbance of soils/sediments or modification of a navigable waterway. Navigable waters of the United States are those waters of the United States that are subject to the ebb and flow of the tide shoreward to the MHW mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. Section 10 also regulates tributaries and backwater areas that are associated with navigable waters of the United States and are located below the ordinary high-water elevation of the adjacent navigable waterway.

The project will require a permit under Section 10 of the Rivers and Harbors Act from USACE. An application for a Department of the Army permit can serve as an application for work regulated under both CWA Section 404 and Rivers and Harbors Act Section 10.

## **State**

### ***California Code of Regulations, Title 8***

The California Division of Occupational Safety and Health (Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations. These regulations concern the use of hazardous materials in the workplace, including requirements for employee safety training; availability of safety equipment; accident and illness prevention programs; hazardous-substance exposure warnings; and preparation of emergency action and fire prevention plans.

Cal/OSHA also enforces hazard communication program regulations, including procedures for identifying and labeling hazardous substances, and requires that safety data sheets (formerly known as material safety data sheets) be available for employee information and training programs. Cal/OSHA standards are generally more stringent than federal regulations. Construction workers and operational employees at the project site would be subject to these requirements.

CCR Title 8, Section 1529 authorizes Cal/OSHA to implement the survey requirements of CFR Title 29 relating to asbestos. These federal and State regulations require facilities to take all necessary precautions to protect employees and the public from exposure to asbestos. Workers who conduct asbestos abatement must be trained in accordance with State and federal OSHA requirements. The Bay Area Air Quality Management District (BAAQMD) oversees the removal of regulated asbestos-containing materials (see “Asbestos Demolition, Renovation, and Manufacturing Rule” below).

CCR Title 8, Section 1532.1 includes requirements to manage and control exposure to lead-based paint. These regulations cover the demolition, removal, cleanup, transportation, storage, and disposal of lead-containing material. The regulations outline the permissible exposure limit, protective measures, monitoring, and compliance

to ensure the safety of construction workers exposed to lead-based material. Loose and peeling lead-based paint must be disposed of as a State and/or federal hazardous waste if the concentration of lead equals or exceeds applicable hazardous waste thresholds. State and federal OSHA regulations require a supervisor who is certified with respect to identifying existing and predictable lead hazards to oversee air monitoring and other protective measures during demolition activities in areas where lead-based paint may be present. Special protective measures and notification of Cal/OSHA are required for highly hazardous construction tasks related to lead, such as manual demolition, abrasive blasting, welding, cutting, or torch burning of structures, where lead-based paint is present.

### ***California Code of Regulations Title 17 and the Airborne Asbestos Toxic Control Measure***

The California Air Resources Board (ARB) maintains regulations regarding the release of airborne asbestos, which are designed to control and minimize exposure to airborne asbestos. CCR Title 17, Section 93105 specifically addresses airborne asbestos produced through grading and construction activities for sites containing naturally occurring asbestos, serpentine, or ultramafic rock. ARB's Airborne Toxic Control Measures for Surfacing Applications and for Construction, Grading, Quarrying, and Surface Mining Operations require preparation and submission of an asbestos dust mitigation plan to BAAQMD before initiating construction on any property containing naturally occurring asbestos, serpentine, or ultramafic rock. Soils in some parts of the project site contain naturally occurring asbestos.

### ***California Code of Regulations Title 22, Division 4.5***

CCR Title 22, Division 4.5 contains the Environmental Health Standards for the Management of Hazardous Waste, which includes California waste identification and classification regulations. CCR Title 22, Chapter 11, Article 3, "Soluble Threshold Limits Concentrations/Total Threshold Limits Concentration Regulatory Limits," identifies the concentrations at which soil is determined to be a California hazardous waste. The proposed project or variant would include the generation of wastes that may exceed the criteria for California hazardous waste.

California's Universal Waste Rule (22 CCR Section 66273) provides an alternative set of management standards in lieu of regulation as hazardous wastes for certain common hazardous wastes, as defined in 22 CCR Section 66261.9. Universal wastes include fluorescent lamps, mercury thermostats, and other mercury-containing equipment. Existing structures on the project site may contain fluorescent light ballasts that could contain mercury or lead.

The Alternative Management Standards for Treated Wood Waste (22 CCR Section 67386) were developed by DTSC to allow for disposal of treated wood as a nonhazardous waste, to simplify and facilitate the safe and economical disposal of such waste. Chemically treated wood can contain elevated levels of hazardous chemicals (e.g., arsenic, chromium, copper, pentachlorophenol, or creosote) that equal or exceed applicable hazardous waste thresholds. The Alternative Management Standards provide for less stringent storage requirements and extended accumulation periods, allow shipments without a hazardous waste manifest and a hazardous waste hauler, and allow disposal at specific nonhazardous waste landfills. The project site contains old creosote-treated piles and other timber.

### *California Health and Safety Code*

As permitted by the RCRA, in 1992, EPA approved California's program called the Hazardous Waste Control Law, administered by DTSC, to regulate hazardous wastes in California. The HWCL differs little from the RCRA, although it covers a larger set of materials. Both laws impose cradle-to-grave regulatory systems for handling hazardous wastes in a manner that protects human health and the environment and would reduce potential resulting impacts to less than significant. The California Health and Safety Code (Section 25141) defines hazardous waste as a waste or combination of waste that may:

...because of its quantity, concentration, or physical, chemical, or infection characteristics:

- (1) Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitation-reversible illness.
- (2) Pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of or otherwise managed.

These regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management practices for hazardous wastes; establish permit requirements for hazardous-waste treatment, storage, disposal, and transportation; and identify hazardous waste that commonly would be disposed of in landfills.

Under both the RCRA and HWCL, hazardous-waste manifests must be retained by the generator for a minimum of 3 years. The generator must match copies of the manifests with copies of manifest receipts from the treatment, disposal, or recycling facility.

In accordance with Chapter 6.11 of the California Health and Safety Code (Section 25404 et seq.), local regulatory agencies enforce many federal and State regulatory programs through the Certified Unified Program Agencies program, including:

- hazardous materials business plans (HMBPs) (Health and Safety Code Section 25501 et seq.);
- State Uniform Fire Code requirements (Uniform Fire Code Section 80.103, as adopted by the State fire marshal pursuant to Health and Safety Code Section 13143.9);
- USTs (Health and Safety Code Section 25280 et seq.);
- aboveground storage tanks (Health and Safety Code Section 25270.5[c]); and
- hazardous-waste-generator requirements (Health and Safety Code Section 25100 et seq.).

The San Francisco Department of Public Health (DPH) is the CUPA for the City and County of San Francisco. As the CUPA, DPH enforces State statutes and regulations through the Hazardous Materials Unified Program Agency (HMUPA). The HMUPA oversees aboveground petroleum tanks; generation of hazardous materials; storage and treatment; USTs; generation of medical waste; the accidental-release prevention program; and the Local Oversight Program, which interfaces with the SWRCB and San Francisco Bay RWQCB on leaking USTs

and UST release sites. An HMBP must be submitted if a facility ever handles any individual hazardous material in an aggregate amount equal to or greater than 55 gallons (liquids), 500 pounds (solids), or 200 cubic feet (gases). An HMBP must include:

- details that include facility floor plans and identify the business conducted at the site;
- an inventory of hazardous materials handled or stored on the site;
- an emergency response plan; and
- a training program in safety procedures and emergency response for new employees who may handle hazardous materials, with an annual refresher course in the same topics for those same employees.

The proposed project or variant could generate hazardous wastes. The variant would include R&D space, which could include uses that require an HMBP.

### ***California Education Code***

Education Code Sections 17071.13, 17072.13, 17210, 17210.1, 17213.1 through 17213.3, and 17268 became effective January 1, 2000. Together these code sections established requirements regarding toxic and hazardous materials that school districts must meet before receiving final site approval from the California Department of Education and funds under the School Facilities Program.

The California Education Code requires a three-step process for assessment of proposed school sites:

- A Phase I ESA must be prepared for the school and approved by DTSC to determine whether the potential exists for exposure to hazardous materials.
- If the Phase I ESA reveals potential contamination, the school district must enter into an environmental oversight agreement with DTSC, and must prepare a preliminary environmental assessment (PEA) according to DTSC guidelines. The PEA must include the results of environmental sampling and a health risk assessment conducted according to DTSC guidelines (Education Code Section 17213.1[a][4][B]), and is subject to public review and comment before DTSC's final determination of approval.
- If the PEA identifies no significant health or environmental risks, the school district will receive a "No Further Action" determination letter from DTSC and the process is complete. If, however, the PEA identifies significant contamination, school districts may elect to drop the proposed school site from consideration or clean up the contamination under a DTSC voluntary cleanup agreement or school cleanup agreement.

The proposed project and variant include construction of a school; however, it is unknown at this juncture whether State funding would be involved, and therefore, whether the provisions of the California Education Code outlined above would be applicable.

### ***Porter-Cologne Act***

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) is California's statutory authority for the protection of water quality. Under the Porter-Cologne Act, the State must adopt water quality policies, plans, and objectives that protect the State's waters for the use and enjoyment of the people. Regional authority

for planning, permitting, and enforcement is delegated to the nine RWQCBs. The RWQCBs are required to formulate and adopt water quality control plans (also known as basin plans) for all areas of the region and establish water quality objectives in the plans. The Porter-Cologne Act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update water quality control plans that recognize and reflect the differences in existing water quality, the beneficial uses of the region's groundwater and surface water, and local water quality conditions and problems. The Porter-Cologne Act also authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements and to implement programs for controlling pollution in State waters.

The Porter-Cologne Act also authorizes the SWRCB and RWQCBs to oversee site investigation and cleanup for unauthorized releases of pollutants to soils and groundwater and in some cases to surface waters or sediments. This is typically achieved through the preparation of a remedial action plan (RAP), which identifies site-specific cleanup criteria for the site, and methods to achieve those criteria. Cleanup criteria are typically set for a contaminated site following a review of site data, and with contributions from the relevant agency, the responsible party, and their engineering consultants, and input from the public and community. Cleanup standards vary based on site characteristics and potential future land uses.

RPD has entered a voluntary cleanup agreement with the San Francisco Bay RWQCB for the 900 Innes property (SFBRWQCB, 2017), and a conceptual RAP has been developed for the property (see "Project Features" in Section 3.16.3 below for more details).

### ***McAteer-Petris Act and San Francisco Bay Plan***

The McAteer-Petris Act has long served as the key legal provision under California state law to preserve the Bay from indiscriminate filling. This law, and subsequent amendments, established the San Francisco Bay Conservation and Development Commission (BCDC) as a permanent State agency charged with preparing a plan for the long-term use of the Bay, and incorporated the policies of the *San Francisco Bay Plan* into State law. A major permit from BCDC would be required for the project to authorize construction within 100 feet of the Bay shoreline (e.g. the "100-foot shoreline band").

### ***Dredged Material Management Office***

The Dredged Material Management Office (DMMO) is a joint program of BCDC, the San Francisco Bay RWQCB, California State Lands Commission, the USACE San Francisco District, and EPA Region 9. Also participating are the California Department of Fish and Wildlife, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service, which provide advice and expertise to the process. The purpose of the DMMO is to cooperatively review sediment quality sampling plans, analyze the results of sediment quality testing, and make suitability determinations for materials proposed for disposal or beneficial reuse in and around the Bay. The goal of this interagency group is to increase efficiency and coordination between the member agencies and to foster a comprehensive and consolidated approach to handling dredged-material management issues. Applicants using the DMMO fill out one application form for a proposed project in relation to the various permits and approvals required from the member agencies.

### ***California Emergency Response Plan***

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Responding to hazardous-materials incidents is one part of this plan. The plan is administered by the California Governor's Office of Emergency Services, which coordinates the responses of other agencies. The San Francisco Department of Emergency Management coordinates response to emergencies in the City. Emergency response team members respond and work with local fire and police agencies, emergency medical providers, the California Highway Patrol (CHP), California Department of Fish and Wildlife, and California Department of Transportation (Caltrans).

### **Regional**

#### ***Asbestos Demolition, Renovation and Manufacturing Rule***

The removal of asbestos-containing building materials is subject to the limitations of BAAQMD Regulation 11, Rule 2, "Hazardous Materials; Asbestos Demolition, Renovation and Manufacturing." This rule prohibits visible emissions to outside air from any operation involving the demolition of any structure containing asbestos, and sets out requirements for demolition of such structures, including a pre-demolition survey conducted by a certified professional. All friable (i.e., crushable by hand) asbestos-containing materials or nonfriable asbestos-containing materials that may be damaged must be abated before demolition in accordance with applicable requirements. Friable asbestos-containing materials must be disposed of as asbestos waste at an approved facility. Nonfriable asbestos-containing materials may be disposed of as nonhazardous waste at landfills that accept such wastes. Existing structures on the project site may contain asbestos-containing materials.

#### ***Association of Bay Area Governments Hazard Mitigation Plan***

The Association of Bay Area Governments' multijurisdictional *Local Hazard Mitigation Plan for the San Francisco Bay Area* was updated in 2010 in partnership with BCDC's Adapting to Rising Tides Program to support local governments in the regional plan for existing and future hazards of climate change. This detailed 5-year plan identifies potential natural and human-made hazards, assesses their potential risks, and includes mitigation methods to reduce risks. The potential hazards identified in the plan include earthquakes and liquefaction, levee failure, wildfires, floods, drought, solar storms, dam failure, disease outbreak, freezes, wind, heat, thunder and lightning storms, siltation, tornadoes, hazardous materials, landslides and debris flows, and other hazards. Similarly, mitigation measures include hazard event planning, emergency preparedness coordination, education, facility upgrades, and monitoring actions.

### **Local**

#### ***San Francisco Health Code, Article 21 (Hazardous Materials)***

Article 21 of the San Francisco Health Code provides for safe handling of hazardous materials in the City. In addition to specifying permitting requirements for hazardous materials, Article 21 prohibits unauthorized releases of hazardous materials and specifies requirements for reporting an unauthorized release, conducting inspections after an unauthorized release, addressing abandoned USTs or hazardous-materials handling facilities, and closing

hazardous-materials handling facilities. This article is applicable to the project as hazardous materials would be handled during construction and could be handled by some operational uses.

***San Francisco Health Code, Article 21A (Risk Management Program)***

Article 21A requires any business that handles, sells, stores, or otherwise uses regulated substances<sup>10</sup> in quantities exceeding specified threshold amounts to register with DPH and prepare a Risk Management Program. The Risk Management Program must be submitted to DPH before a Certificate of Occupancy can be issued. This article would be applicable to the project if operational uses such as maintenance, commercial, or research and development facilities handle, store, sell, or use regulated materials in quantities exceeding the specified thresholds.

***San Francisco Health Code, Article 22 (Hazardous Waste Management)***

Article 22 provides for safe handling of hazardous wastes in the City. It authorizes DPH to implement the State hazardous waste regulations, including authority to conduct inspections and document compliance. This article may be applicable to the project as hazardous wastes may be generated during construction or by some operational uses.

***San Francisco Health Code, Article 22A (Maher Ordinance)***

DPH administers Article 22A of the San Francisco Health Code (also referred to as the Maher Ordinance), which requires applicable projects to assess, sample, analyze, and remediate (if necessary) subsurface contamination before building permits are issued. The Maher Ordinance applies to any project that could encounter hazardous materials in the subsurface soil or groundwater in areas known to contain fill material or are suspected to contain hazardous materials in the subsurface, sometimes referred to as Maher zones.<sup>11</sup> In these Maher zones, the requirements apply to any sites that would excavate more than 50 cubic yards of soil.

In accordance with Health Code Section 22.A.6, the Maher Ordinance requires the project sponsor to retain the services of a qualified professional to prepare a site history report and assess potential and/or known sources of subsurface contamination at the project site. Based on the site history report, the professional recommends whether the project sponsor should conduct subsurface investigation(s) to characterize the quality of the soil and groundwater that would be disturbed during project construction. If so recommended, the professional prepares a subsurface analysis report, based on the subsurface investigation(s), to evaluate hazardous materials in the soil and groundwater at the project site and determine whether they are causing or are likely to cause significant health and safety risks given the intended land use.

If the subsurface analysis report indicates that hazardous substances are present in soil or groundwater exceeding the DTSC or RWQCB public health risk levels, the project sponsor must prepare a site mitigation report. The site mitigation report must:

---

<sup>10</sup> Regulated substances include those regulated under Section 68.130 of Title 40 of the Code of Federal Regulations, or those identified as an extremely hazardous substance in Appendix A of Part 355 of Title 40 of the Code of Federal Regulations, and those identified in Chapter 6.95, Article 2 of the California Health and Safety Code.

<sup>11</sup> Maher zones include areas with current or historical industrial use or zoning; areas within 100 feet of current or historical underground tanks; filled former Bay, marsh, or creek areas; and areas within 150 feet of a current or former elevated highway.



- describe the methods (e.g., source removal, treatment, vapor barrier installation, restrictions on uses or activities at the project site) recommended to assure that the intended use would not result in public health or safety hazards in excess of the DTSC and RWQCB acceptable risk levels or other applicable standards;
- include health and safety measures to protect construction workers and the public during construction, including how to address any unknown conditions encountered;
- outline the soil and groundwater handling procedures that would be followed in all areas that would be disturbed during construction on the land portion of the project site, including dust control measures that would be used; and
- identify any remedial actions that would be taken, including removal or treatment of soil or groundwater, or placing a cover over soil to avoid future exposures, implementing a long-term operations and maintenance plan, or recording use restrictions on the property.

All documents required under the Maher Ordinance must be submitted to and approved by DPH before project construction.

The proposed project and variant are subject to the Maher Ordinance, because the proposed soil excavation would exceed 50 cubic yards and the project site is mapped within a Maher zone. The Maher Ordinance is only applicable to areas above MHW.

#### ***San Francisco Health Code, Article 22B***

Article 22B of the San Francisco Health Code, the Construction Dust Control Ordinance, requires stringent controls to minimize dust emissions. The ordinance requires that all site preparation work, demolition, or other construction activities in the City comply with specific dust control measures. For all projects larger than half an acre, a site-specific dust control plan is required when the project has been determined to have sensitive receptors within 1,000 feet of the project.

The proposed project and variant would be subject to the Construction Dust Control Ordinance because the project site is larger than half an acre and sensitive receptors are located within 1,000 feet.

#### ***San Francisco All-Hazards Strategic Plan, Emergency Response Plan, and Hazard Mitigation Plan***

The City has developed an all-hazards strategic plan (2008), emergency response plan (2009), and hazard mitigation plan (2014) to respond to natural and human-caused disasters; implement the plan; and describe the coordination, roles, and responsibilities of various responding agencies during a major disaster. Provisions of these plans would apply if a major disaster were to occur in the project area.

#### ***San Francisco Building Code and Fire Code***

The City ensures fire safety primarily through provisions of the San Francisco Building Code and San Francisco Fire Code. Existing buildings must meet standards contained in these codes. In addition, the building plans for any new residential project greater than two units are reviewed and approved by SFFD and the San Francisco Department of Building Inspection to ensure conformance with these provisions. The proposed project and variant would be required to comply with these provisions.

The San Francisco Building Code also requires lead-safe work practices for any paint-disturbing repair, remodeling, or renovation work on the exterior of a pre-1979 building or structure and in the interior of a pre-1979 residential rental property or one used for child care. Lead-safe work practices include preventing migration of dust and debris, minimizing dust, cleaning up completely. Existing structures on the project site may contain lead-based paint.

### **3.16.3 Impacts and Mitigation Measures**

#### **Significance Thresholds**

The thresholds for determining the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines, which has been modified by the San Francisco Planning Department. For the purpose of this analysis, the following applicable thresholds were used to determine whether implementing the proposed project or the variant would result in a significant impact related to Hazards and Hazardous Materials. Implementation of the proposed project or the variant would have a significant effect on Hazards and Hazardous Materials if the proposed project or variant would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
- for a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving fires.

#### **Approach to Analysis**

This evaluation focuses on whether the proposed project or variant would result in changes to the physical environment that would cause or exacerbate adverse effects related to the use, transportation, disposal, accidental release, or emission of hazardous materials. The evaluation also includes a determination of whether the changes to the physical environment caused by the proposed project or variant would impair or interfere with emergency response plans, or expose people or structures to increased fire hazards or dangers from overhead power lines.

The project site is not located within an airport land use plan or within 2 miles of a public or private airport. Therefore, consistent with the determination in the Initial Study (Appendix A to this EIR), residents, employees, and recreationists at the project site would not be exposed to significant aircraft-related hazards. Thus, impacts relating to the following two topics will not be addressed further in this EIR because they are not applicable:

- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area; and
- for a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.

For purposes of the analysis, compliance with existing federal, State, regional, and local laws and regulations pertaining to hazardous-materials management is taken into account in determining health and safety risks. It is expected that State and local agencies would continue to enforce applicable requirements to the extent they do so now.

For the evaluation of potential construction-related and operational impacts from existing hazardous materials in project site soils, sediments, groundwater, and surface water, the results of environmental sampling are compared to selected screening levels.<sup>12</sup> Different site-specific screening levels have been selected and/or developed for various parts of the project site, to correspond to the proposed future land uses of those areas, as indicated below.

### ***Soil and Sediment***

- Environmental screening levels (ESLs) have been established by the San Francisco Bay RWQCB for different constituents under various different exposure scenarios: residential land uses, commercial/industrial land uses, and construction worker direct exposure. The ESLs are based on a one-in-a-million cancer target risk or a noncancer target hazard quotient of 1. Construction worker ESLs were used for comparison with analytical data from soil/sediment samples from all areas of the project site that would be disturbed during construction. Residential ESLs were used for comparison with analytical data from soil samples from the 700 Innes property.<sup>13</sup>
- Human health screening levels (HHSLs), as developed by RPD's environmental consultant (RPD, 2016b, 2017c, and 2017d), were used for comparison with analytical data from soil samples in the portions of the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties that would be used for recreational purposes. The HHSLs are based on the most conservative of several available preliminary screening criteria: San Francisco Bay RWQCB ESLs for commercial/industrial land uses, construction worker ESLs, background and ambient regional comparative values, and remediation goals from nearby recreational project sites that share similar features and goals to this project. The HHSLs are designed to be protective of the health and safety of future park workers and visitors.

---

<sup>12</sup> Screening levels are used to compare analytical results from environmental sampling, and are intended to help expedite the identification and evaluation of potential environmental concerns at contaminated sites. More details regarding the screening levels used for the project site and how they were determined are provided in the site characterization reports for the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties (RPD, 2016b, 2017c, and 2017d).

<sup>13</sup> Residential ESLs are more protective than commercial/industrial ESLs, and are therefore considered a conservative screening level for the mix of residential and commercial uses that would occur in the future on the 700 Innes site under the proposed project or variant.

- Ecological habitat screening levels (EHSLs), as developed by RPD's environmental consultant (RPD, 2016b, 2017c, and 2017d), were used for comparison with analytical data from sediment samples in the portions of the project site that are proposed for tidal marsh habitat. The EHSLs are applicable to portions of the project site proposed for tidal marsh restoration, where ecological protection is the primary goal (Northgate, 2017a). In general, chemical criteria that are protective of ecological receptors are more stringent than those for human receptors. The EHSLs are based on a range of available preliminary comparative screening criteria: ambient conditions, beneficial reuse values, and remediation goals from nearby marsh habitat restoration sites that share similar features and goals to this project.

### ***Groundwater***

- Groundwater chemical analytical results for the India Basin Shoreline Park and 900 Innes properties are compared to San Francisco Bay RWQCB ESLs for dermal contact and aquatic habitat (San Francisco Bay RWQCB, 2016), and to batch wastewater discharge requirement values established by SFPUC (2012). The use of these screening levels reflects the expected exposure scenarios with respect to groundwater at these properties.
- Groundwater analytical results for the 700 Innes property were compared to the San Francisco Bay RWQCB's Maximum Contaminant Level Priority Direct Exposure Human Health Risk Levels for groundwater (MCL priority ESLs) [SFBRWQCB, 2016].<sup>14</sup>

### ***Surface Water***

- Surface water analytical results for the India Basin Shoreline Park and 900 Innes properties are compared to marine water quality objectives (SFRWQCB, 2015), and to objectives for the protection of marine aquatic life (SWRCB, 2015). Marine water quality objectives are considered appropriate for surface water at the project site because of the proposed tidal marsh habitat that would be established as part of the project.

In addition to the screening levels for construction worker contact or future land uses discussed above, the results of sediment, soils, groundwater, and surface water sampling were also compared to thresholds established by State and federal agencies for classifying hazardous waste (RPD, 2016b, 2017c, and 2017d). These specific thresholds are useful for assessing whether materials would be classified as a California hazardous waste if removed from the project site, but do not indicate the suitability of soils for future land uses if left in place.

In *California Building Industry Association v. Bay Area Air Quality Management District*, decided in 2015,<sup>15</sup> the California Supreme Court held that CEQA does not generally require lead agencies to consider how existing environmental conditions might affect a project's users or residents, except when the project would significantly exacerbate an existing environmental condition. Accordingly, the significance thresholds above regarding being located on a listed hazardous-materials site or exposure to fire hazards are relevant only to the extent that the project would significantly exacerbate the existing hazardous condition(s). Thus, the analysis below evaluates whether the proposed project or variant could significantly exacerbate the existing risk of fire hazard, or the

---

<sup>14</sup> The use of MCLs as the screening criterion at the 700 Innes property is a conservative approach. Because of its proximity to the Bay and tidal influence, and because of the physical characteristics of the shallow-water bearing zone (thin, discontinuous, fine-grained sediments), shallow groundwater at the project site would likely meet both criterion (a) relating to total dissolved solids, and/or (c) relating to potential yield, of the SWRCB's guidance regarding conditions that preclude groundwater from being a potential source of drinking water (SWRCB, 2006). Drinking water for the project would come from the SFPUC municipal water supply (SFPUC, 2016).

<sup>15</sup> *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal. 4th 369. Opinion filed December 17, 2015.

potential exposure to existing contaminated materials (e.g., through remobilization or release of contaminants that are currently present but not being disturbed).

### **Project Features**

Both the proposed project and the variant would involve demolishing some of the existing buildings on the project site and constructing a mixed-use development that would include residential, commercial, institutional/educational, R&D, parking, and open space uses. Operational uses at the project site could include the use of minor quantities of hazardous materials.

The proposed project and variant would disturb hazardous materials found in site building materials, soil, sediments, groundwater, and surface water during project construction. Operation of the proposed project or variant could also result in disturbance of hazardous materials currently present in soil, shoreline sediments, and groundwater. Further, RPD intends to implement a RAP, approved by the San Francisco Bay RWQCB, for the 900 Innes property prior to redeveloping the 900 Innes property. These RAP-related activities could expose workers, visitors or the public to hazardous materials found in building materials and in soil, sediment, groundwater, and surface water associated with this property.

DPH routinely oversees through its Maher Ordinance process any soil and groundwater remediation that is needed on project sites in San Francisco near the Bay that have been filled in the past or used for industrial activities, and for which new uses are proposed. State agencies may become involved if a project site presents atypical characteristics. In the case of the proposed project or variant, RPD in consultation with the San Francisco Bay RWQCB and DPH has entered the 900 Innes property into the RWQCB's voluntary cleanup program, which RPD expects will result in San Francisco Bay RWQCB approval of the RAP for this property. RPD would implement the RAP as part of the proposed project or variant. After completion of the proposed remediation, RPD would expect to comply with any requirements applicable to hazardous materials as the elements of the proposed project or variant are constructed and operated at this property.

As to the other properties at the project site, site conditions as described previously are typical of properties containing fill in San Francisco. The levels of contaminants on those properties are generally below the relevant environmental screening levels, with only sporadic exceedances in discrete locations. The project sponsors would be expected to construct and operate the proposed project or variant in compliance with the standard Maher Ordinance process for the portions of the project site properties above the MHW line. In addition, for any in-water construction activities, the proposed project or variant would be subject to oversight by various agencies through the CWA 401 water quality certification, CWA Section 404 permit, River and Harbors Act Section 10 permit, and BCDC permit processes.

Because multiple agencies have jurisdiction over the project site on issues that pertain to site conditions involving hazardous materials, the following overview is provided to assist the reader's understanding of the various regulatory oversight requirements.

### ***Voluntary Cleanup Program and Remedial Action Plan***

As noted above in Section 3.16.1, "Environmental Setting," the 900 Innes property has been used by boatbuilding and ship repair facilities in the past and is listed as a State corrective action site. RPD has entered the site into the

San Francisco Bay RWQCB's voluntary cleanup process so that remediation of site soil, groundwater, and sediments can be overseen by one State agency, the RWQCB.(SFBRWQCB, 2017).

As part of the voluntary cleanup program, RPD has prepared a conceptual RAP for the 900 Innes property (RPD, 2017f) for review and approval by the San Francisco Bay RWQCB. It is RPD's intention to implement the approved RAP for the 900 Innes property as part of the proposed project or variant and before constructing the proposed site improvements. The conceptual RAP proposes remedial action goals for upland portions of the property, based on the HHSLs established for recreational use.

A different set of remedial action goals is proposed for the remediation of offshore sediments in areas designated for tidal marsh habitat restoration, because chemical criteria that are protective of ecological receptors are typically more stringent than those for human receptors. The remedial action goals for offshore sediments are based on a review of COPCs identified at the property, comparative ecological screening values, and published action goals that have been adopted at other nearby tidal restoration projects.

The conceptual RAP will be subject to review and approval by the San Francisco Bay RWQCB, including approval (or amendment) of the remedial action goals for the site. The RAP would be available for review and comment by the community, project partners, DPH, resource agencies' permitting authorities, and EPA.

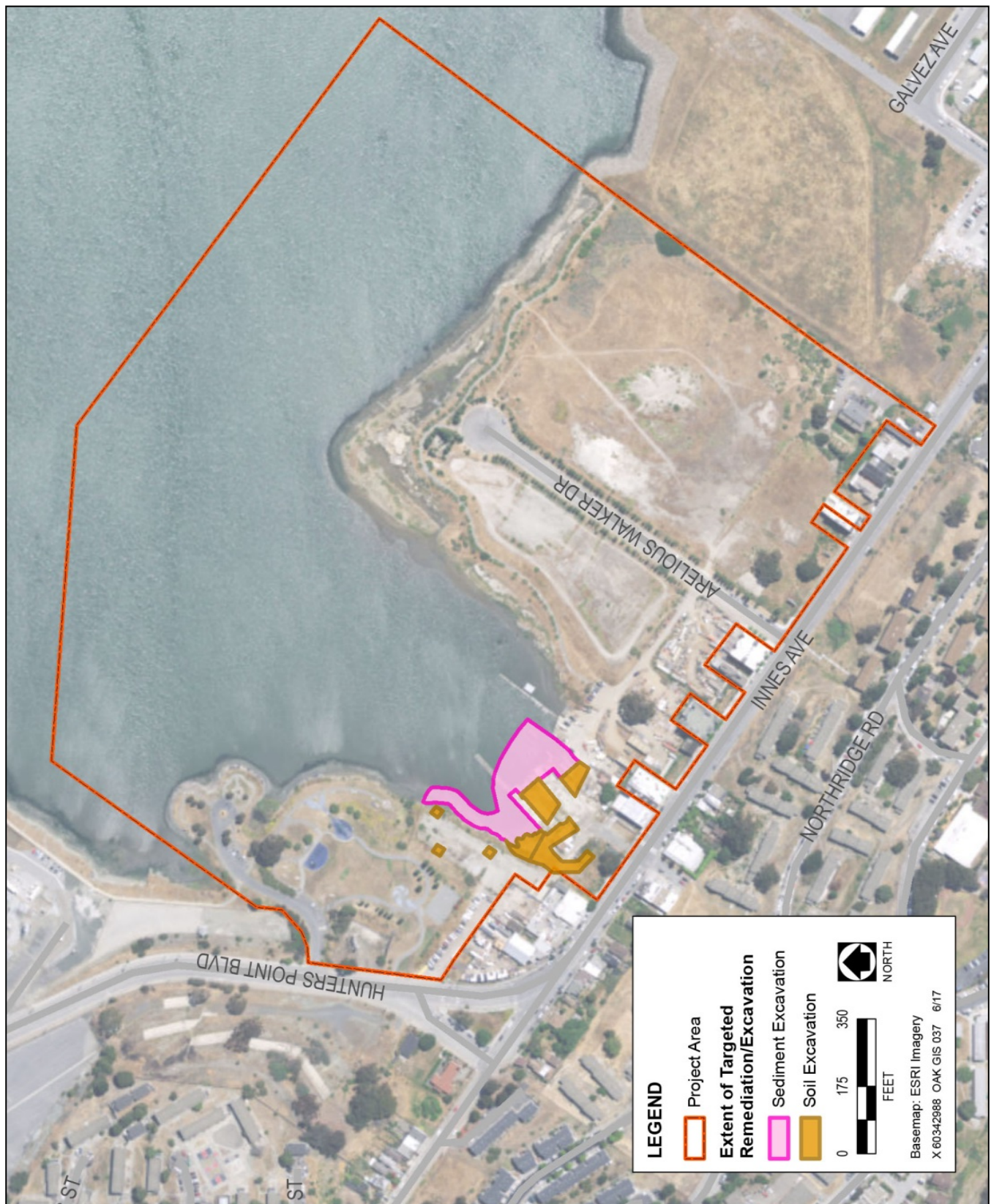
To achieve the remedial action goals, the following actions are proposed as part of the conceptual RAP:

- **Excavation and off-site disposal of soil exceeding Total Threshold Limit Concentrations (TTLCs).** This removal action would be limited to a maximum depth of approximately 5 feet below the existing ground surface or the future park design grade, whichever is less, inland (west) of MHW. The soil would be disposed of as a non-RCRA California hazardous waste.
- **Excavation and off-site disposal of sediment exceeding TTLCs.** This removal action would be limited to a maximum depth of approximately 2 feet below the existing sediment surface or the future design grade, whichever is less, on sediment east of MHW. The sediment would be disposed of as a non-RCRA California hazardous waste.
- **Excavation and off-site disposal of soil that contains COPCs at levels above remedial action goals based on HHSLs.** This removal action would be limited to a maximum depth of approximately 2 feet below the existing ground surface or the future design grade, whichever is less, inland (west) of MHW. The soil would be disposed of as a nonhazardous waste (unless the soil fails the California Soluble Threshold Limit Concentration for leachable metals, in which case it would be disposed of as a non-RCRA California hazardous waste).
- **Excavation and inland reuse or off-site disposal of sediment that contains COPCs above remedial action goals based on ecological habitat considerations.** This removal action would be limited to a maximum depth of approximately 2 feet below the existing sediment surface or the future design grade, whichever is less, for sediment east of MHW. If sediment quality meets inland HHSLs, it may be relocated and used as construction fill. If the removed sediment does not meet inland HHSLs or other construction criteria for fill material, then it would be disposed of as a nonhazardous waste (unless the sediment fails the California Soluble Threshold Limit Concentration for leachable metals, in which case it will be disposed of as a non-RCRA California hazardous waste).

- **Cultural landscape features.** Soil excavation will not extend beneath buildings that would remain and be restored as part of the cultural landscape, such as the Shipwright's Cottage and the nearby former Boatyard office. Portions of the concrete dock and bulkhead that would be retained and repaired would preclude excavation of underlying materials. In these cases, the remaining structures would serve as a physical barrier to underlying materials. Several historical features would not be retained as part of the cultural landscape and would be removed to access contaminated materials targeted for remediation. These features include the west and east marine ways, portions of the concrete boat ramps, several of the existing buildings, and the water fence.
- **Construction of a 2-foot-thick soil cover in areas where inland soil exceeding HHSLs remain.** The surface elevations of the soil cover would align with the redevelopment design subgrade elevations. The cover would be constructed using imported clean soil, and would be underlain by a visible barrier material, such as orange plastic fencing, to differentiate it from underlying materials. In areas where the redevelopment consists of buildings, paved surfaces, or other hardscape, these features could serve as a barrier to underlying soil, and therefore, no soil cover would be needed.
- **Construction of a 2-foot-thick sediment cover in habitat restoration areas where sediment exceeding ecological remedial action goals remains.** The surface elevation of the sediment cover would align with the habitat restoration design surface. The cover would be constructed using imported clean sediment, and would be underlain by a visible barrier material compatible with habitat restoration, to differentiate it from underlying materials. The barrier material also would act as a filter to prevent underlying sediment from mixing with overlying clean cover material.
- **Institutional controls.** If soil or sediment exceeding remedial action goals, HHSLs, or EHSLs remains below the clean soil or surface cover material at the property after remediation is complete, an activities and use limitation deed restriction would be prepared to prevent future exposure to COPCs. The deed restriction would record:
  - the presence of the visual indicator barrier placed over the soil/sediment;
  - prohibition of future uses of the parks and open spaces for sensitive uses, such as residential development, hospitals, and schools or day care centers for children;
  - maintenance requirements for the cover and surface materials placed over the soil/sediment; and
  - soil management and health and safety plans that would be used during future activities that may disturb soil/sediment at depths below clean cover and surface materials.

Figure 3.16-1 shows the anticipated areas of the 900 Innes property that would be excavated as part of RAP implementation, based on the conceptual RAP. A final RAP will be prepared once the park design is finalized and the project has received conditional approval by the San Francisco Bay RWQCB to move forward. The final RAP will include supplemental remediation documents addressing technical engineering design and regulatory agency permit and approval requirements for performing the remediation. Supplemental remediation documents will address worker health and safety, temporary facilities and controls, environmental controls, confirmation sampling and analysis, waste management and disposal, earthwork, soil and sediment stockpile management, excavation support and protection, and site restoration.

Once the remediation activities at the 900 Innes property have been completed, site conditions would be of similar quality to the two adjacent properties: India Basin Shoreline Park to the north and India Basin Open Space to the northeast. Therefore, redevelopment would be able to proceed in accordance with provisions of the Maher Ordinance for inland redevelopment, and in accordance with resource agency permitting requirements for in-water work.



Source: RPD, 2017f, Adapted by AECOM in 2017

**Figure 3.16-1:**

**Extent of Targeted Remediation**



### ***Maher Ordinance Site Mitigation Plans***

The portions of the India Basin Shoreline Park, India Basin Open Space, 700 Innes, and postremediation 900 Innes properties that are above MHW are subject to the provisions of the Maher Ordinance (San Francisco Health Code, Article 22A).

As described more fully above in Section 3.16.2, “Regulatory Framework,” the Maher Ordinance requires preparation of a site history report to assess potential and/or known sources of subsurface contamination at the project site. Based on the site history report, a subsurface analysis report may be required, based on subsurface investigation(s), to evaluate hazardous materials in the soil and groundwater at the project site and determine whether they are causing or are likely to cause significant health and safety risks given the intended land use. If the subsurface analysis report indicates that hazardous substances are present in soil or groundwater at levels exceeding the DTSC or San Francisco Bay RWQCB public health risk levels, a site mitigation report must be prepared in accordance with the requirements of the Maher Ordinance. All documents required under the Maher Ordinance must be submitted to and approved by DPH before project construction.

Site history reports (often called Phase I ESAs) and subsurface analysis reports (often called Phase II environmental investigations or site characterization reports) have been prepared for all four project site properties.

A combined draft site mitigation plan (RPD, 2017a) has been prepared for the three RPD properties (India Basin Shoreline Park, India Basin Open Space, and postremediation 900 Innes). A separate draft site mitigation plan (San Francisco, 2017) has been prepared for the 700 Innes site. The Maher Ordinance requires that the draft site mitigation plans be submitted to and approved by DPH before project construction. The draft site mitigation plans are also included in this EIR in Appendix M.

### ***Agency Permitting Requirements for In-Water and Shoreline Work***

Various permits and approvals are required from the San Francisco Bay RWQCB, USACE, and BCDC for activities proposed to occur in the nearshore area under the proposed project or variant:

- CWA Section 401 certification by the San Francisco Bay RWQCB is required for discharges to the waters of the United States.
- A CWA Section 404 permit is required from USACE for excavation/fill in waters of the United States.
- A River and Harbors Act Section 10 permit is required from USACE for structures and work within navigable waters.
- A major permit is required from BCDC for construction within the 100-foot shoreline band.

These permitting processes would involve coordination between the different permitting agencies (SFBRWQCB, USACE, BCDC), as well as other stakeholder agencies, such as the California State Lands Commission, EPA, the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife. Among other standards, these regulations would require the project to comply with State water quality requirements.

## Impact Evaluation

**Impact HZ-1: The proposed project or variant would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation related to the potential to create a significant hazard to the environment through the routine transport, use, or disposal of hazardous materials. Separate analyses and individual impact conclusions are provided for construction-related and operational impacts. Except where noted, the respective impacts described below would occur under either the proposed project or the variant. An “overall” impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion. Note that impacts related to the need to transport or dispose of contaminated materials encountered during construction (e.g., contaminated soils, sediments, groundwater or hazardous building materials located on the site under existing conditions) are addressed in Impact HZ-2.

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Construction at all four properties under the proposed project or variant would likely involve the routine use, transport, storage, and disposal of common hazardous materials, such as small quantities of gasoline, diesel, oil, grease, and paint. Short-term uses of construction-related hazardous materials, if not used appropriately, could expose workers to potential inhalation, ingestion, or contact with hazardous substances.

Hazards from using such materials during construction would be less than significant, however, because the construction contractor(s) would be required to comply with applicable regulations and laws governing project-related transport, storage, use, and disposal of potentially hazardous materials. Such laws include OSHA’s Hazard Communication Standard, which requires employers to inform workers about the identities and hazards of chemicals used in the workplace, and to train workers to handle such chemicals appropriately. All unused hazardous materials would be removed from the project site and disposed of pursuant to applicable federal, State, and local regulations. For example, California’s HWCL establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management practices for hazardous wastes; establishes permit requirements for hazardous-waste treatment, storage, disposal, and transportation; and identifies hazardous waste. Complying with these regulations and laws would minimize any potential exposure of workers to hazardous materials used during construction activities.

The potential exists, however, for accidental spills of materials during construction, which could create hazards to the public or environment. The project is subject to the National Pollutant Discharge Elimination System Construction General Permit (see Section 3.15, “Hydrology and Water Quality,” for more details), which requires the project sponsors or their contractor(s) to develop and implement a storm water pollution prevention plan (SWPPP). The SWPPP includes measures to prevent hazardous material spills, such as the following:

- **Hazardous Spill Prevention.** Vehicles and equipment will be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other

hazardous materials. Service/maintenance vehicles will carry materials to absorb leaks or spills. Hazardous spills will be cleaned up immediately and the contaminated soil properly disposed of at a licensed facility. Servicing, refueling, and staging of construction equipment will take place only at designated areas offset from riparian or aquatic habitat and not in a location where a spill would drain directly toward aquatic habitat. Equipment washing will occur only in designated locations where water cannot flow into drainage channels.

The project sponsors would develop a SWPPP and implement hazardous materials spill prevention and good-housekeeping activities for all four project site properties. These measures would avoid or minimize potential construction-related impacts from accidental spills of hazardous materials for onshore construction activities. However, as discussed in Section 3.15, “Hydrology and Water Quality,” the SWPPP provisions would not apply to in-water construction activities. Therefore, impacts related to the potential for accidental spills during in-water construction work could be significant.

Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices,” in Section 3.15, “Hydrology and Water Quality,” requires implementation of water quality BMPs, which would reduce the likelihood of accidental spills of hazardous materials during in-water construction activities. With implementation of Mitigation Measure M-HY-1b, under either the proposed project or the variant, the construction impact at all four properties related to the use of hazardous materials would be *less than significant with mitigation*.

#### **Overall Construction Impact HZ-1 Conclusion**

With implementation of Mitigation Measure M-HY-1b, under either the proposed project or the variant, the construction impact at all four properties related to the transport, use and disposal of hazardous materials would be *less than significant with mitigation*.

#### ***Operation***

##### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

Operation of the proposed project or variant at the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties would likely involve transport, use and disposal of generally low levels of hazardous materials (or products containing hazardous materials). For example:

- Open space and landscape maintenance at these properties could use a wide variety of commercial products formulated with hazardous materials, including fuels, cleaners and degreasers, solvents, paints, lubricants, adhesives, sealers, and pesticides/herbicides.
- The observation platform and boat launch facility at the India Basin Shoreline Park property could use relatively small quantities of hazardous materials, consisting mostly of household-type cleaning products and maintenance products (e.g., paints, solvents, cleaning products). Fuels and other petroleum products would be present in boats using the launch facility, but no fueling facility would be provided on-site.
- Small quantities of commercial or household-type cleaning products, as well as maintenance products (e.g., paints, solvents, cleaning products), likely would be used by the commercial park-related concessions, the welcome center, and public exhibition space at the 900 Innes and India Basin Open Space properties.

- The proposed “maker space”/shop on the 900 Innes property could use products containing hazardous materials such as paints, solvents, and adhesives, as well as typical household-type or janitorial cleaning products.
- The proposed maintenance facility at the India Basin Open Space property likely would use moderate quantities of maintenance products that could contain hazardous materials (e.g., paints, solvents, cleaning products) and fuels and other petroleum products.

With an increase in the routine use of hazardous materials under the proposed project or variant, future occupants, visitors, and employees could be exposed to hazardous materials if hazardous materials or hazardous wastes were to be improperly handled or used during project operation, or if a spill were to occur.

As indicated in Section 3.16.2, “Regulatory Framework,” under San Francisco Health Code, Article 21, there is an established, comprehensive framework independent of the CEQA process that is intended to reduce the risks associated with the use of hazardous materials (and generation of hazardous waste). The DPH HMUPA has been granted authority by the State to enforce most regulations pertaining to hazardous materials in the City and would continue to regulate the use of hazardous materials and generation of waste.

Most hazardous materials used on the India Basin Shoreline Park property would likely be stored in a designated maintenance area on the adjacent 900 Innes property. Impacts of the storage of such chemicals are described in the discussion of that property below. Therefore, the potential risks of hazardous materials on the India Basin Shoreline Park property are limited to the handling and use of such materials, which would occur in accordance with manufacturer instructions. The potential risks, such as a spill or other release of small quantities of hazardous materials, would generally be limited to the immediate area where the materials would be used, because this is where exposure would be most likely. For this reason, the individuals most at risk would be employees or others in the immediate vicinity of the hazardous materials, rather than residents or visitors.

For the most part, the health and safety procedures that protect workers and other individuals in the immediate vicinity of hazardous materials (see further discussion under “700 Innes Property,” below) would also protect the adjacent community and environment. Compliance with Cal/OSHA regulations to ensure employee safety by properly identifying hazardous materials and adequately training workers would also be required.

Transporters of hazardous materials and wastes must comply with federal laws and regulations that are monitored and enforced by the CHP. Hazardous materials, as described in the examples above, would routinely be transported to, from, and within the project site, and small amounts of hazardous waste would be removed and transported off-site to licensed disposal facilities. Such transportation would be provided by vendors licensed for such transport (if necessary). Appropriate documentation for all hazardous materials and wastes would be required for compliance with the existing hazardous-materials regulations.

In general, the types and amounts of hazardous materials used at the India Basin Shoreline Park property would not pose any greater risk of upset or accident than other recreational and open space uses elsewhere in the City. No industrial manufacturing or processing activities using large amounts of hazardous materials or acutely hazardous materials that typically pose a greater accident or upset risk are proposed. Major hazardous-materials accidents associated with the limited retail-commercial uses, including cafes and concessions, are extremely infrequent. Moreover, as described above, releases, if any, would generally be limited to the immediate area where the materials would be used, because this is where exposure would be most likely. For this reason, the

individuals most at risk would be employees or others in the immediate vicinity of the hazardous materials, rather than residents or visitors.

SFFD responds to hazardous-materials incidents in the City, and additional emergency response capabilities are not anticipated to be necessary to respond to the incremental increase in the number of incidents that could result from operation of the proposed project or variant. Compliance with existing regulations will assure proper transport, use and disposal of hazardous materials at the India Basin Shoreline Park, 900 Innes, and India Basin Open Space.

### **700 Innes Property**

Operation of the proposed project or variant at the 700 Innes property would likely involve the presence of hazardous materials (or products containing hazardous materials) at varying levels. For example:

- Open space and landscape maintenance could use a wide variety of commercial products formulated with hazardous materials, similar to that described for the India Basin Shoreline Park property above.
- Residential units and commercial office space, most retail uses, and the proposed school would generally use relatively small quantities of hazardous materials, consisting mostly of household-type or janitorial cleaning products and maintenance products (e.g., paints, solvents, cleaning products).
- Commercial uses such as dry cleaners may involve the use of hazardous materials on-site, unless they are drop-off-only facilities or use nontoxic cleaning methods such as carbon dioxide cleaning, silicon cleaning, or wet cleaning methods.
- Artist studios may use products containing hazardous materials such as paints, solvents, and adhesives, as well as typical household-type or janitorial cleaning products.
- If cooling towers are used as part of operations in conjunction with an air conditioning system, they may use chemicals to inhibit rust or corrosion in the storage units.

In addition, the proposed project or variant could include R&D land uses. Some R&D operations could involve “dry” laboratories (or operations), where relatively small or negligible quantities of hazardous materials would be used because the space would typically be used for purposes such as office-based research and software development. In those cases, the types of hazardous materials would be limited to such items as cleaning and maintenance materials, and office products such as adhesives and glues. The proposed project or variant would not include any “wet” research lab functions—i.e., those involving a broad spectrum of activities involving hazardous materials, which would be used in controlled environments (e.g., fume hoods and special rooms).

With an increase in the routine use of hazardous materials under the proposed project or variant, future occupants, visitors, and employees could be exposed to hazardous materials if hazardous materials or hazardous wastes were to be improperly handled or used during project operation, or if a spill were to occur.

As indicated in Section 3.16.2, “Regulatory Framework,” there is an established, comprehensive framework independent of the CEQA process that is intended to reduce the risks associated with the use of hazardous materials (and generation of hazardous waste) by businesses, including R&D facilities. As described previously, the DPH HMUPA has been granted authority by the State to enforce most regulations pertaining to hazardous materials in the City and would continue to regulate the use of hazardous materials and generation of waste.

Facilities where hazardous materials would be used during project operation would be constructed in accordance with current laws and regulations requiring that storage areas minimize exposure to people or the environment and the potential for inadvertent releases. Hazardous materials would be labeled to inform users of potential risks and appropriate storage, handling, and disposal. Compliance with Cal/OSHA regulations would be required to ensure employee safety by properly identifying hazardous materials and adequately training workers. Transporters of hazardous materials and wastes must comply with federal laws and regulations that are monitored and enforced by the CHP.

Hazardous materials, as described in the examples above, would routinely be transported to, from, and within the project site, and hazardous waste would be removed and transported off-site to licensed disposal facilities. The precise increase in the amount of hazardous materials transported to or from the 700 Innes property with implementation of the proposed project or variant cannot be definitively predicted because of the pending selection of tenants for the future retail-commercial stores. It is reasonable to assume, however, that with the addition of new land uses involving the use of hazardous materials, transport would increase relative to current conditions. Such transportation for nonresidential uses would be provided by vendors licensed for such transport (if necessary).

Appropriate documentation for all hazardous materials and wastes would be required for compliance with existing hazardous-materials regulations. The DPH HMUPA would continue to conduct periodic inspections to ensure that hazardous materials and wastes are being used and stored properly. For these reasons, hazardous-materials use and waste generation for project operations would not pose a substantial public health or safety hazard to the surrounding area.

As described for the other project site properties above, in general, the types and amounts of hazardous materials used at the 700 Innes property under the proposed project or variant would not pose any greater risk of upset or accident than at other similar development elsewhere in the City. The proposed project or variant would not involve industrial manufacturing or processing activities or research and development activities that would use large amounts of hazardous materials or acutely hazardous materials, which typically pose a greater accident or upset risk. Residential activities would involve using only normal household quantities of commercially available products. Disposal of residential household hazardous waste in regular composting, recycling, or trash, or into the sewer is prohibited by law, and local providers such as Recology offer household hazardous waste drop-off facilities and pickup services for such waste streams.

Major hazardous-materials accidents associated with retail-commercial uses, including restaurants, theaters, and stores, are extremely infrequent. No industrial manufacturing or processing activities using large amounts of hazardous materials or acutely hazardous materials, which typically pose a greater accident or upset risk, are proposed at the 700 Innes property under the proposed project or variant. Moreover, as described above, any releases would generally be limited to the immediate area where the materials would be used, because this is where exposure would be most likely. For this reason, the individuals most at risk would be employees or others in the immediate vicinity of the hazardous materials, rather than residents or visitors.

SFFD responds to hazardous-materials incidents in the City. Additional emergency response capabilities are not anticipated to be necessary to respond to the incremental increase in the number of incidents that could result from operation of the proposed project or variant. The City has a comprehensive and ongoing hazardous materials emergency response program. San Francisco's emergency response plan was developed to ensure that resources

are allocated and coordinated in case of an emergency in the City (SFDEM, 2009). The emergency response plan generally describes what the City's actions will be during an emergency response. A separate hazard mitigation plan assesses risks posed by natural and human-caused hazards and sets forth a mitigation strategy for reducing the City's risks (SFDEM, 2014).

The specific departmental responsibilities for responding to hazardous-materials incidents in the City are outlined in the Emergency Support Function #10 Oil and Hazardous Materials Response Annex to the Emergency Response Plan (SFDEM, n.d.). SFFD is the first responder to hazardous-materials emergencies for the City and County of San Francisco. As for the other properties, compliance with existing regulations will assure proper transport, use and disposal of hazardous materials at the 700 Innes property.

### **Overall Operational Impact HZ-1 Conclusion**

The overall operational impact related to the potential to create a significant hazard to the environment through the routine transport, use, or disposal of hazardous materials would be *less than significant*. No mitigation measures are necessary.

### **Overall Impact Conclusion**

The overall impact related to potential to create a significant hazard to the environment through the routine transport, use, or disposal of hazardous materials would be reduced to *less than significant with mitigation* with implementation of Mitigation Measure M-HY-1b.

### **Impact HZ-2: The proposed project or variant would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation related to the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Separate analyses and individual impact conclusions are provided for construction-related and operational impacts. Except where noted, the respective impacts described below would occur under either the proposed project or the variant. An "overall" impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion. Note that impacts relating to accidental release (i.e., spills) of hazardous materials and substances routinely used during construction activities and project operations (e.g., small quantities of fuels, solvents, paints and other substances) are addressed in Impact HZ-1 above.

### **India Basin Shoreline Park Property**

#### ***Contaminated Soils, Sediments, and Groundwater***

As discussed previously, to analyze potential impacts to construction workers and the public of project construction activities under the proposed project or variant, environmental sampling results were compared to construction worker and dermal contact ESLs because construction workers would be at the greatest risk of exposure to contaminants in soil, sediment, and groundwater during construction activities. Results were also compared to State and federal hazardous waste criteria to determine potential handling, transportation, and

disposal requirements for any soil or sediment removed from the property during construction, and to surface water marine water quality objectives to determine potential impacts to the environment. Sampling results for soils, sediments, and groundwater at the India Basin Shoreline Park property were generally below the relevant construction worker and dermal contact ESLs, except for the following:

- *Soils*: Some areas of fill contain occurrences of lead and/or PAHs that exceed the construction worker ESLs. In addition, some portions of fill on the India Basin Shoreline Park property contain serpentinite, which contains naturally occurring asbestos, and are subject to ARB's asbestos airborne toxic control measures for Surfacing Applications and for Construction, Grading, Quarrying, and Surface Mining Operations. None of the sampling results exceeded the federal or California hazardous waste criteria.
- *Sediments*: Some nearshore areas contain benzo(a)pyrene and/or benzo(a)pyrene equivalent (both a type of PAH) at levels exceeding construction worker ESLs. None of the sampling results indicated that sediments would be considered a federal or California hazardous waste if removed from the site.
- *Groundwater*: Low levels of metals were detected at concentrations that do not exceed dermal-contact ESLs. The presence of these metals in groundwater likely reflects ambient conditions in the site vicinity and is not anticipated to pose a risk to construction workers.
- *Surface water*: Surface water quality modestly exceeds marine water quality objectives for several metals: arsenic, cadmium, copper, and silver. The presence of these metals in surface water likely reflects the ambient Bay conditions in the vicinity of India Basin and is not anticipated to pose a risk to construction workers.

Construction of the proposed project or variant could release or mobilize contaminants in soil to groundwater; generate fugitive dust emissions; or expose construction workers or the public to contaminated soils, sediments, or emissions during on-land and in-water construction and site preparation activities. Construction activities such as grading and installation of new piles or other deep foundations could also mobilize contaminants. The act of driving piles through the contaminated soils or sediments may drag contaminants into the clean native soil, sediments, or groundwater beneath. Offshore construction/site preparation activities, such as construction of the new pier and removal of riprap protection, could also cause remobilization of contaminants from offshore sediments into the water column of the Bay. These impacts could be significant.

To protect both the public and the environment during project construction activities, Mitigation Measure M-HZ-2a requires preparing and implementing a site mitigation plan for areas above the MHW, which is also required for compliance with Article 22A of the San Francisco Health Code (i.e., the Maher Ordinance). The Maher Ordinance requires DPH review and approval of the site mitigation plan, which may result in additional requirements and controls beyond those specified in Mitigation Measure M-HZ-2a. However, the requirements outlined in the mitigation measure are considered the minimum actions necessary to reduce the potential construction-related impacts to less than significant with mitigation. Implementing Mitigation Measure M-HZ-2a would require adequate worker health and safety, dust and odor control, deep foundation installation, and soil handling procedures. Thus, this measure would reduce the potential for project construction in portions of the India Basin Shoreline Park property above the MHW line (where the site mitigation plan is applicable) to adversely affect workers, the general public, and the environment, and the impact from these activities would be *less than significant with mitigation*.



### **Mitigation Measure M-HZ-2a: Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line**

*Before obtaining a site permit, building permit, or other permit from the City for development activities involving subsurface disturbance landward of the MHW line, the project sponsors shall comply with the requirements of San Francisco Health Code Article 22A, by causing a qualified person to prepare and submit a site mitigation plan to DPH for review and approval. The project sponsors shall implement the approved site mitigation plan. At a minimum, the site mitigation plan shall:*

- *Establish appropriate site-specific cleanup targets, to be reviewed and approved by DPH, that are protective of human health and environment based on the proposed future land use(s). At a minimum, these targets shall be equal to, or more protective, than the following:*
  - *For the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties: The HHSLs (for land to be used for recreational purposes) or the EHSLs (for land to be used for tidal marsh or wetlands) as established in the draft site mitigation plan (RPD, 2017a).*
  - *For the 700 Innes property: San Francisco Bay RWQCB ESLs for residential use.*
- *Delineate the extent of soil and/or groundwater contamination at levels exceeding the plan's cleanup levels. Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The site mitigation plan should include figures and drawings showing areas and depths of soil excavation or treatment, soil waste classifications, and any mitigating measures.*
- *Implement procedures for safe handling and transportation of the excavated materials, consistent with the requirements set forth in Article 22A, including:*
  - *Removal of soil and materials shall be performed by a licensed engineering contractor with a Class A license and hazardous-substance removal certification. A California-licensed engineer shall provide field oversight on behalf of the project sponsors to document the origin and destination of all removed materials. If necessary, removed materials shall be temporarily stockpiled and covered with plastic sheeting pending relocation, segregation, or off-haul.*
  - *If excess materials are off-hauled, waste profiling of the material shall be completed and documented. Materials classified as nonhazardous waste shall be transported under a bill of lading. Materials classified as non-RCRA hazardous waste shall be transported under a hazardous waste manifest. All materials shall be disposed of at an appropriately licensed landfill or facility.*
  - *Trucking operations shall comply with Caltrans and any other applicable regulations, and all trucks shall be licensed and permitted to carry the appropriate waste classification. The tracking of dirt by trucks leaving the project site shall be minimized by cleaning the wheels upon exit and cleaning the loading zone and exit area as needed.*
  - *If materials require dewatering before off-hauling, a dewatering plan shall be prepared, specifying methods of water collection, transport, treatment, and discharge of all water produced by dewatering.*
- *Describe postexcavation confirmation sampling. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where*

*and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated soil, followed by a cap of clean soil or hard surface materials; operation and maintenance protocols for any disturbance of contaminated soils; and recording of deed restrictions, such as activity and use limitations, with the San Francisco Recorder's Office to assure that the remedy is maintained.*

- *Require preparation and implementation of a site-specific health and safety plan (HASP) to minimize impacts on public health, worker health, and the environment. The HASP shall be prepared in accordance with State and federal OSHA regulations (29 CFR 1910.120) and approved by a certified industrial hygienist. Development of the plan shall be required as a condition of any applicable permit. Copies of the HASP shall be made available to construction workers for review during their orientation and/or regular health and safety meetings, and to the project sponsors. The HASP shall be submitted to DPH at least 2 weeks before the beginning of construction activities. The HASP shall identify chemicals of concern, potential hazards, personal protective equipment and devices, decontamination procedures, the need for personal or area monitoring, and emergency response procedures. The HASP shall be amended, as necessary, if new information becomes available that could affect implementation of the plan.*
- *Require preparation of a deep foundation plan that will specify construction and soil handling methods to prevent potentially contaminated fill materials from being pushed into underlying soil or groundwater, or otherwise cause contaminants to be mobilized, transported, or discharged to the environment.*
- *Require preparation and implementation of required construction-related documents, including odor and noise control measures and a SWPPP.*
- *Require preparation of a dust control plan that shall specify measures to reduce fugitive dust emissions during construction, and that complies with San Francisco Health Code Article 22B. For the India Basin Shoreline Park property only, require preparation of an asbestos dust mitigation plan to be submitted to and approved by BAAQMD, in accordance with 17 CCR Section 93105 and 8 CCR Section 1529.*
- *Require preparation and implementation of a contingency plan to address unanticipated conditions or contaminants encountered during construction and development activities. The conditions of the contingency plan shall be incorporated into the first permit and any applicable permit thereafter. This plan shall establish and describe procedures for responding in the event that unanticipated subsurface hazards or hazardous material releases are discovered during construction, including appropriately notifying nearby property owners, schools, and residents and following appropriate site control procedures. Control procedures would include but not be limited to further investigation and, if necessary, remediation of such hazards or releases, including off-site removal and disposal, containment, or treatment. If unanticipated subsurface hazards or hazardous material releases are discovered during construction, the requirements of this contingency plan addressing unknown contaminants shall be followed. The contingency plan shall be amended as necessary if new information becomes available that could affect implementation of the plan.*
- *Include a commitment to prepare and certify a final project report documenting implementation of the site mitigation plan and its provisions after site earthwork has been completed and any required mitigating measures have been installed.*

The provisions of any site mitigation plan prepared under Mitigation Measure M-HZ-2a would not be applicable to proposed construction activities below the MHW line, such as removal of the existing piers and riprap, restoration of wetland habitats, and installation of piles for the proposed replacement pier and dock.

However, implementing Mitigation Measure M-HY-1a, “Monitor Turbidity during Construction,” and Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices,” presented in Section 3.15, “Hydrology and Water Quality,” would substantially reduce the likelihood that construction activities would mobilize contaminants from offshore sediments into Bay waters. In addition, Mitigation Measure M-HZ-2b, presented below, requires preparation and implementation of a nearshore sediment and materials management plan, which would apply to portions of the India Basin Shoreline Park property below the MHW line. The plan requires identification of site-specific cleanup targets for nearshore sediment that are protective of tidal marsh habitat. The regulatory agencies that authorize in-water work must review and approve the plan. Thus, the plan would be included as part of the relevant permitting applications (CWA Section 401 water quality certification and Section 404 permit, Rivers and Harbors Act Section 10 permit, and BCDC major permit). It is recognized that the various permitting and approval processes applicable for work below MHW may result in additional requirements and controls beyond those specified below in Mitigation Measure M-HZ-2b; however, Mitigation Measure M-HZ-2b contains the actions considered necessary under CEQA to reduce the potential impacts at the India Basin Shoreline Park associated with the potential release of hazardous materials in offshore sediments during project construction activities

**Mitigation Measure M-HZ-2b: Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line**

*Before obtaining a permit for any work Bayward of the MHW line, the project sponsors and their construction contractors shall prepare and implement a nearshore sediment and materials management plan. The plan shall identify, as appropriate, such measures as sediment excavation, containment, or treatment of the hazardous materials, monitoring and follow-up testing, and procedures for safe handling and transportation of any materials removed from the nearshore. This plan shall be submitted to the relevant permitting agencies for their review and approval, before work begins below the MHW line. The plan shall:*

- *Establish appropriate site-specific cleanup targets for nearshore sediment that are protective of tidal marsh habitat. The cleanup targets must be approved by the San Francisco Bay RWQCB, USACE, BCDC, and/or another permitting agency. At a minimum, these targets shall be equal to, or more protective, than the EHSLs established in the draft site mitigation plan (RPD, 2017a).*
- *Delineate the extent of nearshore sediment contamination at levels exceeding the plan’s cleanup levels. Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan’s cleanup levels. The plan should include figures and drawings showing areas and depths of sediment excavation or treatment, waste classifications, and any mitigating measures.*
- *Implement procedures for safe handling and transportation of the excavated materials, consistent with the requirements set forth in Article 22A of the San Francisco Health Code, including:*
  - *Removal of sediments and materials shall be performed by a licensed engineering contractor with a Class A license and hazardous-substance removal certification. A California-licensed engineer*

- shall provide field oversight on behalf of the project sponsors to document the origin and destination of all removed materials. If necessary, removed materials shall be temporarily stockpiled and covered with plastic sheeting pending relocation, segregation, or off-haul.*
- *If excess materials are off-hauled, waste profiling of the material shall be completed and documented. Materials classified as nonhazardous waste shall be transported under a bill of lading. Materials classified as non-RCRA hazardous waste shall be transported under a hazardous waste manifest. All materials shall be disposed of at an appropriately licensed landfill or facility.*
  - *Trucking operations shall comply with Caltrans and any other applicable regulations, and all trucks shall be licensed and permitted to carry the appropriate waste classification. To minimize the tracking of dirt by trucks leaving the project site, truck wheels shall be cleaned upon exit and the loading zone and exit area shall be cleaned as needed.*
  - *If materials require dewatering before off-hauling, a dewatering plan shall be prepared, specifying methods of water collection, transport, treatment, and discharge of all water produced by dewatering.*
  - *Describe postremoval confirmation sampling. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated sediments, followed by a cap of clean sediments or hard surface materials; operation and maintenance protocols for any disturbance of contaminated sediments; and recording of deed restrictions, such as activity and use limitations, with the San Francisco Recorder's Office to assure that the remedy is maintained.*
  - *Require preparation and implementation of a site-specific health and safety plan to minimize impacts on public health, worker health, and the environment. The HASP shall be prepared in accordance with State and federal OSHA regulations (29 CFR 1910.120) and approved by a certified industrial hygienist. Development of the plan shall be required as a condition of any applicable permit. Copies of the HASP shall be made available to construction workers for review during their orientation and/or regular health and safety meetings, and to the project sponsors. The HASP shall identify chemicals of concern, potential hazards, personal protective equipment and devices, decontamination procedures, the need for personal or area monitoring, and emergency response procedures. The HASP shall be amended, as necessary, if new information becomes available that could affect implementation of the plan.*
  - *Require preparation of a dust control plan that shall specify measures to reduce fugitive dust emissions during construction. For the India Basin Shoreline Park property only, require preparation of an asbestos dust mitigation plan to be submitted to and approved by BAAQMD, in accordance with 17 CCR Section 93105 and 8 CCR Section 1529.*
  - *Require preparation and implementation of required construction-related documents, including odor, dust, and noise control measures and a SWPPP.*
  - *Require preparation of a deep foundation plan that will specify construction and sediment handling methods to prevent potentially contaminated fill materials from being pushed into underlying*

*sediments or groundwater, or otherwise cause contaminants to be mobilized, transported, or discharged to the environment.*

- *Require preparation and implementation of a contingency plan to address unanticipated conditions or contaminants encountered during construction and development activities. The conditions of the contingency plan shall be incorporated into the first permit and any applicable permit thereafter. This plan shall establish and describe procedures for responding in the event that unanticipated subsurface hazards or hazardous material releases are discovered during construction, including appropriately notifying nearby property owners, schools, and residents and following appropriate site control procedures. Control procedures would include but not be limited to further investigation and, if necessary, remediation of such hazards or releases, including off-site removal and disposal, containment, or treatment. If unanticipated subsurface hazards or hazardous material releases are discovered during construction, the requirements of this contingency plan addressing unknown contaminants shall be followed. The contingency plan shall be amended as necessary if new information becomes available that could affect implementation of the plan.*
- *Include a commitment to prepare and certify a final project report documenting implementation of the nearshore sediment and materials management plan and its provisions after completion of site earthwork has been completed and any required mitigating measures have been installed.*

Implementing Mitigation Measures M-HY-1a and M-HY-1b (Section 3.15, “Hydrology and Water Quality”) and Mitigation Measure M-HZ-2b would reduce the potential for construction impacts on portions of the India Basin Shoreline Park property below the MHW line (where the nearshore sediment and materials management plan is applicable) to *less than significant with mitigation*.

### ***Hazardous Building Materials***

No hazardous building materials (lead-based paint or asbestos-containing materials) on the India Basin Shoreline Park property would be affected by the proposed project or variant. However, the property does contain potentially creosote-impacted piles associated with existing pier structures. Impacts relating to the removal and possible replacement of the creosote-contaminated piles could be significant. However, implementing Mitigation Measures M-HZ-2a and M-HZ-2b (above) and Mitigation Measure M-HY-1b (Section 3.15, “Hydrology and Water Quality”) at the India Basin Shoreline Park property would reduce these adverse effects by requiring adequate worker health and safety procedures, materials handling, and pile removal procedures. As such, potential construction impacts of the proposed project or variant related to hazardous building materials at this property would be reduced to *less than significant with mitigation*.

### **900 Innes Property**

#### ***Contaminated Soils, Sediments, and Groundwater***

As discussed previously, to analyze potential impacts from construction activities under the proposed project or variant on construction workers and the public, environmental sampling results were compared to construction worker and dermal contact ESLs. Results were also compared to State and federal hazardous waste criteria, to determine potential handling, transportation, and disposal requirements for any soil or sediment removed from the property during construction, and to surface water marine water quality objectives to determine potential impacts

to the environment. On much of the 900 Innes property, soil and nearshore sediment contamination is at levels that exceed the construction worker ESLs, as summarized below and described more fully in the site characterization report (RPD, 2017d).

- *Soils:* Many upland areas on the 900 Innes property contain metals (arsenic, cobalt, copper, lead, mercury, and/or nickel), PCBs, TPH-d, and/or PAHs at concentrations exceeding construction worker ESLs. In addition, many samples had concentrations exceeding California's TTLC, and would therefore be considered California hazardous waste if removed from the project site.
- *Sediments:* Much of the nearshore area on this property contains heavy metals (arsenic and/or lead) at concentrations exceeding the construction worker ESLs. In addition, some sediment samples contain COPCs at concentrations exceeding California's TTLC, and would therefore be considered California hazardous waste.
- *Groundwater:* Low levels of metals (barium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, and/or zinc), TPH-d, TPH-mo, and/or PAHs were detected at concentrations that do not exceed dermal-contact ESLs, and are therefore not anticipated to pose a risk to construction workers.
- *Surface water:* Surface water quality exceeds San Francisco Bay RWQCB or SWRCB marine water quality objectives for several metals (arsenic, cadmium, copper, nickel, and/or silver). This likely reflects ambient conditions of India Basin and is not anticipated to pose a risk to construction workers.

As discussed previously, as part of the proposed project or variant, to address existing contamination of soil and sediment on the 900 Innes property, RPD intends to implement a RAP under the San Francisco Bay RWQCB's voluntary cleanup program at the 900 Innes property. RPD has prepared a conceptual RAP for the property (RPD, 2017f), as described under "Project Features," above. The goal of the RAP would be to make the site safe for planned future uses. The RAP is subject to review and approval by the oversight agency (the San Francisco Bay RWQCB); its approval of the RAP would occur after completion of the CEQA process. Consequently, the final requirements and controls in the RAP are not known at this time but the conceptual RAP provides a reasonable understanding of the work that RPD would intend to carry out under the RAP. While the RAP is designed to protect future users and the environment from existing contamination, implementation of the RAP itself would result in disturbance of contaminated soil, sediment, and groundwater, which could expose receptors to health or safety risks.

Mitigation Measure M-HZ-2c will assure that the RAP is carried out in a manner that protects construction workers implementing the RAP from unacceptable exposures to hazardous materials or mobilization of contaminants to the environment during its implementation. The RAP requires that project construction follow adequate worker health and safety, dust and odor control, and soil/sediment/material handling procedures to reduce potential impacts on workers, the general public, and the environment. The RAP also has the goal of protecting future users of the site.

**Mitigation Measure M-HZ-2c: Prepare and Implement a Remedial Action Plan for the 900 Innes Property**

*Before obtaining a grading, excavation, site, building, or other permit for development activities at the 900 Innes property, the project sponsors shall prepare and implement a remedial action plan approved by the San Francisco Bay RWQCB. The RAP must specify the actions that will be implemented to*

*remediate the significant environmental or health and safety risks caused or likely to be caused by the presence of the identified release of hazardous materials in light of project activities. All recommendations of the RAP that affect project design shall be implemented and incorporated into the detailed design of the proposed project or variant. As appropriate and consistent with requirements in San Francisco Health Code Articles 22A and 22B and San Francisco Bay RWQCB standards, the plan and its implementation shall at a minimum:*

- *Establish appropriate site-specific cleanup targets that are protective of human health and the environment, based on the proposed future land use(s). At a minimum, the cleanup targets shall be equal to or more protective than the remedial action goals established in the conceptual RAP (RPD, 2017f). In the conceptual RAP, remedial action goals for upland areas are based on HHSI for recreation use; remedial action goals for offshore sediments are based on a review of COPCs identified at the property, comparative ecological screening values, and published action goals that have been adopted at other nearby tidal restoration projects.*
- *Delineate the extent of soil, sediment, and/or groundwater contamination at levels exceeding the plan's cleanup targets. Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The RAP should include figures and drawings showing areas and depths of soil and sediment excavation or treatment, soil waste classifications, and any mitigating measures.*
- *Implement procedures for safe handling and transportation of the excavated materials, including:*
  - *Removal of soil, sediment, and other materials shall be performed by a licensed engineering contractor with a Class A license and hazardous substance removal certification. A California-licensed engineer shall provide field oversight on behalf of the project sponsors to document the origin and destination of all removed materials. If necessary, removed materials shall be temporarily stockpiled and covered with plastic sheeting pending relocation, segregation, or off-haul.*
  - *If excess materials are off-hauled, waste profiling of the material shall be completed and documented. Materials classified as nonhazardous waste shall be transported under a bill of lading. Materials classified as non-RCRA hazardous waste shall be transported under a hazardous waste manifest. All materials shall be disposed of at an appropriately licensed landfill or facility.*
  - *Trucking operations shall comply with Caltrans and any other applicable regulations, and all trucks shall be licensed and permitted to carry the appropriate waste classification. To minimize the tracking of dirt by trucks leaving the project site, truck wheels shall be cleaned upon exit and the loading zone and exit area shall be cleaned as needed.*
  - *If materials require dewatering before off-hauling, a dewatering plan shall be prepared, specifying methods of water collection, transport, treatment, and discharge of all water produced by dewatering.*
- *Describe postexcavation confirmation sampling. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated*

*soil/sediment, followed by a cap of clean soil/sediment or hard surface materials; operation and maintenance protocols for any disturbance of contaminated soils/sediment; and recording of deed restrictions, such as activity and use limitations, with the San Francisco Recorder's Office to assure that the remedy is maintained.*

- *Require preparation and implementation of a site-specific health and safety plan to minimize impacts on public health, worker health, and the environment. The HASP shall be prepared in accordance with State and federal OSHA regulations (29 CFR 1910.120) and approved by a certified industrial hygienist. Development of the plan shall be required as a condition of any applicable permit. Copies of the HASP shall be made available to construction workers for review during their orientation and/or regular health and safety meetings, and to the project sponsors. The HASP shall identify chemicals of concern, potential hazards, personal protective equipment and devices, decontamination procedures, the need for personal or area monitoring, and emergency response procedures. The HASP shall be amended, as necessary, if new information becomes available that could affect implementation of the plan.*
- *Require preparation and implementation of required construction-related documents, including odor, dust, and noise control measures and a SWPPP.*
- *Require preparation of a deep foundation plan that will specify construction and soil/sediment handling methods to prevent potentially contaminated fill materials from being pushed into underlying soil/sediment or groundwater, or otherwise cause contaminants to be mobilized, transported, or discharged to the environment.*
- *Require preparation and implementation of a contingency plan to address unanticipated conditions or contaminants encountered during construction and development activities. The conditions of the contingency plan shall be incorporated into the first permit and any applicable permit thereafter. This plan shall establish and describe procedures for responding in the event that unanticipated subsurface hazards or hazardous material releases are discovered during construction, including appropriately notifying nearby property owners, schools, and residents and following appropriate site control procedures. Control procedures would include but not be limited to further investigation and, if necessary, remediation of such hazards or releases, including off-site removal and disposal, containment, or treatment. If unanticipated subsurface hazards or hazardous material releases are discovered during construction, the requirements of this contingency plan addressing unknown contaminants shall be followed. The contingency plan shall be amended as necessary if new information becomes available that could affect implementation of the plan.*
- *Include a commitment to prepare and certify a final project report documenting implementation of the RAP and its provisions after site earthwork has been completed and any required mitigating measures have been installed.*

Implementing Mitigation Measure M-HZ-2c would therefore reduce potential impacts from exposure to hazardous materials during remedial actions at 900 Innes to *less than significant with mitigation*.

The RAP would remove contaminated materials that are considered hazardous waste according to California's TTLC values; remove contaminated materials or provide a physical barrier for any contaminants not removed that would pose an unacceptable exposure risk to future site users; and restore offshore sediments to a quality that would support ecological habitat in areas designated for tidal marsh.



Despite implementation of the RAP, construction activities during site development that take place after remediation, such as grading or installing piles or deep foundations, could mobilize contaminants that remain beneath clean fill or hardscape areas after remediation. The act of driving piles through contaminated soils may drag contaminants into the clean native soil and groundwater beneath the fill. Offshore construction/site preparation activities, such as replacing two existing piers and shipyard piles, could also cause mobilization of contaminants from offshore sediments into Bay waters.

Implementing Mitigation Measure M-HZ-2a (presented above in the discussion of the impact at the India Basin Shoreline Park property) would require adequate worker health and safety, dust and odor control, deep foundation installation, and soil handling procedures during construction activities. Thus, this measure would reduce the potential for postremediation project construction in portions of the 900 Innes property above the MHW line (where the site mitigation plan is applicable) to adversely affect workers, the general public, and the environment. With implementation of Mitigation Measure M-HZ-2a, the impact from the release of hazardous materials from contaminated soils, sediments, or groundwater located above the MHW line at 900 Innes would be *less than significant with mitigation*.

However, because the Maher Ordinance is applicable only to areas landward of the MHW line, the provisions of any site mitigation plan prepared under Mitigation Measure M-HZ-2a would not be applicable to postremediation construction activities below the MHW line, such as restoration of wetland habitats, and installation of piles for the proposed replacement piers.

Implementing Mitigation Measure M-HY-1a, “Monitor Turbidity during Construction,” and Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices,” presented in Section 3.15, “Hydrology and Water Quality,” would substantially reduce the likelihood of mobilization of contaminants from offshore sediments into the water column of the Bay. Mitigation Measure M-HZ-2b (presented above in the discussion of the impact at the India Basin Shoreline Park property) requires preparation and implementation of a nearshore sediment and materials management plan, which would apply to portions of the 900 Innes property below the MHW line. The plan would be included as part of the relevant permitting applications (CWA Section 401 water quality certification and Section 404 permit, Rivers and Harbors Act Section 10 permit, and BCDC major permit).

Implementing Mitigation Measures M-HY-1a and M-HY-1b (Section 3.15, “Hydrology and Water Quality”) and Mitigation Measures M-HZ-2b (presented above) would reduce the potential for postremediation construction impacts from the release of hazardous materials from contaminated soils, sediments, or groundwater located below the MHW line at the 900 Innes property to *less than significant with mitigation*.

### ***Hazardous Building Materials***

The 900 Innes property contains older structures that likely have asbestos-containing materials, lead-based paint, and/or mercury-containing materials. The western marineway tracks and piles supporting the existing pier structures are also likely to be contaminated by creosote. Construction on this property would include the handling, transport, and disposal of hazardous building materials, such as asbestos-containing materials, during restoration activities at the Shipwright’s Cottage and tool shed and demolition of other structures and creosote-contaminated wood after removal of the piles.

Demolition of existing buildings and structures would be subject to BAAQMD Regulation 11, Rule 2, “Hazardous Materials; Asbestos Demolition, Renovation, and Manufacturing.” BAAQMD Regulation 11, Rule 2 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses national emissions standards for asbestos and requires the CEQA lead agency (in this case, the City and County of San Francisco) and project-associated sponsors and contractors to notify BAAQMD of any regulated renovation or demolition activity. All asbestos-containing material found on the site must be removed before the start of demolition or renovation activity. The rule contains specific requirements for surveying, notification, removal, and disposal of materials containing asbestos. With adherence to BAAQMD Regulation 11, Rule 2, impacts of the proposed project or variant related to restoration and demolition of structures at the 900 Innes property with asbestos-containing materials would be less than significant. No mitigation measures are necessary.

However, impacts related to the removal and possible replacement of portions of the western marineway tracks and creosote-contaminated piles offshore could be significant. Implementing Mitigation Measures M-HZ-2b and M-HZ-2c, above, along with Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices” (presented in Section 3.15, “Hydrology and Water Quality”), would reduce these effects by requiring adequate worker health and safety procedures, materials handling, and pile removal procedures. Therefore, potential impacts from hazardous building materials during construction of the project or variant at the 900 Innes property would be reduced to *less than significant with mitigation*.

### **India Basin Open Space Property**

#### ***Contaminated Soils, Sediments, and Groundwater***

As discussed previously, to analyze potential impacts to construction workers and the public from construction activities under the proposed project or variant, environmental sampling results were compared to construction worker ESLs. Results were also compared to State and federal hazardous waste criteria, to determine potential handling, transportation, and disposal requirements for any soil or sediment removed from the property during construction. Sampling results for soils, sediments, and groundwater at the India Basin Open Space property were generally beneath the relevant construction worker ESLs, except for the following:

- *Soils*: There are occurrences of slightly elevated concentrations of metals (cobalt, lead, and nickel) and PAHs throughout the India Basin Open Space’s fill soil, which in some cases exceed the construction worker ESLs.
- *Sediments*: Sediment sampling results indicate that some nearshore areas on this property contain heavy metals (arsenic, copper, lead, mercury, nickel, selenium, and/or zinc), PCBs, PAHs, and/or TPH-mo at concentrations that, in some cases, exceed the construction worker ESLs.
- *Groundwater*: No groundwater sampling occurred at the India Basin Open Space property. Conditions are expected to be similar to those described above for the other project site properties.
- *Surface water*: No surface water quality sampling occurred in the vicinity of the India Basin Open Space property. Conditions are expected to be similar to those described above for the other properties.

Construction of the proposed project or variant could cause the release or mobilization of contaminants to groundwater; generate fugitive dust emissions; or expose construction workers or the public to contaminated soils, sediments, groundwater, or emissions during on-land and in-water construction and site preparation. The potential

also exists for contaminants to be mobilized during construction and site preparation activities such as grading and installation of piles or deep foundations. Offshore construction and site preparation activities, such as removal of the existing pier and associated piles, could also cause mobilization of contaminants from offshore sediments into the water column of the Bay. These impacts could be significant.

Mitigation Measure M-HZ-2a (presented above in the discussion of the impact at the India Basin Shoreline Park property), requires preparation and implementation of a site mitigation plan for areas above the MHW line, which is also required for compliance with Article 22A of the San Francisco Health Code (i.e., the Maher Ordinance). The Maher Ordinance requires DPH review and approval of the site mitigation plan, which may result in additional requirements and controls beyond those specified in Mitigation Measure M-HZ-2a. However, the requirements outlined in the mitigation measure are considered the minimum actions necessary to reduce the potential construction-related impacts associated with disturbance of contaminated soils, sediments, and groundwater above the MHW line to *less than significant with mitigation*.

Implementing Mitigation Measure M-HZ-2a would require adequate worker health and safety, dust and odor control, deep foundation installation, and soil handling procedures. Thus, this measure would reduce the potential for project construction in portions of the India Basin Open Space property above the MHW line (where the site mitigation plan is applicable) to adversely affect workers, the general public, and the environment. The impact would be *less than significant with mitigation*.

However, because the Maher Ordinance is applicable only to areas landward of the MHW line, the provisions of any site mitigation plan prepared under Mitigation Measure M-HZ-2a would not be applicable to construction activities below the MHW line, such as removal of the existing riprap, pier and piles, and restoration of wetland habitats.

Implementing Mitigation Measure Mitigation Measure M-HY-1a, “Monitor Turbidity during Construction,” and Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices,” presented in Section 3.15, “Hydrology and Water Quality,” would substantially reduce the likelihood of remobilization of contaminants from offshore sediments into the water column of the Bay. Mitigation Measure M-HZ-2b, presented above, requires preparation and implementation of a nearshore sediment and materials management plan, which would apply to portions of the India Basin Open Space property below the MHW line. The plan would be included as part of the relevant permitting applications (CWA Section 401 water quality certification and Section 404 permit, Rivers and Harbors Act Section 10 permit, and BCDC major permit).

Implementing Mitigation Measures M-HY-1a and M-HY-1b (Section 3.15, “Hydrology and Water Quality”) and Mitigation Measures M-HZ-2b would reduce the potential for construction impacts on the India Basin Open Space property from the release of hazardous materials from contaminated soils, sediments, or groundwater located below the MHW line to *less than significant with mitigation*.

### ***Hazardous Building Materials***

No hazardous building materials (lead-based paint or asbestos-containing materials) on the India Basin Open Space property would be affected by the proposed project or variant. However, the property does contain potentially creosote-impacted piles that would be removed from the nearshore during removal of the associated existing pier. Impacts related to the removal of creosote-contaminated piles in the nearshore could be significant.

Implementing Mitigation Measure M-HZ-2b, presented above, would reduce these effects by requiring adequate worker health and safety procedures, materials handling, and pile removal procedures. Thus, potential impacts from hazardous building materials during construction of the proposed project or variant at the India Basin Open Space property would be reduced to *less than significant with mitigation*.

### **700 Innes Property**

#### ***Contaminated Soils, Sediments, and Groundwater***

As discussed previously, to analyze potential impacts to construction workers and the public from construction activities under the proposed project or variant, environmental sampling results were compared to construction worker ESLs. Results were also compared to State and federal hazardous waste criteria, to determine potential handling, transportation, and disposal requirements for any soil or sediment removed from the property during construction. Sampling results for soils, sediments, and groundwater at the 700 Innes property were generally below the relevant construction worker ESLs, except for the following:

- *Soils:* Some areas on the 700 Innes property contain concentrations of metals (cobalt, lead, mercury, and/or nickel) that exceed the construction worker ESLs. Some fill materials contain metals at levels that exceed the State of California's TTLC, and therefore would be considered California hazardous waste, if the material were removed from the site.
- *Sediments:* Except for a small area directly adjacent to the 900 Innes property, the 700 Innes property is entirely above MHW. No sampling of nearshore sediments occurred at this property. Conditions are expected to be similar to those described for the adjacent portion of the 900 Innes property.
- *Groundwater:* Groundwater within the 700 Innes property contains cobalt and TPH-d at concentrations exceeding the San Francisco Bay RWQCB's MCL priority ESL.
- *Surface water:* Except for a small area directly adjacent to the 900 Innes property, the 700 Innes property is entirely above MHW. No sampling of surface water occurred in the vicinity of this property. Conditions are expected to be similar to those described for the adjacent portion of the 900 Innes property.
- *Soil Gas:* Trace concentrations of several VOCs, including PCE, TCE, cis-1,2-DCE, BTEX, tetrahydrofuran, and carbon disulfide, were present in soil gas samples. There are no established construction worker ESLs for soil gas. Benzene was detected above the residential ESL in some samples.

Construction of the proposed project or variant at the 700 Innes property could cause a release or mobilization of contaminants to groundwater; generate fugitive dust emissions; or expose construction workers or the public to contaminated soils, sediments, groundwater, or emissions during construction and site preparation.

Construction activities such as grading or installing new deep piles or foundations for new residential, commercial, R&D, and institutional structures could mobilize contaminants. The act of driving piles through contaminated soils may drag contaminants into the clean native soil and groundwater beneath the fill. These construction impacts could be significant.

Mitigation Measure M-HZ-2a, detailed above, requires preparation and implementation of a site mitigation plan for areas above the MHW line, which is also required for compliance with Article 22A of the San Francisco Health Code (i.e., the Maher Ordinance). The Maher Ordinance requires DPH review and approval of the site

mitigation plan, which may result in additional requirements and controls beyond those specified in Mitigation Measure M-HZ-2a. However, the requirements outlined in the mitigation measure are considered the minimum actions necessary to reduce the potential construction-related impacts to less than significant with mitigation.

Implementing Mitigation Measure M-HZ-2a would require adequate worker health and safety, dust and odor control, deep foundation installation, and soil handling procedures. Thus, this measure would reduce the potential for construction impacts from portions of the 700 Innes property above the MHW line (where the site mitigation plan is applicable) to adversely affect workers, the general public, and the environment. The impact would be *less than significant with mitigation*.

However, because the Maher Ordinance is applicable only to areas landward of the MHW line, the provisions of any site mitigation plan prepared under Mitigation Measure M-HZ-2a would not be applicable to construction activities such as removal of the existing pier and piles in the small portion of the 700 Innes property that is below the MHW line.

Implementing Mitigation Measure M-HY-1a, “Monitor Turbidity during Construction,” and Mitigation Measure M-HY-1b, “Implement Pile Removal Best Management Practices,” presented in Section 3.15, “Hydrology and Water Quality,” would substantially reduce the likelihood of mobilization of contaminants from offshore sediments into the water column of the Bay.

Given the proximity of this portion of the 700 Innes property to the 900 Innes property, it is possible that sediments in the nearshore of this area could contain similar levels of contaminants to the 900 Innes property, which, as discussed above, is enrolled in a voluntary cleanup program with the San Francisco Bay RWQCB and would be subject to a RAP. If further sampling in the area determines that is the case, the project sponsors would seek to expand the RAP, subject to RWQCB approval, to also cover in-water work at the 700 Innes property where such contaminants are found. In that case, Mitigation Measure M-HZ-2c would be applicable to that portion of the 700 Innes property. Implementing the RAP would protect worker safety and future uses, and prevent mobilization of contaminants during remedial actions, by requiring adequate worker health and safety, dust and odor control, and soil/sediment/material handling procedures that would reduce potential impacts on workers, the general public, and the environment.

For in-water areas at the 700 Innes property not covered by the RAP, Mitigation Measure M-HZ-2b requires preparation and implementation of a nearshore sediment and materials management plan, which would apply to portions of the 700 Innes property below the MHW line. This plan would be included as part of the relevant permitting applications (CWA Section 401 water quality certification and Section 404 permit, Rivers and Harbors Act Section 10 permit, and BCDC major permit).

Implementing Mitigation Measures M-HY-1a and M-HY-1b (Section 3.15, “Hydrology and Water Quality”) and Mitigation Measures M-HZ-2b and M-HZ-2c would reduce the potential for construction impacts on the 700 Innes property from the release of hazardous materials from contaminated soils, sediments, or groundwater below the MHW line to *less than significant with mitigation*.

### ***Hazardous Building Materials***

The 700 Innes property contains older structures that likely have asbestos-containing materials, lead-based paint, and/or mercury-containing materials. Construction on this property would include the handling, transport, and disposal of hazardous building materials, such as asbestos-containing materials, during relocation of the 702 Earl Street building and demolition of other structures.

Demolition and renovation of existing buildings and structures would be subject to BAAQMD Regulation 11, Rule 2, "Hazardous Materials; Asbestos Demolition, Renovation, and Manufacturing." BAAQMD Regulation 11, Rule 2 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses national emissions standards for asbestos and requires the CEQA lead agency (in this case, the City and County of San Francisco) and project-associated sponsors and contractors to notify BAAQMD of any regulated renovation or demolition activity. All asbestos-containing material found on the site must be removed before the start of demolition or renovation activity. The rule contains specific requirements for surveying, notification, removal, and disposal of materials containing asbestos. With adherence to BAAQMD Regulation 11, Rule 2, impacts of the proposed project or variant related to associated with restoration and demolition of structures on the 700 Innes property with asbestos-containing materials would be *less than significant*. No mitigation measures are necessary.

### **Overall Construction Impact Conclusion**

The overall construction impact of the proposed project or variant related to potential to create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials, with the implementation of Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, M-HZ-2b, and M-HZ-2c), would be *less than significant with mitigation*.

### ***Operation***

#### **India Basin Shoreline Park**

As discussed previously, to analyze potential impacts from operation of the proposed project or variant, soil sampling results for upland portions of the India Basin Shoreline Park property were compared to recreational HHSLs, while sediment sampling results for nearshore areas were compared to tidal marsh/wetland EHSLs. The soils, sediments, and groundwater at the India Basin Shoreline Park property are generally within these screening levels, with the following exceptions:

- *Soils*: Metals including lead (and to a lesser extent cobalt, copper, and/or nickel), benzo(a)pyrene (a PAH), and asbestos were detected in several samples at the India Basin Shoreline Park property, at concentrations exceeding the recreational HHSLs.
- *Sediments*: Some nearshore areas of this property contain heavy metals (arsenic, copper, lead, mercury, nickel, selenium, and/or zinc), PCBs, PAHs, and/or TPH-mo at levels that exceed the tidal marsh/wetland EHSLs.
- *Groundwater*: Groundwater sampling results indicate that the quality of the groundwater is typical of shallow, near-Bay conditions in urban settings. Low levels of metals were detected at this property, at concentrations

that do not exceed human health ESLs; however, one occurrence of lead exceeded the aquatic habitat ESL. The presence of these metals in groundwater likely reflects ambient conditions in the site vicinity.

- *Surface water:* Surface water quality modestly exceeds San Francisco Bay RWQCB or SWRCB marine water quality objectives for several metals (arsenic, cadmium, copper, and silver). This likely reflects ambient Bay conditions in the vicinity of India Basin.

Operation of the proposed project or variant, particularly activities such as landscape maintenance, utility installation, or recreational activities involving direct contact with or disturbance of soils or nearshore sediments, could release or mobilize contaminants in soil to groundwater; generate fugitive dust emissions; or expose future site users to contaminated soils, sediments, or emissions.

As discussed above for construction impacts, Mitigation Measure M-HZ-2a requires preparation and implementation of a site mitigation plan for areas above MHW. The site mitigation plan not only includes measures to protect construction workers during site preparation and construction work, but it also includes measures to remove potential exposure routes for future users of the site. In particular, the following requirements from Mitigation Measure M-HZ-2a are applicable to protection of future users:

- *Establish appropriate site-specific cleanup targets, to be reviewed and approved by DPH, that are protective of human health and environment based on the proposed future land use(s). At a minimum, these targets shall be equal to, or more protective, than the following:*
  - *For the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties: The HHSLs (for land to be used for recreational purposes) or the EHSLs (for land to be used for tidal marsh or wetlands) as established in the draft site mitigation plan (RPD, 2017a).*
  - *For the 700 Innes property: San Francisco Bay RWQCB ESLs for residential use.*
- *Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The site mitigation plan should include figures and drawings showing areas and depths of soil excavation or treatment, soil waste classifications, and any mitigating measures.*
- *Describe post-excavation confirmation sampling. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated soil, followed by a cap of clean soil or hard surface materials; operation and maintenance protocols for any disturbance of contaminated soils; and recording of deed restrictions, such as activity and use limitations, with the San Francisco Recorder's Office to assure that the remedy is maintained.*

Implementing Mitigation Measure M-HZ-2a would mean that the majority of contaminated soils would be removed from areas above the MHW line, and that any residual contamination remaining would be adequately capped or covered with clean fill or hardscape to prevent future users from contacting contaminated soils during normal activities, such as recreational uses or landscaping activities involving shallow soil disturbance. The required operation and maintenance protocols and deed restrictions would also ensure that future users would be aware of the residual contamination, and that appropriate precautions to prevent exposure would be taken during

activities, such as utility installation/maintenance or landscaping, that might involve disturbance of soils beneath the clean fill or hardscape cap.

The Maher Ordinance requires DPH review and approval of the site mitigation plan, which may result in additional requirements and controls beyond those specified in Mitigation Measure M-HZ-2a. However, the requirements outlined in the mitigation measure are considered the minimum actions necessary to reduce the potential operational impacts to less than significant with mitigation for portions of the India Basin Shoreline Park property that are above MHW (where the site mitigation plan and Maher Ordinance are applicable). Implementation of Mitigation Measure M-HZ-2a would therefore remove contaminated soils before operational use; or it would otherwise protect future users from exposure to or release of any residual contamination remaining at the site after construction, through implementation of institutional controls. This operational impact of the proposed project or variant at portions of the India Basin Shoreline Park property above the MHW line would therefore be *less than significant with mitigation*.

However, because the Maher Ordinance is applicable only to areas landward of the MHW line, the provisions of any site mitigation plan prepared under Mitigation Measure M-HZ-2a would not be applicable to portions of the property below the MHW line; therefore, future users of such areas could potentially be exposed to contaminants during recreational or maintenance activities involving sediment contact or disturbance.

As discussed above for the construction impacts, Mitigation Measure M-HZ-2b requires preparation and implementation of a nearshore sediment and materials management plan for areas below MHW. This plan not only includes measures to protect construction workers during site preparation and construction work, but it also includes measures to protect future users of the site. In particular, the following requirements from Mitigation Measure M-HZ-2b are applicable to protection of future users:

- *Establish appropriate site-specific cleanup targets for nearshore sediment that are protective of tidal marsh habitat. The cleanup targets must be approved by the San Francisco Bay RWQCB, USACE, BCDC, and/or another permitting agency. At a minimum, these targets shall be equal to, or more protective, than the EHSLs established in the draft site mitigation plan (RPD, 2017a).*
- *Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The plan should include figures and drawings showing areas and depths of sediment excavation or treatment, waste classifications, and any mitigating measures.*
- *Describe postremoval confirmation sampling. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated sediments, followed by a cap of clean sediments or hard surface materials; operation and maintenance protocols for any disturbance of contaminated sediments; and recording of deed restrictions, such as activity and use limitations, with the San Francisco Recorder's Office to assure that the remedy is maintained.*

Implementing Mitigation Measure M-HZ-2b would mean that the majority of contaminated sediments would be removed from areas below the MHW line, that any residual contamination remaining would be adequately capped



or covered with clean sediments, and that such a cap/cover would be adequately maintained, to prevent future users from contacting contaminated sediments during future activities such as recreational uses. The required operation and maintenance protocols and deed restrictions would also ensure that future maintenance workers would be aware of the residual contamination, and that appropriate precautions to prevent exposure would be taken during maintenance and operation activities that might involve disturbance of sediment.

Implementing Mitigation Measure M-HZ-2b would therefore remove contaminated soils or sediments before operational use; or it would otherwise protect future users from exposure to or release of any residual contamination remaining at the site after construction, through implementation of institutional controls. This operational impact of the proposed project or variant at portions of the India Basin Shoreline Park property below the MHW line would therefore be *less than significant with mitigation*.

### **900 Innes Property**

As discussed previously, to analyze potential impacts from operation of the proposed project or variant, soil sampling results for upland portions of the property were compared to recreational HHSLs, while sediment sampling results for nearshore areas were compared to tidal marsh/wetland EHSLs. On much of the 900 Innes property, soil and nearshore sediment contamination is at levels that exceed these screening levels, as summarized below and described more fully in the site characterization report (RPD, 2017d):

- *Soils*: Much of the upland portions of the 900 Innes property contain metals (arsenic, cobalt, copper, lead, mercury, and/or nickel), PCBs, TPH-d, and/or PAHs in concentrations exceeding the relevant recreational HHSLs
- *Sediment*: Much of the nearshore area of this property contains heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, and/or zinc), PCBs, PAHs and TPH-d, and/or TPH-mo at concentrations exceeding the tidal marsh/wetland EHSLs.
- *Groundwater*: Groundwater at the property contains copper, lead, silver, zinc, TPH-d, and/or the PAH “fluorene” at concentrations exceeded aquatic habitat ESLs.
- *Surface water*: Surface water quality exceeds San Francisco Bay RWQCB or SWRCB marine water quality objectives for several metals (arsenic, cadmium, copper, nickel, and silver). This likely reflects ambient conditions of India Basin.

Operation of the proposed project or variant at the 900 Innes property, particularly activities such as landscape maintenance, utility installation, or recreational activities involving direct contact with or disturbance of soils or nearshore sediments, could release or mobilize contaminants in soil to groundwater; generate fugitive dust emissions; or expose future site users to contaminated soils, sediments, or emissions.

The 900 Innes property is subject to a voluntary cleanup program, which requires preparation and implementation of a remedial action plan, which is subject to approval by the San Francisco Bay RWQCB. This requirement is also included as mitigation in this EIR (Mitigation Measure M-HZ-2c), and would result in removal and/or mitigation of contaminants exceeding the approved remedial action goals established in the conceptual remedial action plan (at a minimum). In particular, the following requirements from Mitigation Measure M-HZ-2c are applicable to protection of future users:

- *Establish appropriate site-specific cleanup targets that are protective of human health and the environment, based on the proposed future land use(s). The cleanup targets must be reviewed and approved by the San Francisco Bay RWQCB. At a minimum, the cleanup targets shall be equal to or more protective than the remedial action goals established in the conceptual RAP (RPD, 2017f).*
- *Identify and implement measures such as excavation, containment, or treatment of the hazardous materials to achieve the plan's cleanup levels. The RAP should include figures and drawings showing areas and depths of soil and sediment excavation or treatment, soil waste classifications, and any mitigating measures.*
- *Describe postexcavation confirmation sampling. If residual contamination remains at the site above the site-specific cleanup targets, include appropriate controls, including institutional controls where and if necessary, to assure that activities by future users do not expose them to unacceptable health and safety risks. Such controls may include but are not limited to visual barriers over contaminated soil/sediment, followed by a cap of clean soil/sediment or hard surface materials; operation and maintenance protocols for any disturbance of contaminated soils/sediment; and recording of deed restrictions, such as activity and use limitations, with the San Francisco Recorder's Office to assure that the remedy is maintained.*

Implementing Mitigation Measure M-HZ-2c would mean that the majority of contaminated soils would be removed from the site during the remedial action, or would be covered with a cap of clean fill or hardscape, which would remove direct exposure routes to contaminants from future users of the site. Mitigation Measure M-HZ-2c also requires institutional controls, such as operation and maintenance protocols and deed restrictions to ensure that future users would be aware of any residual contamination, and that appropriate precautions to prevent exposure would be taken during activities, such as utility installation/ maintenance or landscaping, that might involve disturbance of soils beneath the clean fill or hardscape cap. With implementation of Mitigation Measure M-HZ-2c, exposure of future users from and releases to the environment of contaminated soils, sediments and groundwater during project operations at the 900 Innes property would be *less than significant with mitigation*.

#### **India Basin Open Space Property**

As discussed previously, to analyze potential impacts from operation of the proposed project or variant, soil sampling results for upland portions of the India Basin Open Space property were compared to recreational HHSLs, while sediment sampling results for nearshore areas were compared to tidal marsh/wetland EHSLs. The soils, sediments, and groundwater at the India Basin Open Space property are generally within these screening levels, with the following exceptions:

- *Soils:* Some upland areas of the property contain occasional occurrences of lead and/or PAHs that exceed the recreational HHSLs.
- *Sediments:* Some areas of the nearshore contain heavy metals, PCBs, PAHs, and/or TPH-mo that exceeds tidal marsh habitat EHSLs.
- *Groundwater:* No groundwater sampling occurred at the India Basin Open Space property. Conditions are expected to be similar to those described above for the other project site properties.
- *Surface water:* No surface water quality sampling occurred in the vicinity of the India Basin Open Space property. Conditions are expected to be similar to those described above for the other properties.

Operation of the proposed project or variant at the India Basin Open Space property, particularly activities such as landscape maintenance, utility installation, or recreational activities involving direct contact with or disturbance of soils or nearshore sediments, could release or mobilize contaminants in soil to groundwater; generate fugitive dust emissions; or expose future site users to contaminated soils, sediments, or emissions.

Similar to the discussion for India Basin Shoreline Park above, implementing Mitigation Measures M-HZ-2a and M-HZ-2b would remove contaminated soils or sediments before operational use, or would otherwise protect future users from exposure to or release of any residual contamination remaining at the site after construction through implementation of institutional controls. This operational impact of the proposed project or variant at the India Basin Open Space property would therefore be *less than significant with mitigation*.

### **700 Innes Property**

As discussed previously, to analyze potential impacts from operation of the proposed project or variant, soil and soil-gas sampling results for upland portions of the 700 Innes property were compared to residential ESLs, and groundwater results were compared to the San Francisco Bay RWQCB's MCL priority ESLs. Except for a small area directly adjacent to the 900 Innes property, the 700 Innes property is entirely above MHW. No sampling of nearshore sediments or surface water occurred at this property; however, conditions are expected to be similar to those described for the adjacent portion of the 900 Innes property.

The soil and groundwater at the 700 Innes property are generally within the residential ESLs, with the following exceptions:

- *Soil:* In some areas of the property, concentrations of metals (cobalt, lead, mercury, and/or nickel) and/or the semivolatile organic compound benzo(a)anthracene exceeded the relevant residential ESLs.
- *Soil Gas:* Trace concentrations of several VOCs, including PCE, TCE, cis-1,2-DCE, benzene, toluene, ethylbenzene, and BTEX, tetrahydrofuran, and carbon disulfide were present in soil gas samples at the 700 Innes property. However, only some samples detected benzene at concentrations that exceeded the residential ESL.
- *Groundwater:* Groundwater sampling detected metals (antimony, arsenic, barium, cobalt, molybdenum, nickel, vanadium, and zinc), TPH-d, and TPH-mo at low concentrations. Only cobalt and TPH-d were at levels exceeding the MCL priority ESLs.

Operation of the proposed project or variant at the 700 Innes property, particularly activities such as landscape maintenance, utility installation, or residential and recreational activities involving direct contact with or disturbance of soils or nearshore sediments, could release or mobilize contaminants in soil to groundwater; generate fugitive dust emissions; or expose future site residents, visitors, employees, and maintenance workers to contaminated soils, sediments, or emissions.

Similar to the discussion for India Basin Shoreline Park above, implementation of Mitigation Measure M-HZ-2a would remove contaminated soils or sediments from the upland portions of the property before operational use; or it would otherwise protect future users from exposure to or release of any residual contamination remaining at the site after construction through implementation of institutional controls.

However, because the Maher Ordinance is applicable only to areas landward of the MHW line, the provisions of any site mitigation plan prepared under Mitigation Measure M-HZ-2a would not be applicable to the small portion of the 700 Innes property that is below the MHW line. Given the proximity of this portion of the 700 Innes property to the 900 Innes property, it is possible that sediments in the nearshore of this area could contain similar levels of contaminants to the 900 Innes property, which, as discussed above, is enrolled in a voluntary cleanup program with the San Francisco Bay RWQCB and would be subject to a RAP. If further sampling in the area determines that is the case, the project sponsors would seek to expand the RAP, subject to RWQCB approval, to also cover in-water work at the 700 Innes property where such contaminants are found. In that case, Mitigation Measure M-HZ-2c would be applicable to that portion of the 700 Innes property. Implementing the RAP would mean that the majority of contaminated soils would be removed from the site during the remedial action, or would be covered with a cap of clean fill or hardscape, which would remove direct exposure routes to contaminants from future users of the site. Mitigation Measure M-HZ-2c also requires institutional controls, such as operation and maintenance protocols and deed restrictions, to ensure that future users would be aware of any residual contamination, and that appropriate precautions to prevent exposure would be taken during operational activities that might involve disturbance of soils beneath the clean fill or hardscape cap.

For in-water areas at the 700 Innes property not covered by the RAP, Mitigation Measure M-HZ-2b, presented above, requires preparation and implementation of a nearshore sediment and materials management plan, which would apply to portions of the 700 Innes property below the MHW line. The plan would be included as part of the relevant permitting applications (CWA Section 401 water quality certification and Section 404 permit, Rivers and Harbors Act Section 10 permit, and BCDC major permit). Implementing the nearshore sediment and materials management plan would remove contaminated soils or sediments before operational use, or would otherwise protect future users from exposure to or release of any residual contamination remaining at the site after construction through implementation of institutional controls.

Implementing Mitigation Measure M-HZ-2a, and Mitigation Measures M-HZ-2b and M-HZ-2c would reduce operational impacts of the proposed project or variant at the 700 Innes property to *less than significant with mitigation*.

### **Overall Operational Impact Conclusion**

The overall operational impact related to potential to create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials during project operations would be *less than significant with mitigation* with implementation of Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c.

### **Overall Impact Conclusion**

The overall impact related to the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be *less than significant with mitigation* with implementation of Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, M-HZ-2b, and M-HZ-2c.

**Impact HZ-3: The proposed project or variant is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation related to the project's location on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and the resulting potential to create a significant hazard to the public or the environment. Separate analyses and individual impact conclusions are provided for construction-related and operational impacts. The respective impacts described below would occur under either the proposed project or the variant. An "overall" impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion.

***Construction***

**India Basin Shoreline Park**

The India Basin Shoreline Park property is on the Cortese List of hazardous materials sites (DTSC, 2016) and environmental sampling has confirmed low levels of contamination (RPD, 2017a). Construction of the proposed project or variant at the India Basin Shoreline Park property could cause a release or mobilization of contaminants to groundwater, generate fugitive dust emissions, or expose construction workers or the public to contaminated soils, groundwater, sediments, or emissions. These impacts are discussed in more detail in Impact HZ-2, above.

As discussed in Impact HZ-2 above, Mitigation Measures M-HY-1a and M-HY-1b (presented in Section 3.15, "Hydrology and Water Quality") require monitoring turbidity and implementing pile-removal BMPs, and Mitigation Measures M-HZ-2a and M-HZ-2b require preparing and implementing a site mitigation plan for areas above the MHW line and a nearshore sediment and materials management plan for areas below the MHW line. All of these measures would minimize construction worker exposure to contaminants in the soils, sediments, and groundwater, and would reduce the potential for mobilization of contaminants to surrounding groundwater, soil, soil gas, or Bay waters during site construction. Under either the proposed project or the variant, implementing Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, and M-HZ-2b would reduce the construction-related impact associated with India Basin Shoreline Park's existing site contamination and inclusion on the Cortese List to *less than significant with mitigation*.

**900 Innes Property**

The 900 Innes property is listed on the Cortese List (DTSC, 2016) and environmental sampling has confirmed existing site contamination.

Construction of the proposed project or variant at this property could cause a release or mobilization of contaminants to groundwater; generate fugitive dust emissions; or expose construction workers or the public to contaminated soils, sediments, groundwater, or emissions during construction and/or remedial activities. The potential exists for contaminants to mobilize if piles for the proposed replacement pier are installed in areas where contaminated soils are left in place and capped with clean fill or hardscape. The act of driving piles through the contaminated soils may drag contaminants into the clean native soil beneath the artificial fill. Offshore construction and site preparation activities, such removing the existing pier and associated piles, could also

remobilize contaminants from offshore sediments into the water column of the Bay. These impacts are discussed in more detail in Impact HZ-2, above.

As discussed previously, the voluntary cleanup program is being undertaken at the 900 Innes property, because of the level of contamination existing at the property. The voluntary cleanup program requires preparation and implementation of a remedial action plan. A conceptual RAP has been prepared for the property (RPD, 2017f), as described in “Project Features,” above. Because the RAP is subject to review and approval by the oversight agency (the San Francisco Bay RWQCB), additional requirements and controls beyond those currently outlined in the conceptual RAP may be required by the RWQCB. However, because such requirements are currently unknown and are outside of the CEQA lead agency’s control, Mitigation Measure M-HZ-2c outlines the minimum requirements that the RAP shall include to reduce the potential impacts during remedial actions and construction to less than significant with mitigation.

In addition, Mitigation Measures M-HY-1a and M-HY-1b (presented in Section 3.15, “Hydrology and Water Quality” and Mitigation Measures M-HZ-2a and M-HZ-2b require monitoring turbidity and implementing pile-removal BMPs; a site mitigation plan for areas above the MHW line; and a nearshore sediment and materials management plan for areas below the MHW line, which would be implemented during construction activities occurring after remediation. All of these measures would minimize construction worker exposure to contaminants in soil, sediments, and groundwater, and would reduce the potential for mobilization of contaminants to surrounding groundwater, soil, soil gas, or Bay waters.

Under either the proposed project or the variant, implementing Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, M-HZ-2b, and M-HZ-2c would reduce the construction-related impact associated with the 900 Innes property’s existing site contamination and inclusion on the Cortese List to *less than significant with mitigation*.

#### **India Basin Open Space Property**

The India Basin Open Space is not on a list of hazardous-materials sites compiled pursuant to Government Code Section 65962.5. Therefore, *no impact* would occur at the India Basin Open Space property under either the proposed project or the variant. No mitigation measures are necessary.

#### **700 Innes Property**

According to the 2013 Phase I ESA performed for the City by AEI Consultants (San Francisco, 2013, cited in San Francisco, 2014b), the 700 Innes property is listed in the regulatory database as a State hazardous waste site and Voluntary Cleanup Program site (San Francisco, 2014a). However, review of the environmental database report by AECOM showed that the 700 Innes property was incorrectly identified in the report as the India Basin Boatyard at 894 Innes Avenue, which is part of the 900 Innes property. The 700 Innes property is not on the Cortese List of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, *no impact* would occur at the 700 Innes property during construction under either the proposed project or the variant. No mitigation measures are necessary.

#### **Overall Construction Impact Conclusion**

The overall construction impact related to the project’s location on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and the resulting potential to create a significant

hazard to the public or the environment, would be *less than significant with mitigation* with implementation of Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, M-HZ-2b, and M-HZ-2c

### ***Operation***

#### **India Basin Shoreline Park Property**

India Basin Shoreline Park is on the Cortese List of hazardous materials sites (DTSC, 2016), and environmental sampling has confirmed low levels of contamination in soil (RPD, 2017a).

Operation of the proposed project or variant at this property could therefore create a significant hazard to the public or the environment by exposing visitors, occupants, or employees to contaminants, especially during ground-disturbing maintenance activities such as landscaping, utility replacement, and subsurface repairs. This operational impact of the proposed project or variant at the India Basin Shoreline Park property could be significant.

As discussed in more detail in Impact HZ-2, Mitigation Measure M-HZ-2a requires preparation and implementation of a site mitigation plan for areas above MHW, while Mitigation Measure M-HZ-2b requires preparation and implementation of a nearshore sediment and materials management plan for areas below MHW. Both of these documents include measures to protect future users of the site from any residual contamination that may remain on the site after construction, including delineation and capping/cover of any areas with residual contamination, operation and maintenance protocols for future users, and activity and use limitation deed restrictions, if necessary.

Implementing Mitigation Measures M-HZ-2a and M-HZ-2b would reduce the operational impact associated with India Basin Shoreline Park's existing site contamination and inclusion on the Cortese List to *less than significant with mitigation*.

#### **900 Innes Property**

The 900 Innes property<sup>16</sup> is listed on the Cortese List (DTSC, 2016a) and environmental sampling has confirmed existing site contamination. The property is subject to a voluntary cleanup program, which requires preparation and implementation of a remedial action plan, which is subject to approval by the San Francisco Bay RWQCB. This requirement is also included as mitigation in this EIR (Mitigation Measure M-HZ-2c), which would result in removal and/or other mitigation of contaminants exceeding the approved remedial action goals established in the remedial action plan. Implementing Mitigation Measure M-HZ-2c would mean that the majority of contaminated soils would be removed from the site during the remedial action.

After remedial actions at the 900 Innes property under the RAP, implementing Mitigation Measures M-HZ-2a and M-HZ-2b would also ensure that any remaining soils or sediments exceeding the established targeted cleanup goals from outside of the RAP-targeted remediation areas would be either removed before operational use, and/or otherwise mitigated to protect future users from exposure to or release of any residual contamination remaining at the site after construction. The required operation and maintenance protocols and deed restrictions would also ensure that future users would be aware of the residual contamination, and that appropriate precautions to prevent

---

<sup>16</sup> The listing is under the address 996 Innes Avenue, which is part of the 900 Innes property.

exposure would be taken during activities, such as utility installation/maintenance or landscaping, that might involve disturbance of soils beneath the clean fill or hardscape cap.

Implementing Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c would reduce the operational impact of the proposed project or variant associated with the 900 Innes property's existing site contamination and inclusion on a Cortese List site to *less than significant with mitigation*.

#### **India Basin Open Space Property**

The India Basin Open Space property is not on the Cortese List of hazardous-materials sites compiled pursuant to Government Code Section 65962.5. Therefore, *no impact* would occur during project operation under either the proposed project or the variant. No mitigation measures are necessary.

#### **700 Innes Property**

The 700 Innes property is not on the Cortese List of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, *no impact* would occur during project operation under either the proposed project or the variant. No mitigation measures are necessary.

#### **Overall Operational Impact Conclusion**

The overall operational impact related to the project's location on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and the resulting potential to create a significant hazard to the public or the environment, would be *less than significant with mitigation* with implementation of Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c.

#### **Overall Impact Conclusion**

The overall impact related to the project's location on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and the resulting potential to create a significant hazard to the public or the environment, would be *less than significant with mitigation* with implementation of Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c.

**Impact HZ-4: The proposed project or variant would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (*Less than Significant with Mitigation*)**

The following impact discussion describes the impacts of project construction and operation related to the potential for hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Separate analyses and individual impact conclusions are provided for construction-related and operational impacts. The respective impacts described below would occur under either the proposed project or the variant. An "overall" impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion.



## ***Construction***

### **India Basin Shoreline Park Property**

Under either the proposed project or the variant, a kindergarten through 8th grade (K-8) school would be located on the 700 Innes property, which is within ¼ mile of the India Basin Shoreline Park property. However, because the proposed school would not open until after construction of the proposed project or variant, emissions or handling of hazardous materials during construction would not affect this future school.

The only existing school located within ¼ mile of the India Basin Shoreline Park property is Malcolm X Academy, a pre-kindergarten through 5th grade school located at 350 Harbor Road, approximately 1,200 feet west of the India Basin Shoreline Park property.

Construction would involve the use of common hazardous materials, such as small quantities of gasoline, diesel, oil, grease, and paint. As indicated in Section 3.16.2, “Regulatory Framework,” and discussed above in Impact HZ-1, there is an established, comprehensive framework independent of the CEQA process that is intended to reduce the risks associated with the handling, storage, transportation, and disposal of hazardous materials and wastes. The contractor(s) would be responsible for complying with all City, State, and federal codes, rules, and regulations relating to hazardous materials and wastes.

As discussed in Impact HZ-2, existing site contamination is present at low levels on the India Basin Shoreline Park property as a result of historic contamination and impacted fill, and creosote-impacted materials are present in the nearshore. Site preparation activities for construction of the proposed project or variant would likely result in handling of contaminated soils, sediments, groundwater or materials on the India Basin Shoreline Park property, and would therefore occur within ¼ mile of an existing school. Fugitive dust emissions generated during construction or remediation actions could contain hazardous materials such as heavy metals or naturally occurring asbestos. This impact could be significant.

Mitigation Measure M-HZ-2a requires that a site mitigation plan be prepared, and approved by DPH in accordance with the requirements of the Maher Ordinance. The site mitigation plan must include preparation and implementation of a dust control plan, including dust monitoring to ensure that dust control measures are effective and that fugitive dust emissions do not extend beyond the boundary of the project site.

Adhering to relevant federal, State, and local regulations and implementing Mitigation Measure M-HZ-2a would reduce the construction-related impact of the proposed project or variant at the India Basin Shoreline Park property on schools from hazardous emissions or handling of hazardous materials to *less than significant with mitigation*.

The impact of fugitive dust and TAC emissions on sensitive receptors such as schools during construction is discussed in Section 3.7, “Air Quality.”

### **900 Innes, India Basin Open Space, and 700 Innes Properties**

A K-8 school is included as part of the proposed project and variant (on the 700 Innes property). However, because the school would not be open until after construction, emissions or handling of hazardous materials during construction would not affect this future school. In addition, no schools are located within ¼ mile of the

900 Innes, India Basin Open Space, and 700 Innes properties. Therefore, construction under either the proposed project or the variant at the 900 Innes, India Basin Open Space, or 700 Innes properties would have *no impact* regarding hazardous emissions and handling of hazardous wastes on nearby schools. No mitigation measures are necessary.

### **Overall Construction Impact Conclusion**

The overall construction impact of the proposed project or variant related to the potential for hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be *less than significant with mitigation* with implementation of Mitigation Measure HZ-2a.

### ***Operation***

#### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

##### ***Use of Hazardous Substances***

Under either the proposed project or the variant, a K-8 school would be located on the 700 Innes property, which is within ¼ mile of the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties. As discussed in Impact HZ-1, operation of the proposed project or variant at these three properties would involve the use, storage, transport, and disposal of hazardous materials and wastes, in small quantities. Therefore, the proposed project or variant could emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

However, as discussed in Impact HZ-1, such activities would occur in accordance with relevant federal, State, and local regulations, and would not result in significant impacts on residents and visitors to the project site, or on the proposed school (and its associated students) that would be located on the adjacent 700 Innes property in the future. Therefore, although the proposed project or variant could emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of the existing Malcolm X Academy or the proposed new school, the environmental impacts of such emissions or handling would be *less than significant*. No mitigation measures are necessary.

##### ***Contaminated Soils, Sediments, and Groundwater***

As discussed previously, the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties currently contain varying levels of soil, sediment, and groundwater contamination. If such contamination is not appropriately cleaned up during site construction and remediation activities, future school users could be exposed to hazardous materials. The impact of such exposure could be significant.

As discussed in Impact HZ-2, a portion of the 900 Innes property would be subject to a remedial action plan as part of construction, which would be required by Mitigation Measure M-HZ-2c to achieve site-specific cleanup levels consistent with the requirements of the San Francisco Bay RWQCB for the proposed land uses. In addition, Mitigation Measure M-HZ-2a requires implementing a DPH-approved site mitigation plan for areas above the MHW line, which requires removing or capping soils that contain contaminants at levels exceeding the targeted HHSLs and establishing engineering or institutional controls if any residual contamination remains on the site

after construction. Mitigation Measure M-HZ-2b requires similar cleanup requirements for areas below the MHW line.

Implementing Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c would therefore remove the potential for future site users, and occupants, residents, users, or workers at adjacent land uses (including the proposed school), to be exposed to any emissions from the contamination currently present on the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties. Implementing Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c would reduce impacts relating to emissions from, or handling of, existing contamination at the project site to *less than significant with mitigation*. The impact of fugitive dust and TAC emissions on sensitive receptors such as schools during operation of the proposed project or variant is discussed in Section 3.7, “Air Quality.”

### **700 Innes Property**

#### ***Use of Hazardous Substances***

As discussed in Impact HZ-1, operation of either the proposed project or the variant at the 700 Innes property would involve the use, storage, transport, and disposal of hazardous materials and wastes, in small to moderate quantities. Such activities would occur in accordance with relevant federal, State, and local regulations, and would not result in significant impacts on residents and visitors to the project site, or on the proposed school that would operate on this property in the future. The impact of TAC emissions on sensitive receptors such as schools during operation of the proposed project or variant is discussed in Section 3.7, “Air Quality.”

#### ***Contaminated Soils, Sediments, and Groundwater***

As discussed previously, contaminants have been detected in soil, soil gas, and groundwater during previous investigations (San Francisco, 2014b). Although contamination levels are generally low, some samples did exceed the relevant ESLs for residential land use, including the PAH benzo(a)anthracene in soil gas. Therefore, if appropriate precautions are not taken, operation of the 700 Innes property under the proposed project or variant could expose future students, employees, and visitors at the proposed new school to contaminated soils, water, or soil gas, especially during ground-disturbing maintenance activities, such as utility replacement and subsurface repairs (via direct contact or generation of fugitive dust), or potentially through vapor intrusion into proposed buildings. This impact of either the proposed project or the variant could be significant.

Mitigation Measure M-HZ-2a requires implementation of a DPH-approved site mitigation plan, which includes a requirement to conduct postexcavation confirmation sampling, and to establish mitigating measures and institutional controls if any residual contamination remains on the site after construction. Such measures could include capping of residual soil contamination with clean cover, hardscaping, or other suitable medium, with presence of a visual barrier. Implementing Mitigation Measure M-HZ-2a would reduce the potential impact of exposure for future students, employees, and visitors to the proposed school to *less than significant with mitigation*.

It is unknown whether operation of the proposed school on the 700 Innes site would involve any State funding. If State funding is involved, construction or operation of the school as part of the proposed project or variant would be required to comply with the California Education Code (as described in Section 3.16.2, “Regulatory Framework,” above). This would require preparation and approval by DTSC of a Phase 1 ESA, and in the event

of potential contamination, an oversight agreement with DTSC and preparation of a health risk assessment. Many school developers choose to implement similar provisions on a voluntary basis. If operation of the proposed school were to involve State funding or a partnership with a public school district, such provisions would be mandatory.

The requirements of any DTSC voluntary cleanup agreement or school cleanup agreement (if a public school and required) would be similar to those of Mitigation Measure M-HZ-2a, with respect to conducting postexcavation confirmation sampling and establishing mitigating measures and institutional controls if any residual contamination remains on the site. As such, whether or not the proposed school is subject to the requirements of the California Education Code, implementing Mitigation Measure M-HZ-2a is considered sufficient to reduce operational impacts of the proposed project or variant related to hazardous emissions within ¼ mile of a school to less than significant with mitigation. Therefore, conforming to the applicable regulations and implementing Mitigation Measure M-HZ-2a would reduce the operational impact of the proposed project or variant on school operations at the 700 Innes property to *less than significant with mitigation*.

### **Overall Operational Impact Conclusion**

The overall operational impact of the proposed project or variant related to the potential for hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be *less than significant with mitigation* with implementation of Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c.

### **Overall Impact Conclusion**

The overall impact of the proposed project or variant related to the potential for hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be *less than significant with mitigation* with implementation of Mitigation Measures M-HZ-2a, M-HZ-2b, and M-HZ-2c.

### **Impact HZ-5: The proposed project or variant would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (*Less than Significant*)**

The following impact discussion describes the impacts of proposed project or variant construction and operation related to the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Separate analyses and individual impact conclusions are provided for construction-related and operational impacts. The respective impacts described below would occur under either the proposed project or the variant. An “overall” impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion.

### **Construction**

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Construction of the proposed project or variant would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. The Regional Emergency Coordination Plan (RECP) (Governor’s Office of Emergency Services, 2008) provides an all-hazards framework for collaboration

among responsible entities and coordination during emergencies in the Bay Area. The RECP defines procedures for regional coordination, collaboration, decision-making, and resource sharing among emergency response agencies in the Bay Area. The RECP and its subsidiary plans do not identify specific evacuation routes, but rather define responsibilities among the multitude of interested and affected agencies and organizations, and identify general response strategies.

San Francisco's emergency response plan was developed to ensure that resources are allocated and coordinated in the event of an emergency in the City (SFDEM, 2009). The emergency response plan generally describes what the City's actions will be during an emergency response. A separate hazard mitigation plan assesses risks posed by natural and human-caused hazards and sets forth a mitigation strategy for reducing the City's risks (SFDEM, 2014). These plans do not identify specific evacuation routes.

As discussed in Section 3.5, "Transportation and Circulation," construction activities could result in temporary lane closures, increased construction truck traffic, and other roadway effects that might temporarily disrupt access to the site by emergency services, or hinder emergency evacuations.

However, these effects would be temporary and would dissipate once trucks have cleared the public right-of-way. Construction activities would not fundamentally alter emergency response and evacuation routes in the vicinity of the project site, which would generally remain unchanged from existing conditions. Lane and sidewalk closures or diversions are subject to review and approval by the City's Transportation Advisory Staff Committee, which consists of representatives from SFFD, the San Francisco Police Department, the San Francisco Municipal Transportation Agency's (SFMTA's) Traffic Engineering Division, and San Francisco Public Works. The project sponsors and their construction contractor(s) would be required to meet the City's *Regulations for Working in San Francisco Streets* (Blue Book), and would meet with SFMTA staff to determine whether any special traffic permits would be required. The contractor(s) would also be responsible for complying with all City, State, and federal codes, rules, and regulations.

### **Overall Construction Impact Conclusion**

The overall construction impact of either the proposed project or the variant related to the potential for impairment or interference with an adopted emergency response or evacuation plan would be *less than significant*.

Although the construction impacts would be less than significant, implementing Improvement Measure I-TR-4, "Implement Construction Management Strategies" (presented in Section 3.5, "Transportation and Circulation"), at each of the four project site properties would further reduce the impacts of any less-than-significant conflicts between construction activities and emergency services, because it includes measures related to maintaining emergency access as part of a traffic control plan for construction. Adoption of Improvement Measure I-TR-4 may be recommended by City decision makers as a condition of project approval under either the proposed project or the variant.

## ***Operation***

### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

Operation of the recreational, commercial, and institutional facilities proposed for the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties under either the proposed project or the variant would not impair implementation of an emergency response or evacuation plan.

The proposed project or variant would be built in conformance with the California and San Francisco fire codes, including necessary utility and access requirements for emergency services. Because the components of the proposed project or variant would be constructed according to State and local fire codes, operational impacts at the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties related to impairment of emergency response plans and evacuation plans would be *less than significant*. No mitigation measures are necessary.

### **700 Innes Property**

Development of the 700 Innes property under the proposed project would support approximately 3,400 residents and 924 employees. Under the variant, development of the 700 Innes property would support approximately 1,371 residents and 3,530 employees. Either increase in population could result in congestion in the event of an emergency evacuation.

San Francisco ensures fire safety primarily through provisions of the San Francisco Building Code and San Francisco Fire Code. The building plans for any new residential project greater than two units are reviewed and approved by SFFD and the San Francisco Department of Building Inspection to ensure conformance with these provisions. Project buildings and structures would be required to conform to these standards, which (depending on building type) may also include development of an emergency procedures and an exit drill plan.

State and local fire codes, including the 2010 California Building Standards Code and Fire Code, regulate the design of buildings, streets, parks, and landscaping. The proposed project or variant would be built in conformance with the San Francisco Fire Code, which requires that adequate emergency access be provided through the project site and within the proposed buildings. BUILD would work with SFFD to determine utility and access requirements for emergency services for the proposed project or variant during operations.

Because the components of the proposed project or variant would be constructed according to the California and San Francisco fire codes, operational impacts of either the proposed project or the variant at the 700 Innes property related to impairment of emergency response plans and evacuation plans would be *less than significant*. No mitigation measures are necessary.

### **Overall Operational Impact Conclusion**

The overall operational impact related to the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan would be *less than significant*. No mitigation measures are necessary.

### ***Overall Impact Conclusion***

The overall impact related to the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan would be *less than significant*. No mitigation measures are necessary.

#### **Impact HZ-6: The proposed project or variant would not expose people or structures to a significant risk of loss, injury, or death involving fires. (*Less than Significant*)**

The following impact discussion describes the impacts of project construction and operation related to the potential to expose people or structures to a significant risk of loss, injury, or death involving fires. Separate analyses and individual impact conclusions are provided for construction-related and operational impacts. The respective impacts described below would occur under either the proposed project or the variant. An “overall” impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion.

### ***Construction***

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Construction activities at all four project site properties would involve using tools and equipment that could generate sparks and would use flammable or combustible materials, and could therefore potentially expose existing or partially constructed structures and construction workers to the risk of fire. The City ensures fire safety primarily through provisions of the San Francisco Building and Fire codes. The contractor(s) would be responsible for complying with all City, State, and federal codes, rules, and regulations. Thus construction impact of the proposed project or variant would be *less than significant*. No mitigation measures are necessary.

### ***Operation***

#### **India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties**

Operation of the recreational, commercial, and institutional facilities proposed for the India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties under either the proposed project or the variant would not expose people or structures to a significant risk of loss, injury, or death involving fires.

The proposed project or variant would be built in conformance with the California and San Francisco fire codes, including necessary utility and access requirements for fire protection and emergency services. Existing gas and electric and other utility infrastructure would be upgraded, resized, and located underground as part of the project, and therefore would not overtax existing overhead power lines along Innes Avenue.

#### **700 Innes Property**

The proposed project or variant would be built in conformance with State and local fire codes, including the 2010 California Building Standards and Fire Codes, and the San Francisco Fire Code. Accordingly, the proposed developments would be required to comply with the applicable sections of these building codes that require several fire safety features, such as equipping the building with a fire protection system; constructing the building

with noncombustible materials or with a fire-resistive design, including fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions in the building; and requiring adequate emergency access through the project site and within the proposed buildings. During the final design phase, the water volume and pressure needed for on-site fire suppression and the locations of hydrants would be determined, pursuant to SFFD's review and guidance. BUILD would work with SFFD to determine utility and access requirements for fire protection and emergency services for the proposed project during operation. The final building plans would be reviewed by SFFD to ensure conformance with these provisions.

### ***Overall Operational Impact Conclusion***

Because the components of the proposed project or variant would be constructed according to the California and San Francisco fire codes, operational impacts of either the proposed project or the variant related to exposure to fire hazards would be *less than significant*. No mitigation measures are necessary.

### ***Overall Impact Conclusion***

The overall impact of the proposed project or variant related to the potential to expose people or structures to a significant risk of loss, injury, or death involving fires would be *less than significant*. No mitigation measures are necessary.

## **3.16.4 Cumulative Impacts**

**Impact-C-HZ-1: The proposed project or variant, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would substantially contribute to cumulative impacts related to hazards and hazardous materials. (*Less than Significant with Mitigation*)**

The following cumulative impact discussion describes the cumulative impacts of the proposed project or variant and past, present, and reasonably foreseeable future projects in the vicinity related to transport, use, disposal, or accidental spills of hazardous materials; soil or groundwater contamination; emergency services access; and fire hazards. The cumulative projects considered are listed in Table 3-1 of this EIR. Separate cumulative impact analyses and individual impact conclusions are provided for each topic. An "overall" impact conclusion, which represents the most severe CEQA impact conclusion of those listed below, is provided at the end of the impact discussion. The geographic context for cumulative impacts relating to hazards and hazardous materials is the India Basin area.

### ***Routine Transport, Use, and Disposal of Hazardous Materials***

Cumulative impacts related to hazards and hazardous materials could occur through the routine transport, use and disposal, of hazardous materials. The potential hazards depend on the type of development. The list of cumulative projects includes mainly residential/commercial development and transportation improvements, with no major industrial facilities. The Hunters Point Shipyard Redevelopment Plan does allow for research and development uses that could include light industrial and laboratory, life science, and green technology uses, some of which could use, store, generate or dispose of hazardous materials. As indicated in Section 3.16.2, "Regulatory Framework," there is an established, comprehensive framework independent of the CEQA process that is intended to reduce the risks associated with the use of hazardous materials (and generation of hazardous waste) by



businesses, and all of the future uses associated with cumulative projects would be required to adhere to the applicable local, State, and federal laws and regulations pertaining to use, transport, and disposal of hazardous materials, and would be under the oversight of the appropriate regulatory agencies enforcing them. Appropriate documentation for all hazardous materials and wastes would be required for compliance with existing hazardous-materials regulations. The DPH HMUPA would continue to conduct periodic inspections to ensure that hazardous materials and wastes are being used and stored properly.

Some of the cumulative project sites in the vicinity (e.g., the Candlestick Point–Hunters Point Shipyard project) have been found to have contaminated soil and groundwater and are in the process of undergoing remediation activities in some cases, which may involve transportation of hazardous materials and wastes from those sites. All of the cumulative projects listed above would be required to adhere to the applicable local, State, and federal laws and regulations pertaining to use, transport, and disposal of hazardous materials, and would be under the oversight of the appropriate regulatory agencies enforcing them. For example, remediation activities at the Hunters Point Shipyard federal superfund facility are overseen by the USEPA, DTSC and RWQCB. Any other sites undergoing remediation activities in the area would likewise be overseen by either federal, state or local regulatory agencies.

Cumulative impacts relating to the use, storage, handling, transportation, or disposal of hazardous materials and wastes, including any accidental spills, would therefore be *less than significant*. No mitigation measures are necessary.

### ***Soil or Groundwater Contamination***

Cumulative impacts related to hazardous materials could also occur through the mobilization of contaminants in soil and/or groundwater at the project site for the proposed project or variant and the cumulative project(s) sites. Several of the cumulative project sites in the vicinity have been found to have contaminated soil and groundwater and are in the process of site remediation in some cases as explained above. The proposed project or variant would control mobilization of contaminants at the site through implement the following mitigation measures:

- Mitigation Measure M-HZ-2a, requiring implementation of a DPH-approved site mitigation plan including dust, odor, noise, and stormwater controls for above the MHW line;
- Mitigation Measure M-HZ-2b, requiring implementation of an approved nearshore sediment and materials management plan below the MHW line; and
- Mitigation Measure M-HZ-2c, requiring implementation of a San Francisco Bay RWQCB–approved remedial action plan for the 900 Innes property.

Additional mitigation measures related to water quality would also be implemented: Mitigation Measures M-HY-1a and M-HY-1b in Section 3.15, “Hydrology and Water Quality.”

Implementing these mitigation measures would reduce the potential for construction workers, the public, students and staff at nearby schools, and site occupants to be exposed to contaminated materials from the project during project or variant construction. Therefore, with implementation of Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, M-HZ-2b, and M-HZ-2c the project’s contribution to this cumulative impact would be *less than significant with mitigation*.

### ***Emergency Services Access***

There would be no significant cumulative impact related to hazards related to the disruption of emergency services. Any temporary changes to the public right-of-way during construction must comply with SFMTA's *Regulations for Working in San Francisco Streets*, also known as the Blue Book or SFMTA Construction Regulations (SFMTA, 2016). The Blue Book establishes rules for working safely and in a way that will cause the least possible interference with pedestrian, bicycle, transit, and other traffic, including emergency services. All projects for which the construction period could overlap with construction under the proposed project or variant would also be required to comply with these City regulations such that no significant cumulative impact would result.

However, as described in Improvement Measure I-TR-4, "Implement Construction Management Strategies," in Section 3.15, "Transportation and Circulation," the project sponsors could develop and implement a traffic control plan that would describe the regulations applicable to the proposed project or variant related to right-of-way safety and access during construction. The traffic control plan would maintain emergency access through the construction period. Implementation of Improvement Measure I-TR-4 would further reduce the less-than-significant hazards impact.

### ***Fire Hazards***

All of the cumulative projects listed above would be required to adhere to the applicable local, State, and federal laws and regulations pertaining to fire safety, such as the California and San Francisco fire codes, including necessary utility and access requirements for fire protection and emergency services. In addition, if the San Francisco Emergency Firefighting Water System (i.e., Auxiliary Water Supply System) is extended to the Candlestick Point–Hunters Point development, and in doing so provides infrastructure along Innes Avenue, such an extension would benefit the proposed project or variant by providing additional firefighting water infrastructure to the project area that could be available for use at the project site. Cumulative impacts relating to fire hazards would therefore be *less than significant*. No mitigation measures are necessary.

### ***Overall Cumulative Impact Conclusion***

The overall cumulative impact of the proposed project or variant, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the project site, would be *less than significant with mitigation* with implementation of Mitigation Measures M-HY-1a, M-HY-1b, M-HZ-2a, M-HZ-2b, and M-HZ-2c.

#### **3.16.5 References**

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Draft Fire Hazard Severity Zones in Local Responsibility Areas: San Francisco County. Available:

[http://frap.fire.ca.gov/webdata/maps/san\\_francisco/fhszl06\\_1\\_map.38.pdf](http://frap.fire.ca.gov/webdata/maps/san_francisco/fhszl06_1_map.38.pdf). Accessed July 19, 2017.

California Department of Toxic Substances Control (DTSC). 2016. "Cortese" list of DTSC's EnviroStor database list of Hazardous Waste and Substances sites. DTSC's Hazardous Waste and Substances Site List—

Site Cleanup (Cortese List) Available: [http://www.dtsc.ca.gov/SiteCleanup/Cortese\\_List.cfm](http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm). Accessed October 28, 2016.

California Environmental Protection Agency (CalEPA). 2016a. "Cortese" list of solid waste disposal sites identified with waste constituents above hazardous waste levels outside the waste management unit. Available: <http://www.calepa.ca.gov/files/2016/10/SiteCleanup-CorteseList-CurrentList.pdf>. Accessed, August 12, 2016.

———. 2016b. "Cortese" list of SWRCB sites with active Cease and Desist Orders or Cleanup Abatement Orders. Available: <http://www.calepa.ca.gov/files/2016/10/SiteCleanup-CorteseList-CDOCAOList.xlsx>. Accessed October 28, 2016.

———. 2016c. "Cortese" list of sites subject to Corrective Action pursuant to Health & Safety Code 25187.5. Available: <https://www.calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/>. Accessed October 28, 2016.

California Office of Environmental Health Hazard Assessment (OEHHA). 2010 (September 23). California Human Health Screening Levels (CHHSLs) for Soil and Soil-Gas. Available: <http://oehha.ca.gov/chhsltable>.

Governor's Office of Emergency Services. 2008. San Francisco Bay Area Regional Emergency Coordination Plan – Base Plan. Prepared by the Governor's Office of Emergency Services, Cities of Oakland, San Francisco, and San Jose Counties of Alameda, Contra Costa, Marin, Napa, San Mateo Santa Clara, Santa Cruz, Solano, and Sonoma, with support from Homeland Security. Available: [http://bayareauasi.org/sites/default/files/resources/RECP\\_BASE\\_PLAN.pdf](http://bayareauasi.org/sites/default/files/resources/RECP_BASE_PLAN.pdf). Accessed June 14, 2017,

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 2017 (April 25). Lead Agency Determination for 900 Innes Avenue, San Francisco, San Francisco County. Letter to Ms. Charlene Angsuko, San Francisco Recreation and Park Department. File No. 1210.57 (SAH).

———. 2016 (February). *Environmental Screening Levels*, Interim Final (Rev 3). Available: [http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/esl.shtml](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml).

San Francisco, City and County of. 1999 (August 23). Phase II Soil Sample Results. San Francisco, CA. Provided by Treadwell and Rollo, Inc.

———. 2013 (January 14). *Phase I Environmental Site Assessment, 110 Undeveloped Parcels Bound by India Street, Innes Avenue, Earl Street, and Griffith Street, San Francisco, San Francisco County, California 94124*. San Francisco, CA. Prepared by AEI Consultants.

———. 2014a (March 17). *Technical Memorandum, Shoreline Area Focused Ecological Risk Assessment for Area F at Hunters Point*. San Francisco, CA. Prepared by Haley & Aldrich.

———. 2014b. *Updated Phase I Environmental Site Assessment, India Basin*. San Francisco, CA. Prepared by Langan Treadwell and Rollo.

- . 2014c. *Phase II Environmental Site Assessment, India Basin*. San Francisco, CA. Prepared by Langan Treadwell and Rollo.
- . 2015 (June 30). *Phase I Environmental Site Assessment, India Basin Shoreline Park, San Francisco, California*. San Francisco, CA. Prepared by Langan Treadwell and Rollo.
- . 2017 (February 28). *Draft Site Mitigation Plan, India Basin, San Francisco, California*. San Francisco, CA. Prepared by Langan Engineering and Environmental Services, Inc.
- San Francisco Department of Emergency Management (SFDEM). 2009 (December). *City and County of San Francisco Emergency Response Plan*. Available:  
<http://sfdem.org/modules/showdocument.aspx?documentid=1455>
- . 2014 (June). *City and County of San Francisco Hazard Mitigation Plan*. Available:  
<http://sfdem.org/modules/showdocument.aspx?documentid=2328>.
- . N.D. *City and County of San Francisco Emergency Response Plan ESF #10: Part: Land, Oil & Hazardous Materials Response Annex*. Available:  
<http://sfdem.org/ftp/uploadedfiles/DEM/PlansReports/ESF10-Oil-Hazmat-land.pdf>.
- San Francisco Department of the Environment (SFDE). 2015. *Analysis of Brownfield Cleanup Alternatives, Shipwrights Cottage*. San Francisco, CA. Prepared by URS Corporation, San Francisco, CA.
- San Francisco Department of the Environment and San Francisco Recreation and Parks Department (SFDE and RPD). 2016. *Final Technical Memorandum Data Gaps for 900 Innes*. San Francisco, CA. Prepared by AECOM, San Francisco, CA.
- San Francisco Municipal Transportation Agency (SFMTA). 2016. *Regulations For Working in San Francisco Streets (the Blue Book)*. Available: <https://www.sfmta.com/services/streets-sidewalks/construction-regulations>. Accessed July 18, 2017.
- San Francisco Public Utilities Commission (SFPUC). 2014 (February). *CS-199 Planning Support Services for Auxiliary Water Supply System (AWSS). Project Report*. San Francisco, CA. Prepared by AECOM and AGS, San Francisco, CA.
- . 2016 (December). Agenda Item—Approval of Water Supply Assessment for the India Basin Mixed Use Project. December 13, 2016, Meeting Agenda Item 10a.
- . 2017. Emergency Firefighting Water System. Available: <http://www.sfwater.org/index.aspx?page=467>. Accessed February 13, 2017.
- San Francisco Recreation and Parks Department (RPD). 1992. *Results of Technical Review of Environmental Reports India Basin Shoreline Park*. San Francisco, CA. Prepared by PES Environmental, Inc.
- . 2016a. *Final Technical Memorandum Data Gaps for India Basin Shoreline Park*. San Francisco, CA. Prepared by AECOM.

- . 2016b (September 7). *Site Characterization Report, India Basin Shoreline Redevelopment Project, India Basin Open Space, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- . 2017a (February 28). *Site Mitigation Plan (Draft), India Basin Redevelopment Project, India Basin Shoreline Park, 900 Innes Avenue, India Basin Open Space, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- . 2017b (February 28). *Technical Briefing, Conceptual Remediation Plan, 900 Innes Avenue, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- . 2017c (April 28). *Site Characterization Report, India Basin Shoreline Redevelopment Project, India Basin Shoreline Park, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- . 2017d (April 27). *Site Characterization Report, India Basin Shoreline Redevelopment Project, 900 Innes Avenue, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- . 2017e (April 4). *Phase I Environmental Site Assessment, India Basin Open Space, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- . 2017f (April 6). *Draft Remedial Action Plan. 900 Innes Avenue, San Francisco, California*. San Francisco, CA. Prepared by Northgate Environmental Management.
- State Water Resources Control Board (SWRCB). 2015. California Ocean Plan. Prepared by the California Environmental Protection Agency, Sacramento, CA.
- . 2016. “Cortese” List of Leaking Underground Storage Tank Sites by County (San Francisco County). Available: [https://geotracker.waterboards.ca.gov/sites\\_by\\_county](https://geotracker.waterboards.ca.gov/sites_by_county). Accessed October 28, 2016.
- U.S. Environmental Protection Agency (EPA). 2013a. *Phase I/II Investigation Targeted Brownfields Assessment, Final Report, 900 Innes Avenue Site*. Region 9, San Francisco, CA. Prepared by Weston, Walnut Creek, CA.
- . 2013b. *900 Innes Avenue Site, Analysis of Brownfield Cleanup Alternatives*. San Francisco, CA. Prepared by Weston, Walnut Creek, CA.

This page intentionally left blank.

## 4.0 ALTERNATIVES

### 4.1 INTRODUCTION

This chapter presents the alternatives analysis as required by CEQA for the proposed India Basin Mixed-Use Development. The chapter identifies a reasonable range of alternatives to the proposed project and the variant, including preservation alternatives, and these alternatives are evaluated for their comparative merits with respect to minimizing adverse environmental effects. For the alternatives selected for detailed analysis, the chapter evaluates the alternatives' impacts against existing environmental conditions and compares the potential impacts of the alternatives with those of the proposed project and the variant. Based on this analysis, this chapter then identifies the environmentally superior alternative. Finally, it describes other alternative concepts that were considered but eliminated from detailed consideration and reasons for their elimination.

State CEQA Guidelines Section 15126.6(a) requires that an EIR evaluate “a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects, and evaluate the comparative merits of the alternatives.” An EIR need not consider every conceivable alternative to a proposed project. Rather, it must consider a range of potentially feasible alternatives governed by the “rule of reason” to foster informed decision-making and public participation (State CEQA Guidelines Section 15126.6[f]).

State CEQA Guidelines Sections 15126.6(f)(1) and 15126.6(f)(3) state that “among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)” and that an EIR “need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative.” The final determination of feasibility will be made by project decisionmakers based on substantial evidence in the record.

### 4.2 ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

Based on the environmental analyses in this EIR, the City has determined that the proposed project or variant on its own and/or in conjunction with cumulative development in southeastern San Francisco would result in significant unavoidable impacts related to cultural resources, transportation and circulation, noise, wind, and air quality. For other significant impacts that are reduced to less than significant with mitigation, please refer to the Summary chapter and Chapter 3.0, “Environmental Setting and Impacts.”

#### **Transportation and Circulation Impacts:**

- Cumulative transportation impacts related to transit delay due to increased round-trip transit travel time.

#### **Cultural Resources Impacts:**

- Project elements may, depending on final project design, negatively affect the integrity of setting, design, materials, workmanship, feeling, and association to such a degree that the India Basin Scow Schooner

Boatyard Vernacular Cultural Landscape would no longer remain eligible for listing in the California Register of Historical Resources (CRHR).

#### **Noise Impacts:**

- Project-level ambient noise impacts during operation, including surface transportation sources, on sensitive receptors located off site along roadways.
- Cumulative noise impacts on sensitive receptors located off site along roadways.

#### **Air Quality Impacts**

- Project-level emissions of criteria air pollutants and precursors during construction, operation, and overlapping construction and operational activities.
- Project-level emissions that could expose sensitive receptors to substantial pollutant concentrations.
- Cumulative regional air quality and health risk impacts

#### **Wind Impacts:**

- Project-level wind impacts that would affect public areas.

The alternatives selection process first considered potential project changes that could avoid or lessen some of the significant and unavoidable impacts listed above. Alternative project options were then screened for their feasibility and their ability to meet most of the project sponsors' objectives. The process resulted in four alternatives that were determined to represent a reasonable range of alternatives, in addition to the no project alternative. The following alternatives are analyzed in this chapter:

- **No Project Alternative:** As required by State CEQA Guidelines Section 15126.6(e), the No Project Alternative is evaluated to allow decision-makers to compare the environmental effects of approving the proposed project with the effects of not approving the project. Under this alternative, the project site would remain in its current condition and no new development would occur. There would be no construction and no provision of new residential, commercial (retail, office, research and development [R&D]), and recreational uses.
- **Code Compliant Alternative:** This alternative was selected because of its potential to reduce wind impacts and to demonstrate what is allowable under existing land use controls at the site. The purpose of choosing this alternative is to allow decision-makers to compare the environmental effects of approving the proposed project or the variant with development that would be consistent with existing zoning on the site. The same type of recreational and commercial development and associated parking and access would occur at the India Basin Shoreline Park and 900 Innes properties under the Code Compliant Alternative as under the proposed project or variant, because the proposed development on these two properties has been designed to be code compliant. The Code Compliant Alternative would include residential and commercial (retail, office, and R&D) uses on the 700 Innes property; however, under this alternative, the 700 Innes property would include more overall built square footage, which would be closer to the maximum development allowable by the San Francisco Planning Code (Planning Code). Under this alternative, the proposed heights of the structures on the 700 Innes property would be lower than under the proposed project or variant. The India Basin Open



Space and 700 Innes properties would have a 40-foot height limit with no bulk restriction, which would increase the total land coverage (i.e., total building footprint) of the 700 Innes property to 13.3 acres or 579,348 gross square feet (gsf).

- **Reduced Development Alternative:** This alternative was selected because of its potential to reduce the transportation and circulation, noise, and wind impacts listed above. The Reduced Development Alternative would include the same type of on-land recreational and commercial space and associated parking and access on the India Basin Shoreline Park and 900 Innes properties as under the proposed project or variant; however, the in-water redevelopment would not include a new pier and dock extending from the India Basin Shoreline Park property. The Reduced Development Alternative would include residential, commercial (retail, office, and R&D), institutional/education, parking, and recreational/open space uses on the 700 Innes property, but the total square footage of development would be reduced by approximately 50 percent. Under this alternative, the proposed heights of the structures on the 700 Innes property would be lowered at the proposed tower locations and throughout most of the remaining project site compared to the proposed project or variant.
- **Full Preservation Alternative:** This alternative was selected because of its potential to reduce the cultural resource impact listed above. The Full Preservation Alternative would be similar to the proposed project and variant, but would include the rehabilitation to Secretary of Interior (SOI) Standards of all three buildings (the Shipwright's Cottage, the Boatyard Office Building, and the Tool Shed and Water Tank building) that are significant features of the India Basin Scow Schooner Boatyard and contribute to the boatyard's CRHR eligibility. The Full Preservation Alternative would also propose that plantings and new park furniture would be designed to retain the industrial character of the cultural landscape. Under this alternative, the Griffith Street right-of-way alignment and width would be maintained and would be designed as a stepped path rather than wood stairs.
- **Partial Preservation Alternative:** This alternative was selected because of its potential to reduce the cultural resource impact listed above. The Partial Preservation Alternative would be similar to the proposed project and variant, but would guarantee the retention of the Boatyard Office Building and interpretation of the Tool Shed and Water Tank building, significant features of the India Basin Scow Schooner Boatyard that contributes to the boatyard's CRHR eligibility.

These five alternatives were determined to adequately represent the range of feasible alternatives to the proposed project and variant required under CEQA. They would each lessen significant adverse impacts that were identified for the proposed project and variant.

The five alternatives are presented and analyzed below in Sections 4.3, 4.4, 4.5, 4.6 and 4.7 respectively. Each section presents a description of the alternative and a detailed analysis of its impacts compared to those of the proposed project and variant. The impact analysis is based on the same environmental setting and significance thresholds as presented for each resource topic in Chapter 3.0 and uses the same approach to analysis. The analysis here is generally qualitative relative to the identified impacts of the proposed project and variant. A quantitative transportation and circulation analysis is presented to provide a more refined comparison of the severity of impacts associated with the alternatives relative to those of the proposed project and variant.

In the following discussions of components of the EIR alternatives, the proposed RPD development is described first, followed by the proposed BUILD development. Although RPD owns the India Basin Open Space property, BUILD would design and build this property's project components; therefore, the proposed uses on the India Basin Open Space property are described in the BUILD discussions. Table 4-1 summarizes the proposed project and variant and the components of the EIR alternatives, and Table 4-2 compares the impacts of the proposed project and variant with those of the alternatives.

### 4.3 NO PROJECT ALTERNATIVE

#### 4.3.1 Overview

The No Project Alternative would involve no construction and no provision of new residential, commercial (retail, office, R&D), and recreational uses. As such, the existing riprap, dilapidated piers, and creosote-treated piles would remain in place on the project site. Furthermore, no hazardous-materials remediation activities and preservation of historic resources would occur at the project site.

**Table 4-1: Summary of Proposed Project and Variant and Components of the EIR Alternatives**

Proposed Feature	Proposed Project	Variant	No Project Alternative	Code Compliant Alternative	Reduced Development Alternative	Full Preservation Alternative	Partial Preservation Alternative
Residential Space (# of units)	1,240,100 gsf (1,240 units)	417,300 gsf (500 units)	6,935 gsf (4 units)	1,240,100 gsf (1,240 units)	620,000 gsf (620 units)	1,240,100 gsf (1,240 units)	1,240,100 gsf (1,240 units)
Commercial Space—retail, office, research and development	275,330 gsf	1,000,000 gsf	18,162 gsf	738,501 gsf	75,000 gsf	275,330 gsf	275,330 gsf
Institutional/Educational Space	50,000 gsf	50,000 gsf	0 gsf	50,000 gsf	26,750 gsf	50,000 gsf	50,000 gsf
Parking Space (# of spaces)	679,900 gsf (1,800 spaces)	717,365 gsf (1,932 spaces)	20,340 gsf (113 spaces)	679,900 gsf (1,800 spaces)	360,000 gsf (900 spaces)	679,900 gsf (1,800 spaces)	679,900 gsf (1,800 spaces)
<b>TOTAL BUILT SPACE</b>	<b>2,245,330 gsf</b>	<b>2,184,665 gsf</b>	<b>45,437 gsf</b>	<b>2,708,501 gsf</b>	<b>1,081,750 gsf</b>	<b>2,245,330 gsf</b>	<b>2,245,330 gsf</b>
Publicly Accessible Recreation/Open Space (# of acres) <sup>1</sup>	1,067,220 sq. ft. (24.5 acres)	1,067,220 sq. ft. (24.5 acres)	514,008 sq. ft. (11.8 acres)	618,552 sq. ft. (14.2 acres)	618,552 sq. ft. (14.2 acres)	1,067,220 sq. ft. (24.5 acres)	1,067,220 sq. ft. (24.5 acres)
Zoning Districts	SUD	SUD	M-1, M-2, NC-2, P	M-1, M-2, NC-2, P	SUD	SUD	SUD
Height and Bulk Districts	165-X, OS	165-X, OS	40-X, OS	40-X, OS	75-X, OS	165-X, OS	165-X, OS
Building Heights (# of floors)	160 feet (14 floors)	160 feet (14 floors)	40 feet (4 floors)	40 feet (4 floors)	75 feet (6 floors)	160 feet (14 floors)	160 feet (14 floors)
Building Footprint (# of acres)	422,532 gsf (9.7 acres)	422,532 gsf (9.7 acres)	15,539 gsf (.36 acres)	579,348 (13.3 acres)	422,532 (9.7 acres)	422,532 gsf (9.7 acres)	422,532 gsf (9.7 acres)
# of Bike Spaces	1,240 spaces	500 spaces	0 spaces	1,240 spaces	620 spaces	1,240 spaces	1,240 spaces

Notes: EIR = environmental impact report; gsf = gross square feet; OS = Open Space; M-1 = Light Industrial; M-2 = Heavy Industrial;

NC-2 = Small-Scale Neighborhood Commercial; P = Public; sq. ft. = square feet; SUD = Special Use District

<sup>1</sup> The open space for the No Project Alternative, Code Compliant Alternative, and Reduced Development Alternative is the existing open space of India Basin Shoreline Park and India Basin Open Space; no additional open space would be created.

The existing parks would not be enhanced under the No Project Alternative.

Source: Compiled by AECOM in 2017

**Table 4-2: Summary of Impact Conclusions of the EIR Alternatives Compared to the Proposed Project and Variant**

	<b>Proposed Project (PP)</b>	<b>Variant (PV)</b>	<b>No Project Alternative</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
Land Use and Land Use Planning	LTS	LTS	NI (less than PP & PV)	LTS (same as PP & PV)	LTS (same as PP & PV)	LTS	LTS
Aesthetics	LSM	LSM	NI (less than PP & PV)	LTS (less than PP & PV)	LSM (less than PP & PV)	LSM	LSM
Population and Housing	LTS	LTS	NI (less than PP & PV)	LTS (same as PP & PV)	LTS (less than PP; & PV)	LTS	LTS
Cultural Resources	SUM	SUM	NI (less than PP & PV)	SUM	SUM	LSM (less than PP & PV)	LSM (less than PP & PV)
Transportation and Circulation (Cumulative Transit Delay)	SUM	SUM	NI (less than PP & PV)	SUM (greater than PP & PV)	SUM (less than PP & PV)	SUM	SUM
Noise	SUM	SUM	NI (less than PP & PV)	SUM (same as PP & PV)	SUM (less than PP & PV)	SUM	SUM
Air Quality	SUM	SUM	NI (less than PP & PV)	SUM (greater than PP & PV)	SUM (less than PP & PV)	SUM	SUM
Greenhouse Gas Emissions	LTS	LTS	NI (less than PP & PV)	LTS (same as PP & PV)	LTS (less than PP & PV)	LTS	LTS
Wind	SUM	SUM	NI (less than PP & PV)	SUM (less than PP & PV)	SUM (less than PP & PV)	SUM	SUM
Shadow	LTS	LTS	NI (less than PP & PV)	LTS (less than PP & PV)	LTS (less than PP & PV)	LTS	LTS
Recreation	LSM	LSM	NI (less than PP & PV)	LTS (greater than PP & PV)	LTS (less than PP & PV)	LSM	LSM
Utilities and Service Systems	LSM	LSM	NI (less than PP & PV)	LTS (greater than PP & PV)	LSM (less than PP & PV)	LSM	LSM
Public Services	LTS	LTS	NI (less than PP & PV)	LTS (same as PP & PV)	LTS (less than PP & PV)	LTS	LTS
Biological Resources	LSM	LSM	NI (less than PP & PV)	LSM (greater than PP; & PV)	LSM (less than PP & PV)	LSM	LSM

	<b>Proposed Project (PP)</b>	<b>Variant (PV)</b>	<b>No Project Alternative</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
Hydrology and Water Quality	LSM	LSM	NI (less than PP & PV)	LSM (same as PP & PV)	LSM (same as PP & PV)	LSM	LSM
Hazards and Hazardous Materials	LSM	LSM	NI (less than PP & PV)	LSM (same as PP & PV)	LSM (less than PP; & PV)	LSM	LSM
<b>TOTAL</b>	<b>N/A</b>	<b>N/A</b>	<b>Less for 16 topics</b>	<b>Less for 3 topics; Same for 7 topics; Greater for 5 topics</b>	<b>Less for 15 topics; Same for 1 topic</b>	<b>Less for 1 topic; Same for 15 topics</b>	<b>Less for 1 topic; Same for 15 topics</b>

Notes: LSM = less than significant with mitigation; LTS = less than significant; N/A = not applicable; NI = no impact;

PP = proposed project; PV = variant; SUM = significant and unavoidable with mitigation

Source: Compiled by AECOM in 2017

### 4.3.2 Impacts of the No Project Alternative

#### Land Use and Land Use Planning

Under the No Project Alternative, each of the project site properties would remain in its existing condition. No new development would occur on any of the properties. No amendments to the *San Francisco General Plan* (General Plan), Planning Code text, or zoning map would be required, and the existing development controls over the site would remain in place. Because no new private development would be constructed on-site, the No Project Alternative would not need for a trust settlement or exchange agreement pursuant to the Public Trust. Similarly, a San Francisco Bay Conservation and Development Commission Major Permit and an amendment to the *San Francisco Bay Plan* would not be needed.

The No Project Alternative would not physically divide an existing community by constructing a physical barrier to neighborhood access or removing an existing means of access. The No Project Alternative would not result in any changes on the project site that would conflict with land use plans, policies, or regulations adopted for the purpose of mitigating or avoiding an environmental effect. Compared to the proposed project or variant, which would result in less-than-significant impacts, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to land use and land use planning.

#### Aesthetics

Under the No Project Alternative, no new development would occur on the project site. The existing India Basin Shoreline Park and India Basin Open Space would not be enhanced. The San Francisco Bay Trail (Bay Trail) would continue to traverse a portion of the project site, but a new connection to and through a different portion of the project site would not be implemented. Riprap along the shoreline would remain in place, and no shoreline enhancements would occur. Scenic vistas and the visual quality of the area would not be altered. Compared to the proposed project or variant, which would result in less-than-significant impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to aesthetics.

## Population and Housing

Under the No Project Alternative, the number of existing housing units, residents, and employees on the project site would not change. There would be no construction of new residential or commercial uses on the project site, and no displacement of existing residents or existing businesses would occur. Compared to the proposed project or variant, which would result in less-than-significant impacts, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to population and housing.

## Cultural Resources

Under the No Project Alternative, existing archeological resources on the project site would not be affected. Because the No Project Alternative would not result in any excavation or ground disturbance, there would not be any disturbance of potential archeological resources, including the two identified buried ships on the property, or of potential tribal cultural resources or human remains that may be present. Compared to the proposed project or variant, which would result in less-than-significant impacts with mitigation, the No Project Alternative would not result in any project-level impact or contribute to any cumulative impact related to archeological resources.

Under the No Project Alternative, existing historic architectural resources on the project site would not be altered, rehabilitated, or demolished. Compared to the proposed project or variant, which would result insignificant and unavoidable impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to historic architectural resources.

## Transportation and Circulation

Under the No Project Alternative, existing conditions on the project site would not change. The existing street grid and other features of the transportation network—including roadway, transit, bikeway, and pedestrian facilities; loading and parking accommodations; and emergency vehicle access—would remain as they are now. There would also be no new development on the project site that would result in new vehicle, transit, bicycle, or pedestrian trips. Compared to the proposed project or variant, which would result in less-than-significant impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to transportation and circulation – specifically cumulative transit delay.

## Noise

Under the No Project Alternative, no new development would occur on the project site. There would be no changes on the site that would result in new sources of noise. Because no new noise sources would result under the No Project Alternative, *no impact* on ambient noise conditions would occur. For this reason, the No Project Alternative would avoid the significant noise impacts that would result from implementation of the proposed project or variant, including significant and unavoidable construction and traffic-related noise impacts.

## Air Quality

Under the No Project Alternative, existing conditions on the project site would not change. There would be no new development on the site that would result in new emissions of criteria air pollutants or toxic air contaminants. Compared to the proposed project or variant, which would result in significant and unavoidable impacts with

mitigation for criteria pollutants and the health risk assessment, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to air quality or health risk. Mitigation measures to offset construction and operational emissions would not be required under the No Project Alternative.

### **Greenhouse Gas Emissions**

Under the No Project Alternative, no new development would occur on the project site. There would be no changes to existing conditions that would result in new sources of greenhouse gas (GHG) emissions. Compared to the proposed project or variant, which would result in less-than-significant impacts, the No Project Alternative would result in no impact related to GHG emissions.

### **Wind**

Under the No Project Alternative, existing wind conditions at the project site would not change. The No Project Alternative would not result in the construction of any new buildings, structures, or landscapes that would alter existing wind currents or conditions. Compared to the proposed project or variant, which would result in significant and unavoidable impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to wind.

### **Shadow**

Under the No Project Alternative, no new shadows would be cast on the project site. The No Project Alternative would not result in the construction of any new buildings, structures, or landscapes that would cast a shadow, and therefore would not change existing sunlight conditions on nearby open spaces or publicly accessible features or sidewalks. Compared to the proposed project or variant, which would result in less-than-significant impacts, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to shadow.

### **Recreation**

Under the No Project Alternative, existing conditions on the project site would not change. There would be no new development that would increase demand for recreation facilities or cause or accelerate the physical deterioration of such facilities. Compared to the proposed project or variant, which would result in less-than-significant impacts, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to recreation.

### **Utilities and Service Systems**

With no new development at the site under the No Project Alternative, existing water, wastewater, and stormwater facilities would remain in place and demand for the City's wastewater or potable water facilities would not increase. The No Project Alternative would not exceed wastewater treatment requirements; would not result in the construction of new water, wastewater, or stormwater drainage treatment facilities; and would not require new or expanded water supply resources or entitlements. Compared to the proposed project or variant, which would

result in less-than-significant impacts, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to utilities and service systems.

### **Public Services**

Under the No Project Alternative, the project site would remain in its existing condition. No development or improvements would occur on the site. Because no new residents, employees, or visitors would be added to the project site, demand on public service providers, including the San Francisco Police Department (SFPD), San Francisco Fire Department (SFFD), San Francisco Unified School District (SFUSD), and San Francisco Public Library (SFPL) would remain similar to current demand. The improvements to emergency vehicle access through the site that would be implemented under the proposed project and variant would not occur under the No Project Alternative. The school that would be constructed under the proposed project and variant would not be constructed under the No Project Alternative. Compared to the proposed project or variant, which would result in less-than-significant impacts, the No Project Alternative would not result in any project-level impacts and would not contribute to a cumulative impact related to public services.

### **Biological Resources**

Under the No Project Alternative, existing conditions on the project site would not change. There would be no new development that could affect special-status species, riparian habitats, sensitive natural communities, wetlands, or migratory wildlife corridors. Compared to the proposed project or variant, which would result in less-than-significant impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to a cumulative impact related to biological resources.

### **Hydrology and Water Quality**

The No Project Alternative would not include any development on the project site, so waste discharge, drainage patterns, or surface runoff would not change. Nothing new would be constructed within the 100-year flood hazard area that would impede or redirect water flows. Compared to the proposed project or variant, which would result in less-than-significant impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to hydrology and water quality.

### **Hazards and Hazardous Materials**

Under the No Project Alternative, existing conditions on the project site would not change. Contaminated soil and groundwater underlying the project site would not be remediated. There would be no new development on the project site that would involve the transport, use, or disposal of hazardous materials; interfere with an adopted emergency response plan or emergency evacuation plan; or expose structures or people to significant risk of loss, injury, or death involving fires. Compared to the proposed project or variant, which would result in less-than-significant impacts with mitigation, the No Project Alternative would not result in any project-level impacts and would not contribute to any cumulative impact related to hazards and hazardous materials.

## Other Topics

The Notice of Preparation/Initial Study (NOP/IS) and public scoping process concluded that the proposed project or variant would have no impacts or less-than-significant impacts in the following analysis areas:

- Geology and Soils
- Mineral and Energy Resources
- Agriculture and Forestry Resources

The No Project Alternative would result in no impacts related to any of the above-listed environmental topics, because this alternative would result in no changes to existing site conditions with respect to these topics.

## 4.4 CODE COMPLIANT ALTERNATIVE

Overall, the Code Compliant Alternative would include the same amount of residential, and parking uses and nearly the same institutional/educational gsf, as under the proposed project, which includes 1,240,000 gsf of residential (1,240 units), 50,000 gsf of school space, and 679,900 gsf (1,800 spaces) of parking, but with an increase to 738,501 gsf of commercial space (including retail, office, and R&D) and a decrease to 618,552 square feet (sq. ft.) of recreational/open space for a total of approximately 2,708,501 gsf under this alternative. As a comparison the variant would have 417,300 gsf of residential (500 units), 50,000 gsf of school space, and 717,365 gsf (1,932 spaces) of parking, 1,000,000 gsf of commercial space (including retail, office, and R&D) and 1,067,220 square feet (sq. ft.) of recreational/open space for a total of approximately 2,184,665 gsf.

The Code Compliant Alternative meets all applicable provisions of the Planning Code. Under this alternative, the project site would remain within the 40-X and Open Space (OS) height and bulk districts and the Light Industrial (M-1), Heavy Industrial (M-2), Small-Scale Neighborhood Commercial (NC-2), and Public (P) zoning districts, as set forth below.

### 4.4.1 San Francisco Recreation and Parks Department Development

#### India Basin Shoreline Park and 900 Innes Properties

The same recreational and commercial development and associated parking and access would occur at the India Basin Shoreline Park and 900 Innes properties under the Code Compliant Alternative as under the proposed project, because the proposed development on these two properties has been designed to be code compliant (Figure 4-1a). Bicycle circulation improvements would also be implemented, including the Bay Trail extension through the India Basin Shoreline Park and 900 Innes properties as well as a Class I bikeway connecting to bikeways on adjacent streets. The India Basin Shoreline Park and 900 Innes properties are currently zoned M-1, NC-2, and P, and are within the 40-X and OS height and bulk districts; therefore, development heights would be limited to 40 feet (Figure 4-2a).

Under the Code Compliant Alternative, similar to the proposed project, the existing dilapidated piers and creosote-treated piles in tidal areas connected with the India Basin Shoreline Park and 900 Innes properties would be removed and, in some cases, replaced. Existing riprap would be removed, existing tidal marsh wetlands would be partially restored, and new additional tidal marsh wetlands would be created along the shoreline of the India



Basin Shoreline Park and 900 Innes properties. Furthermore, similar to the proposed project, hazardous-materials remediation activities and preservation of historic resources would occur on the India Basin Shoreline Park and 900 Innes properties.

#### **4.4.2 BUILD Development**

##### **India Basin Open Space and 700 Innes Properties**

Like the proposed project, the Code Compliant Alternative would include no structures on the India Basin Open Space property, which is code compliant. The proposed uses at the 700 Innes property under this alternative would not require changes to the development controls, such as increases in permitted height through amendments to the General Plan, Planning Code text, and zoning map.

The Code Compliant Alternative would include residential and commercial (retail, office, and R&D) uses on the 700 Innes property; however, under this alternative, the 700 Innes property would include more built square footage (Figure 4-1b), which is closer to the maximum development that can be accommodated on the property and that is allowable by the Planning Code.

The proposed heights of the structures on the 700 Innes property would be lower under this alternative than under the proposed project. The India Basin Open Space and 700 Innes properties are located within the 40-X and OS height and bulk districts; therefore, the Code Complaint Alternative would have a 40-foot height limit with no bulk restriction (Figure 4-2b). This would increase the total land coverage (i.e., total building footprint) of the 700 Innes property from 9.7 acres (422,532 gsf) under the proposed project to 13.3 acres or 579,348 gsf.

Because the 700 Innes property could receive more development in terms of total land coverage, the open space on this property would be reduced from 10.3 acres to 5.3 acres. The proposed project includes an approximately 5.63-acre open space, referred to as the “Big Green,” on the 700 Innes property that would be eliminated under the Code Compliant Alternative, along with a reduction of the other open space areas on the 700 Innes property.



Source: GGN, 2017

**Figure 4-1a**

**Code Compliant Alternative Site and Land Use Plan  
(India Basin Shoreline Park and 900 Innes Properties)**



Source: SOM, 2017

**Figure 4-1b**

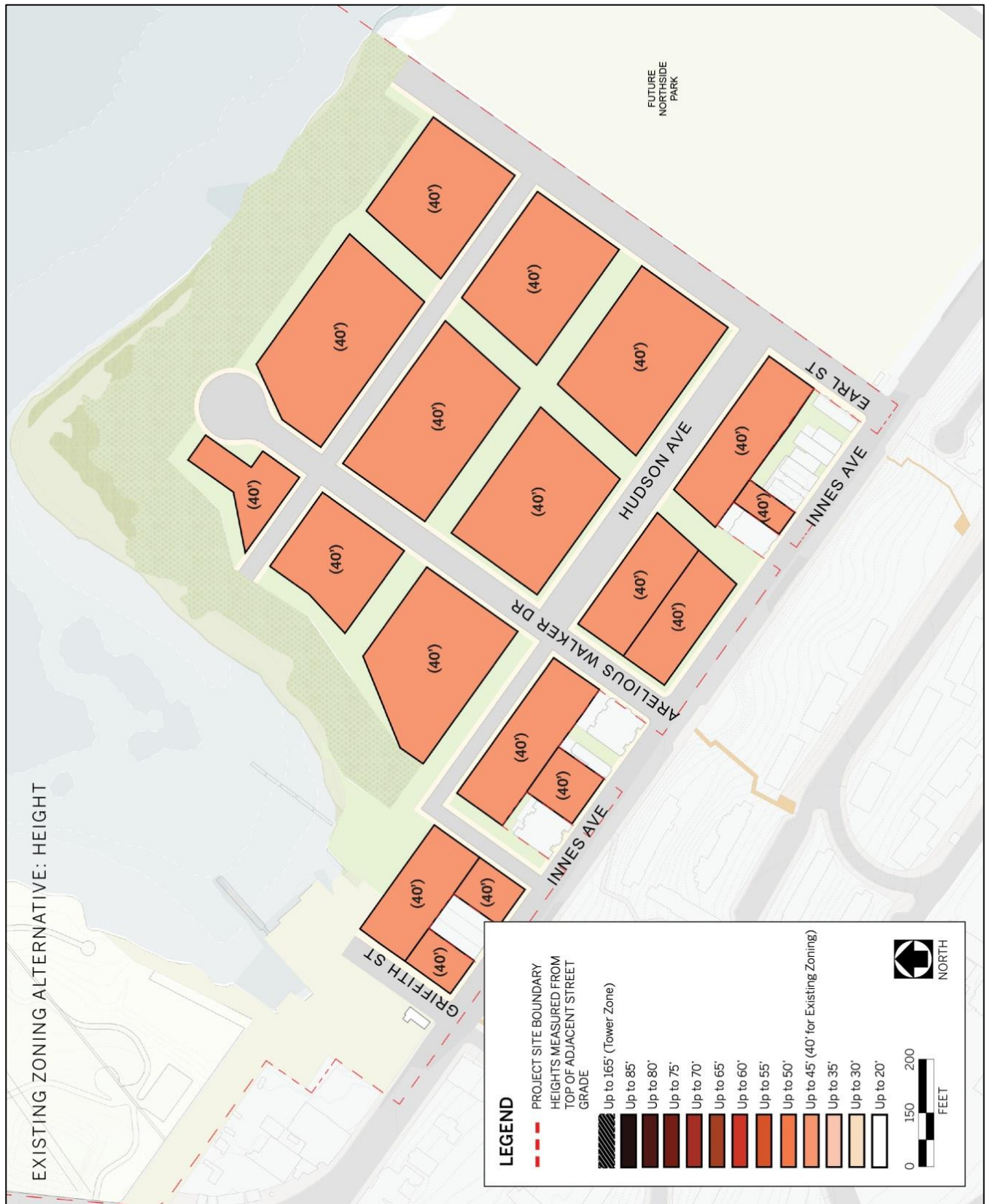
**Code Compliant Alternative Site and Land Use Plan  
(India Basin Open Space and 700 Innes Properties)**



Source: GGN, 2017

**Figure 4-2a**

**Code Compliant Alternative Building Heights  
(India Basin Shoreline Park and 900 Innes Properties)**



Source: SOM, 2017

**Figure 4-2b**

**Code Compliant Alternative Building Heights  
(India Basin Open Space and 700 Innes Properties)**

Like the proposed project, the Code Compliant Alternative would include transportation and circulation improvements including new and reconstructed streets, sidewalks, and pathways. However, the layout of the streets would be changed from the pattern presented under the proposed project to a more-simplified grid pattern with the primary egress/ingress to the 700 Innes property occurring on Innes Avenue at Griffith Street, Arelious Walker Drive, and Earl Street. Hudson Avenue, in its currently planned configuration, would contain a simplified painted Class 2 bike lane. Earl Street, Arelious Walker Drive, and Griffith Street would all function as two-way local streets with a moderate amount of on-street parking and Class 3 bike facilities to enable access to India Basin Shoreline Park. None of the bike lanes would be separated and they would all travel through the built environment. The Bay Trail would remain unchanged through the India Basin Open Space property. Like the proposed project, this alternative would also include a transportation demand management (TDM) program, although the on-site Class 2 bike facilities may be limited because of space constraints. Similar to the proposed project, hazardous-materials remediation would occur on the 700 Innes property under the Code Compliant Alternative.

The Code Compliant Alternative would leave the 6.2-acre India Basin Open Space property in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront.

### 4.4.3 Impacts of the Code Compliant Alternative

#### Land Use and Planning

##### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Under the Code Compliant Alternative, development across all of the project site properties would comply with all applicable provisions of the Planning Code. The project site would remain within the 40-X and OS height and bulk districts and the M-1, M-2, NC-2, and P zoning districts. No amendments to the General Plan, Planning Code text, or zoning map would be required under this alternative, and the existing development controls over the site would remain in place. Because new private development would be constructed on portions of the project site that could be subject to the Public Trust Doctrine, this alternative would need a trust settlement or exchange agreement pursuant to the Public Trust, similar to the proposed project or variant.

Because the proposed development would be substantially similar under the Code Compliant Alternative, the proposed project, and the variant, the Code Compliant Alternative would result in similar impacts on land use and land use planning as the proposed project or variant. Because the India Basin Open Space property would not be improved, the connectivity along the shoreline envisioned by the Recreation and Open Space Element and the *Hunters Point Area Plan* would not be implemented as fully as under the proposed project or variant. However, the Bay Trail would still be extended, allowing recreational connectivity throughout the properties to other open space that would be provided. The publicly accessible recreation and open space would be reduced from 24.5 acres under the proposed project or variant to 11.8 acres, reducing the available amenities on the 700 Innes property while receiving more development in terms of total land coverage. The Code Compliant Alternative would eliminate the approximately 5.63-acre open space referred to as the “Big Green,” located on the 700 Innes property. Overall, compared to the proposed project or variant, which would result in less-than-significant impacts, the Code Compliant Alternative would likewise result in *less-than-significant* project-level impacts and the cumulative impact related to land use and planning would be *less than significant*. No mitigation measures are necessary.

## Aesthetics

### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

The same recreational and commercial development would occur at these properties under the Code Compliant Alternative as under either the proposed project or the variant. Buildings on these properties would be a maximum of 25 feet tall, the same as under both the proposed project and the variant. The 900 Innes property would be left in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront, and the 700 Innes property would include shorter buildings with a maximum height of 40 feet, with no bulk restriction. Because the 700 Innes property could receive more development in terms of total land coverage, the open space on this property would be reduced and the Big Green would be eliminated.

Because of the reduction in building heights, the visibility of scenic resources and vistas from public vantage points would be better than under either the proposed project or the variant. In addition, impacts on the visual character and quality would likely be less than under either the proposed project or the variant because buildings fronting Innes Avenue would be more uniform in height.

Compared to the proposed project or variant, which would result in less-than-significant impacts, the Code Compliant Alternative would similarly result in *less-than-significant* project-level impacts. The cumulative impact related to aesthetics would also be *less than significant*. No mitigation measures are necessary.

## Population and Housing

### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

The impacts of the Code Compliant Alternative on the population and housing conditions at these properties would be similar to the impacts of the proposed project or variant. This alternative would have the same recreational amenities and minimal commercial development on the India Basin Shoreline Park and 900 Innes properties as the proposed project and variant.

Under this alternative, the India Basin Open Space would be left in its existing condition with fewer improvements to recreational amenities, and the property would not be enhanced. This would result in fewer temporary construction jobs than under either the proposed project or the variant. At the 700 Innes property, the Code Compliant Alternative would include the same number of housing units as the proposed project, but more commercial space than the proposed project.

The Code Compliant Alternative would displace the same number of people as both the proposed project and the variant, and direct population and housing growth under this alternative would be similar to the proposed project. The variant would include 740 fewer residential units than the Code Compliant Alternative, but substantially more commercial space than the Code Compliant Alternative.

On balance, the Code Compliant Alternative's impacts on population and housing would be similar to those of either the proposed project or the variant, which would have a less-than-significant impact, and the Code Compliant Alternative would have a *less-than-significant* project-level and cumulative impact. The population

and housing growth in this area is planned for in the *Bayview Hunters Point Area Plan*, and thus, reflects the City's planned future for this area of the City.

## Cultural Resources

### *Historic Architecture*

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

There are no architectural historical resources on the India Basin Shoreline Park or the India Basin Open Space properties; thus, the discussion below focuses on architectural historical resources located on the 900 Innes and 700 Innes properties.

The Code Compliant Alternative would have an equal potential to the proposed project or variant for a significant impact on the Shipwright's Cottage, the India Basin Scow Schooner Boatyard, and 702 Earl Street, because construction would similarly result in a change of use/setting of the site, and the removal of contributing and noncontributing character-defining features of the cultural landscape would be the same. The project elements of the Code Compliant Alternative, including the potential demolition of the Boatyard office building, would negatively affect the integrity of setting, design, materials, workmanship, feeling, and association to such a degree that the India Basin Scow Schooner Boatyard would no longer remain eligible for listing in the CRHR.<sup>1</sup> This impact, if present, would be *significant and unavoidable*. Because of this loss of CRHR eligibility, this impact cannot be reduced to a less-than-significant level. Nonetheless, the Code Compliant Alternative would incorporate Mitigation Measures M-CR-1a, M-CR-1b, M CR-1c, M CR-1d, and M CR-1e to lessen the severity of the impact of the Code Compliant Alternative on the India Basin Scow Schooner Boatyard, but not to the degree that the resource would remain eligible for listing in the CRHR. Thus, the impact of the Code Compliant Alternative on the built environment at the India Basin Scow Schooner Boatyard (900 Innes property) would be significant and unavoidable with mitigation.

In addition, the relocation and rehabilitation of 702 Earl Street would not materially impair the significance of the building to the extent that it would no longer be eligible for listing in the CRHR. The project proponent would meet the Secretary of the Interior's Standards for Rehabilitation of the building to retain and preserve the building's character-defining features. For these reasons, the relocation of 702 Earl Street would not substantially affect the building's integrity of setting because it would be within the same general location as its historical context and the spatial relationship of the original building location along the shoreline before the infill of the 1960s would be largely restored. Compared to the proposed project or the variant, which would result in an impact of *significant and unavoidable with mitigation*, the project-level and cumulative impacts of the Code Compliant Alternative related to historic architecture would also be *significant and unavoidable with mitigation*.

---

<sup>1</sup> If final project design retains the Boatyard office building along with the other contributing elements that are to remain under the Code Compliant Alternative there is the potential that the India Basin Scow Schooner Boatyard would remain eligible for listing in the CRHR



## ***Archeological Resources***

### ***India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties***

The Code Compliant Alternative would have an equal potential to the proposed project or variant for a significant impact on archeological resources on the India Basin Shoreline Park and 900 Innes properties, but a lesser impact on the India Basin Open Space property. The amount of ground-disturbing activities on the India Basin Shoreline Park and 900 Innes properties would be the same under the Code Compliant Alternative as under either the proposed project or the variant, but would be less on the India Basin Open Space property because this property would not be improved. The Code Compliant Alternative would similarly implement Mitigation Measures M-CR-2a (“Undertake an Archeological Testing Program”), M-CR-3a (“Implement Legally Required Measures in the Event of Inadvertent Discovery of Human Remains”), and M-CR-4a (“Implement Tribal Cultural Resources Interpretive Program”), which would reduce impacts on archeological resources, including the two buried ships.

### ***700 Innes Property***

The Code Compliant Alternative would have greater potential for impacts on archeological resources on the 700 Innes property than the proposed project or the variant because it would involve a greater amount of proposed ground-disturbing activities on this property. However, implementation of Mitigation Measures M-CR-1b (“Undertake an Archeological Testing Program”) and M-CR-1c (“Implement Legally Required Measures in the Event of Inadvertent Discovery of Human Remains”) would reduce the Code Compliant Alternative’s project-level impact on archeological resources, if present.

### ***Overall Impact Conclusion for Archeological Resources***

Compared to the proposed project or variant, which would result in impact conclusions of less than significant with mitigation, the Code Compliant Alternative’s impacts related to archeological resources would be the same as those of the proposed project or the variant. The project-level and cumulative impacts of this alternative would be *less than significant with mitigation*.

## **Transportation and Circulation**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

Under the Code Compliant Alternative, overall development on the project site would increase by approximately 466,670 gsf (relative to the proposed project) or 527,335 gsf (relative to the variant) to approximately 2,712,000 gsf (Table 4-1). In particular, residential development would be similar to the proposed project, but with 740 dwelling units more than the variant, while commercial space would be about 460,000 sf larger than the proposed project but about 260,000 sf smaller than the variant.

Travel demand by mode and vehicle-trips by direction under the Code Compliant Alternative are summarized in Table 4-4 and Table 4-5, respectively, alongside the corresponding values for the proposed project and the variant. The overall person- and vehicle-trip generation of the Code Compliant Alternative would be substantially higher (26 to 30 percent more) than that of the proposed project due to a larger amount of commercial development, but similar to that of the variant, as shown in Table 4-4. However, the Code Compliant Alternative

would have a balance of inbound and outbound trips that would fall in between that of the proposed project and variant, as shown in Table 4-5.

In particular, peak-direction vehicle-trips (inbound during the weekday a.m. peak hour and outbound during the weekday p.m. peak hour) under the Code Compliant Alternative would fall within the bounds of the corresponding values for the proposed project and variant. The Code Compliant Alternative would, however, generate more vehicle-trips in the reverse-peak directions (outbound during the weekday a.m. peak hour and inbound during the weekday p.m. peak hour) than either the proposed project or the variant, although this difference would only be on the order of approximately 10 percent.

**Table 4-4: Project Travel Demand by Mode (Code Compliant Alternative)**

Peak Hour and Trip Type	Proposed Project		Variant		Code Compliant Alternative					
	Trips	Mode Share	Trips	Mode Share	Trips	Mode Share	Change from			
							Proposed Project	Variant		
<b>Weekday AM Peak Hour</b>										
Person-trips (total)	3,860	–	5,075	–	5,095	–	+1,235	+32%	+20	+1%
Auto	3,044	79%	4,018	79%	3,978	78%	+934	+31%	-40	-1%
Transit	237	6%	458	9%	452	9%	+215	+91%	-6	-1%
Bike	101	3%	138	3%	121	2%	+20	+20%	-17	-12%
Walk	478	12%	461	9%	544	11%	+66	+13%	+83	+18%
Vehicle-trips (total)	1,865	–	2,612	–	2,546	–	+681	+37%	-66	-3%
<b>Weekday PM Peak Hour</b>										
Person-trips (total)	4,724	–	6,118	–	6,014	–	+1,290	+27%	-104	-2%
Auto	3,372	71%	4,457	73%	4,425	74%	+1,053	+31%	-32	-1%
Transit	302	6%	517	8%	520	9%	+218	+72%	+3	+1%
Bike	103	2%	131	2%	129	2%	+26	+25%	-2	-2%
Walk	947	20%	1,013	17%	940	16%	-7	-1%	-73	-7%
Vehicle-trips (total)	1,969	–	2,734	–	2,705	–	+736	+37%	-29	-1%

Source: San Francisco, 2017a

**Table 4-5: Project Vehicle-Trips by Direction (Code Compliant Alternative)**

	Weekday A.M. Peak Hour				Weekday P.M. Peak Hour			
	Inbound Vehicle-Trips		Outbound Vehicle-Trips		Inbound Vehicle-Trips		Outbound Vehicle-Trips	
Proposed Project	1,051	56%	814	44%	994	54%	975	46%
Variant	1,906	73%	706	27%	947	35%	1,787	65%
Code Compliant Alternative	1,656	65%	890	35%	1,106	41%	1,599	59%

Source: San Francisco, 2017a

Like the proposed project and variant, the Code Compliant Alternative would include a TDM program and would implement circulation improvements on the project site and in the immediate vicinity, although the proposed street layout would differ slightly from that of the proposed project and variant (Figure 4-1a and Figure 4-1b). Given the development on the site under the Code Compliant Alternative and the overall similarity in person- and vehicle-trip generation to the proposed project and the variant (Table 4-4 and Table 4-5), the Code Compliant

Alternative would result in transportation and circulation impacts similar to those identified for the proposed project and variant.

In particular, the Code Compliant Alternative would result in significant impacts related to overcrowding on local transit services under Existing plus Project Conditions and to passenger loading for the proposed school use. Mitigation Measures M-TR-3P (“Implement Transit Capacity Improvements [Proposed Project]”), M-TR-3V (“Implement Transit Capacity Improvements [Variant]”), and M-TR-8 (“Implement Passenger Loading Strategies for the School”) would reduce these impacts to *less than significant with mitigation*. Similar to the proposed project or the variant, the Code Compliant Alternative would also result in a cumulative transit delay impact, which would be mitigated to *less than significant* by implementation of Mitigation Measure M-C-TR-2 (“Implement Transit-Only Lanes”). However, this impact would be *significant and unavoidable*, as the San Francisco Municipal Transportation Agency (SFMTA) cannot commit to implementation of this mitigation measure at this time.

Like the proposed project or the variant, other impacts under the Code Compliant Alternative would be less than significant. As described above, overall person- and vehicle-trip generation would be similar to that under the proposed project or the variant, and the differences in the internal street network would not substantially affect any of the conclusions regarding project or variant impacts.

## Noise

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Similar to the proposed project and variant, the Code Compliant Alternative would require removal and/or replacement of existing dilapidated piers and creosote-treated piles in tidal areas connected with the India Basin Shoreline Park and 900 Innes properties, along with removal of existing riprap and the restoration of tidal marsh wetlands.

However, unlike the proposed project or variant, construction activities associated with development of the 700 Innes property may extend over a greater area within the Code Compliant Alternative project boundary, corresponding with the reduction of expected open space acreage. However, with respect to the assessment of construction noise impacts at off-site community noise-sensitive receptors, the anticipated noisiest construction equipment and their distances (from the project boundary) to these receptors would be essentially similar, thus resulting in predicted noise levels that are comparable to those studied for the proposed project and the variant. Hence, implementation of Mitigation Measures M-NO-1a (“Implement Noise Control Measures during Construction”) and M-NO-1b (“Implement Noise Control Measures for Pile Driving”) would still be required to reduce noise exposures at these studied off-site receptors to less than significant with mitigation. Therefore, the impact conclusion of *less than significant with mitigation* would be the same for the Code Compliant Alternative as for the proposed project and the variant, and likewise, the contribution to a cumulative impact would be *less than significant with mitigation*.

## ***Operation***

### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

Off-site traffic flows (and hence, corresponding increases over existing traffic volumes on roadways in the vicinity of the project) under the Code Compliant Alternative are likely to be the dominant noise sources in the area, which would be similar to the proposed project and the variant based on the anticipated quantity of residential units and available parking spaces as presented in Table 4-1. Increases to the outdoor ambient sound environment caused by these traffic contributions from the Code Compliant Alternative would thus create similar *significant and unavoidable impacts* on nearby noise-sensitive receptors. On this basis, the off-site traffic noise impact conclusion would be the same as that of the proposed project or the variant—significant and unavoidable. As stated in Section 3.6, “Noise,” no feasible mitigation measures are available to reduce such transportation noise emissions.

## ***Air Quality***

### **India Basin Shoreline Park and 900 Innes Properties**

The same type of recreational and commercial development would occur on the India Basin Shoreline Park and 900 Innes properties under the Code Compliant Alternative as under the proposed project or variant. Therefore, the Code Compliant Alternative would result in similar emissions of criteria pollutants at the India Basin Shoreline Park and 900 Innes properties during construction and operation and similar health risk impacts as the proposed project and variant.

### **India Basin Open Space Property**

The 6.2-acre India Basin Open Space property would be left in its existing condition under the Code Compliant Alternative and no construction would occur. Thus, construction emissions at the India Basin Open Space property would be less under this alternative than under the proposed project or variant. Because no construction would occur at this property under the Code Compliant Alternative, operational uses would not change from existing conditions. There would be no impacts at the India Basin Open Space property related to emissions of particulate matter equal to or less than 2.5 microns in diameter (PM<sub>2.5</sub>) and excess cancer risk because no construction-related or operational activity would occur at this property.

### **700 Innes Property**

The 700 Innes property would include more built square footage under the Code Compliant Alternative than under the proposed project or variant. Because the 700 Innes property would include more development and the open space on this property would be reduced, construction-related emissions would be greater under this alternative than under the proposed project or variant. Similarly, the increased development at the 700 Innes property would generate higher operational emissions from stationary, area, energy, and mobile sources under the Code Compliant Alternative than under the proposed project or variant, as well as an increase in the PM<sub>2.5</sub> and excess cancer risk impacts relative to the proposed project and variant. The PM<sub>2.5</sub> impacts would already be significant and unavoidable with mitigation.

## ***Overall Impact Conclusion***

Compared to the proposed project or variant, which would result in impacts that would be significant and unavoidable with mitigation, the Code Compliant Alternative's impacts related to air quality would be slightly greater because of the increase in development at the 700 Innes property. Similar to the proposed project and variant, the following mitigation measures would apply to the Code Compliant Alternative:

- M-AQ-1a (“Minimize Off-Road Construction Equipment Emissions”)
- M-AQ-1b (“Minimize On-Road Construction Equipment Emissions”)
- M-AQ-1c (“Utilize Best Available Control Technology for In-Water Construction Equipment”)
- M-AQ-1d (“Offset Emissions Offsets for Construction and Operational Ozone Precursor Emissions”)
- M-AQ-1e (“Implement Best Available Control Technology for Operational Diesel Generators”)
- M-AQ-1f (“Prepare and Implement Transportation Demand Management”)

However, even with implementation of the mitigation measures, like the proposed project and variant, the Code Compliant Alternative could violate an air quality standard, contribute to an existing or projected air quality violation, and cause a cumulatively considerable increase in criteria air pollutants or health risk. Thus, the Code Compliant Alternative would have project-level and cumulative impacts that would be *significant and unavoidable with mitigation*, which would be the same as under the proposed project or variant.

## **Greenhouse Gas Emissions**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

Under the Code Compliant Alternative, similar to the proposed project and variant, the project site properties would be subject to the San Francisco GHG Reduction Strategy's regulations adopted to reduce GHG emissions. Compliance with the applicable regulations would reduce GHG emissions from transportation, energy use, waste disposal, wood burning, and use of refrigerants. Similar to the proposed project or the variant, the renovations associated with the Code Compliant Alternative would generate GHG emissions, but not at levels that would result in a significant impact on the environment, or conflict with any policy, plan, or regulation adopted for the purpose of reducing GHG emissions. The project-level and cumulative impacts of the Code Compliant Alternative related to GHG emissions would be *less than significant*, the same as under the proposed project or the variant. No mitigation measures are necessary.

## **Wind**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

The same recreational and commercial development would occur at the India Basin Shoreline Park and 900 Innes properties under the Code Compliant Alternative as under either the proposed project or the variant. However, the India Basin Open Space would be left in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront. Similar to the proposed project and variant, the Code Compliant Alternative would include buildings up to 25 feet tall on the India Basin Shoreline Park, 900 Innes, and India Basin Open

Space properties. Thus, new buildings or structures would not be tall enough to substantially alter wind currents, redirect them downward, or alter ground-level wind conditions.

On the 700 Innes property, the Code Compliant Alternative would include buildings up to 40 feet in height with no bulk restriction. All buildings would be uniform in height, which could improve wind conditions. Typically, shorter buildings with more uniform heights do not create as much wind acceleration as tall buildings surrounded by shorter buildings, which would be present under either the proposed project or the variant. Therefore, conditions at the 700 Innes property would likely be better and less windy under the Code Compliant Alternative than under either the proposed project or the variant. Because no buildings would be more than 100 feet in height, interim hazardous wind conditions would be unlikely during the phased buildout of the Code Compliant Alternative, and Mitigation Measure M-WI-1a (“Improve Interim Hazardous Wind Conditions by Undertaking Supplemental Wind Impact Analyses”) would not be applicable to this alternative.

A wind tunnel model was not prepared for the Code Compliant Alternative and quantitative modeling data are not available. Without such quantitative data, the potential exists for wind hazard exceedances to occur on the project site and in adjacent areas during construction and operation of the Code Compliant Alternative. Mitigation Measures M-WI-1b (“Improve Wind Hazard Effects during Construction by Undertaking Temporary Measures”) and M-WI-1c (“Reduce Effects of Ground-Level Hazardous Winds through Ongoing Review and Mitigation of Hazardous Wind Impacts”) would reduce impacts of the Code Compliant Alternative during construction and operation.

The Code Compliant Alternative’s impacts on wind conditions at the project site may be improved compared to the proposed project or the variant due to the overall shorter heights of buildings, but a wind tunnel test was not undertaken for this alternative. However, a supplemental wind technical memorandum, included in Appendix H, stated that based on previous modeling experience and the proposed shorter heights under this alternative, a reduction was possible. Without wind tunnel test results to demonstrate the impact of the Code Compliant Alternative on wind conditions at the project site, not enough information is available to conclude that no wind hazard exceedances would occur, and thus, that the impact would be less than significant. Therefore, the impact of the Code Compliant Alternative on wind conditions at the project site would be the same as the impact of the proposed project or variant, or *significant and unavoidable*.

The cumulative projects listed in Table 3-1 in Chapter 3, “Environmental Setting and Impacts,” are more than 1,500 feet away. For this reason, the cumulative projects in combination with the Code Compliant Alternative are not expected to result in a materially different wind effect at public areas in the project vicinity. Therefore, the Code Compliant Alternative would not contribute to a cumulative impact related to wind, and would have the same cumulative impact as the proposed project or the variant, or *less than significant*. No mitigation measures are necessary.

## **Shadow**

### ***India Basin Shoreline Park Property***

The same recreational and commercial development would occur at the India Basin Shoreline Park property under the Code Compliant Alternative as under either the proposed project or the variant. Shadows cast by buildings on public open space on the India Basin Shoreline Park property would be the same under this alternative as under

either the proposed project or the variant, because the buildings that could cast shadows would be the same height under this alternative.

### ***900 Innes Property***

The same recreational and commercial development would occur at the 900 Innes property under the Code Compliant Alternative as under either the proposed project or the variant; however, buildings with the potential to cast shadows on this property would be a maximum of 40 feet tall. Therefore, shadows cast by buildings would be smaller and shorter in duration under the Code Compliant Alternative than under the proposed project or the variant.

### ***India Basin Open Space Property***

The India Basin Open Space would be left in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront. Buildings with the potential to cast shadows on the India Basin Open Space, located on the 700 Innes property, would be a maximum of 40 feet tall, which would be substantially shorter than under the proposed project or the variant.

Unlike the proposed project and variant, the Code Compliant Alternative would place buildings within the Big Green area. These buildings, located on the 700 Innes property, would cast additional shadows on the India Basin Open Space. Thus, during the early morning and afternoons at the winter solstice and vernal and autumnal equinoxes, buildings would cast more shadows under the Code Compliant Alternative than under the proposed project or variant. However, the reverse would be the case during the midday hours. At the summer solstice, shadows cast by buildings under the Code Compliant Alternative, the proposed project, and the variant are expected to be limited, and the proposed project or variant would likely have a marginally larger shadow area.

Overall, buildings are expected to cast more shadows on the India Basin Open Space property under the Code Compliant Alternative than under the proposed project or the variant, [because there would be more buildings in closer proximity to the open space,] however the overall building heights across the project site under this alternative are lower at 40 feet, resulting in a smaller shadow effect per building.

### ***700 Innes Property***

The Code Compliant Alternative would include buildings up to 40 feet tall on the 700 Innes property and would not include the Big Green, which would be a publicly accessible open space under the proposed project and the variant. With the reduction in building heights, buildings would likely cast smaller shadows under the Code Compliant Alternative than under the proposed project or variant. An exception to this would occur during the summer solstice, when fewer shadows would be cast in the park areas under the proposed project or variant. However, buildings generally cast fewer shadows during the summer solstice than during the winter solstice and the vernal and autumnal equinoxes, so the annual shadow time would not be substantially less under the Code Compliant Alternative.

## ***Overall Impact Conclusion***

Overall, buildings would cast more shadows on the India Basin Open Space under the Code Compliant Alternative than under the proposed project or the variant during the early morning and afternoons at the winter solstice and vernal and autumnal equinoxes. During early mornings in the fall, winter, and spring, when shadows would be the greatest, it is anticipated that uses of the park would be more active (walking or jogging) and these uses are less sensitive to sunlight than passive uses (sitting). Therefore, new net shadow would not adversely affect the public's ability to use and enjoy the open space, and similar to the proposed project or the variant, implementation of the Code Compliant Alternative would not create new shadow in a manner that would substantially affect the India Basin Open Space property. The Code Compliant Alternative's impact on public open spaces would be the same as the proposed project or the variant, or *less than significant*. No mitigation measures are necessary.

The cumulative projects listed in Table 3-1 in Chapter 3, "Environmental Setting and Impacts," are more than 1,500 feet away; therefore, the effect of cumulative projects in combination with the Code Compliant Alternative on shadow would be the same as the cumulative effect under the proposed project or variant, or *less than significant*. No mitigation measures are necessary.

## **Recreation**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

#### **Construction**

Recreation-related construction impacts of the Code Compliant Alternative for the India Basin Shoreline Park and 900 Innes properties would be the same as those of the proposed project or variant. However, because this alternative would not include new recreational facilities at the India Basin Open Space property and would provide fewer facilities on the 700 Innes property, construction impacts on recreation use and facilities at these properties would be reduced or eliminated compared to the proposed project or variant.

Overall, the construction-related impacts of the Code Compliant Alternative on recreation facilities would be the same as those of the proposed project or the variant, *less than significant*. No mitigation measures are necessary.

#### **Operation**

Operational impacts on recreation under the Code Compliant Alternative would be similar to those of the proposed project and the variant. However, this alternative could result in increased use of the recreation facilities at the RPD properties because fewer recreation facilities would be available at the India Basin Open Space and 700 Innes properties. As a result, recreation use by the new and larger on-site population generated by the Code Compliant Alternative would be focused onto fewer facilities, increasing the use of such facilities and resulting in more deterioration and physical degradation of such facilities. The 700 Innes property would receive more development in terms of total land coverage, but the open space on this property would be substantially reduced.

The proposed project and variant would include an approximately 5.63-acre open space, referred to as the "Big Green," on the 700 Innes property. Under the Code Compliant Alternative, there would be no Big Green and



less open space would be provided on the 700 Innes property. The use of the recreational facilities may increase under the Code Compliant Alternative, thus increasing the amount of deterioration and physical degradation. However, such an increase would likely not result in substantial deterioration because the recreation facilities at the India Basin Shoreline Park and 900 Innes properties would be new, and thus, less prone to deterioration and physical degradation. The Code Compliant Alternative would result in *less-than-significant* project-level and cumulative impacts, the same as under the proposed project or the variant. No mitigation measures are necessary.

## **Utilities and Service Systems**

### ***India Basin Shoreline Park and 900 Innes Properties***

Impacts on utilities and service systems on these properties would be the same under the Code Compliant Alternative as under the proposed project or variant because similar development would occur under this alternative.

### ***India Basin Open Space Property***

No impacts on utilities or service systems would occur at the India Basin Open Space property under the Code Compliant Alternative because development of utility infrastructure, wastewater generation, and use of potable water would not occur on this portion of the site. This would be similar to the proposed project or variant, which would not generate wastewater or create stormwater infrastructure for the India Basin Open Space property. However, under the proposed project and variant, potable water use at the site would be minimal.

### ***700 Innes Property***

The building development at the 700 Innes property would be larger under the Code Compliant Alternative than under the proposed project or variant, and thus, would generate additional wastewater. However, this alternative also would likely not result in the exceedance of wastewater requirements because the wastewater generated at the site would represent a very small fraction of the Southeast Treatment Plant's total design treatment capacity. Impacts from wastewater generation during construction would be the same under the Code Compliant Alternative as under the proposed project or variant.

Like the proposed project and variant, the Code Compliant Alternative would require the construction of new water, wastewater, or stormwater drainage facilities, the construction of which could cause environmental effects. However, facilities required for the Code Compliant Alternative would be comparable to those proposed to be constructed as part of the proposed project or the variant.

Additionally, the Code Compliant Alternative would have a higher demand for potable and recycled water than the proposed project or variant because it would develop more square footage in buildings. However, this alternative would likely not require new or expanded water supply resources or entitlements because the increased demand would still meet the San Francisco Public Utilities Commission's (SFPUC's) projections of available potable water. In addition, the SFPUC confirmed that there are adequate short-term and long-term water supplies for the Code Compliant Alternative to operate through 2040 (Lau, 2017).

## ***Overall Impact Conclusion***

Overall, the Code Compliant Alternative would have a higher demand for potable and recycled water than the proposed project or variant because there would be slightly more overall square footage than the proposed project or the variant. However, the India Basin Open Space would not be improved under this alternative. Similar to the proposed project and the variant, the Code Compliant Alternative would likely not require new or expanded water supply resources or entitlements given SFPUC's projections of available potable water. In addition, the SFPUC approved a water supply assessment for the proposed project and the variant on December 13, 2016, concluding that SFPUC has adequate short-term and long-term water supplies for the project to operate through 2040. Furthermore, the SFPUC confirmed that there are adequate short-term and long-term water supplies for the Code Compliant Alternative to operate through 2040 (Lau, 2017). Mitigation measures listed in Section 3.5, "Transportation and Circulation"; Section 3.6, "Noise"; and Section 3.7, "Air Quality," would reduce any impacts specifically related to expanded water, wastewater, and stormwater facilities to less-than-significant levels. Therefore, like the proposed project and the variant, the Code Compliant Alternative would have a *less-than-significant with mitigation* project-level and cumulative impact on utilities.

## **Public Services**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

The Code Compliant Alternative, like the proposed project and the variant, would increase the on-site population through the development of residential, commercial, institutional/educational, R&D, and recreational uses. As a result, this alternative would generate an increase in demand on public service providers, including SFPD, SFFD, SFUSD, and the SFPL. The Code Compliant Alternative would improve emergency access through the site and would construct a new school, as proposed under the proposed project and the variant. The impact of the Code Compliant Alternative on public services would be generally the same as the impact of the proposed project or variant. As under the proposed project and the variant, public service providers would be able to accommodate the demand of the new population of residents and visitors; therefore, the project-level and cumulative impacts of the Code Compliant Alternative on public services would be *less than significant*. No mitigation measures are necessary.

## **Biological Resources**

### ***India Basin Shoreline Park and 900 Innes Properties***

The Code Compliant Alternative would include the same recreational and commercial development and associated parking and access on the India Basin Shoreline Park and 900 Innes properties as the proposed project and the variant. Under this alternative, similar to the proposed project and variant, the existing dilapidated piers and creosote-treated piles in tidal areas connected with these project site properties would be removed and, in some cases, replaced. Existing riprap would be removed, existing tidal marsh wetlands would be partially restored, and new additional tidal marsh wetlands would be created along the shoreline of the India Basin Shoreline Park and 900 Innes properties.

Therefore, on the India Basin Shoreline Park and 900 Innes properties, the Code Compliant Alternative would have similar impacts as the proposed project and variant related to candidate, sensitive, or special-status species;

riparian habitats or sensitive natural communities; federally protected wetlands; interference with the movement of migratory fish or wildlife species; conflicts with local policies or ordinances protecting biological resources; and conflicts with habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans.

### ***India Basin Open Space and 700 Innes Properties***

The Code Compliant Alternative would have greater potential than the proposed project or variant for impacts on biological resources because the 700 Innes property would receive more development in terms of total land coverage and the open space on this property would be reduced. The proposed project and variant include an approximately 5.63-acre open space, referred to as the “Big Green,” on the 700 Innes property. The Code Compliant Alternative would eliminate the Big Green and reduce the other open space areas on the 700 Innes property, which would reduce habitat for special-status species and migratory bird nesting, foraging, and stopover habitat. This alternative would reduce the value of the India Basin shoreline as a migratory corridor for special-status species and migratory birds with the removal of the Big Green.

However, the Big Green would be primarily landscaped and with ornamental plantings, and would not provide habitat for any of the special-status wildlife present in the Bay (e.g., Ridgway’s rail, California black rail, California least tern, salt marsh harvest mouse, green sturgeon, protected salmonids). Habitat that supports these species would still be protected, restored, and created with implementation of Mitigation Measure M-BI-1c (“Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation”), which requires that sensitive natural communities be created or restored at a ratio of no less than 1:1. In addition, the project would result in the creation of an additional 0.81 acre of tidal marsh habitat. Therefore, although removing the Big Green from the India Basin Open Space under the Code Compliant Alternative would reduce habitat for migratory bird populations, it does not change the overall determination of significance for the Code Compliant Alternative relative to the proposed project. The Code Compliant Alternative would have similar impacts as the proposed project and variant on the India Basin Open Space and 700 Innes properties related to federally protected wetlands; conflicts with local policies or ordinances protecting biological resources; and conflicts with habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans. However, this alternative would have greater impacts related to effects on candidate, sensitive, or special-status species; riparian habitats or sensitive natural communities; and interference with the movement of migratory fish or wildlife species.

### ***Overall Impact Conclusion***

Overall, compared to the proposed project or the variant, which would have an impact on biological resources of less than significant with mitigation, the Code Compliant Alternative’s impact on biological resources would be slightly greater. However, similar to the proposed project or the variant, the following mitigation measures would apply to the Code Compliant Alternative:

- M-BI-1a (“Prepare and Implement a Hydroacoustic Monitoring Program for Special-Status Fish and Marine Mammals”)
- M-BI-1b (“Implement Avoidance and Minimization Measures for Special-Status Species”)
- M-BI-1c (“Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation”)

- M-HY-1a (“Monitor Turbidity during Construction”)
- M-HY-1b (“Implement Pile Removal Best Management Practices”)

Implementation of these mitigation measures would reduce the project-level and cumulative biological impacts of the Code Compliant Alternative to *less than significant with mitigation*.

## **Hydrology and Water Quality**

### ***India Basin Shoreline Park and 900 Innes Properties***

Development proposed for the India Basin Shoreline Park and 900 Innes properties under the Code Compliant Alternative would be the same as that for the proposed project and variant. Accordingly, impacts related to water quality and waste discharge requirements (WDRs) would be the same for the Code Compliant Alternative as for the proposed project and variant and would require the same mitigation measures related to turbidity monitoring and pile removal best management practices (BMPs).

### ***India Basin Open Space Property***

Unlike the proposed project or variant, no construction on the landside or in-water work would occur at the India Basin Open Space property under the Code Compliant Alternative because this alternative would not involve implementing the same level of enhancements. Without improvements to the India Basin Open Space, construction or operation under this alternative would result in no impacts related to water quality or exceedance of WDRs, or to alteration of the existing drainage pattern or an increase in the rate and amount of surface runoff. Stormwater impacts would be the same under the Code Compliant Alternative as under the proposed project or variant because stormwater would continue to flow overland and would be self-treating under this alternative. Impacts from the placement of structures within the 100-year flood hazard area would be the same under the Code Compliant Alternative as under the proposed project or variant because no structures would be placed within the 100-year flood hazard area under each of these alternatives.

### ***700 Innes Property***

The Code Compliant Alternative would result in additional impervious area relative to the proposed project and variant because additional development would occur. Nonetheless, impacts related to altering existing drainage patterns, increasing the rate and amount of surface runoff, and stormwater runoff and management would be similar to the impacts of the proposed project and variant because proposed stormwater facilities under this alternative would be designed to conform to the City’s stormwater management requirements.

Impacts related to the placement of structures within the 100-year flood hazard area would be the same for the Code Compliant Alternative as for the proposed project or variant because no structures would be placed within the 100-year flood hazard area under any of these alternatives. Similar to the proposed project and variant, potential water quality impacts from land-based construction work and groundwater dewatering would be reduced under the Code Compliant Alternative through compliance with existing water quality control measures required under the general construction permit, construction site runoff permit, and batch wastewater discharge permit.

The Code Compliant Alternative would not cause an increase in stormwater pollutants discharged to the Bay at this property, given compliance with the City's regulatory and permitting requirements regarding stormwater (National Pollutant Discharge Elimination System [NPDES] Phase II Municipal Separate Storm Sewer System [MS4] permit, Stormwater Management Ordinance, *San Francisco Stormwater Management Requirements and Design Guidelines* [SMR], and industrial general stormwater permit). Wastewater discharged to the combined sewer system would be treated in accordance with the City's NPDES permit and recycled water generated on-site would be treated to Title 22 requirements. Therefore, the operational impact of the Code Compliant Alternative related to a violation of water quality standards or WDRs would be similar to that of the proposed project and the variant.

### ***Overall Impact Conclusion***

The following mitigation measures described in Section 3.15, "Hydrology and Water Quality," would also apply to the Code Compliant Alternative:

- M-HY-1a ("Monitor Turbidity during Construction")
- M-HY-1b ("Implement Pile Removal Best Management Practices")
- M-HY-1c ("Dredging Equipment Requirement")

With implementation of these mitigation measures, the Code Compliant Alternative's overall project-level and cumulative impacts on hydrology and water quality would be *less than significant with mitigation*, the same as under the proposed project or the variant.

### **Hazards and Hazardous Materials**

#### ***India Basin Shoreline Park Property***

The Code Compliant Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the India Basin Shoreline Park property. The limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a ("Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line"), M-HZ-2b ("Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line"), and M-HZ-2c ("Prepare and Implement a Remedial Action Plan for the 900 Innes Property") would also be applicable to this alternative and would result in potential impacts on hazards and hazardous materials similar to those of either the proposed project or the variant.

#### ***900 Innes Property***

The Code Compliant Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the 900 Innes property as the proposed project and variant. The limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a ("Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line"), M-HZ-2b ("Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line"), and M-HZ-2c ("Prepare and Implement a Remedial Action Plan for the 900 Innes Property"), and compliance with Bay Area Air Quality

Management District (BAAQMD) Regulation 11, Rule 2, and implementation of a remedial action plan would also be applicable to this alternative. Together these measures would result in potential impacts related to hazards and hazardous materials similar to those of the proposed project or the variant.

### ***India Basin Open Space Property***

The Code Compliant Alternative would have fewer impacts on hazards and hazardous materials at the India Basin Open Space property than the proposed project and variant, because no construction would occur and operational uses would not change from existing conditions. As such, the potential uses of hazardous materials during construction and operation would be less.

Because no construction would occur at this property under this alternative, the existing contaminants in soil, sediment, and groundwater would not be disturbed; therefore, the potential for exposure to construction workers or release of contaminants would be less than under the proposed project. However, under this alternative, Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”) and M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”) would not be applicable at the India Basin Open Space property. As a result, existing contamination would remain and could pose a risk to future site users.

Despite the potential of the Code Compliant Alternative to expose future site users to these potential risks, this alternative would have less of an impact than either the proposed project or the variant because this property would be left in its existing condition and no construction would occur.

### ***700 Innes Property***

The Code Compliant Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the 700 Innes property. The limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”) and M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative. Together these measures would result in potential impacts related to hazards and hazardous materials similar to those of the proposed project and the variant.

### ***Overall Impact Conclusion***

The following mitigation measures described in Section 3.16, “Hazards and Hazardous Materials,” would also apply to the Code Compliant Alternative:

- M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”)
- M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”)
- M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”)

With implementation of these mitigation measures, the Code Compliant Alternative's overall project-level and cumulative impact on hazards and hazardous materials would be *less than significant with mitigation*, the same as under the proposed project or the variant.

## Other Topics

The Notice of Preparation/Initial Study (NOP/IS) and public scoping process concluded that the proposed project or variant would have no impacts or less-than-significant impacts in the following analysis areas:

- Geology and Soils
- Mineral and Energy Resources
- Agriculture and Forestry Resources

The Code Compliant Alternative would result in no impacts or less-than-significant impacts related to any of the above-listed environmental topics, because this alternative would result in no changes to existing site conditions with respect to these topics.

## 4.5 REDUCED DEVELOPMENT ALTERNATIVE

Overall, the buildout of the Reduced Development Alternative would include 620,000 gsf of residential (620 units), 75,000 gsf of commercial space (including retail, office, and R&D), 26,750 gsf of school space, 360,000 gsf of parking, and 618,552 sq. ft. of recreational/open space for a total of approximately 1,700,302 gsf under this alternative.

### 4.5.1 San Francisco Recreation and Parks Department Development

#### India Basin Shoreline Park and 900 Innes Properties

The Reduced Development Alternative would include the same on-land recreational and commercial space and associated parking and access on the India Basin Shoreline Park and 900 Innes properties as the proposed project; however, the in-water redevelopment would not include a new pier and dock extending from the India Basin Shoreline Park property (Figure 4-3a). Bicycle circulation improvements would also be implemented, including the Bay Trail extension through the India Basin Shoreline Park and 900 Innes properties and Class 1 and Class 3 facilities on streets. The India Basin Shoreline Park and 900 Innes properties are currently zoned M-1, NC-2, and P, and are within the 40-X and OS height and bulk districts; therefore, development heights would be limited to 40 feet (Figure 4-4a). The proposed uses on these two properties would not require rezoning.

Under the Reduced Development Alternative, similar to the proposed project, the existing dilapidated piers and creosote-treated piles would be removed and replaced in water areas connected with the India Basin Shoreline Park and 900 Innes properties. Existing riprap would be removed, existing tidal marsh wetlands would be restored, and new additional tidal marsh wetlands would be created near the shoreline of the India Basin Shoreline Park property. Furthermore, similar to the proposed project, hazardous-materials remediation activities and preservation of historic resources would occur on the India Basin Shoreline Park and 900 Innes properties.

## 4.5.2 BUILD Development

### India Basin Open Space and 700 Innes Properties

Like the proposed project and variant, the Reduced Development Alternative would include no structures on the India Basin Open Space property. The proposed uses at the 700 Innes property under this alternative would require some changes to the development controls (including increases in permitted height) through amendments to the General Plan, Planning Code text, and zoning map, including an India Basin Special Use District (SUD) and Design Standards and Guidelines for development entitled through the SUD process and a development agreement.

The Reduced Development Alternative would include residential, commercial (retail, office, and R&D), institutional/education, parking, and recreational/open space uses on the 700 Innes property; however, the total square footage of development would be reduced by approximately 50 percent (Figure 4-3b), which is less development than is allowed on the property by the Planning Code. Under this alternative, the proposed heights of the structures on the 700 Innes property would be lowered relative to the proposed project at the proposed tower locations and throughout the rest of this property. However, the height and bulk would be slightly higher than under the Code Compliant Alternative, with the tallest building at 75 feet or approximately 6 floors (Figure 4-4b).

The proposed project includes an approximately 5.63-acre open space, referred to as the “Big Green,” on the 700 Innes property that would be eliminated under the Reduced Development Alternative, along with a reduction of the other 700 Innes property open space areas semi-public internal open space areas.

Like the proposed project, the Reduced Development Alternative would include transportation and circulation improvements including new and reconstructed streets, sidewalks, and pathways. The street layout would be the same as under the proposed project. Similar bicycle circulation improvements would also be implemented, as well as Class 2 and Class 3 bicycle facilities on streets, but there would not be any improved bike trails through the existing 700 Innes property (where the Big Green would otherwise be located). The Bay Trail along the India Basin Open Space property would remain unchanged. Like the proposed project, this alternative would also include a TDM program, and hazardous-materials remediation would occur on the 700 Innes property.

The Reduced Development Alternative would leave the India Basin Open Space property in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront.





Source: GGN, 2017

Figure 4-3a

Reduced Development Alternative Site and Land Use Plan  
(India Basin Shoreline Park and 900 Innes Properties)



Source: SOM, 2017

**Figure 4-3b**

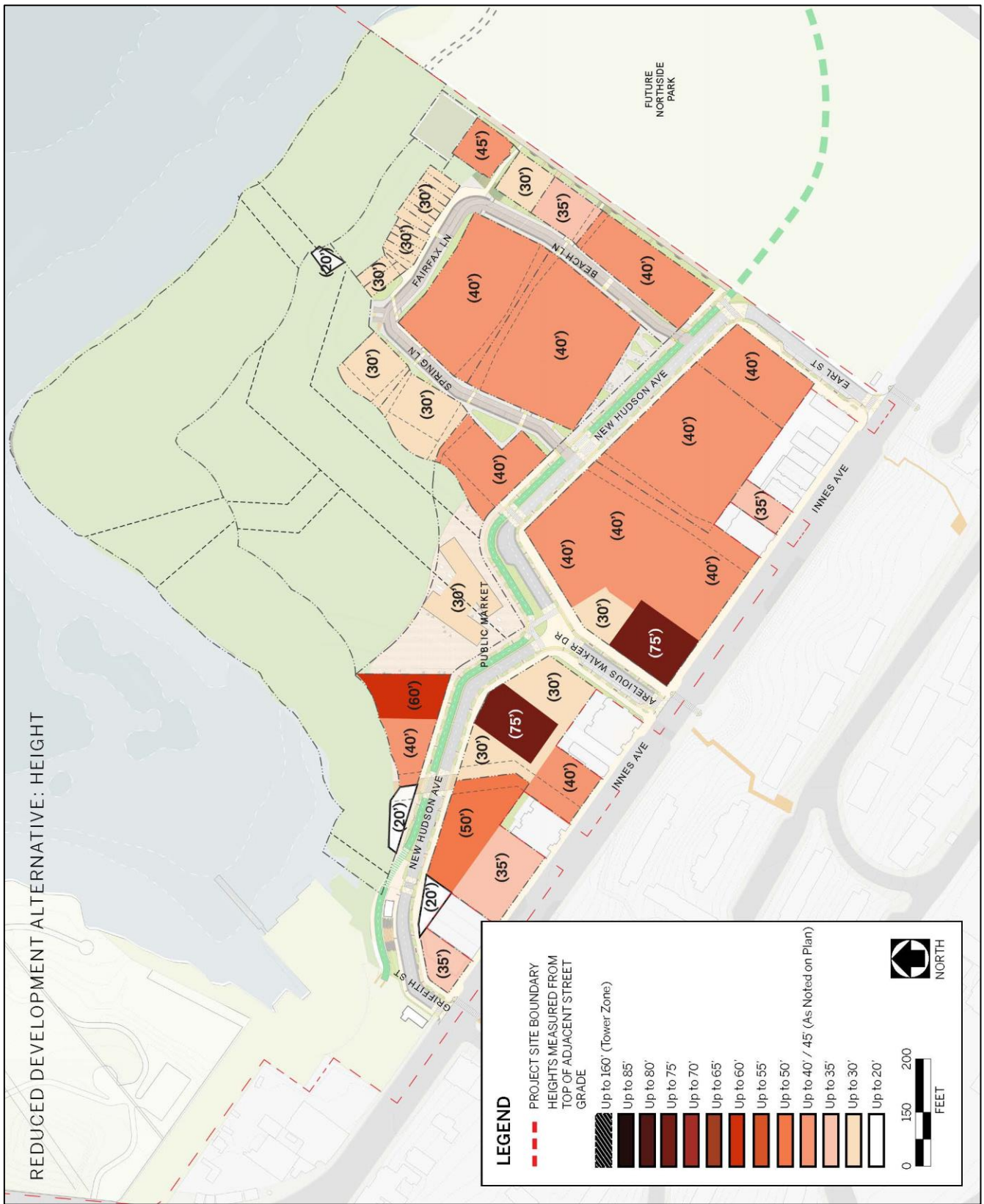
**Reduced Development Alternative Site and Land Use Plan  
India Basin Open Space and 700 Innes Properties)**



Source: GGN, 2017

Figure 4-4a

Reduced Development Alternative Building Heights (India Basin Shoreline Park and 900 Innes Properties)



Source: SOM, 2017

**Figure 4-4b**

**Reduced Development Alternative Building Heights (India Basin Open Space and 700 Innes Properties)**

### 4.5.3 Impacts of the Reduced Development Alternative

#### Land Use and Planning

##### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

Like the proposed project and variant, the Reduced Development Alternative would construct buildings with proposed heights greater than permitted by the Planning Code. Although building heights would be less than under the proposed project or variant, the Reduced Development Alternative would still require changes to development controls through amendments to the General Plan, Planning Code text, and zoning map, including an India Basin SUD and Design Standards and Guidelines for development entitled through the SUD process and a development agreement. Because new private development would be constructed on portions of the project site that could be subject to the Public Trust Doctrine, this alternative would need a trust settlement or exchange agreement pursuant to the Public Trust, similar to the proposed project or variant.

The scale of development would be smaller under the Reduced Development Alternative than under the proposed project or variant, but the proposed mix of land uses would be similar. The Reduced Development Alternative would be inconsistent with the *Bay Trail Plan*, the Recreation and Open Space Element of the General Plan, and the *Hunters Point Area Plan*, because the Bay Trail would not be improved for bicycle access through the project site. Overall, the inconsistencies between these plans and policies and the Reduced Development Alternative are the same as their inconsistencies relative to the proposed project or the variant, which would be resolved through the development and permit application process.

Similar to the proposed project, the Reduced Development Alternative would not physically divide an existing community because this new mixed-use community would be connected to existing and future residential communities surrounding the project site to the west and east and to existing and future open spaces along the Bay that would connect through the site. The project-level and cumulative impacts of the Reduced Development Alternative on land use and planning would be *less than significant*, generally the same as under the proposed project and the variant. No mitigation measures are necessary.

#### Aesthetics

##### *India Basin Shoreline Park and 900 Innes Properties*

Under the Reduced Development Alternative, these properties would include the same on-land recreational and commercial development as the proposed project and the variant; however, India Basin Shoreline Park would not include a new pier and dock extending from the park property. Without construction of the pier and dock, impacts on the scenic vistas, resources, and the visual character and quality of the site would be reduced from the impacts of either the proposed project or the variant.

##### *India Basin Open Space Property*

Under the Reduced Development Alternative, this property would be left in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront. The impact on scenic vistas, resources, the

visual character and quality of the area, and light and glare would be the same as described above for the No Project Alternative.

### ***700 Innes Property***

The Reduced Development Alternative would involve constructing buildings up to 75 feet in height in some locations. The general layout of buildings under this alternative would be similar to the layout under either the proposed project or the variant; however, the shorter maximum height would reduce impacts on scenic vistas, resources, the visual character and quality of the area, and light and glare.

### ***Overall Impact Conclusion***

The Reduced Development Alternative would include shorter buildings in some locations compared to the proposed project or the variant, which would result a reduced impact on aesthetics therefore the impact would be less than significant with mitigation. Because new develop would result in new light sources on the site, Mitigation Measure M-AE-3 (“Develop a Lighting Plan for Approval by the San Francisco Planning Department”) would similarly apply to the Reduced Development Alternative and would reduce the project-level and cumulative impacts of the Reduced Development Alternative to *less than significant with mitigation*, the same as under the proposed project or variant.

## **Population and Housing**

### ***India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties***

The Reduced Development Alternative would generally have the same recreational and commercial development as the proposed project, but the dock and pier extending from the India Basin Shoreline Park property would not be built. Therefore, the amount of temporary construction employment would be reduced, and no permanent population and housing impacts on this part of the property would occur. In addition, the India Basin Open Space Property would be left in its existing condition and no improvements to the shoreline would be made.

### ***700 Innes Property***

The Reduced Development Alternative would include construction of approximately 620 residential units and 75,000 gsf of commercial space, approximately 50 percent less development overall than under either the proposed project or the variant. However, the building footprint of the Reduced Development Alternative would generally be the same and would displace the same number of people as the proposed project and the variant. Direct population and housing growth under the Reduced Development Alternative would be reduced by approximately 50 percent overall, resulting in a lower growth level than under the proposed project or the variant.

### ***Overall Impact Conclusion***

The Reduced Development Alternative would result in approximately 50 percent less development overall than either the proposed project or variant and therefore the population and housing impacts would generally be less. However, compared to the proposed project or the variant, which would result in a less-than-significant impact,

the Reduced Development Alternative would similarly result in *less-than-significant* project-level and cumulative impacts on population and housing. No mitigation measures are necessary.

## Cultural Resources

### *Historic Architecture*

#### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

There are no architectural historical resources on the India Basin Shoreline Park or the India Basin Open Space properties; thus, the discussion below focuses on architectural historical resources located on the 900 Innes and 700 Innes properties.

The Reduced Development Alternative would have an equal potential to the proposed project or variant for a significant impact on the Shipwright's Cottage and the India Basin Scow Schooner vernacular cultural landscape, both on 900 Innes property. Construction under these scenarios would similarly result in a change of use/setting of the site, and in the removal of contributing and noncontributing character-defining features of the cultural landscape. The project elements of the Reduced Development Alternative, including the potential demolition of the Boatyard office building, would negatively affect the integrity of setting, design, materials, workmanship, feeling, and association to such a degree that the India Basin Scow Schooner Boatyard would no longer remain eligible for listing in the CRHR<sup>2</sup>. This impact, if present, would be *significant*. Because of this loss of CRHR eligibility, this impact cannot be reduced to a less-than-significant level. Nonetheless, the Reduced Development Alternative would incorporate Mitigation Measures M-CR-1a, M-CR-1b, M CR-1c, M CR-1d, and M CR-1e to lessen the severity of the impact of the Reduced Development Alternative on the India Basin Scow Schooner Boatyard, but not to the degree that the resource would remain eligible for listing in the CRHR. Thus, the impact of the Reduced Development Alternative on the built environment at the India Basin Scow Schooner Boatyard (900 Innes property) *would be significant and unavoidable with mitigation*.

In addition, the relocation and rehabilitation of 702 Earl Street would not materially impair the significance of the building to the extent that it would no longer be eligible for listing in the CRHR. The project proponent would meet the Secretary of the Interior's Standards for Rehabilitation of the building to retain and preserve the building's character-defining features. For these reasons, the relocation of 702 Earl Street would not substantially affect the building's integrity of setting because it would be within the same general location as its historical context and the spatial relationship of the original building location along the shoreline before the infill of the 1960s would be largely restored. Compared to the proposed project or the variant, which would result in an impact of *significant and unavoidable with mitigation*, the project-level and cumulative impacts of the Reduced Development Alternative related to historic architecture would also be *significant and unavoidable with mitigation*.

---

<sup>2</sup> If final project design retains the Boatyard office building along with the other contributing elements that are to remain under the Reduced Development Alternative there is the potential that the India Basin Scow Schooner Boatyard would remain eligible for listing in the CRHR

## ***Archeological Resources***

### ***India Basin Shoreline Park, 900 Innes, and India Basin Open Space Properties***

The Reduced Development Alternative would have a lower potential to affect archeological resources on the India Basin Shoreline Park property than the proposed project and variant. The in-water redevelopment would not include a new pier and dock, which would limit the potential to affect the buried ship adjacent to this property that is located in the Bay. The other buried ship that is assumed to be located under most of the land portion of Shoreline Park would be affected the same as the proposed project and variant under the Reduced Development Alternative.

This alternative would have an equal potential to having a significant impact on archeological resources on the 900 Innes property because the amount of ground-disturbing activity would be the same as under the proposed project and variant, and no effect on archeological resources on the India Basin Open Space property would occur as it would be left in its existing condition. Similar to the proposed project or the variant, Mitigation Measures M-CR-2a (“Undertake an Archeological Testing Program”), M-CR-3a (“Implement Legally Required Measures in the Event of Inadvertent Discovery of Human Remains”), and M-CR-4a (“Tribal Cultural Resources Interpretive Program”) would apply to the Reduced Development Alternative, which would reduce the impacts on archeological resources, including buried ships.

### ***700 Innes Property***

The Reduced Development Alternative would have a similar and slightly lower potential than the proposed project and variant to affect archeological resources on the 700 Innes property because this alternative would entail a similar building footprint that would generally be the same and would have the same or lesser amount of ground-disturbing activities.

### ***Overall Impact Conclusion for Archeological Resources***

Because approximately the same or a lesser amount of proposed ground-disturbing activities would occur across all properties under the Reduced Development Alternative, the potential to affect archeological resources would not be eliminated and Mitigation Measures M-CR-2a (“Undertake an Archeological Testing Program”) and M-CR-3a (“Implement Legally Required Measures in the Event of Inadvertent Discovery of Human Remains”) would apply to this alternative. Implementation of these mitigation measures would reduce the potential project-level impacts on archeological resources to *less than significant with mitigation* and would not contribute to any cumulative impact related to archeological resources, similar to the proposed project and variant.

## **Transportation and Circulation**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

Under the Reduced Development Alternative, new residential, commercial, and institutional/educational space would be developed on the project site, but in lower amounts than under the proposed project or the variant. Overall development on the site would be reduced by approximately 50 percent, as represented in Table 4-1.



Like the proposed project and variant, the Reduced Development Alternative would include a TDM program and would implement circulation improvements on the project site and in the immediate vicinity similar to those under the proposed project or variant. The substantial reduction in new building development under the Reduced Development Alternative would reduce overall travel demand and would generally be expected to reduce the magnitude of impacts identified for the proposed project or the variant.

However, the Reduced Development Alternative would result in passenger loading impacts related to the proposed school use, similar to the proposed project or the variant. Mitigation Measure M-TR-8 (“Implement Passenger Loading Strategies for the School”) would reduce this impact to *less than significant with mitigation*. The Reduced Development Alternative may also result in significant impacts related to overcrowding on local transit services under Existing plus Project Conditions and to delays to transit vehicles under Cumulative Conditions. Mitigation Measure M-TR-3P (“Implement Transit Capacity Improvements [Proposed Project]”) or M-TR-3V (“Implement Transit Capacity Improvements [Variant]”) would reduce the transit capacity impacts to *less than significant with mitigation*, but cumulative impacts related to transit delay would be *significant and unavoidable*, as SFMTA cannot commit to implementation of Mitigation Measure M-C-TR-2 (“Implement Transit-Only Lanes”) at this time.

Like the proposed project or the variant, other impacts under the Reduced Development Alternative would be less than significant, as the internal street network would generally be the same as under the proposed project or the variant but the overall travel demand at the site would be substantially less.

## Noise

### *Construction*

#### **India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties**

The Reduced Development Alternative, like the proposed project and variant, would require removal and/or replacement of existing dilapidated piers and creosote-treated piles in tidal areas connected with the India Basin Shoreline Park and 900 Innes properties, along with removal of existing riprap and the restoration of tidal marsh wetlands. Thus, construction activity noise would be expected to be similar to construction noise from the proposed project and the variant.

Construction activities associated with development at the India Basin Open Space and 700 Innes properties may extend over less area within the Reduced Development Alternative project boundary, corresponding with the reduction of expected developed acreage. However, with respect to the assessment of construction noise impacts at off-site community noise-sensitive receptors, the expected noisiest construction equipment and their distances (from the project boundary) to these receptors would be essentially similar, thus resulting in predicted levels that are comparable to those studied for the proposed project and the variant. Hence, implementation of Mitigation Measures M-NO-2a (“Implement Noise Control Measures during Construction”) and M-NO-2b (“Implement Noise Control Measures for Pile Driving”) would still be anticipated to reduce noise exposures at off-site receptors to less than significant with mitigation. Therefore, the impact conclusion of *less than significant with mitigation* would be the same as for the proposed project and the variant.

## ***Operation***

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

Off-site traffic flows (and hence, corresponding increases over existing traffic volumes on roadways in the project vicinity) for the Reduced Development Alternative are likely to be somewhat less than those of the proposed project and the variant, based on the anticipated quantity of residential units and available parking spaces as presented in Table 4-1. However, the comparative differences in these three quantities between the proposed project, the variant, and the Reduced Development Alternative would be no greater than about 60 percent. Thus, the expected increases to the outdoor ambient sound environment attributable to traffic contributions from the Reduced Development Alternative are still likely to be impactful and, could create similar *significant and unavoidable* impacts on nearby noise-sensitive receptors. On this basis, the off-site traffic noise impact assessment would be the same as that of the proposed project or the variant, and this project-level and cumulative impact would be *significant and unavoidable*.

## **Air Quality**

### ***India Basin Shoreline Park Property***

The India Basin Shoreline Park property would include the same type of on-land recreational and commercial development under the Reduced Development Alternative as under the proposed project and the variant, but would not include a new pier and dock extending from the property into the Bay. Thus, construction-related emissions would be slightly less under this alternative than under the proposed project and variant. The reduced construction would also result in a reduction in PM<sub>2.5</sub> and excess cancer risk impacts.

Because the Reduced Development Alternative would include the same type of on-land recreational and commercial development, the India Basin Shoreline Park property would generate similar operational emissions from area, energy, and mobile sources as the proposed project and variant. The PM<sub>2.5</sub> and excess cancer risk associated with the India Basin Shoreline Park would also be the same.

### ***900 Innes Property***

The 900 Innes property would include the same type of recreational and commercial development under the Reduced Development Alternative as under the proposed project and the variant. Thus, emissions associated with construction and operation under the Reduced Development Alternative would be similar to emissions under the proposed project and variant. The PM<sub>2.5</sub> and excess cancer risks associated with the 900 Innes property would also be similar.

### ***India Basin Open Space Property***

The 6.2-acre India Basin Open Space property would be left in its existing condition under the Reduced Development Alternative, and no construction would occur. Thus, construction emissions at this property would be less under the Reduced Development Alternative than under the proposed project and variant. Because no construction would occur at the India Basin Open Space property under this alternative, operational uses would

not change from existing conditions. There would be no PM<sub>2.5</sub> and excess cancer risk impacts from the India Basin Open Space property because no construction or operational activity would occur at this property.

### ***700 Innes Property***

Approximately 620 residential units and 75,000 gsf of commercial space would be constructed at the 700 Innes property under the Reduced Development Alternative, approximately 50 percent less residential and more than 70 percent less commercial development than under the proposed project. The building footprint of the Reduced Development Alternative would generally be the same but with approximately 50 percent less gsf overall. Because of this reduced development, this alternative would have reduced construction activities, and thus, would generate less construction-related emissions than the proposed project and variant. Accordingly, the Reduced Development Alternative would generate fewer operational emissions from stationary, area, energy and mobile sources. The reduced construction activity and fewer operational emissions from emergency generators and vehicle traffic would result in lower PM<sub>2.5</sub> and excess cancer risk impacts relative to the proposed project and variant.

### ***Overall Impact Conclusion***

Overall, compared to the proposed project or variant, which would have an impact of significant and unavoidable with mitigation, the Reduced Development Alternative's impact on air quality would be less than that of either the proposed project or the variant. Similar to the proposed project and the variant, the following mitigation measures would apply to the Reduced Development Alternative:

- M-AQ-1a (“Minimize Off-Road Construction Equipment Emissions”)
- M-AQ-1b (“Minimize On-Road Construction Equipment Emissions”)
- M-AQ-1c (“Utilize Best Available Control Technology for In-Water Construction Equipment”)
- M-AQ-1d (“Offset Emissions Offsets for Construction and Operational Ozone Precursor Emissions”)
- M-AQ-1e (“Implement Best Available Control Technology for Operational Diesel Generators”)
- M-AQ-1f (“Prepare and Implement Transportation Demand Management”)

Implementation of these mitigation measures would likely reduce the project-level and cumulative emissions and health risk of the Reduced Development Alternative. However, emissions could continue to exceed the thresholds of significance and would result in project-level and cumulative impacts of *significant and unavoidable with mitigation*, the same as under the proposed project or the variant.

### **Greenhouse Gas Emissions**

#### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

The total square footage of development on the project site would be approximately half as large under the Reduced Development Alternative as under either the proposed project or the variant. Development under this alternative would be subject to the regulations adopted to reduce GHG emissions identified in the San Francisco GHG Reduction Strategy. Compliance with the applicable regulations would reduce GHG emissions related to transportation, energy use, waste disposal, wood burning, and use of refrigerants.

Like the proposed project or variant, the Reduced Development Alternative would generate GHG emissions, but not at levels that would result in a significant impact on the environment, or conflict with any policy, plan, or regulation adopted for the purpose of reducing GHG emissions. The project-level and cumulative impacts of the Reduced Development Alternative related to GHG emissions would be *less than significant*, the same as under the proposed project and the variant.

## Wind

### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

The same recreational and commercial development would occur at the India Basin Shoreline Park and 900 Innes properties under the Reduced Development Alternative as under either the proposed project or the variant; however, this alternative would not include a pier and dock that would extend into the Bay. The India Basin Open Space would be left in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront. The Reduced Development Alternative at the India Basin Shoreline Park and 900 Innes properties would include buildings and structures up to 25 feet tall, not tall enough to substantially alter wind currents, redirect them downward, or alter ground-level wind conditions.

Buildings on the 700 Innes property would be up to a maximum of 65 feet tall under the Reduced Development Alternative, which is generally shorter than under either the proposed project or the variant. Typically, shorter buildings do not create as much wind acceleration as tall buildings surrounded by shorter buildings, which would be present under either the proposed project or the variant. Therefore, conditions at the 700 Innes property under the Reduced Development Alternative would be better and less windy than under either the proposed project or the variant. Because no buildings would be more than 100 feet in height, interim hazardous wind conditions would be unlikely during the phased buildout of the Reduced Development Alternative, and Mitigation Measure M-WI-1a (“Improve Interim Hazardous Wind Conditions by Undertaking Supplemental Wind Impact Analyses”) would not be applicable to this alternative.

A wind tunnel model was not prepared for the Reduced Development Alternative, and quantitative modeling data are not available. Without such quantitative data, the potential exists for wind hazard exceedances to occur on the project site and in adjacent areas during construction and operation of the Reduced Development Alternative. Mitigation Measures M-WI-1b (“Temporary Wind Reduction Measures during Construction”) and M-WI-1c (“Reduce Effects of Ground-Level Hazardous Winds through Ongoing Review”) would reduce impacts of the Reduced Development Alternative during construction and operation.

The Reduced Development Alternative’s impacts on wind conditions at the project site may be improved compared to the proposed project or the variant because buildings would be shorter in locations where the highest impact was present under the proposed project or variant. A supplemental wind technical memorandum, included in Appendix H, stated that based on previous modeling experience and the proposed shorter heights under this alternative, a reduction was possible. However, a wind tunnel test was not undertaken for the Reduced Development Alternative, and there are no test results to demonstrate the impact of the Reduced Development Alternative on wind conditions at the project site. Because there is not enough information available to conclude that no wind hazard exceedances would occur, the impact of the Reduced Development Alternative on wind conditions would be the same as the impact of the proposed project or variant, or *significant and unavoidable*.

The cumulative projects listed in Table 3-1 in Chapter 3, “Environmental Setting and Impacts,” are more than 1,500 feet away. For this reason, the cumulative projects in combination with the Reduced Development Alternative are not expected to result in a materially different wind effect at public areas in the project vicinity. Therefore, the Reduced Development Alternative would not contribute to a cumulative impact related to wind, and would have the same cumulative impact as the proposed project or the variant, or *less than significant*. No mitigation measures are necessary.

## **Shadow**

### ***India Basin Shoreline Park Property***

The same type of recreational and commercial development would occur at the India Basin Shoreline Park property under the Reduced Development Alternative as under either the proposed project or the variant. Shadows cast by buildings on public open spaces on the India Basin Shoreline Park property would be the same under this alternative as under either the proposed project or the variant, because the buildings that could cast shadows on this property would be the same height under this alternative.

### ***900 Innes Property***

The same recreational and commercial development would occur at the 900 Innes property under the Reduced Development Alternative as under either the proposed project or the variant; however, buildings with the potential to cast shadows on this property would be lower in height, especially the towers which would be up to 75 feet tall. Therefore, shadows cast by buildings under the Reduced Development Alternative would be smaller in size and shorter in duration than shadows cast by buildings under the proposed project or the variant.

### ***India Basin Open Space Property***

The India Basin Open Space would be left in its existing condition with wetlands and a pedestrian pathway traversing the site along the Bay waterfront. Buildings with the potential to cast shadows on the India Basin Open Space property are located on the 700 Innes property and would be lower than the proposed project or variant, especially at the tower locations where they would be up to only 75 feet tall maximum. With the reduction in building heights, especially at the tower locations, it is expected to lead to fewer shadows cast by the Reduced Development Alternative compared to the proposed project or the variant. Therefore, shadows cast on the India Basin Open Space by buildings under the Reduced Development Alternative would be smaller in size and shorter in duration than shadows cast by buildings under the proposed project or the variant.

### ***700 Innes Property***

The Reduced Development Alternative would include some buildings up to 75 feet or approximately 6 stories, including the tower locations, which would be shorter as compared to the proposed project and variant, both of which would include some buildings up to 160 feet in height. The Big Green, which would be a future publicly accessible open space on the 700 Innes property under the proposed project and the variant, would not be constructed under this alternative. The reduction in building height would result in fewer shadows cast by the Reduced Development Alternative compared to the proposed project or the variant. An exception to this would occur during the summer solstice, when fewer shadows would be cast in the park areas under the proposed project

or variant. However, buildings generally cast fewer shadows during the summer solstice than during the winter solstice and the vernal and autumnal equinoxes, so the annual shadow time would not be substantially less under the Reduced Development Alternative.

### ***Overall Impact Conclusion***

Overall, buildings would cast fewer shadows under the Reduced Development Alternative than under the proposed project or the variant because of the reduction in building heights up to a maximum of 75 feet in some locations; however, this alternative would have the same overall impact conclusion as the proposed project or variant, or *less than significant*. No mitigation measures are necessary.

The cumulative projects listed in Table 3-1 in Chapter 3, “Environmental Setting and Impacts,” are more than 1,500 feet away; therefore, the effect of cumulative projects in combination with the Reduced Development Alternative on shadow would be the same as the cumulative effect with the proposed project or the variant, or *less than significant*. No mitigation measures are necessary.

### **Recreation**

#### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

##### **Construction**

Recreation-related construction impacts of the Reduced Development Alternative for the India Basin Shoreline Park and 900 Innes properties would be the same as those of the proposed project or variant. However, because this alternative would not include new recreational facilities at the India Basin Open Space property and would provide fewer recreational facilities on the 700 Innes property, construction impacts on recreation use and facilities at these properties would be reduced or eliminated compared to the proposed project or variant.

Overall, the construction-related impacts of the Reduced Development Alternative on recreation facilities would be the same as those of the proposed project or the variant, *less than significant*. No mitigation measures are necessary.

##### **Operation**

Operational impacts on recreation under the Reduced Development Alternative would be similar to those of the proposed project and the variant. However, this alternative could result in increased use of the recreation facilities at the RPD properties because fewer recreation facilities would be available at the 700 Innes property. As a result, recreation use by the new on-site population generated by the Reduced Development Alternative would be focused onto fewer facilities, increasing the use of such facilities and resulting in more deterioration and physical degradation of such facilities, including RPD properties.

The proposed project and variant would include an approximately 5.63-acre open space, referred to as the “Big Green,” on the 700 Innes property. Under the Reduced Development Alternative, there would be no Big Green and less open space would be provided on the 700 Innes property. The use of the other recreational facilities may increase under the Reduced Development Alternative, thus increasing the amount of deterioration and physical degradation, including RPD properties. However, such an increase would likely not result in

substantial deterioration because the recreation facilities at the India Basin Shoreline Park and 900 Innes properties would be new and upgraded, and thus, less prone to deterioration and physical degradation. In addition, the overall gsf under the Reduced Development Alternative is approximately 50 percent less, which would result in fewer potential users of recreational resources. The Reduced Development Alternative would result in *less-than-significant* project-level and cumulative impacts, the same as under the proposed project or the variant. No mitigation measures are necessary.

## **Utilities and Service Systems**

### ***India Basin Shoreline Park and 900 Innes Properties***

Impacts on utilities and service systems on these properties would be the same under the Reduced Development Alternative as under the proposed project or variant because similar development would occur under this alternative.

### ***India Basin Open Space Property***

No impacts on utilities or service systems would occur at the India Basin Open Space property under the Reduced Development Alternative because development of utility infrastructure, wastewater generation, and use of potable water would not occur at this site. This would be similar to the proposed project or variant, which would not generate wastewater or create stormwater infrastructure for the India Basin Open Space property. However, under the proposed project and variant, potable water use at the site would be minimal.

### ***700 Innes Property***

Development at the 700 Innes property would be smaller under the Reduced Development Alternative than under the proposed project or variant, and thus, would generate less wastewater. Like the proposed project and variant, this alternative would likely not result in the exceedance of wastewater requirements because the wastewater generated at the site would represent a very small fraction of the Southeast Treatment Plant's total design treatment capacity. Impacts from wastewater generation during construction would be the same under the Reduced Development Alternative as under the proposed project or variant.

Like the proposed project and variant, the Reduced Development Alternative would require the construction of new water, wastewater, or stormwater drainage facilities, the construction of which could cause environmental effects. Impacts would be similar to those described for the proposed project and variant because, as with the proposed project and the variant, new utilities would be extended to the project site for construction under the Reduced Development Alternative.

The Reduced Development Alternative would have a lower demand for potable and recycled water than the proposed project or variant because it would develop less square footage in buildings. The Reduced Development Alternative would likely not require new or expanded water supply resources or entitlements given SFPUC's projections of available potable water. Furthermore, the SFPUC confirmed that there are adequate short-term and long-term water supplies for the Reduced Development Alternative to operate through 2040 (Lau, 2017).

## ***Overall Impact Conclusion***

Overall, the Reduced Development Alternative would have a lower demand for potable and recycled water than the proposed project or variant because it would not develop the India Basin Open Space and would include less square footage in buildings on the 700 Innes property. Similar to the proposed project and the variant, the Reduced Development Alternative would likely not require new or expanded water supply resources or entitlements given SFPUC's projections of available potable water. In addition, the SFPUC approved a water supply assessment for the proposed project and the variant on December 13, 2016, concluding that SFPUC has adequate short-term and long-term water supplies for the project to operate through 2040. Furthermore, the SFPUC confirmed that there are adequate short-term and long-term water supplies for the Reduced Development Alternative to operate through 2040 (Lau, 2017). Mitigation measures listed in Section 3.5, "Transportation and Circulation"; Section 3.6, "Noise"; and Section 3.7, "Air Quality," would reduce any impacts specifically related to expanded water, wastewater, and stormwater facilities to less-than-significant levels. Therefore, like the proposed project and the variant, the Reduced Development Alternative would have a *less-than-significant with mitigation* project-level and cumulative impact on utilities.

## **Public Services**

### ***India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties***

The Reduced Development Alternative, like the proposed project and the variant, would increase the on-site population through the development of residential, commercial, institutional/educational, and recreational uses. This alternative would have approximately 50 percent of the gsf development which would result in fewer residential units, fewer commercial uses, a smaller school, and fewer recreational uses, and thus, would generate a lesser population on-site than the proposed project and variant. However, relative to existing conditions, the Reduced Development Alternative would generate an increase in demand for public service providers, including SFPD, SFFD, SFUSD, and the SFPL. The Reduced Development Alternative would improve emergency access through the site and would construct a new school, as proposed under the proposed project and the variant. The school would be 50 percent smaller under this alternative than under the proposed project or variant. However, the Reduced Development Alternative would also result in fewer residential units, and therefore fewer students. As under the proposed project and variant, BUILD would be required to pay impact fees to SFUSD. As under the proposed project and the variant, public service providers would be able to accommodate the demand of the new population; therefore, the impact of this alternative on public services would be less than significant. The project impact of the Reduced Development Alternative on public services would be less than that of the or variant because of the relative reduction of the population on-site, but the impact conclusion would be the same as the proposed project or variant, or *less than significant*. No mitigation measures are necessary. Like the proposed project and variant, the Reduced Development Alternative's cumulative impact would be *less than significant*. No mitigation measures are necessary.

## **Biological Resources**

### ***India Basin Shoreline Park and 900 Innes Properties***

The Reduced Development Alternative would have less potential than the proposed project and variant for impacts on biological resources at the India Basin Shoreline Park and 900 Innes properties. This alternative would



include the same on-land recreational and commercial development and associated parking and access on the India Basin Shoreline Park and 900 Innes properties as the proposed project; however, the in-water redevelopment would not include a new pier and dock extending from the India Basin Shoreline Park property. The removal of this dock extending from the India Basin Shoreline Park property would reduce potential underwater noise impacts on marine mammals and fish. Removal of the new pier and dock would improve the habitat value of the India Basin shoreline as a migratory corridor for marine mammals and other species, and would result in a reduction in potential impacts on open water habitat and jurisdictional waters.

### ***India Basin Open Space and 700 Innes Properties***

The Reduced Development Alternative would have a lower potential than the proposed project and variant for impacts on biological resources at the India Basin Open Space and 700 Innes properties. This alternative would include residential, commercial (retail, office, and R&D), institutional/education, parking, and a reduced recreational/open space uses on the 700 Innes property; however, the total square footage of development would be reduced by approximately 50 percent. Less development would result in less greenfield development, which in turn would reduce the potential for degradation of the surrounding habitat (open water/tidal marsh/coastal scrub) from trash and domestic animals. However, no enhancements would be made to the India Basin Open Space and it would remain in its current condition. The reduction of human presence would make this portion of the India Basin shoreline more attractive to special-status and common species that are easily deterred by humans, and would improve the value of this section of the India Basin shoreline as a migratory corridor for bird species.

Under this alternative, the proposed heights of the structures on the 700 Innes property would be lowered relative to the proposed project and variant at the proposed tower locations and throughout the rest of this property up to a maximum of 75 feet tall. Reducing the height of towers would reduce the potential for bird collisions. The reduced bird collision potential would increase the value of this section of the India Basin shoreline as a migratory corridor for birds.

Therefore, the Reduced Development Alternative would have similar impacts as the proposed project and the variant at the India Basin Open Space and 700 Innes properties related to conflicts with local policies or ordinances protecting biological resources and conflicts with habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans. However, this alternative would have less impacts relating to effects on candidate, sensitive, or special-status species; riparian habitats or sensitive natural communities; federally protected wetlands; and interference with the movement of migratory fish or wildlife species.

### ***Overall Impact Conclusion***

Overall, compared to the proposed project or the variant, which would have an impact on biological resources of less than significant with mitigation, the Reduced Development Alternative's impact on biological resources would be less with regard to effects on candidate, sensitive, or special-status species; riparian habitats or sensitive natural communities; federally protected wetlands; and interference with the movement of migratory fish or wildlife species and conflicts with habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans. Similar to the proposed project or the variant, the following mitigation measures would apply to the Reduced Development Alternative:

- M-BI-1a (“Prepare and Implement a Hydroacoustic Monitoring Program for Special-Status Fish and Marine Mammals”)
- M-BI-1b (“Implement Avoidance and Minimization Measures for Special-Status Species”)
- M-BI-1c (“Prepare and Implement a Vegetation Restoration Plan and Compensatory Mitigation”)
- M-HY-1a (“Monitor Turbidity during Construction”)
- M-HY-1b (“Implement Pile Removal Best Management Practices”)

Implementation of these mitigation measures would reduce the project-level and cumulative biological impacts of the Reduced Development Alternative to *less than significant with mitigation*, the same as under the proposed project or the variant.

## **Hydrology and Water Quality**

### ***India Basin Shoreline Park and 900 Innes Properties***

Development proposed for the India Basin Shoreline Park and 900 Innes properties under the Reduced Development Alternative would be the same as that for the proposed project and variant, except the in-water redevelopment would not include a new pier and dock extending from the India Basin Shoreline Park property. Accordingly, impacts related to water quality and WDRs would be substantially the same for the Reduced Development Alternative as for the proposed project and variant and would require the same mitigation measures related to turbidity monitoring and pile removal BMPs.

Impacts related to altering the existing drainage pattern and increasing the rate and amount of surface runoff, stormwater runoff and management, and placement of structures within the 100-year flood hazard area would be the same for the Reduced Development Alternative as for the proposed project and variant, because similar development is proposed for the India Basin Shoreline Park and 900 Innes properties under each of these alternatives.

### ***India Basin Open Space Property***

Unlike the proposed project or variant, no construction or in-water work would occur at the India Basin Open Space property under the Reduced Development Alternative. Therefore, construction and operation under this alternative would result in no impacts related to water quality or exceedance of WDRs, or to altering the existing drainage pattern or increasing the rate and amount of surface runoff. Stormwater impacts would be less than significant and would be the same for the Reduced Development Alternative as for the proposed project or variant because stormwater would continue to flow overland and be self-treating under each of these alternatives. Impacts from the placement of structures within the 100-year flood hazard area would be *less than significant* and would be the same for the Reduced Development Alternative as under the proposed project or variant because no structures would be placed within the 100-year flood hazard area under each of these alternatives. No mitigation measures are necessary.

### ***700 Innes Property***

The Reduced Development Alternative would cover a similar building footprint, but with 50 percent less overall gsf which would result in similar, but less impervious area than the proposed project or variant because development would be reduced. Impacts related to altering existing drainage patterns, increasing the rate and amount of surface runoff, and stormwater runoff and management would be similar to those of the proposed project and variant because proposed stormwater facilities under the Reduced Development Alternative would be designed to conform to the City's stormwater management requirements, resulting in less-than-significant impacts on hydrology.

Impacts related to the placement of structures within the 100-year flood hazard area would be less than significant and would be the same for the Reduced Development Alternative as for the proposed project or variant because no structures would be placed within the 100-year flood hazard area under any of these alternatives. Similar to the proposed project and variant, potential water quality impacts from land-based construction work and groundwater dewatering would be reduced under the Reduced Development Alternative to less than significant given compliance with existing water quality control measures required under the general construction permit, construction site runoff permit, and batch wastewater discharge permit.

The Reduced Development Alternative would not cause an increase in stormwater pollutants discharged to the Bay at this property, given compliance with the City's regulatory and permitting requirements regarding stormwater (NPDES Phase II MS4 permit, Stormwater Management Ordinance, SMR, and industrial general stormwater permit). Wastewater discharged to the combined sewer system would be treated in accordance with the City's NPDES permit and recycled water generated on-site would be treated to Title 22 requirements. Therefore, the operational impact of the Reduced Development Alternative related to a violation of water quality standards or WDRs would be the same as the impact of the proposed project and the variant.

### ***Overall Impact Conclusion***

The following mitigation measures described in Section 3.15, "Hydrology and Water Quality," would also apply to the Reduced Development Alternative:

- M-HY-1a ("Monitor Turbidity during Construction")
- M-HY-1b ("Implement Pile Removal Best Management Practices")
- M-HY-1c ("Dredging Equipment Requirement")

With implementation of these mitigation measures, the Reduced Development Alternative's overall project-level and cumulative impacts on hydrology and water quality would be *less than significant with mitigation*, the same as under the proposed project or the variant.

### **Hazards and Hazardous Materials**

#### ***India Basin Shoreline Park Property***

The Reduced Development Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the India Basin Shoreline Park property. The limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for

use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”) would also be applicable to this alternative and would result in potential impacts related to hazards and hazardous materials similar to either the proposed project or the variant.

### ***900 Innes Property***

The Reduced Development Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the 900 Innes property because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative, resulting in potential impacts related to hazards and hazardous materials similar to those of the proposed project or the variant.

### ***India Basin Open Space Property***

The Reduced Development Alternative would have fewer impacts related to hazards and hazardous materials at the India Basin Open Space property than the proposed project and variant because no construction would occur and operational uses would not change from existing conditions. As such, the potential uses of hazardous materials during construction and operation would be less. Because no construction would occur at this property under this alternative, the existing contaminants in soil, sediment, and groundwater would not be disturbed; therefore, the potential for exposure to construction workers or release of contaminants would be less than under the proposed project or variant. However, under this alternative, Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”) and M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”) would not be applicable at the India Basin Open Space property; therefore, existing contamination would remain, and could pose a risk to future site users.

Despite the potential of the Reduced Development Alternative to expose future site users to these potential risks, this alternative would have less of an impact than either the proposed project or the variant because this property would be left in its existing condition and no construction would occur.

### ***700 Innes Property***

The Reduced Development Alternative would have a similar potential as the proposed project and variant for impacts related to hazardous materials at the 700 Innes property because the construction of the foundations, buildings and operational uses would have similar potential for use of hazardous materials. While the overall gsf of the development is approximately 50 percent less, the building footprints and ground disturbance would be similar under the Reduced Development Alternative compared to the proposed project and variant. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water

Line”), and M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative and would result in potential impacts related to hazards and hazardous materials similar to those of the proposed project and the variant.

### ***Overall Impact Conclusion***

The following mitigation measures described in Section 3.16, “Hazards and Hazardous Materials,” would also apply to the Reduced Development Alternative:

- M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”)
- M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”)
- M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”)

With implementation of these mitigation measures, the Reduced Development Alternative’s overall project-level and cumulative impact on hazards and hazardous materials would be *less than significant with mitigation*, the same as under the proposed project or the variant.

### **Other Topics**

The Notice of Preparation/Initial Study (NOP/IS) and public scoping process concluded that the proposed project or variant would have no impacts or less-than-significant impacts in the following analysis areas:

- Geology and Soils
- Mineral and Energy Resources
- Agriculture and Forestry Resources

The Reduced Development Alternative would result in no impacts or less-than-significant impacts related to any of the above-listed environmental topics, because this alternative would result in no changes to existing site conditions with respect to these topics.

## 4.6 FULL PRESERVATION ALTERNATIVE

### 4.6.1 San Francisco Recreation and Parks Department Development

#### India Basin Shoreline Park and 900 Innes Properties

This alternative would have exactly the same components as the proposed project and variant to 900 Innes Avenue and India Basin Shoreline Park except that cultural resources associated with the India Basin Scow Schooner Boatyard cultural landscape would be preserved (Figure 4-5).

The Full Preservation Alternative seeks to rehabilitate and retain significant features of the India Basin Scow Schooner Boatyard cultural landscape, which is eligible for listing in the California Register of Historical Resources, in order to maintain the historical significance of the cultural landscape while allowing for modest alterations to accommodate a new park and recreation area. Similar to the proposed project and variant, the Full Preservation Alternative would rehabilitate the San Francisco Landmark Shipwright's Cottage to the Secretary of the Interior's Standards for the Treatment of Historic Resources (SOI Standards) and retain the following significant features of the landscape: circulation pathways, storage and staging areas, marine way metal rails, ship hulls associated with the Hunters Point Ship Graveyard, views, and general site grade.

The Full Preservation Alternative, similar to the proposed project and variant, would remove the water fence posts and replace them in kind, if feasible, with nontoxic substitutes.<sup>3</sup> The original circulation paths and the site's topography would be altered with new surface materials, stepped grading and general site grading, and plantings for use in a new park. However, the character-defining circulation pathways would be maintained and distinguished from the new circulation paths, and the general slope of the landscape would be maintained. The Full Preservation Alternative might entail driving piles into the archeological remains of the Hunters Point Ship Graveyard to support the proposed park features but would ensure that portions of at least one of the hulls was visible to the public and would be included in a public interpretation program.

Under the Full Preservation Alternative, Boatyard Office Building and Tool Shed and Water Tank building would be rehabilitated according to the SOI Standards. This would include maintaining the character-defining features of both buildings, such as their massing, roof forms, wood cladding, and window and door openings. Both buildings would be rehabilitated for reuse as functioning buildings and would convey their historical uses within the cultural landscape. Proposed plantings would be low-scale native plants along the hillside that would retain the industrial character of the cultural landscape. New park furniture, such as park benches and pathways, would be designed to reflect the industrial character of the landscape. The Griffith Street right-of-way alignment and width would be maintained and would be designed as a stepped path rather than wood stairs. Both the new Overlook Building and the new "maker space"/shop building would utilize material salvaged from the non-contributing buildings within the cultural landscape that are proposed for demolition and their design would maintain the industrial character of the cultural landscape.

---

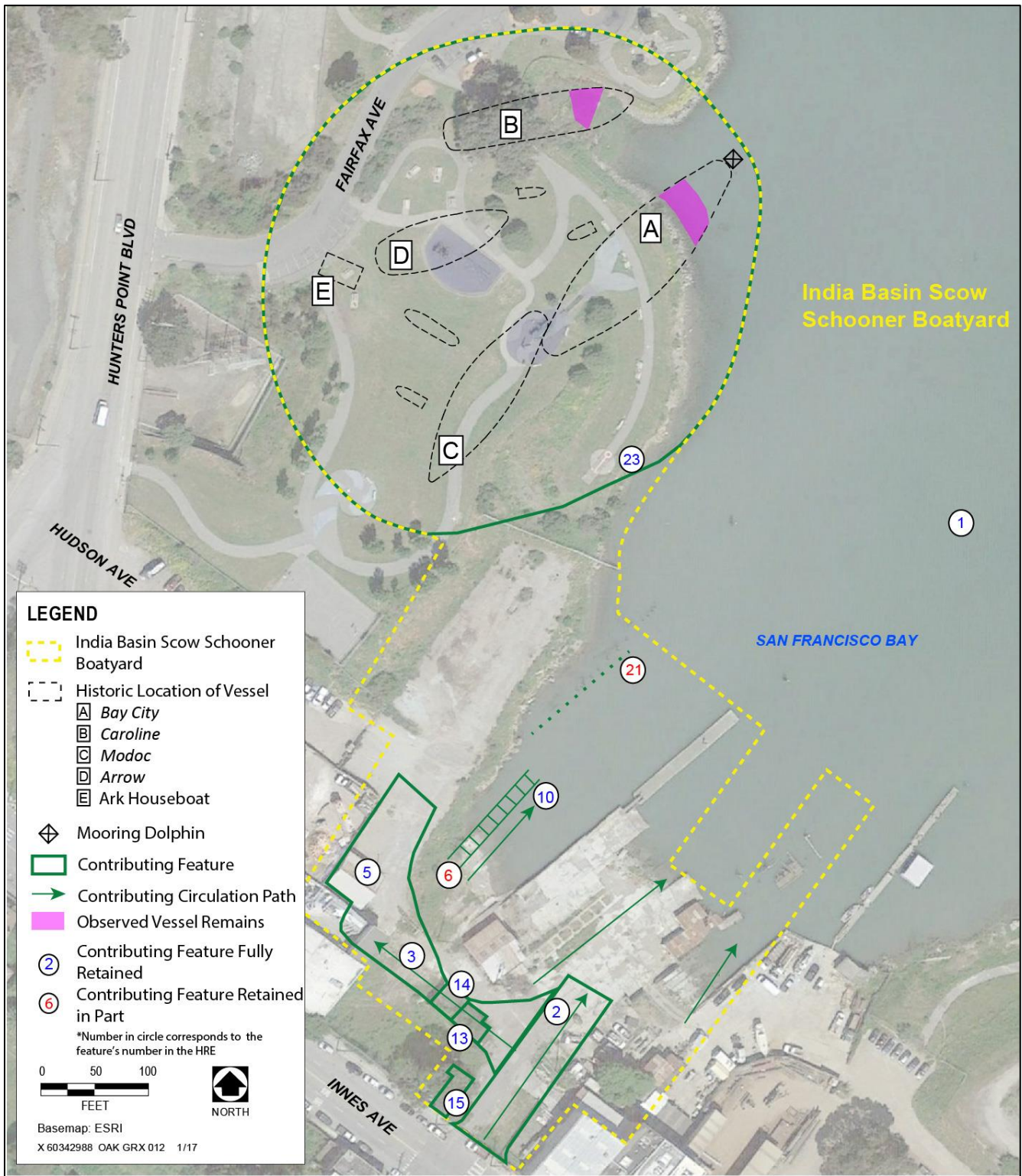
<sup>3</sup> The existing piles that comprised the water fence were previously treated with creosote, a toxic substance. The San Francisco Bay Conservation and Development Commission requires that these creosote-treated piles be removed when such piles are connected to proposed projects. Replacement feasibility of the piles depends upon both regulatory and engineering constraints.

The Full Preservation Alternative maintains the integrity of design, materials, association, and feeling of the landscape by retaining significant features of the landscape and rehabilitating the three significant buildings to the SOI Standards.

#### **4.6.2 BUILD Development**

##### **India Basin Open Space and 700 Innes Properties**

The full preservation alternative would be the same as the proposed project or variant in terms of proposed development, including the relocation and rehabilitation of 702 Earl Street.



Source: GGN, 2017

**Figure 4-5**

**Full Preservation Alternative  
(India Basin Shoreline Park and 900 Innes Properties)**



### 4.6.3 Impacts of the Full Preservation Alternative

Impacts under the Full Preservation Alternative would be similar to impacts under the proposed project or the variant with respect to the following environmental topics: Land Use and Planning, Aesthetics, Population and Housing, Transportation and Circulation, Noise, Air Quality, GHG Emissions, Wind, Shadow, Recreation, Utilities and Service Systems, Public Services, Biological Resources, and Hydrology and Water Quality.

#### Cultural Resources

##### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

There are no architectural historical resources on the India Basin Shoreline Park or the India Basin Open Space properties. The Full Preservation Alternative differs from the proposed project and variant in the treatment of the India Basin Scow Schooner Boatyard cultural landscape at 900 Innes Avenue. The treatment of 702 Earl Street and the Shipwright's Cottage as individual historic resources would remain the same as under the proposed project and variant.

Under the Full Preservation Alternative, all significant buildings that contribute to the India Basin Scow Schooner Boatyard cultural landscape would be rehabilitated to SOI Standards, and new construction and plantings would be designed to maintain the industrial character of the landscape (Figure 4-5). Table 4-3 summarizes the proposed changes to the character-defining features of the historical resource under the Full Preservation Alternative.

**Table 4-3: Impacts of the Full Preservation Alternative on Character-Defining Features of the India Basin Scow Schooner Boatyard Cultural Landscape**

No. in HRE	Name of Feature/Address	Impact of the Full Preservation Alternative
1	India Basin/San Francisco Bay	Shoreline retained
2	Griffith Street right-of-way	Altered; portion realigned, grade change, stepped path
3	Path between Griffith Street and west marine ways	Retained
5	Historic storage and staging yard	Retained
6	West marine way tracks (wood)	Wood elements replaced; metal portions retained
10	Circulation routes and water access at marine ways	Routes and access alignment retained
13	Boatyard Office building	Retained; rehabilitated to the SOI Standards
14	Tool Shed and Water Tank building	Retained; rehabilitated to the SOI Standards
15	Shipwright's Cottage	Retained; rehabilitated to the SOI Standards
21	Water fence posts	Would be removed; attempt would be made to replace these piles in place
N/A	Views east toward San Francisco Bay and the East Bay hills	Views retained
N/A	Gradual slope from Innes Avenue to India Basin	Slope retained; site would be graded
23	Hunters Point Ship Graveyard (archeological)	Retained; Piles would be installed to support the Marineway and the viewing deck, each which lay over the remains of an identified ship hull.

Notes: HRE = historical resource evaluation; N/A = not applicable  
Source: Compiled by AECOM in 2017

The character-defining features of the Boatyard Office Building are the following: the location of the building within the landscape, the flat roof with wide eaves and broad fascia boards, one-story L-shaped massing, wood-clad wood-frame construction, and small circular porthole window openings (San Francisco, 2017b). The character-defining features of the Tool Shed and Water Tank building are the following: the location of the building within the landscape, the prominent shed roof, one-story rectangular massing, wood-clad wood-frame construction, and wide door opening facing east (San Francisco, 2017b). For both buildings under the Full Preservation Alternative, all of these features would be retained or replaced-in-kind per SOI Standards.

Under this alternative, new plantings would be native and planted naturalistically on the hillside in order to maintain the historic character of the waterfront site. Additionally, the Griffith Street right-of-way would be interpreted by a stepped path that more closely matches the existing gravel roadway rather than a wood staircase as with the proposed project and variant.

Under the Full Preservation Alternative, most of the character-defining features of the cultural landscape would be rehabilitated to SOI Standards or retained. However, the introduction of new buildings, structures, and pathways along with some removal of and alteration to significant features would affect the landscape's integrity of setting, design, and materials. Additionally, as under the proposed project and the variant, construction activities have the potential to damage significant features of the cultural landscape.

Implementation of Mitigation Measures M-CR-1a, M-CR-1b, M-CR-1c, and, M-CR-1e would lessen impacts of the Full Preservation Alternative on the India Basin Scow Schooner Boatyard cultural landscape to such a degree that the resource would still be able to convey the characteristics that justify its eligibility for listing in the CRHR. Thus, the overall impact on the India Basin Scow Schooner Boatyard cultural landscape would be *less than significant with mitigation*, instead of significant and unavoidable with mitigation as under the proposed project and variant.

The Full Preservation Alternative would be the same as the proposed project and variant in terms of archeological impacts. Specifically, because approximately the same amount of proposed ground-disturbing activities would occur across all properties under the Full Preservation Alternative, the potential to affect archeological resources would not be eliminated and Mitigation Measures M-CR-2a ("Undertake an Archeological Testing Program") and M-CR-3a ("Implement Legally Required Measures in the Event of Inadvertent Discovery of Human Remains") would apply to this alternative. Implementation of these mitigation measures would reduce the project-level impacts on archeological resources to *less than significant with mitigation* and would not contribute to any cumulative impact related to archeological resources, similar to the proposed project and variant.

## **Hazards and Hazardous Materials**

### ***India Basin Shoreline Park Property***

The Full Preservation Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the India Basin Shoreline Park property. The limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a ("Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line"), M-HZ-2b ("Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line"), and M-HZ-2c ("Prepare and

Implement a Remedial Action Plan for the 900 Innes Property”) would also be applicable to this alternative and would result in potential impacts related to hazards and hazardous materials similar to either the proposed project or the variant.

### ***900 Innes Property***

The Full Preservation Alternative would have a similar potential to the proposed project and variant for impacts on hazards and hazardous materials at the 900 Innes property because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Fewer buildings containing hazardous building materials such as asbestos-containing materials would be demolished under this alternative compared to the proposed project or variant, however, the buildings would be rehabilitated under this alternative, which would include removal of all asbestos-containing materials prior to any renovation activities. Compliance with BAAQMD Regulation 11, Rule 2 is applicable to both renovation and demolition activities. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative, resulting in impacts related to hazards and hazardous materials similar to those of the proposed project or the variant.

### ***India Basin Open Space Property***

The Full Preservation Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the India Basin Open Space property because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”) would also be applicable to this alternative and would result in impacts related to hazards and hazardous materials similar to either the proposed project or the variant.

### ***700 Innes Property***

The Full Preservation Alternative would have an equal potential as the proposed project and variant for impacts related to hazardous materials at the 700 Innes property, because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), and M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative and would result in impacts related to hazards and hazardous materials similar to those of the proposed project and the variant.

## ***Overall Impact Conclusion***

The following mitigation measures described in Section 3.16, “Hazards and Hazardous Materials,” would also apply to the Full Preservation Alternative:

- M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”)
- M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”)
- M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”)

With implementation of these mitigation measures, the Full Preservation Alternative’s overall project-level and cumulative impact on hazards and hazardous materials would be *less than significant with mitigation*, the same as under the proposed project or the variant.

## **Other Topics**

The Notice of Preparation/Initial Study (NOP/IS) and public scoping process concluded that the proposed project or variant would have no impacts or less-than-significant impacts in the following analysis areas:

- Geology and Soils
- Mineral and Energy Resources
- Agriculture and Forestry Resources

The Full Preservation Alternative would result in no impacts or less-than-significant impacts related to any of the above-listed environmental topics, because this alternative would result in no changes to existing site conditions with respect to these topics.

## **4.7 PARTIAL PRESERVATION ALTERNATIVE**

### **4.7.1 San Francisco Recreation and Parks Department Development**

#### **India Basin Shoreline Park and 900 Innes Properties**

This alternative would have exactly the same components as the proposed project and variant except that cultural resources associated with the India Basin Scow Schooner Boatyard cultural landscape would be partially preserved (Figure 4-6).

The Partial Preservation Alternative seeks to rehabilitate and retain significant features of the California Register of Historical Resources-eligible India Basin Scow Schooner Boatyard cultural landscape, in order to maintain the historical significance of the cultural landscape while allowing for the creation of a new accessible park and recreation area. Similar to the proposed project and variant, the Partial Preservation Alternative would rehabilitate the San Francisco Landmark Shipwright’s Cottage to the SOI Standards and retain the following significant features of the landscape: circulation pathways, storage and staging areas, marine way metal rails, ship hulls associated with the Hunters Point Ship Graveyard, views, and general site grade.

The Partial Preservation Alternative, similar to the proposed project and variant, would remove the water fence posts and replace them in kind, if feasible, with nontoxic substitutes.<sup>4</sup> The original circulation paths and the site's topography would be altered with new surface materials, stepped grading and general site grading, and plantings for use in a new park. However, the character-defining circulation pathways would be maintained and distinguished from the new circulation paths and the general slope of the landscape would be maintained. The proposed pedestrian path and stairs located in the historic Griffith Street alignment would be wider than, and use a different material treatment than, the two new pedestrian pathways northwest of the Griffith Street/Innes Avenue intersection that would connect Innes Avenue to the park interior. The Partial Preservation Alternative might entail driving piles into the archeological remains of the Hunters Point Ship Graveyard to support the proposed park features but would ensure that portions of at least one of the hulls was visible to the public and would be included in a public interpretation program.

Differing from the proposed project and variant, the Partial Preservation Alternative would retain the Boatyard Office Building, a significant feature of the landscape. While the building may not be rehabilitated to the SOI Standards under this alternative, some character-defining features of the Boatyard Office building would be retained in order to ensure that the building remains a significant feature of the cultural landscape. At a minimum, this would include retention or replacement-in-kind of a portion of the roof form, wood frame structure, and wood cladding so that the massing of the building is still expressed. If possible, the porthole openings on the southeast and southwest façade would be retained.

The Partial Preservation Alternative proposes to demolish the significant Tool Shed and Water Tank Building and to interpret it within the landscape. This may include interpreting the location of the building by incorporating an outline of the building into the ADA path and park design, keeping all or a portion of the foundation, or retaining or replacing-in-kind a portion of the building in order to convey the building's massing, roof form and materials as feasible.

Compared to the proposed project and variant, the Partial Preservation Alternative aims to maintain the integrity of location, design, association, and feeling of the cultural landscape by retaining the Boatyard Office Building as a significant structure to the cultural landscape and interpreting the Tool Shed and Boatyard Office Building in order to maintain the relationship between the Shipwright's Cottage and the significant landscape features along the shoreline.

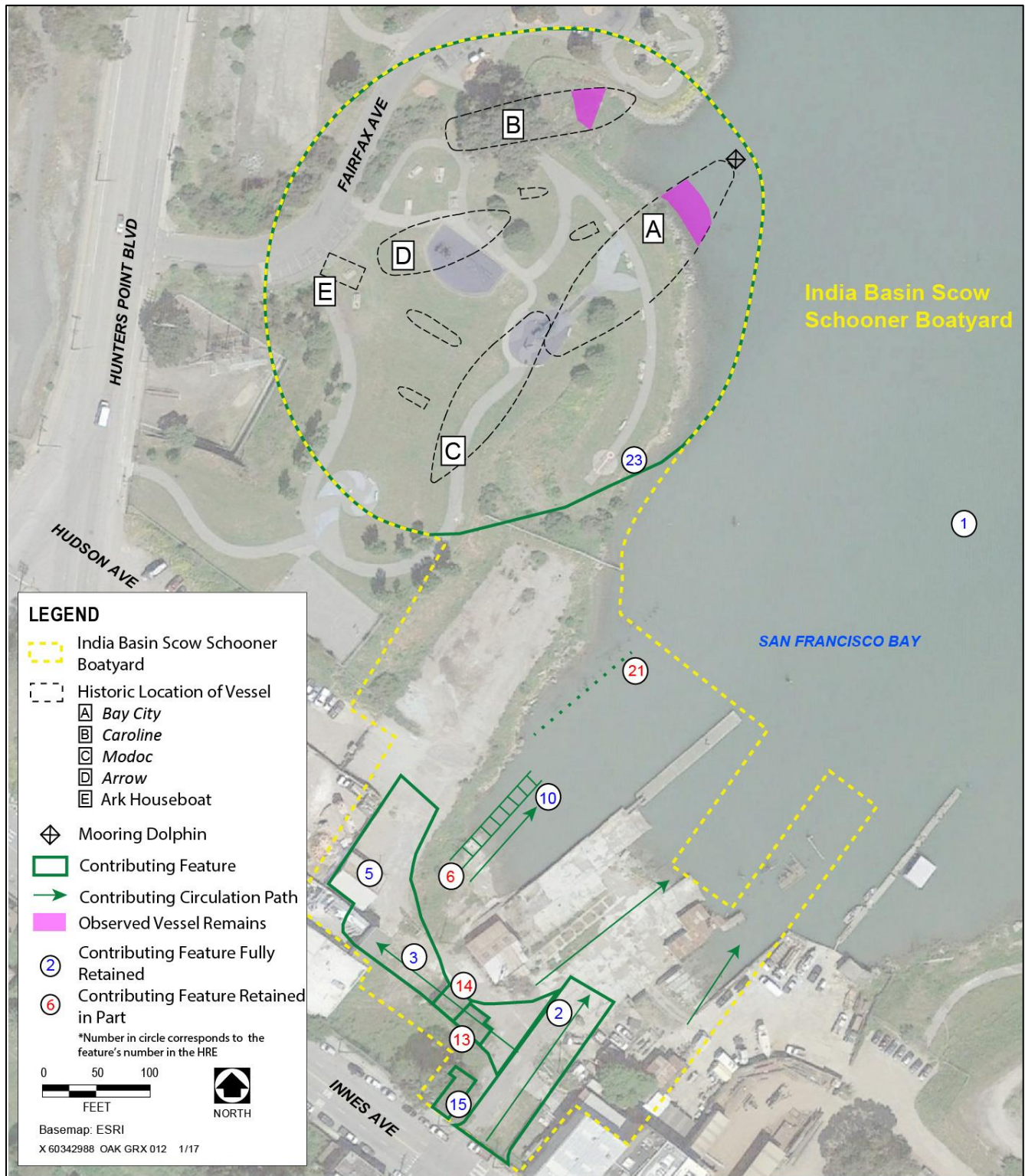
## **4.7.2 BUILD Development**

### **India Basin Open Space and 700 Innes Properties**

The Partial Preservation Alternative would be the same as the proposed project or variant in terms of proposed development, including the relocation and rehabilitation of 702 Earl Street.

---

<sup>4</sup> The existing piles that comprised the water fence were previously treated with creosote, a toxic substance. The San Francisco Bay Conservation and Development Commission requires that these creosote-treated piles be removed when such piles are connected to proposed projects. Replacement feasibility of the piles depends upon both regulatory and engineering constraints.



Source: GGN, 2017

**Figure 4-6**

**Partial Preservation Alternative  
(India Basin Shoreline Park and 900 Innes Properties)**

### 4.7.3 Impacts of the Partial Preservation Alternative

Impacts under the Partial Preservation Alternative would be similar to impacts under the proposed project or the variant with respect to the following environmental topics: Land Use and Planning, Aesthetics, Population and Housing, Transportation and Circulation, Noise, Air Quality, GHG Emissions, Wind, Shadow, Recreation, Utilities and Service Systems, Public Services, Biological Resources, and Hydrology and Water Quality.

#### Cultural Resources

##### *India Basin Shoreline Park, 900 Innes, India Basin Open Space, and 700 Innes Properties*

There are no architectural historical resources on the India Basin Shoreline Park or the India Basin Open Space properties. The Partial Preservation Alternative differs from the proposed project and variant in the treatment of the India Basin Scow Schooner Boatyard cultural landscape at 900 Innes Avenue. Under the Partial Preservation Alternative, the significant features of the India Basin Scow Schooner Boatyard cultural landscape would receive the same treatment as under the proposed project and variant except for the retention of the Boatyard Office Building and the interpretation of the Tool Shed and Water Tank building (Figure 4-6). The treatment of 702 Earl Street and the Shipwright's Cottage as individual historic resources would remain the same as under the proposed project and variant. Table 4-4 summarizes the proposed changes to the character-defining features of the historical resource under the Partial Preservation Alternative.

**Table 4-4: Impacts of the Partial Preservation Alternative on Character-Defining Features of the India Basin Scow Schooner Boatyard Cultural Landscape**

No. in HRE	Name of Feature/Address	Impact of the Partial Preservation Alternative
1	India Basin/San Francisco Bay	Shoreline retained
2	Griffith Street right-of-way	Altered; portion realigned, grade change, partial stairs
3	Path between Griffith Street and west marine ways	Retained
5	Historic storage and staging yard	Retained
6	West marine way tracks (wood)	Wood elements replaced; metal portions retained
10	Circulation routes and water access at marine ways	Routes and access alignment retained
13	Boatyard office building	Retained
14	Tool Shed and Water Tank building	Demolished; interpreted
15	Shipwright's Cottage	Retained; rehabilitated
21	Water fence posts	Would be removed; attempt would be made to replace these piles in place, if possible
N/A	Views east toward San Francisco Bay and the East Bay hills	Views retained
N/A	Gradual slope from Innes Avenue to India Basin	Slope retained; site would be graded
23	Hunters Point Ship Graveyard (archeological)	Retained; Piles would be installed to support the Marineway and viewing deck, each of which lay over the remains of an identified ship hull.

Notes: HRE = historical resource evaluation; N/A = not applicable

Source: Compiled by AECOM in 2017

The Partial Preservation Alternative proposes to retain character-defining features of the Boatyard Office building, so that it would remain a significant feature of the cultural landscape. The character-defining features of the Boatyard Office Building are the following: the location of the building within the landscape, the flat roof with wide eaves and broad fascia boards, one-story L-shaped massing, wood-clad wood-frame construction, and small circular porthole window openings (San Francisco, 2017b). Under the Partial Preservation Alternative, at minimum, a portion of the roof form, a portion of the wood frame structure, and a portion of the wood cladding would be retained or replaced-in-kind, so that the massing and materials of the building is still expressed. For example, this may include the retention of an open-frame or partially open-frame roof structure with wide eaves supported by a wood frame structure with a portion of the structure clad in retained or replaced-in-kind wood cladding. If possible, the porthole openings on the southeast and southwest façade would be retained.

Similar to the proposed project and variant, under the Partial Preservation Alternative, alteration of character-defining features of the landscape and the introduction of new buildings, structures, pathways, and plantings would affect the landscape's integrity of setting, design, materials, feeling, and association. However, retention of the Boatyard Office Building and interpretation of the Tool Shed and Water Tank Building would help to retain integrity of location, design, association, and feeling of the cultural landscape by supporting the connection between the Shipwright's Cottage and the significant landscape features along the shoreline. Additionally, as with the proposed project and variant, construction activities have the potential to damage significant features of the cultural landscape.

Implementation of Mitigation Measures M-CR-1a, M-CR-1b, M-CR-1c, and, M-CR-1e would lessen impacts of the Partial Preservation Alternative on the India Basin Scow Schooner Boatyard cultural landscape to such a degree that the resource would still be able to convey the characteristics that justify its eligibility for listing in the CRHR. Thus, the overall impact on the India Basin Scow Schooner Boatyard cultural landscape would be *less than significant with mitigation*, instead of significant and unavoidable with mitigation as under the proposed project and variant.

The Partial Preservation Alternative would be the same as the proposed project and variant in terms of archeological impacts. Specifically because approximately the same amount of proposed ground-disturbing activities would occur across all properties under the Partial Preservation Alternative, the potential to affect archeological resources would not be eliminated and Mitigation Measures M-CR-2a ("Undertake an Archeological Testing Program") and M-CR-3a ("Implement Legally Required Measures in the Event of Inadvertent Discovery of Human Remains") would apply to this alternative. Implementation of these mitigation measures would reduce the potential project-level impacts on archeological resources to *less than significant with mitigation* and would not contribute to any cumulative impact related to archeological resources, similar to the proposed project and variant.

## **Hazards and Hazardous Materials**

### ***India Basin Shoreline Park Property***

The Partial Preservation Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the India Basin Shoreline Park property. The limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a ("Prepare and Implement a Site Mitigation Plan for



Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”) would also be applicable to this alternative and would result in impacts related to hazards and hazardous materials similar to either the proposed project or the variant.

### ***900 Innes Property***

The Partial Preservation Alternative would have a similar potential to the proposed project and variant for impacts on hazards and hazardous materials at the 900 Innes property because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Fewer buildings containing hazardous building materials such as asbestos-containing materials would be demolished under this alternative compared to the proposed project or variant, however, the buildings would be rehabilitated under this alternative, which would include removal of all asbestos-containing materials prior to any renovation activities. Compliance with BAAQMD Regulation 11, Rule 2 is applicable to both renovation and demolition activities. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative, resulting in impacts related to hazards and hazardous materials similar to those of the proposed project or the variant.

### ***India Basin Open Space Property***

The Partial Preservation Alternative would have an equal potential to the proposed project and variant for impacts on hazards and hazardous materials at the India Basin Open Space property because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”) would also be applicable to this alternative and would result in impacts related to hazards and hazardous materials similar to either the proposed project or the variant.

### ***700 Innes Property***

The Partial Preservation Alternative would have an equal potential as the proposed project and variant for impacts related to hazardous materials at the 700 Innes property, because the building footprints, limits and type of construction would be similar, and future operational uses would be the same with respect to their potential for use of hazardous materials. Mitigation Measures M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”), and M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”), and compliance with BAAQMD Regulation 11, Rule 2 would also be applicable to this alternative and would result in impacts related to hazards and hazardous materials similar to those of the proposed project and the variant.

### ***Overall Impact Conclusion***

The following mitigation measures described in Section 3.16, “Hazards and Hazardous Materials,” would also apply to the Partial Preservation Alternative:

- M-HZ-2a (“Prepare and Implement a Site Mitigation Plan for Areas Above the Mean High-Water Line”)
- M-HZ-2b (“Prepare and Implement a Nearshore Sediment and Materials Management Plan for Areas Below the Mean High-Water Line”)
- M-HZ-2c (“Prepare and Implement a Remedial Action Plan for the 900 Innes Property”)

With implementation of these mitigation measures, the Partial Preservation Alternative’s overall project-level and cumulative impact on hazards and hazardous materials would be *less than significant with mitigation*, the same as under the proposed project or the variant.

### **Other Topics**

The Notice of Preparation/Initial Study (NOP/IS) and public scoping process concluded that the proposed project or variant would have no impacts or less-than-significant impacts in the following analysis areas:

- Geology and Soils
- Mineral and Energy Resources
- Agriculture and Forestry Resources

The Partial Preservation Alternative would result in no impacts or less-than-significant impacts related to any of the above-listed environmental topics, because this alternative would result in no changes to existing site conditions with respect to these topics.

## 4.8 ABILITY OF THE ALTERNATIVES TO MEET PROJECT SPONSOR'S OBJECTIVES

As stated above, CEQA Guidelines Section 15126.6(a) requires that an EIR evaluate “a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects, and evaluate the comparative merits of the alternatives.” A range of potentially feasible alternatives was reviewed in this EIR as governed by the “rule of reason” to foster informed decision-making and public participation (State CEQA Guidelines Section 15126.6[f]). The No Project Alternative is included, as required by State CEQA Guidelines Section 15126.6(e), even though it would not meet the basic project objectives. The Code Compliant Alternative and Reduced Development Alternative are potentially feasible options that would likely meet most but not all of the project objectives. A Full Preservation and Partial Preservation Alternative were also analyzed. Table 4-5 presents the ability of each alternative to meet the project objectives.

**Table 4-5: Ability of Alternatives to Meet Project Objectives**

<b>Project Sponsors' Objectives</b>	<b>Proposed Project</b>	<b>Variant</b>	<b>No Project</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
<b>RPD (Neighborhood &amp; Community)</b>							
Create a neighborhood center that stimulates meaningful and inclusive local, citywide, and regional community engagement.	Yes	Yes	No	Yes	Yes	Yes	Yes
Develop a seamless park user experience along India Basin that ensures a high level of waterfront and recreation access for neighborhood users, and create a significant amenity on the Bayview/Hunters Point recreation loop/waterfront.	Yes	Yes	No	Yes	Yes	Yes	Yes
Construct more open space to address the population growth in a high-need and emerging neighborhood, and improve recreational amenities to existing residents.	Yes	Yes	No	Yes	Yes	Yes	Yes
Create an opportunity for the City to address issues of environmental justice, equity, and inclusion in parks and open space for the India Basin and greater Bayview Hunters Point communities.	Yes	Yes	No	Yes	Yes	Yes	Yes

<b>Project Sponsors' Objectives</b>	<b>Proposed Project</b>	<b>Variant</b>	<b>No Project</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
Stimulate local hiring through job training for construction activities, park-related concession opportunities, and recreation leadership positions.	Yes	Yes	No	Yes	Yes	Yes	Yes
Create a safe environment for park users that includes increased visibility of park spaces, including direct sightlines from bordering streets to the water.	Yes	Yes	No	Yes	Yes	No	Partially,(retention of the Boatyard Office building in its current location would affect sightlines to the waterfront.)
<b>RPD (Environment &amp; Sustainability)</b>							
Prioritize environmental cleanup to promote public health, safety, and welfare.	Yes	Yes	No	Yes	Yes	Yes	Yes
Design a landscape that will be adaptive and resilient alongside anticipated sea-level rise.	Yes	Yes	No	Partially (the India Basin Open Space would not be enhanced)	Partially (the India Basin Open Space would not be enhanced)	Yes	Yes
Conserve and strengthen natural resources, and increase biodiversity and interconnectivity on City parkland, through the expansion of shoreline wetlands and redevelopment of natural upland landscaping.	Yes	Yes	No	Partially (the India Basin Open Space would not be enhanced/Big Green would not be built)	Partially (the India Basin Open Space would not be enhanced/Big Green would not be built)	Yes	Yes
Provide on-site stormwater treatment infrastructure to promote improved Bay water quality.	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>RPD (History &amp; Cultural)</b>							
Preserve and celebrate historic and cultural resources, including the restoration of the historic Shipwright's Cottage and revitalization and interpretation of the historic boatyard cultural landscape at 900 Innes and the associated ship hulls at India Basin Shoreline Park.	Yes	Yes	No	Yes	Yes	Yes	Yes

<b>Project Sponsors' Objectives</b>	<b>Proposed Project</b>	<b>Variant</b>	<b>No Project</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
Create a Welcome Center featuring the site's shipbuilding heritage and surrounding neighborhood/community history, complemented by a food and beverage concession to serve as a community gathering space and to promote local hiring.	Yes	Yes	No	Yes	Yes	Yes	Yes
Create an entry experience from Innes Avenue that highlights the features of both the cultural and natural landscape, maintains sightlines to the waterfront, and contributes to a seamless park user experience and sense of place as a neighborhood center.	Yes	Yes	No	Yes	Yes	No	Partially,(retention of the Boatyard Office building in its current location would require revisions to site access from Innes and affect sightlines to the waterfront.)
<b>RPD (Recreation &amp; Education)</b>							
Create a center for waterfront programming with a variety of active and passive recreational opportunities, and strengthen the quality of existing parks and facilities.	Yes	Yes	No	Partially (the India Basin Open Space would not be enhanced)	Partially (the India Basin Open Space would not be enhanced)	No	Yes
Expand public access to the Bay and accelerate the development of the Blue Greenway/Bay Trail, by connecting India Basin Shoreline Park, 900 Innes, and India Basin Open Space with all seven properties along the India Basin cove.	Yes	Yes	No	Partially (the India Basin Open Space would not be enhanced)	Partially (the India Basin Open Space would not be enhanced)	Yes	Yes
Provide active recreational programming such as a human-powered boating center, basketball courts, skateboard ramps, bike paths, children's playground, and public beach access.	Yes	Yes	No	Yes	Partially (the dock and pier would not be constructed at India Basin Shoreline Park)	Yes	Yes
Provide passive recreational programming such as bird-watching, barbeque and picnic areas, landscaped/natural hiking paths, and a great lawn.	Yes	Yes	No	Yes	Yes	Yes	Yes

Project Sponsors' Objectives	Proposed Project	Variant	No Project	Code Compliant Alternative	Reduced Development Alternative	Full Preservation Alternative	Partial Preservation Alternative
Construct an educational/"makers" building (the "Shop"), intended to provide recreational arts and shop programming focused on the historic shipbuilding industry.	Yes	Yes	No	Yes	Yes	Yes	Yes
Design park spaces that are safe and inviting and that follow departmental best practices for successful maintenance.	Yes	Yes	No	Yes	Yes	No	No
<b>RPD (Transportation &amp; Infrastructure)</b>							
Provide Class 1 bicycle lane infrastructure to enhance community transportation alternatives.	Yes	Yes	No	Yes	Yes	Yes	Yes
Create publicly accessible Griffith Street site access, linking the neighboring community and new retail to the sites south of 900 Innes.	Yes	Yes	No	Yes	Yes	Yes	Yes
Construct enhanced/signalized crosswalks to park entrances for easier and safer pedestrian access.	Yes	Yes	No	Yes	Yes	Yes	Yes
Create Americans with Disabilities Act (ADA)-accessible pathways providing waterfront access and safe interactions with highly trafficked routes such as the Class 1 bicycle path.	Yes	Yes	No	Yes	Yes	No	Partially (retention of the Boatyard Office building in its current location would require revisions to site access from Innes and may impact the ADA pathway.)
<b>BUILD</b>							
Revitalize a prime but underutilized southeastern waterfront site with a range of uses designed to increase housing at a range of affordability levels and provide increased business and employment opportunities.	Yes	Yes	No	Yes	Partially (this alternative would include approximately half the housing, business, and employment opportunities as either the proposed project or the variant)	Yes	Yes

<b>Project Sponsors' Objectives</b>	<b>Proposed Project</b>	<b>Variant</b>	<b>No Project</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
Construct high-quality housing with sufficient density to contribute to active uses on the project site while offering a mix of unit types, sizes, and affordability to accommodate a range of potential residents.	Yes	Yes	No	Yes	Partially (this alternative would include approximately half the housing as the proposed project)	Yes	Yes
Provide sufficient mixed-use development capacity (in terms of gross floor area and residential unit count) with a range of flexible uses that can respond to market demands and attract the private capital necessary to build out the proposed project in a timely fashion and financially support an array of public benefits, including public open space, a permanent maintenance and operations tax district, community job training and small business development opportunities, public transportation improvements and affordable housing.	Yes	Yes	No	Partially (this alternative would include substantially less open space than either the proposed project or the variant, with no Big Green)	Partially (with approximately half the housing and employment at the 700 Innes property, it is unknown whether this alternative would be able to attract the capital necessary to build out the project in a timely fashion; also, this alternative would include less open space, with no Big Green)	Yes	Yes
Pursue a balanced mix of residential, retail, and office space, as well as R&D space, to support a daytime population adequate to create a viable, vibrant small-scale neighborhood retail district.	Yes	Yes	No	Yes	Partially (with less housing, retail, office space, and R&D space at the 700 Innes property, it is unknown whether this alternative would be able to support a viable district)	Yes	Yes
Preserve the shoreline areas of the project site for public park and public open space use.	Yes	Yes	Partially (the 900 Innes property would not be accessible)	Partially; with no Big Green, less of a connection through the site to the shoreline	Partially; with no Big Green, less of a connection through the site to the shoreline	Yes	Yes

<b>Project Sponsors' Objectives</b>	<b>Proposed Project</b>	<b>Variant</b>	<b>No Project</b>	<b>Code Compliant Alternative</b>	<b>Reduced Development Alternative</b>	<b>Full Preservation Alternative</b>	<b>Partial Preservation Alternative</b>
Incorporate environmental sustainability concepts and practices into the project, including stormwater treatment swales and bioretention areas, improved and new wetlands, green building design, and construction practices.	Yes	Yes	No	No (the Big Green would not be developed and these facilities would not be provided)	No (the Big Green would not be developed and these facilities would not be provided)	Yes	Yes

Notes: Bay = San Francisco Bay; Bay Trail = San Francisco Bay Trail; City = City and County of San Francisco; R&D = research and development; RPD = San Francisco Recreation and Parks Department

Source: Compiled by AECOM in 2017

## 4.9 ALTERNATIVES CONSIDERED AND REJECTED

Section 15126.6(c) of the State CEQA Guidelines provides that an EIR should “identify any alternatives that were considered by the lead agency but rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination.” The screening process for identifying viable EIR alternatives included consideration of the following criteria: ability to meet the project objectives; potential ability to substantially lessen or avoid environmental effects associated with the proposed project or the variant; and potential feasibility. The discussion below provides the reasons for eliminating these alternatives from detailed consideration in the EIR.

Several alternatives were considered but eliminated through the planning process that resulted in the alternatives evaluated in the EIR. A brief summary is provided below.

### 4.9.1 Leave In-Water Structures in Place

An alternative that would not include any in-water redevelopment was explored. This alternative would leave all current piers, piles, and riprap structures in their current condition (including those treated with creosote and/or in a dilapidated, unsafe condition). This alternative would also limit the ability to clean up the site with regard to hazardous materials, as many of the contaminated elements are at the shoreline edge or in the Bay. Without removal and remediation of harmful elements, portions of the properties would be harmful to the public and the Bay ecosystem and unsafe for development and use. Such areas on land and in water would need to be fenced off from the public. In addition, the residential and commercial uses may not be compatible without proper cleanup of the site. Thus, an alternative to leave in-water structures in place has been eliminated from further consideration and is not evaluated in the EIR because it fails to meet basic project objectives described above regarding, creating a safe environment for park users, public access to the Bay and prioritizing environmental cleanup to promote public health, safety, and welfare. In addition, by not addressing the edge of the Bay adjacent to new development, this alternative would not include landscape that would be adaptive and resilient alongside anticipated sea-level rise or conserve and strengthen natural resources.



### **4.9.2 100 Percent Affordable Housing**

An alternative to use the entire project site for affordable residential housing was explored; however, the cost to conduct hazardous materials cleanup<sup>5</sup> and develop the land entirely with affordable housing residential uses does not make this alternative economically feasible. The property is located on real estate that is one of the last remaining waterfront properties in San Francisco. Constructing 100 percent affordable housing on the entire site would not be financially feasible or practical at this location and does not meet the project objectives related to provision of open space/park uses. To construct affordable housing on the 700 Innes property, all funds otherwise available for public benefits would be directed back into filling the gap for construction of these homes; therefore, no funds would be available to improve or build any new parks or open space, provide any transportation improvements, or subsidize any new art installations. This alternative would not meet some of the objectives described above such as including high-quality housing with sufficient density to contribute to 18-hour activity on the project site while offering a mix of unit types, sizes. It would also not provide sufficient mixed-use development capacity with a range of flexible uses that can respond to market demands and attract the private capital necessary to build out the proposed project in a timely fashion and financially support an array of public benefits, including public open space, a permanent maintenance and operations tax district, community job training and small business development opportunities, public transportation improvements and affordable housing. Thus, a 100 percent affordable housing alternative has been eliminated from further consideration and is not evaluated in the EIR.

### **4.9.3 No Brownfield Redevelopment**

An alternative that would not involve any hazardous materials cleanup of the sites that are contaminated was considered. The cost to clean up the site is high and cleanup can take years to accomplish with limited funds. Without removal and remediation of harmful elements, portions of the properties would be harmful and unsafe for development. Therefore, use of the site would be limited and not practical for residential, commercial and recreational use. Some of the project objectives above would not be met including creating a neighborhood center that stimulates meaningful and inclusive local, citywide, and regional community engagement and creating a safe environment for park users, public access to the Bay and prioritizing environmental cleanup to promote public health, safety, and welfare would not be possible. In addition the opportunity to improve the open space along the Bay would be lost and a seamless park user experience along India Basin that ensures a high level of waterfront and recreation access for neighborhood users could not be achieved including connectivity to the Blue Greenway/Bay Trail. Because this alternative does not meet the project objectives, a no brownfield redevelopment alternative has been eliminated from further consideration and is not evaluated in the EIR.

### **4.9.4 100 Percent Open Space/Park Use**

An alternative was explored in which the entire site could be used for open space and park purposes that would be owned and operated by RPD. This alternative was considered and eliminated because the funds were not available to develop the entire site as open space/park. The cost of waterfront land in San Francisco is at a premium and the cost to clean up hazardous materials is also very high; therefore, without financial resources from a private developer, this alternative is not practical. Some of the project objectives would not be met as described above

---

<sup>5</sup> The amount and type of hazardous materials cleanup required for residential uses is more extensive and costly than the amount and type of hazardous materials cleanup required for recreational/open space uses.

including revitalizing a prime but underutilized southeastern waterfront site with a range of uses designed to increase housing at a range of affordability levels and providing increased business and employment opportunities and pursuing a balanced mix of residential, retail, and office space, as well as R&D space to support a viable, vibrant small-scale neighborhood retail district. In addition, several other objectives such as constructing high-quality housing with sufficient density while offering a mix of unit types, sizes, and affordability to accommodate a range of potential residents, and providing sufficient mixed-use development capacity with a range of flexible uses that can respond to market demands and attract the private capital necessary to build out the project site. As such, a 100 percent open space/park use alternative has been eliminated from further consideration and is not evaluated in the EIR.

#### **4.10 ENVIRONMENTALLY SUPERIOR ALTERNATIVE**

State CEQA Guidelines Section 15126.6(e)(2) requires identification of an environmentally superior alternative. If the No Project Alternative is environmentally superior, CEQA requires selection of the “environmentally superior alternative other than the No Project Alternative” from among the proposed project and the alternatives evaluated.

The No Project Alternative is considered the overall environmentally superior alternative because the impacts associated with implementation of the proposed project would not occur under the No Project Alternative. However, the No Project Alternative would not meet any of the project objectives.

To identify the environmentally superior alternative in accordance with the State CEQA Guidelines, Table 4-2 presents a comparison of the impacts related to the alternatives. As shown in Table 4-2, the Reduced Development Alternative is the environmentally superior alternative because it would have a lower impact level for most of the topics. Because of the substantially lower number of residential units and the decrease in the gsf of commercial, office, R&D, institutional/educational, and open space/recreation uses, this alternative would lessen (but not avoid) most of the significant adverse impacts reducing them to less than significant. However the significant impacts identified for the proposed project and the variant related to the topics of noise, air quality, transportation and circulation, and wind would still remain significant. They would not be reduced to a LTS level because the amount of development on the site still would result in a significant impact. Mitigation measure would be introduced to improve environmental impacts.

As shown in Table 4-3, the Reduced Development Alternative would partially meet the two project sponsors’ objectives. Similar to the proposed project or the variant, the Reduced Development Alternative would provide public open spaces, housing, R&D, commercial/retail, and recreational opportunities and would include restoration and remediation of the project site.

#### **4.11 REFERENCES**

San Francisco, City and County of (San Francisco). 2017a (August). *India Basin Alternative Analysis – Transportation and Circulation*. San Francisco, CA. Case Number: 2014.2541E. Prepared for San Francisco Planning Department by Fehr & Peers, San Francisco, CA.

- . 2017b (March 8). *India Basin Project Historic Resource Evaluation Report Parts 1 and 2*, San Francisco, CA. Final. [14290B.] San Francisco, CA. Prepared by Page & Turnbull, San Francisco, CA.
- Lau, Fan. Water Resources Specialist, San Francisco Public Utilities Commission (SFPUC), San Francisco, CA. August 21, 2017—Personal Communication (telephone call) with Elliott Schwimmer of AECOM regarding SFPUC’s comments on the India Basin Mixed-Use Project’s Screencheck Draft EIR.

This page intentionally left blank.

## **5.0 OTHER CEQA CONSIDERATIONS**

### **5.1 SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED**

Based on the environmental analyses in this EIR, the City has determined that the proposed project and variant in conjunction with cumulative development in southeastern San Francisco would result in the project-level and cumulative significant and unavoidable impacts listed below.

#### **Cultural Resources Impacts:**

- Project-level vernacular cultural landscape impacts related to CRHR eligibility of the India Basin Scow Schooner Boatyard due to uncertainty associated with ability to retain the Boatyard Office building.

#### **Transportation and Circulation Impacts:**

- Project-level transportation impacts related to loading demand during the peak hour of loading activities and resulting hazardous traffic conditions or significant delays affecting transit, bicycles, or pedestrians.
- Cumulative transportation impacts related to transit delay due to increased round-trip travel time.

#### **Noise Impacts:**

- Project-level ambient noise impacts during operation on sensitive receptors located off site along roadways.
- Cumulative noise impacts on sensitive receptors located off site along roadways.

#### **Air Quality Impacts:**

- Project-level emissions of criteria air pollutants and precursors during construction, operation, and overlapping construction and operational activities.
- Project-level emissions that could expose sensitive receptors to substantial pollutant concentrations.
- Cumulative regional air quality and health risk impacts.

#### **Wind Impacts:**

- Project-level wind impacts that would affect public areas.

### **5.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES**

CEQA and the State CEQA Guidelines (Section 151826[c]) require that an EIR address “significant irreversible environmental changes which would be involved in the Project, should it be implemented.”

If the proposed project or variant is implemented, the development would involve the use of nonrenewable resources during its construction phase. Construction would include the use of building materials, such as petroleum-based products and metals that cannot reasonably be recreated. Construction also would involve

significant consumption of energy, usually petroleum-based fuels that deplete supplies of nonrenewable resources. Construction of structures and infrastructure would consume energy and water; however, because of its temporary and one-time nature, construction under the proposed project or variant would not represent a significant irreversible use of resources.

Once construction is complete, the land uses associated with the proposed project or variant would use some nonrenewable fuels to heat and light structures and consume water. Development elements would be built to current codes, including the California Green Building Standards Code, which requires insulation and support designs that minimize wasteful energy consumption. Specific aspects of the proposed project or variant would be as energy efficient as possible, as the RPD development would be built to meet Leadership in Energy and Environmental Design (LEED) Gold certification standards and the BUILD development would be built to meet LEED Silver certification standards. Finally, because the land uses associated with the proposed project or variant would consume energy for heat and light and water for irrigation and plumbing in an efficient manner (per compliance with California Green Building Standards Code and LEED Gold and Silver certification standards), operation under the proposed project or variant would represent a minimal use in resources, and thus would not represent a significant irreversible use of resources.

### 5.3 GROWTH-INDUCING IMPACTS

Section 15126.2(d) of the State CEQA Guidelines requires that an EIR discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Typical growth-inducing factors might be the extension of urban services or transportation infrastructure to a previously unserved or underserved area, or the removal of major barriers to development. This section evaluates the project's potential to create such growth inducements. Not all aspects of growth inducements are negative; rather, negative impacts associated with growth inducement occur only where the projected growth would cause adverse environmental impacts.

Growth-inducing impacts fall into two general categories: direct or indirect. Direct growth-inducing impacts are generally associated with providing urban services to an undeveloped area. Indirect, or secondary growth-inducing impacts consist of growth induced in the region by additional demands for housing, goods, and services associated with population increase caused by or attracted to, a new project.

The State CEQA Guidelines, as interpreted by the City, state that a significant growth-inducing impact may result if the proposed project would:

1. induce substantial population growth in an area (for example, by proposing new homes and commercial or industrial businesses beyond the land use density/intensity envisioned in the community plan);
2. substantially alter the planned location, distribution, density, or growth rate of the population of an area; or
3. include extensions of roads or other infrastructure not assumed in the community plan or adopted capital improvements project list, when such infrastructure exceeds the needs of the project and could accommodate future developments.

The project site is located in a partially developed area of San Francisco. Implementing the proposed project or variant would directly induce growth in the City, but not in a manner that is beyond the Citywide land use densities/intensities envisioned in the *San Francisco General Plan* and the *Bayview Hunters Point Area Plan* for

this area of San Francisco. According to the U.S. Census Bureau's American Community Survey (U.S. Census Bureau, 2014), as of 2014, the City's population was 829,072 people. According to the Association of Bay Area Governments (ABAG), the population of the County of San Francisco is expected to increase by approximately 152,728 people from the 2014 population estimates by 2030 (ABAG, 2013, as cited in San Francisco, 2015a), resulting in a total anticipated population of 981,800 by 2030. Implementing the proposed project would involve constructing up to 1,240 residential units, while implementing the variant would involve constructing up to 500 residential units. This would increase the population of the project site and this area of the City by approximately 3,401 or 1,371 residents, respectively (Bean, pers. comm., 2016). The population growth that could be accommodated by the proposed project or variant would be consistent with growth projections for the City as projected by ABAG (2013). The ABAG projections illustrate how the City will accommodate growth if policies consistent with the vision of the draft *Plan Bay Area* (ABAG and MTC, 2017) are adopted.

In addition to residential units, direct growth from the proposed project or variant would include retail and service commercial facilities, public institutional facilities, office/research and development space, and recreational facilities, as well as improvements to City roadways near the project site. This growth would add 929 jobs under the proposed project or 3,535 jobs under the variant. Infrastructure and services would be expanded to serve the proposed project and variant, without significant excess capacity that might encourage additional growth beyond that already planned for in the *Bayview Hunters Point Area Plan*. As a result, the proposed project or variant would create minimal to no indirect growth that would be inconsistent with ABAG's projections for the City and County of San Francisco.

The project site currently consists of primarily vacant, undeveloped land; see Chapter 2.0, "Project Description," for more details regarding the existing project site setting. Implementing the proposed project or variant would not require the extension of electrical, natural gas, or water utility infrastructure, but would require connections to existing utilities infrastructure on and adjacent to the project site. Because the project site is surrounded by existing residential development, a proposed and existing park, and an existing electrical substation, such connections would not induce growth in other areas. Therefore, neither the proposed project nor the variant would include any significant infrastructure expansion that would facilitate growth in other areas of San Francisco. In addition, both the proposed project and the variant would be compatible with the surrounding residential uses and would not pressure adjacent properties to redevelop with new or different land uses. As a result, it is not anticipated that nearby residents would relocate.

The proposed project and variant would also not significantly and adversely affect the permanent jobs/housing balance. As discussed above, either the proposed project or the variant would create nonresidential development and jobs, and could create housing demand above what would otherwise occur in the City. However, the proposed project and variant would also include up to 1,240 new residential units and up to 3,401 new residents. New residents would be expected to have existing jobs in the greater San Francisco Bay Area. Further, housing included as part of the proposed project or variant would help the City achieve a more even jobs/housing balance by providing much-needed housing.

The direct population growth created by implementing the proposed project or variant would still be consistent with ABAG's future-growth projections and the City's planned future for this area of the City. In an attempt to further refine broad policies in the *Bayview Hunters Point Area Plan*, the San Francisco Planning Department, working with the San Francisco Redevelopment Agency, prepared a draft subarea plan to the *Bayview Hunters*

*Point Area Plan* known as *India Basin Shoreline Sub-Area Plan: A Subarea Plan of the Bayview Hunters Point Area Plan* (Sub-Area Plan) (San Francisco, 2009). The draft Sub-Area Plan continued the work of the community revitalization concept plan prepared by the Bayview Hunters Point Project Area Committee and published by the San Francisco Redevelopment Agency in 2002. The City has not finalized and adopted a subarea plan for the India Basin Shoreline Area. Nevertheless, the draft Sub-Area Plan outlines a community vision for the area, which includes a shoreline-accessible recreation zone at the location of the proposed India Basin Shoreline Park, 900 Innes, and India Basin Open Space properties, and a waterfront mixed-use district at the location of the proposed 900 Innes and 700 Innes properties.

Development of cumulative projects in the City and County of San Francisco, as identified in Table 3-1 in Section 3.0.3, “Format of the Environmental Analysis,” would result in 16,313 residential housing units, 270,700 gross square feet (gsf) of retail space, 75,000 gsf of community or institutional space, and 7,150,000 gsf of office space. In combination with the proposed project or the variant, this projected population and employment growth in this portion of the City would help the City meet its share of the Regional Housing Needs Assessment. For example, the supply of housing under the cumulative projects scenario would be between 54 and 57 percent of the Regional Housing Needs Assessment target for the City by 2022.

Furthermore, neither the proposed project nor the variant would result in any indirect growth or negatively alter the existing jobs/housing balance, nor would they be inconsistent with ABAG’s growth projections for the City, the *Bayview Hunters Point Area Plan*, or the Sub-Area Plan. Therefore, implementation of the proposed project or variant would have a *less-than-significant* growth-inducing impact. No mitigation measures are necessary.

## 5.4 SOCIOECONOMIC CONSIDERATIONS UNDER CEQA

CEQA requires review of the effects of a project that are related to a physical change to the environment. Social or economic impacts alone are not changes in physical conditions. Therefore, the State CEQA Guidelines provide that social or economic impacts may not be treated as significant effects on the environment.<sup>1</sup> Evidence of social or economic impacts (e.g., property values, rent levels, neighborhood demographics) that do not contribute to, or are not caused by, physical impacts on the environment is not substantial evidence of a significant effect on the environment. However, a social or economic change related to a physical change may be considered in determining whether a physical change is significant.

Additionally, an EIR or other CEQA document must consider the reasonably foreseeable indirect environmental consequences or physical changes resulting from a project’s economic or social changes.<sup>2</sup> In short, social and economic effects are only relevant under CEQA if they would result in or are caused by an adverse physical impact on the environment. The public’s concerns regarding socioeconomic issues that may be associated with the proposed project, including gentrification, displacement, and housing affordability, are briefly acknowledged here. City decision-makers may consider these and other issues in their deliberations on the proposed project and variant.

Concerns have been raised in general throughout the City regarding the loss of middle-income jobs and affordable housing. These socioeconomic effects are not considered environmental effects unless they are shown to result in

---

<sup>1</sup> State CEQA Guidelines Sections 15358(b), 15064(e), and 15382.

<sup>2</sup> State CEQA Guidelines Sections 15064(d) and 15064(e).



physical impacts on the environment and must be linked to the action undergoing CEQA review. The following discussion addresses these socioeconomic concerns.

By accommodating demand for jobs and housing consistent with regional growth projections, and in particular by increasing the supply of both market-rate and affordable housing, the proposed project or variant would provide some relief to San Francisco's housing market pressures. However, the effect that development under the proposed project or variant would have on housing affordability is a matter of considerable controversy. Although there is general consensus that the high costs of market-rate housing and the limited supply of affordable housing in San Francisco are causing displacement of lower income residents, opinions differ on the underlying causes.

In September 2015, the City Office of the Controller, Office of Economic Analysis, published a report addressing the effects of temporary and permanent moratoria on new market-rate housing projects in San Francisco's Mission District (San Francisco, 2015b).

The report concluded that constraining the supply of market-rate housing units through a moratorium would result in higher housing prices. With fewer available units, both buyers and renters would engage in bidding wars and drive housing prices upward. Because market-rate housing developers are required to provide a certain percentage of affordable housing units in compliance with the City's inclusionary housing program, a temporary moratorium on new market-rate housing projects would delay the production of these affordable housing units, while a permanent moratorium would result in no new affordable housing units under this program. The report concluded that a moratorium on new market-rate housing projects would not entirely eliminate the potential for the displacement of existing businesses and residents, because other types of development projects (affordable housing, commercial, production/distribution/repair) could similarly displace existing businesses and residents.

CEQA prohibits the finding of significant impacts that are not based on substantial evidence of adverse physical changes to the environment. As described above, these social and economic concerns regarding affordable housing are being addressed in the City's planning and policy development processes. There is no evidence that the proposed project or variant would result in potential social and economic effects that would result in significant effects on the physical environment. Changes to the physical environment that would result from the proposed project or variant are addressed in the appropriate environmental topics in this EIR and in the accompanying Initial Study (Appendix A).

## 5.5 REFERENCES

- Association of Bay Area Governments (ABAG). 2013. Forecasts and Projections. Available: <http://abag.ca.gov/planning/research/forecasts.html>. Accessed September 20, 2016. As cited in City and County of San Francisco 2015.
- Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG and MTC). 2017 (March). *Plan Bay Area*. Draft. Available: <http://2040.planbayarea.org/>. Accessed April 3, 2017.
- Bean, Trafton. Assistant Project Manager. BUILD, San Francisco, CA. September 16, 2016—personal communication (e-mail) with David Reel of AECOM regarding estimates of total residents and employees for the proposed project and variant.

San Francisco, City and County of (San Francisco). 2009 (June). *India Basin Shoreline Sub-Area Plan. A Subarea Plan of the Bayview Hunters Point Area Plan*. Draft. San Francisco, CA: Planning Department.

———. 2015a (April). *San Francisco General Plan, Housing Element*. Adopted April 27, 2015. San Francisco, CA.

———. 2015b (September 10). *Potential Effects of Limiting Market-Rate Housing in the Mission*. Prepared by the City Office of the Controller, Office of Economic Analysis.

U.S. Census Bureau. 2014. American Community Survey 5-Year Estimates, 2010–2014. Available: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed September 21, 2016.

## **6.0 LIST OF PREPARERS AND CONTRIBUTORS**

### **6.1 CEQA LEAD AGENCY**

#### **6.1.1 City and County of San Francisco Planning Department, Environmental Planning Division (Environmental Impact Report)**

*Environmental Review Officer:* Lisa Gibson

*Senior Environmental Planner:* Joy Navarrete

*Environmental Planner:* Michael Li

*Cultural Resources Planner:* Allison Vanderslice

*Transportation Planners:* Wade Wietgreffe and Debra Dwyer

*Noise Planner:* Chris Thomas

*Air Resources Planner:* Wade Wietgreffe

*Water Resources Planner:* Chris Thomas

### **6.2 OTHER AGENCY CEQA SUPPORT<sup>1</sup>**

#### **6.2.1 San Francisco Municipal Transportation Agency (Transportation Impact Study)**

*Senior Transportation Planner:* Erin Miller

*Transportation Planners:* Dustin White, Ricardo Olea, and Sandra Padilla

#### **6.2.2 San Francisco Public Utilities Commission (Water Supply Assessment)**

*Director of Water Resources:* Paula Kehoe

*Water Resources Planner:* Fan Lau

#### **6.2.3 San Francisco Department of Public Health (Remediation Action Plan)**

*Senior Environmental Health Planner:* Martita Lee Weden

---

<sup>1</sup> Although other local, regional, State, and federal agencies are involved in the separate permitting processes related to the project, this list of agencies is limited to those that provided input and review related to data included in the environmental impact report.

## **6.3 PROJECT SPONSORS**

### **6.3.1 San Francisco Recreation and Parks Department (RPD)**

*Project Manager:* Charlene Angsucu

*Deputy Project Manager:* Jordan Harrison

*Project Director:* Nicole Avril

### **6.3.2 BUILD**

*Project Manager:* Courtney Pash

*Deputy Project Manager:* Victoria Lehman

*Project Director:* Michael Yarne

## **6.4 CONSULTANTS**

### **6.4.1 AECOM (Environmental Impact Report)**

*Project Manager:* Kelsey Bennett

*Deputy Project Manager:* Elliott Schwimmer

*Project Director:* David Reel

*Editing:* Julie Nichols

*Word Processing:* Deborah Jew

*Graphics:* Elliott Schwimmer and Brian Perry<sup>2</sup>

#### ***EIR Resource Topics (listed in alphabetical order)***

*Aesthetics:* Elliott Schwimmer and Kelsey Bennett

*Air Quality:* Jason Paukovits, Mary Kaplan, Paola Pena, and Kelsey Bennett

*Biological Resources:* Peter Boice

*Cultural Resources:* Mark Hale, Chandra Miller, Jennifer Redmond, and Kelsey Bennett

*Greenhouse Gas Emissions:* Jason Paukovits, Paola Pena, and Kelsey Bennett

---

<sup>2</sup> Graphics support for project description figures provided by RPD's designers (GGN and Rana Creek) and BUILD's designers (SOM and Bionic).

*Hazards and Hazardous Materials:* Emma Rawnsley and Kelsey Bennett

*Hydrology and Water Quality:* Kara Baker, Danielle Hughes, and Anne Ferguson

*Land Use:* Christine Wolfe and David Reel

*Noise:* Sean Bui and Mark Storm

*Population and Housing:* Elliott Schwimmer

*Public Services:* Christine Wolfe

*Recreation:* Anne Ferguson

*Shadow:* Elliott Schwimmer and David Reel

*Transportation and Circulation:* Anthony Mangonon

*Utilities/Service Systems:* Kara Baker and Anne Ferguson

*Wind:* Elliott Schwimmer and David Reel

### ***Archaeological Survey Report***

*Report Manager:* Mark Hale

*Report Analysts:* Jennifer Redmond and Annamarie Guerrero

*Report QA/QC:* Kathleen Kubal

### ***Noise Technical Report***

*Report Manager:* Sean Bui

*Report QA/QC:* Amir Yazdanniyaz

### ***India Basin Shoreline Park/900 Innes Phase I Assessment***

*Report Manager:* Erik Skov

*Report Analysts:* Kali Futnani and Jill Hedgecock

## **6.4.2 Fehr & Peers (Transportation Impact Study)**

*Report Manager:* Chris Mitchell

*Report Analyst:* Andy Kosinski

**6.4.3 Page & Turnbull (Historic Resources Evaluation)**

*Report Manager:* Jonathon Rusch

*Report Director:* Ruth Todd

*Report Analyst:* Christina Dikas

**6.4.4 WRA (Biological Resources Assessments)**

*Report Manager:* Ellie Knecht

*Report Director:* Geoff Smick

*Report Analyst:* Leslie Lazarotti

**6.4.5 Moffatt & Nichol (Coastal Resources Study)**

*Report Manager:* Dilip Trivedi

*Report Director:* Christopher Devick

**6.4.6 Langan Treadwell & Rollo (Hazardous Materials Assessments)**

*India Basin Open Space/700 Innes Phase I Assessments*

*Report Manager:* Peter Cusack

*Report Director:* Maria Flessas

*700 Innes Phase II Assessment*

See Langan Treadwell & Rollo representatives listed above.

**6.4.7 Northgate Environmental Management (Hazardous Materials Assessments)**

*India Basin Shoreline Park/900 Innes/India Basin Open Space Phase II Assessments*

*Report Manager:* Elizabeth Nixon

*India Basin Shoreline Park/India Basin Open Space Site Mitigation Plans*

See Northgate Environmental Management representative listed above.

*900 Innes Remediation Action Plan*

See Northgate Environmental Management representative listed above.

**6.4.8 Sherwood (Hydrology, Stormwater, and Wastewater Reports)*****700 Innes/India Basin Open Space Hydrology and Stormwater Management Report***

*Report Manager:* Clara Tang

*Report Director:* John Leys

*Report Analyst:* Froste Wistrom

***India Basin Shoreline Park/900 Innes Wastewater Generation Assessment***

See Sherwood representatives listed above.

**6.4.9 MKA (Hydrology and Stormwater Reports)*****India Basin Shoreline Park/900 Innes Hydrology and Stormwater Management Report***

*Report Manager:* Drew Gangnes

**6.4.10 BKF Engineers (Water Supply and Wastewater Assessments)*****Water Supply Assessment***

*Report Manager:* Tom Morse

*Report Analyst:* Jennifer Chu

***India Basin Open Space/700 Innes Wastewater Generation Assessment***

See BKF Engineers representatives listed above.

**6.4.11 BMT Fluid Mechanics (Wind and Shadow Studies)*****Wind Microclimate Study***

*Report Manager:* Max Lee

*Report Director:* Rob Stanfield

***Shadow Analysis Study***

See BMT Fluid Mechanics representatives listed above.

**6.4.12 Square One Productions Multimedia (Visual Simulations)**

*Report Manager:* Angela Lin

*Report Analyst:* Nichola Carroll

This page intentionally left blank.