OCII
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COMMUNITY INVESTMENT
and INFRASTRUCTURE

Addendum 5 to the CP-HPS2 2010 FEIR

Addendum Date:	**April 9, 2018**
Case No.:	2007.0946E
Project Title:	Candlestick Point–Hunters Point Shipyard Phase II
EIR:	2007.0946E, certified June 3, 2010
Project Sponsor:	CP Development Co., LLC
Lead Agency:	Office of Community Investment & Infrastructure
OCII Staff Contact:	José Campos – 415.749.2554 jose.campos@sfgov.org
City Staff Contact:	Joy Navarrete – 415.575.9040 joy.navarrete@sfgov.org

One S. Van Ness Ave.
5th Floor
San Francisco, CA
94103

415.749.2400

www.sfocii.org

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CONTENTS

One S. Van Ness Ave.
5th Floor
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94103

415.749.2400

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Appendices

Figures

Tables

I. PROJECT DESCRIPTION

I.A Introduction

This addendum (Addendum 5) describes and analyzes proposed modifications to the 2010 Candlestick Point–Hunters Point Shipyard Phase II Project (CP-HPS2, or 2010 Project[1]).

The modifications discussed in Addendum 5 relate primarily to Hunters Point Shipyard Phase II (HPS2) and are now being pursued in anticipation of the future transfer of certain parcels from the Navy to the Office of Community Investment & Infrastructure (OCII); in addition, there are minor changes proposed at Candlestick Point (CP). The modifications at HPS2 and CP are collectively referred to as the 2018 Modified Project Variant, which is proposed by the Project Sponsor as a new variant as a means to clearly compare the environmental impacts of the new proposal to the 2010 Final EIR (2010 FEIR) environmental analysis. The 2018 Modified Project Variant includes all Project revisions evaluated in previous addenda, to the extent they remain applicable as part of the Project Sponsor's current proposal. In this document, the 2018 Modified Project Variant may also be referred to as the "proposed modifications," either in reference to CP or HPS2.

At HPS2, the 2018 Modified Project Variant generally includes revisions to the existing land uses and height/bulk limits; modified standards for location of two high-rise towers; reconfiguration of the design and sizes of parks and open space areas; revisions to the number of housing units proposed by the Project Sponsor; revisions to the street network and roadway cross-section dimensions and alignments, the provision of water taxi infrastructure and two bridges; revisions to the proposed utility network and systems; and changes to the phasing plan. The two bridges are located over Dry Dock 4 at HPS2. The Water Room Bridge would be a pedestrian and bicycle bridge and the Eastern Bridge would be a pedestrian bridge. Addendum 5 Section I.C.1 (HPS2 Proposed Modifications) discusses the changes at HPS2 under the 2018 Modified Project Variant in detail.

Modifications are also being sought in relation to Candlestick Point (CP) to reorder CP Major Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; to remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02) and shift this parcel from Zone 1 and include it in Zone 2 of the BVHP Redevelopment Plan; and to modify the boundary of CP-05. In addition, other modifications include revisions to the number of housing units proposed by the Project Sponsor. Addendum 5 Section I.C.2 (CP Proposed Modifications) discusses the changes at CP under the 2018 Modified Project Variant in detail.

The 2018 Modified Project Variant includes conforming modifications to the Hunters Point Shipyard and Bayview Hunters Point Redevelopment Plans and additional modifications to the plans allowing for limited conversion of approved uses within the plan areas and a limited transfer of commercial uses between the plan areas, Disposition and Development Agreements for HPS Phase 1

[1] The 2010 Project is the "main project" analyzed in the CP-HPS2 FEIR, which is alternatively referred to as the "stadium project."

(HPS1), CP-HPS2 and attachments thereto (including but not limited to the Infrastructure; Transportation; Parks, Open Space, and Habitat Concept; and Housing Plans), and the HPS Design for Development (2018 HPS D4D). The approvals required to implement the 2018 Modified Project Variant are listed in greater detail in Section I.F (Project Approvals).

I.B Project Overview

I.B.1 Project Location

The CP-HPS2 Project covers approximately 702 acres along the southeastern waterfront of San Francisco, bordered by India Basin on the north; the Executive Park area and San Mateo County line on the south; Bayview Hill, the Bayview-Hunters Point (BVHP) neighborhood, Yosemite Slough, and Hunters Point Hill on the west; and San Francisco Bay on the north and the east. Figure 1 (Project Location) illustrates the Project boundaries. Table 1 (2018 Modified Project Variant Site Areas) presents the acreage of the Project site.

The 2018 Modified Project Variant would primarily occur within HPS2 but would also include minor modifications at CP. The location of HPS2 and CP is provided by Figure 1. The HPS2 site is approximately 421 acres in area and is located to the southeast of the BVHP neighborhood. The CP site is approximately 281 acres in area and is located east of Bayview Hill and southeast of the Bayview Neighborhood.

TABLE 1 2018 MODIFIED PROJECT VARIANT SITE AREAS

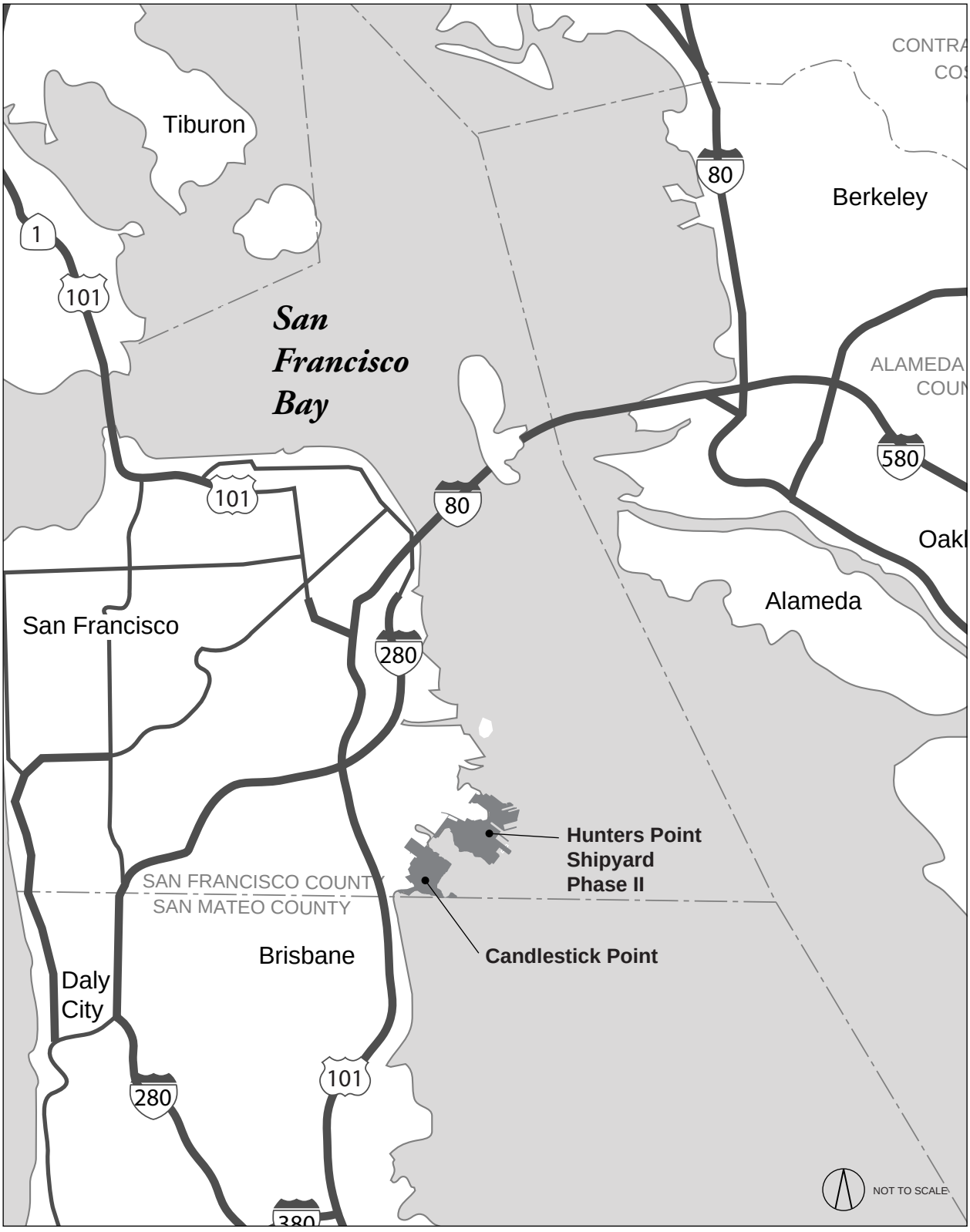
Development Area	*Acres*
Candlestick Point	281[a]
Hunters Point Shipyard Phase II	421
Total	***702***

SOURCE: Lennar Urban, 2009.

Candlestick Point includes the approximately 120.2-acre Candlestick Point State Recreation Area.

a. The 2010 FEIR reflected 281 acres for CP; however, if the BVHP Redevelopment Plan amendment is adopted, the Jamestown parcel would be removed, which would reduce the size of CP by approximately 9.4 acres.

Changes at CP as a result of the 2018 Modified Project Variant would occur within the area labeled as "Candlestick Point" in Figure 1. The Candlestick Point portion of the Project site comprises approximately 281 acres, of which 120.2 acres are part of the Candlestick Point State Recreation Area (CPSRA), which is east of Bayview Hill Park. A recreational vehicle park occupies a portion of the site on Gilman Avenue, and the CP State Recreation Area occupies the area of land along the CP shoreline.



SOURCE: Clement Designs, 2008; ESA 2018.

FIGURE 1 Addendum 5 to the CP-HPS2 2010 FEIR

PROJECT LOCATION

I.B.2 Previous Approvals and Development Status

On June 3, 2010, the San Francisco Planning Commission and the San Francisco Redevelopment Agency (SFRA) Commission certified the Final Environmental Impact Report (FEIR) for the CP-HPS2 Project, San Francisco Planning Department File Number 2007.0946E and SFRA File Number ER6.05.07. On July 14, 2010, the San Francisco Board of Supervisors affirmed the Planning Commission's certification of the 2010 FEIR (Motion No. M10-110).

Between June 3, 2010, and August 3, 2010, the Planning Commission, SFRA, Board of Supervisors, and other City Boards and Commissions adopted findings of fact, evaluation of mitigation measures and alternatives, a statement of overriding considerations (File No. 100572), and a mitigation monitoring and reporting program (MMRP) in fulfillment of the requirements of the California Environmental Quality Act (CEQA). These entities then adopted various resolutions, motions and ordinances related to Project approval and implementation, including, but not limited to (1) General Plan amendments; (2) Planning Code amendments; (3) Zoning Map amendments; (4) BVHP Redevelopment Plan amendments; (5) HPS Redevelopment Plan amendments; (6) Interagency Cooperation Agreements; (7) Design for Development documents; (8) Health Code, Public Works Code, Building Code, and Subdivision Code amendments; (9) Disposition and Development Agreement (DDA), which included as attachments a Phasing Plan and Schedule of Performance, a Transportation Plan, an Open Space Plan and an Infrastructure Plan, among other items; (10) Real Property Transfer Agreement; (11) Public Trust Exchange Agreement; (12) Park Reconfiguration Agreement; and (13) Tax Increment Allocation Pledge Agreement.

The 2010 FEIR evaluated several variants[2] of the CP-HPS2 Project. In 2010, it was not known whether the 49ers football team would require a new stadium as part of the Project. As a result, the 2010 FEIR included, and the City approved, several potential land use and development options for the Project, specifically:

1. The Project with a stadium, as described in Chapter II of the 2010 FEIR, with Candlestick Tower Variant (Variant 3D), Utilities Variant (Variant 4), and Shared Stadium Variant (Variant 5);
2. The Project without the stadium, with Non-Stadium R&D Variant (Variant 1), Candlestick Tower Variant (Variant 3D), and Utilities Variant (Variant 4);

[2] Variants proposed and analyzed in the 2010 FEIR: (1) R&D Variant (Variant 1): this variant would not include a stadium, but would increase R&D space at the previously proposed stadium location; (2) Housing Variant (Variant 2): this variant would not include a stadium, but would relocate 1,350 residential units from CP to the previously proposed stadium location; (3) Housing/R&D Variant (Variant 2A): this variant would not include a stadium, but would relocate 1,650 residential units from CP to the previously proposed stadium location, and would include an additional 500,000 sf of R&D when compared to the Project; (4) Tower Variants A, B, C, and D (Variant 3): these variants would have the same land use program and overall description as with the Project, but would have different locations and heights for residential towers at CP; (5) Utilities Variant (Variant 4): this variant would include an automated solid waste collection system, decentralized wastewater treatment, and district energy; and (6) Shared Stadium Variant (Variant 5): this variant would include a shared stadium where both the San Francisco 49ers and the Oakland Raiders would play at the stadium at HPS2.

3. The Project without the stadium, with Non-Stadium Housing Variant (Variant 2), Non-Stadium Housing/R&D Variant (Variant 2A),[3] Candlestick Tower Variant (Variant 3D), and Utilities Variant (Variant 4); and
4. Sub-alternative 4A, which provides for the preservation of four historic structures in HPS2; Sub-alternative 4A could be implemented with either the stadium variant or non-stadium variants (see Board of Supervisors CEQA Findings pp. 2–4).

Following the 49ers relocation to Santa Clara, the Project Sponsor elected to implement Option 3 above, the Housing/R&D Variant (Variant 2A), including Candlestick Tower Variant (Variant 3D) and Utilities Variant (Variant 4) (collectively called the "Housing/R&D Variant [Variant 2]"). In 2014 and 2016, the Project Sponsor obtained certain approvals allowing development to commence at CP.[4] Development at CP includes construction associated with Sub-phase CP-01 (Alice Griffith) in the northern area of the site, which is nearing completion. In the southern area of the site, the stadium was demolished in 2015 and civil works associated with CP Center are underway generally north of Harney Way, west of Ingerson Avenue, and east of Jamestown Avenue.

Since certification of the 2010 FEIR, four addenda have been prepared to address proposed modifications to the 2010 Project, although only two of the Projects described in those addenda were pursued by the Project Sponsor (Addenda 1 and 4).[5]

Addenda 1 and 4 are summarized as follows:

- **Addendum 1 (published on January 7, 2014): The** Project Sponsor received approval for changes to the Phasing Plan and Schedule of Performance, the schedules for implementation of the Transportation Plan (including the Transit Operating Plan of the Infrastructure Plan), and other public benefits. In addition, approvals to the Master Streetscape Plan and Signage Plan were received and mitigation measure MM TR-16 was amended.
- **Addendum 4 (published on March 3, 2016):** The Project Sponsor received approval for modifications of the approved Project Candlestick Point Design for Development (2016 CP D4D), and proposed transportation system changes that require modification of the Major Phase 1 CP Approval, including the Schedule of Performance, the Candlestick Point Infrastructure Plan, the Candlestick Point Hunters Point Shipyard Phase II Transportation Plan. In addition, mitigation measures MM TR-16 and MM TR-23.1 were also amended.

[3] Housing/R&D Variant (Variant 2A) was evaluated in the Responses to Comments to the 2010 Draft EIR, and is included and analyzed as part of the 2010 FEIR.

[4] Modifications to the Phasing Plan and Schedule of Performance and the schedules for implementation of the Transportation Plan and other public benefits were analyzed in Addendum 1, published on December 11, 2013, and approved by various City agencies and OCII in 2014. Addendum 4, published on February 22, 2016, analyzed modifications to the CP Design for Development and certain transportation system changes that required modification of several CP-HPS2 Project plan documents. These modifications were approved in 2016.

[5] OCII has also prepared two other addenda to the 2010 FEIR. Addendum 2 to the 2010 FEIR, published on May 2, 2014, evaluated the potential environmental impacts of the Automatic Waste Collection System described in the 2010 FEIR as part of Utility Variant 4 (in more detail). The Project Sponsor did not pursue this option. Addendum 3 to the 2010 FEIR, published on September 19, 2014, evaluated the potential environmental impacts of a proposal to demolish Candlestick Park stadium with explosives rather than conventional and/or mechanical demolition. This proposal was not pursued by the Project Sponsor, and the stadium was demolished using conventional and mechanical means.

Table A-1 (Comparison of CP-HPS2 Project Changes Since 2010) of Addendum 5 Appendix A (Comparison of CP-HPS2 Project Changes Since 2010) provides a summary of the CP-HPS2 Project changes that have occurred since 2010 as evaluated in Addenda 1 and 4. The changes are provided by primary project component (e.g., land use plan, phasing, utility systems, transportation and transit system, and mitigation measures).

Three parcels of land (D-2, UC-1, and UC-2) have been transferred from the Navy to the Office of Community Investment and Infrastructure ("OCII," the successor agency to the SFRA). Vertical development to date at HPS2 is limited to these parcels and includes the demolition of the "commercial kitchen" building, which was located along Robinson Street, north of Fisher Street, and construction of a new commercial kitchen, which is now located along Fisher Street near the intersection of Spear Avenue. The new commercial kitchen was considered in the 2010 FEIR as a use within the artist building; however, it is now provided in an adjacent building, along Robinson Street.

Other construction activities include excavation of the artist building/plaza, with soil being stockpiled behind Buildings 808/813. Water and storm drain utilities are currently being installed in the roadway on Galvez/Horne/Robinson (in the winter of 2017), and subsequent grading and paving of these roadways is anticipated in the early part of 2018. Ongoing remediation activities by the Navy are also occurring at Navy-owned parcels within HPS2.

Future transfer parcels to the Project Sponsor would occur in accordance with the terms of the DDA and other CP-HPS2 Project documents.

I.B.3 Summary of 2018 Modified Project Variant

The 2018 Modified Project Variant would retain the same land use categories as analyzed in the 2010 FEIR (with the exception of the stadium). These uses generally include residential, commercial/retail, research and development, artist space, community uses, parks and open space, a marina, and parking; however, certain new uses (i.e., hotel, institutional, bridges, and a water taxi) would also be provided.

The distribution of the allowed residential units between HPS2 and CP would change, providing more units at HPS2 and fewer units at CP. The square footage of certain commercial uses at HPS2 would also change to allow new uses and to accommodate other revisions to the land use program Additionally, the location of certain parks and open space at HPS2 would change and overall acreage would increase. Transportation networks and utility systems would also change. The Phasing Plan and Schedule of Performance would be modified, resulting in construction beginning later (in 2014, rather than 2011, as envisioned in the 2010 FEIR) and concluding later (in 2034, rather than 2031, as envisioned in the 2010 FEIR). Construction would still occur over a 21-year period.[6]

[6] The Schedule of Performance and the construction schedule used in the environmental analysis differ. The Schedule of Performance shows "outside dates" required to fulfill the contractual obligations related to the transfer of parcels. The construction schedule used in the environmental analysis shows a more aggressive schedule to provide a conservative environmental analysis in the event that the transfer of parcels occurs more quickly than required.

The modifications evaluated in Addendum 5 are described in detail in Section I.B.4 (Overview of 2018 Modified Project Variant) and Section I.C (2018 Modified Project Variant).

The 2018 Modified Project Variant incorporates 2010 FEIR Candlestick Tower Variant 3D and certain components of the Utilities Variant 4, which proposed an alternative utility system. The 2018 Modified Project Variant would include the following alternative utilities systems: a solar electricity distribution and storage system (through a building-scale photovoltaic (PV) system and building- and utility-scale battery storage systems), a recycled water treatment and distribution system, and district heating and cooling plants (including a geothermal heating and cooling system as a component of the district heating and cooling plants). If approved, the 2018 Modified Project Variant would be implemented instead of the 2010 Project, R&D Variant (Variant 1), or R&D/Housing Variant (Variant 2A), all of which were described and analyzed in the 2010 FEIR. Necessary infrastructure, including utilities, transportation improvements, and parks and open space improvements, would be included as part of the development within each sub-phase of the 2018 Modified Project Variant.

The 2018 Modified Project Variant includes 172 dwelling units and 71,000 square feet (sf) of retail uses that were approved for HPS1, but have not and will not be constructed at HPS1. Instead, these dwelling units and retail square footage would be incorporated into HPS2 and constructed on the HPS2 site. While these units and square footage were accounted for in the 2010 FEIR as part of the cumulative analysis, in Addendum 5, they are analyzed as part of the HPS2 project under the 2018 Modified Project Variant.

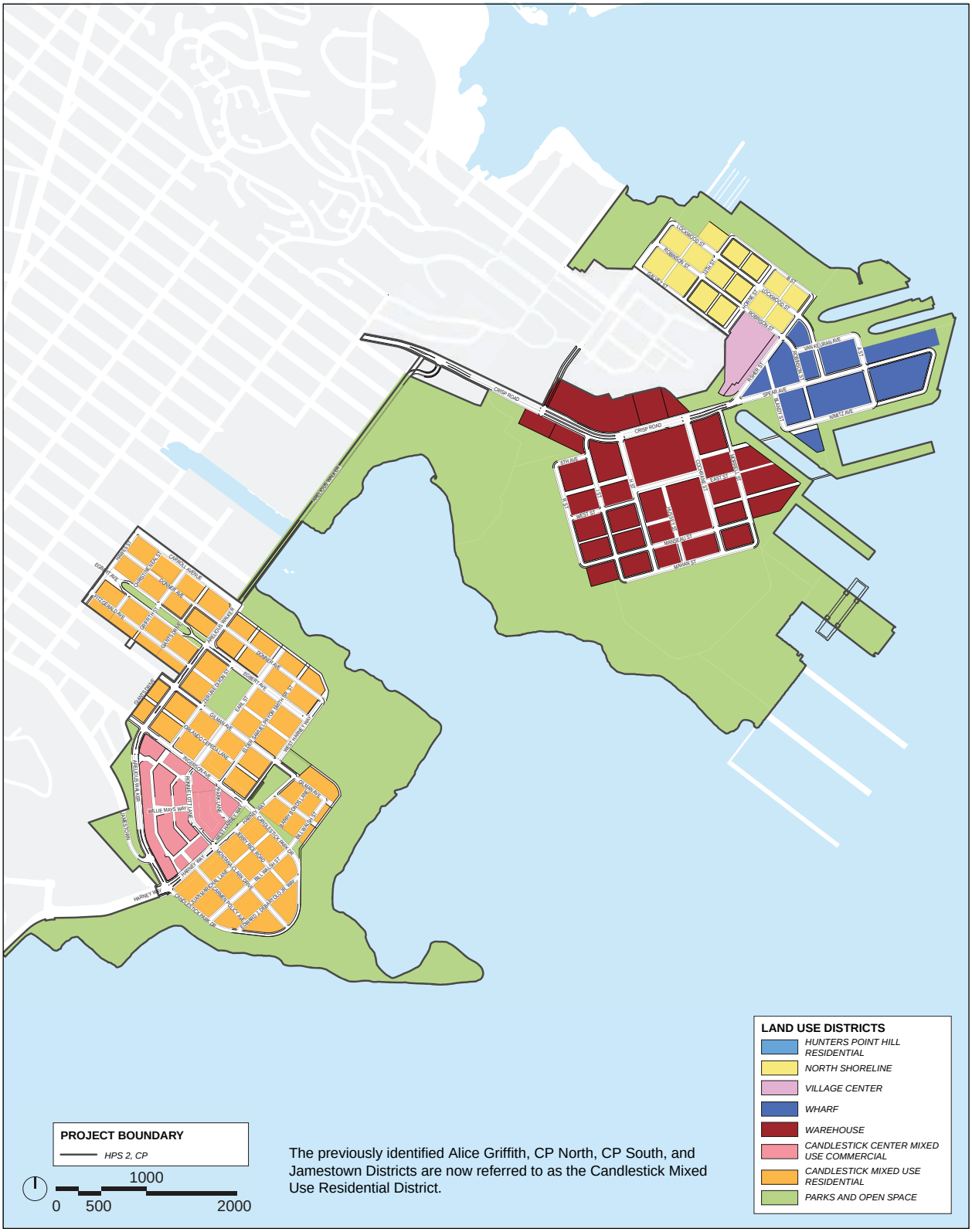
In Addendum 5, the 2018 Modified Project Variant is primarily described and assessed in relation to the Project described in 2010 FEIR Chapter II (Project Description). However, certain impacts are assessed in comparison to the 2010 FEIR R&D Variant (Variant 1) and Utilities Variant (Variant 4), where impacts are most comparable to those variants instead of the 2010 Project. A more-detailed description of the analysis methodology is provided in Section II.A (Approach to the Analysis).

I.B.4 Overview of 2018 Modified Project Variant

Land Use Districts

The Bayview Hunters Point (BVHP) and Hunters Point Shipyard (HPS) Redevelopment Plans define the land use districts for CP and HPS2, respectively. Figure 2 (CP-HPS2 Land Use Districts) illustrates the CP-HPS2 land use districts. The HPS2 site is divided into five land use districts: North Shoreline District, Village Center District, Wharf District, Warehouse District, and Parks and Open Space District.[7] The CP site is divided into three districts: Candlestick Center Mixed Use Commercial

[7] The district names have changed relative to the 2010 FEIR and the 2010 HPS Redevelopment Plan. The Shipyard North Residential District is now the North Shoreline District; the Shipyard Village Center Cultural District is now the Village Center District; the Shipyard Research and Development District is now the Wharf District; the Shipyard South Multi-Use District is now the Warehouse District; and the Shipyard Shoreline Open Space District is now the Parks and Open Space District.



SOURCE: FivePoint, 2018.

FIGURE 2 Addendum 5 to the CP-HPS2 2010 FEIR

CP-HPS2 LAND USE DISTRICTS

District, Candlestick Mixed Use Residential District,[8] and Parks and Open Space District. For comparative purposes, Figure 3 (HPS2 Redevelopment Plan Land Use Districts) illustrates the land use districts in the 2010 HPS Redevelopment Plan as compared to the 2018 HPS Redevelopment Plan, and Figure 4 (BVHP Redevelopment Plan Land Use Districts) illustrates the land use districts in the 2010 BVHP Redevelopment Plan as compared to the 2018 BVHP Redevelopment Plan. Figure 4 shows that the Jamestown parcel would be removed from the limits of Zone 1 of the 2018 BVHP Redevelopment Plan area and the CP site; it would, instead, be included within Zone 2 of the BVHP Redevelopment Plan, which is outside of the CP Project boundary and is not depicted on Figure 4.

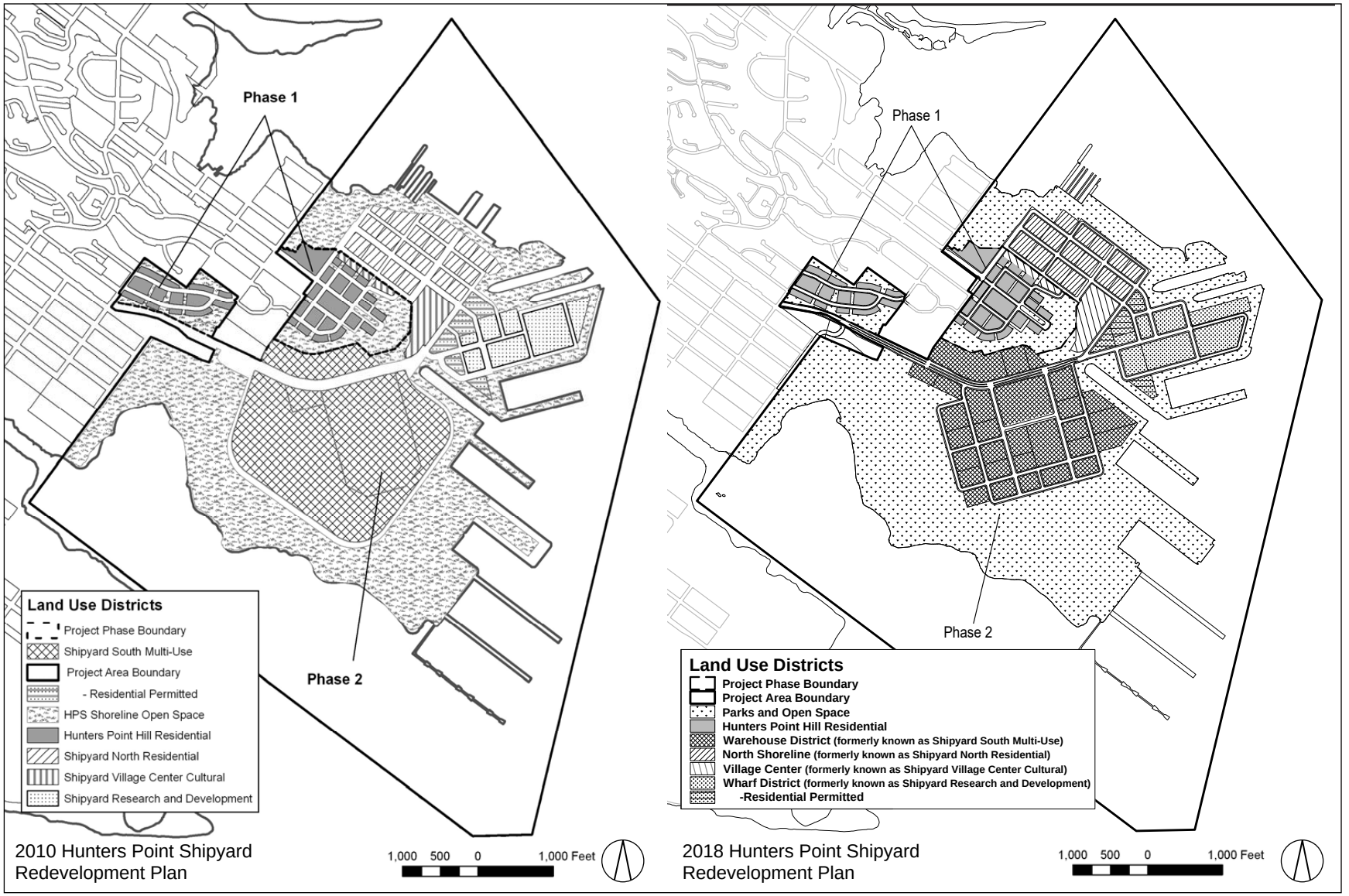
Proposed Modifications and Key Redevelopment Plan Provisions

The 2018 Modified Project Variant at HPS2 generally includes the following modifications at HPS2, with additional detail provided in Addendum 5 Section I.C.1 [HPS2 Proposed Modifications] and Section I.D [HPS2 Construction Activities]:

1. Increase residential units in HPS2 by 804 units, as compared to the 2010 Project, resulting in 3,454 residential units at HPS2 (including 172 units previously approved for HPS1)
2. Provide for new land uses, including a school and hotel;
3. Adjust the location and acreage of parks and open space, providing for an increase of approximately 1.3 acres of new parks and other parks as compared to the 2010 Project;
4. Revise standards for the location of two of the approved towers;
5. Increase and decrease height and bulk limitations in various locations, as further discussed in Section I.C.1 and II.B.4 (Aesthetics);
6. Change the street layout (including the extension of Donahue Street from LaSalle Avenue/ Kirkwood Avenue to Crisp Road), street geometrics, bicycles route locations, and transit network;
7. Add two bridges over Dry Dock 4;
8. Revise the number of parking spaces for residential and commercial garages and on-street parking based on approved parking ratios[9] and revised street layouts, respectively. The number of spaces analyzed in Addendum 5 corresponds to the number of residential units and the square footage of nonresidential uses identified as part of the 2018 Modified Project Variant and would result in an increase of approximately 3,686 structured parking spaces and 804 on-street parking spaces;
9. Provide a new water taxi service from Dry Dock 4;

[8] The previously identified Alice Griffith, CP North, CP South, and Jamestown Districts, which is proposed for removal from CP under the 2018 Modified Project Variant, are referred to as the Candlestick Mixed Use Residential District.

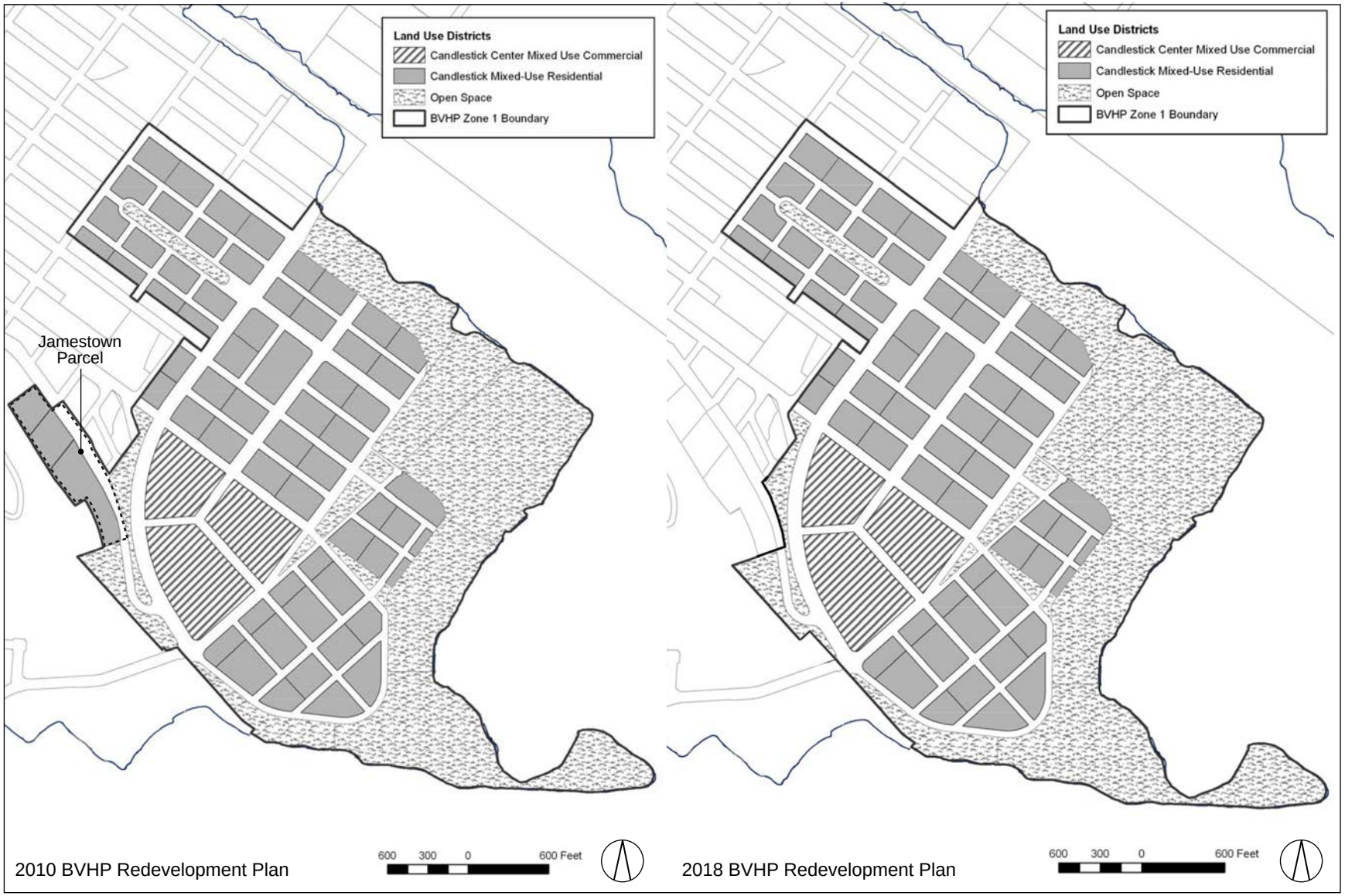
[9] Each land use has a parking ratio identified in the 2010 FEIR, which would be maintained for the 2018 Modified Project Variant. Therefore, while the land use program has been modified, which has increased the number of parking spaces required, the 2018 Modified Project Variant meets the same parking standards as provided in 2010 FEIR. Further, if any land uses change in the future, the number of parking spaces would be provided according to the established parking ratios identified in the 2010 FEIR and Addendum 5, unless different ratios are agreed upon between the Project Sponsor, EP, OCII, and any other involved parties.



SOURCE: OCII Office of Community Investment and Infrastructure, 2010 and 2018

FIGURE 3 Addendum 5 to the CP-HPS2 2010 FEIR

HPS REDEVELOPMENT PLAN LAND USE DISTRICTS: 2010 AND 2018



SOURCE: OCII Office of Community Investment and Infrastructure, 2010 and 2018

FIGURE 4 Addendum 5 to the CP-HPS2 2010 FEIR

BVHP REDEVELOPMENT PLAN LAND USE DISTRICTS: 2010 AND 2018

10. Provide details for previously identified alternative utility systems[10] (as generally described under 2010 FEIR Alternative 4, including a solar electricity generation system, a recycled water treatment and distribution system, and district heating and cooling plants) and provide for new alternative utility systems (including a geothermal heating and cooling system as a component of the district heating and cooling plants and solar electricity distribution and storage [through a building-scale photovoltaic (PV) system and building-scale and utility-scale battery storage systems]);
11. Update the Phasing Plan and Schedule of Performance; and
12. Update construction information, including construction methods.

The 2018 Modified Project Variant at CP generally includes the following modifications, with additional detail provided in Addendum 5 Section I.C.2 [CP Proposed Modifications]:

1. Provide for 7,218 housing units at CP, which would be a decrease of 632 units as compared to the 2010 Project;
2. Include an updated phasing plan, which would re-order CP Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; and
3. Remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02) and modify the boundary of CP-05.

Overall, the number of residential units would increase from 10,500 units to 10,672 units, which includes the 172 units previously approved HPS1 but not constructed. The overall development plan would consist of the 2010 development program for CP (less 632 housing units) and the 2018 development program for HPS2. The combination of these two development programs is evaluated in Addendum 5.

In addition to the specific modifications described above for the 2018 Modified Project Variant, the BVHP and HPS Redevelopment Plans would be amended to allow the transfer of up to 118,500 sf of nonresidential uses from HPS2 to CP, which represents approximately 10 percent of the total nonresidential land use program at CP, which is 1,185,000 sf, and the internal conversion of uses within HPS2 and CP. The manner in which these project elements are evaluated in Addendum 5 is described in Section II.A, Approach to the Analysis.

I.C 2018 Modified Project Variant

Table 2 (2018 Modified Project Variant Land Use Program) provides the land uses proposed under the 2018 Modified Project Variant for both CP and HPS2. Table 3 (Land Use Comparison) provides the land uses proposed under the 2018 Modified Project Variant as compared to the projects approved in the 2010 FEIR Findings, which included the 2010 Project, Variant 1, and Variant 2A, each of which assumed either the presence or absence of a stadium, as well as the inclusion of the tower variant and the utility variant.

[10] The use of the term "alternative utility system" does not mean that these alternative systems would entirely supplant the use of traditional utility systems at CP and/or HPS2; instead, the alternative utility systems would be supplementary to traditional utility systems.

TABLE 2 2018 MODIFIED PROJECT VARIANT LAND USE PROGRAM

	2018 Modified Project Variant					
Use	***Candlestick***		***Hunters Point Phase 2***		***Total***	
Nonresidential Land Use[a]						
Artist Studio	0	sf	255,000	sf	**255,000**	**sf**
Community Use	50,000	sf	50,000	sf	**100,000**	**sf**
Arena	75,000	sf	0	sf	**75,000**	**sf**
	10,000	seats	0	seats	**10,000**	**seats**
Hotel (New Proposed HPS2 Use)	150,000	sf	120,000	sf	**270,000**	**sf**
	220	rooms	175	rooms	**395**	**rooms**
Institution (New Proposed HPS2 Use):[b]	0	sf	410,000	sf	**410,000**	**sf**
Elementary School/Junior High School	*0*	*sf*	*345,000*	*sf*	***345,000***	***sf***
	0	*students*	*±1,000*	*students*	***±1,000***	***students***[c]
High School/Post-Secondary	*0*	*sf*	*65,000*	*sf*	***65,000***	***sf***
	0	*students*	*±1,000*	*students*	***±1,000***	***students***[d]
Stadium	0	sf	0	sf	**0**	**sf**
	0	seats	0	seats	**0**	**seats**
R&D/Office	150,000	sf	4,265,000	sf	**4,415,000**	**sf**[e,f]
Regional Retail	635,000	sf	100,000	sf	**735,000**	**sf**
Neighborhood Retail	125,000	sf	226,000	sf	**351,000**	**sf**[g]
Maker Space	0	sf	75,000	sf	**75,000**	**sf**
Gross-Square-Foot Total	**1,185,000**	**sf**	**5,501,000**	**sf**	**6,686,000**	**sf**
Residential	7,218	units	3,454	units	**10,672**	**units**[h]
Car Parking						
Residential (Structured) Parking	7,218	spaces	3,454	spaces	**10,672**	**spaces**
Commercial (Structured) Parking	2,736	spaces	7,152	spaces	**9,888**	**spaces**
Parking Total	**9,954**	**spaces**	**10,606**	**spaces**	**20,560**	**spaces**
± On-Street Parking	*1,360*	*spaces*	*1,487*	*spaces*	***2,847***	***spaces***[i]
Marina	0	slips	300	slips	**300**	**slips**
Water Taxi	No		Yes		**Yes**	
Parks and Open Space						
New Parks	9.0	acres	173.9	acres	**182.9**	**acres**
New Sports Fields and Active Urban Recreation	0.0	acres	58.1	acres	**58.1**	**acres**
New State Recreation Area	5.8	acres	0.0	acres	**5.8**	**acres**
Existing State Recreation Area	90.9	acres	0.0	acres	**90.9**	**acres**
Parks and Open Space Total	**105.7**	**acres**	**232.0**	**Acres**	**337.7**	**acres**
Other Parks	7.1	acres	17.3	acres	**24.4**	**acres**[j]

NOTES:

a. All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

b. Although schools were allowed as institutional uses in the 2010 HPS Redevelopment Plan, specific school uses were not analyzed in the 2010 FEIR and are considered new uses for purposes of Addendum 5.

b. Includes 400 students living on campus.

c. Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

d. Consistent with the 2010 FEIR, R&D uses are defined to include research and development, office, and light-industrial uses.

e. Converts R&D/Office gsf to Institution gsf at HPS2.

f. Includes 71,000 sf of approved (but not constructed) commercial space from HPS1.

g. Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CP-HPS2 from 10,500 to 10,672.

h. On-street parking is in addition to structured parking.

i. Other Parks, which are detailed in Table A-5 of Addendum 5 Appendix A, and occur in both CP and HPS2, are included for informational purposes only; they are not included in the final calculation of useable parks and open space.

TABLE 3 LAND USE COMPARISON

	2010 Project (Project with Stadium, Candlestick Tower Variant D, Utility Variant, 49ers/Raiders Shared Stadium Variant)		*Variant 1 (Project without Stadium, with Candlestick Tower Variant D, Utility Variant, R&D Variant [Variant 1])*		*Variant 2A (Project without stadium, with Candlestick Tower Variant D, Utility Variant, Housing/R&D Variant [Variant 2A])*		*2018 Modified Project Variant*	
Land Use Plan Components	***CP***	***HPS***	***CP***	***HPS***	***CP***	***HPS***	***CP***	***HPS***
Residential Units	7,850	2,650	7,850	2,650	6,225	4,275	7,218	3,454
Office (gsf)	150,000	0	150,000	0	150,000	0	150,000	0
Hotel (gsf)	150,000	0	150,000	0	150,000	0	150,000	120,000
Research & Development/Office (gsf)	150,000	2,500,000	150,000	5,000,000	150,000	3,000,000	150,000	4,265,000
Regional Retail (gsf)	635,000	0	635,000	0	635,000	0	635,000	100,000
Neighborhood Retail (gsf)	125,000	125,000	125,000	125,000	125,000	125,000	125,000	226,000
Artists' Studios/Art Center (gsf)	N/A	255,000	N/A	255,000	N/A	255,000	N/A	255,000
Community Services (gsf)	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Football Stadium (seats)	0	69,000[a]	0	0	0	0	0	0
Arena (seats)	10,000	0	10,000	0	10,000	0	10,000	0
Marina (slips)	N/A	300	N/A	300	N/A	300	0	300
Yosemite Slough Bridge	Auto/BRT/Ped		BRT/Ped		BRT/Ped		BRT/Ped	
Parking (spaces):								
• Residential	7,850	2,650	7,850	2,650	6,225	4,275	7,218	3,454
• Commercial	2,346	4,028	2,346	7,028	2,346	4,428	2,736	7,152
• General and Commercial (on-street)	1,360	683	1,360	1,678	1,360	1,428	1,360	1,487
Total Parking (Spaces)	*18,917*		*22,912*		*20,062*		*23,407*	
Total Park and Rec Space (acres):								
• New Parks	8.1	140	8.1	152.4	8.1	150.9	9.0	173.9
• Active Recreation	N/A	91.6	N/A	69.8	N/A	70.9	0.0	58.1
• State Parkland	96.7	N/A	96.7	N/A	96.7	N/A	96.7	0.0
Subtotal Park and Rec Space	*104.8*	*231.6*	*104.8*	*222.2*	*104.8*	*221.8*	*105.7*	*232.0*

SOURCE: San Francisco Planning Department, *Candlestick Point–Hunters Point Shipyard Phase II Project California Environmental Quality Act Findings: Findings of Fact, Evaluation of Mitigation Measures and Alternatives, and Statement of Overriding Considerations*, 2010, Table A (Comparison of Land Use Development Scenarios [Stadium and Non-Stadium Options]); FivePoint, 2018.

NOTE:

a. While the Findings associated with the 2010 FEIR reflected 70,000 seats for the stadium, the 2010 FEIR and the traffic analysis associated with the 2010 FEIR assumed 69,000 seats; therefore, Addendum 5 reflects 69,000 seats.

Appendix A Tables A-2 through A-4 (Table A-2 [Comparison of 2018 Modified Project Variant to 2010 Project], Table A-3 [Comparison of 2018 Modified Project Variant to 2010 R&D Variant (Variant 1)], and Table A-4 [Comparison of 2018 Modified Project Variant to 2010 R&D/Housing Variant (Variant 2A)] also provide a comparison of the 2018 Modified Project Variant to the 2010 Project, Variant 1, and Variant 2A; however, these tables further show net changes by land use, which is not provided in Table 3.

Figure 5 (CP-HPS2 2010 Project Land Use Plan) illustrates the arrangement of land uses under the 2010 Project, and Figure 6 (CP-HPS2 2018 Modified Project Variant Land Use Plan) illustrates the arrangement of land uses under the 2018 Modified Project Variant.

Table A-1 (Comparison of CP-HPS2 Project Changes Since 2010) of Addendum 5 Appendix A provides a summary of the CP-HPS2 Project changes that have occurred since 2010. The changes are provided by primary project component (e.g., land use plan, phasing, utility systems, transportation and transit system, and mitigation measures).

I.C.1 HPS2 Proposed Modifications

At HPS2, the 2018 Modified Project Variant generally includes revisions to the proposed land uses and height limits; adjusted locations for two high-rise towers; reconfiguration of the design and sizes of parks and open space areas; revisions to the number of housing units proposed by the Project Sponsor; revisions to the street network and roadway cross-section dimensions and alignments, the provision of water taxi infrastructure and two bridges; revisions to the proposed utility network and systems; and changes to the phasing plan.

Land Use Plan

The 2018 Modified Project Variant would result in changes to the distribution and amount of square footage associated with nonresidential land uses at HPS2. The proposed square footage for new and existing uses within HPS2 (5,501,000 gsf) was determined by identifying the maximum amount of R&D square footage allowed under the HPS Redevelopment Plan and analyzed in the 2010 FEIR (5,000,000 gsf, as analyzed in Variant 1), and converting a portion of that space to other uses based on vehicle trip generation. The commensurate reduction in R&D floor space would accommodate an increase in square footage for retail/maker space, school/institutional uses, and a hotel.

HPS2 Residential Land Uses

The 2018 Modified Project Variant would result in a total of 3,454 residential units at HPS2, which represents an increase of 804 units as compared to the 2010 Project of 2,650 units.

HPS2 Commercial and Institutional Land Uses

The commercial and institutional and use modifications under the 2018 Modified Project Variant are described below and shown on the Proposed HPS2 Land Use Plan (Figure 6).

SOURCE: Lennar Urban, 2009

FIGURE 5 Addendum 5 to the CP-HPS2 2010 FEIR

CP-HPS2 2010 PROJECT LAND USE PLAN

SOURCE: FivePoint, 2018

FIGURE 6

Addendum 5 to the CP-HPS2 2010 FEIR

CP-HPS2 2018 MODIFIED PROJECT VARIANT LAND USE PLAN

Retail

As shown in Table 2, the 2018 Modified Project Variant would result in approximately 400,000 sf of retail uses, which would include regional retail (up to 100,000 sf), neighborhood retail and maker space, which is approximately 276,000 sf more than assumed under the 2010 Project for retail uses; further, no regional retail or maker space was assumed in the 2010 Project.

Maker space would be used for contemporary forms of small-scale manufacturing activities in urban areas, as further described in the Hunters Point Shipyard Redevelopment Plan.[11] At HPS2, maker spaces would specifically involve small-scale manufacturing and post-manufacturing activities, such as (but not limited to) craft, industrial arts and design, robotics, woodwork, digital technologies and electronics, jewelry, clothing and apparel, 3D printing, food and beverage (production, tasting, and sales), and bicycle repairs, among many others. Maker spaces typically have a small retail storefront.

Hotel

The 2018 Modified Project Variant would include a new proposed hotel use with approximately 175 rooms and 120,000 sf.

Schools

The 2018 Modified Project Variant would provide for one or more public or private schools as new proposed uses. A high school and postsecondary school would be expected to accommodate up to 1,000 students in 65,000 sf of space; however, school schedules would be staggered, resulting in fewer students present on site at any time. An elementary and junior high school would accommodate approximately 1,000 students in 335,000 sf of space, with up to 400 students residing on campus.

Other Uses

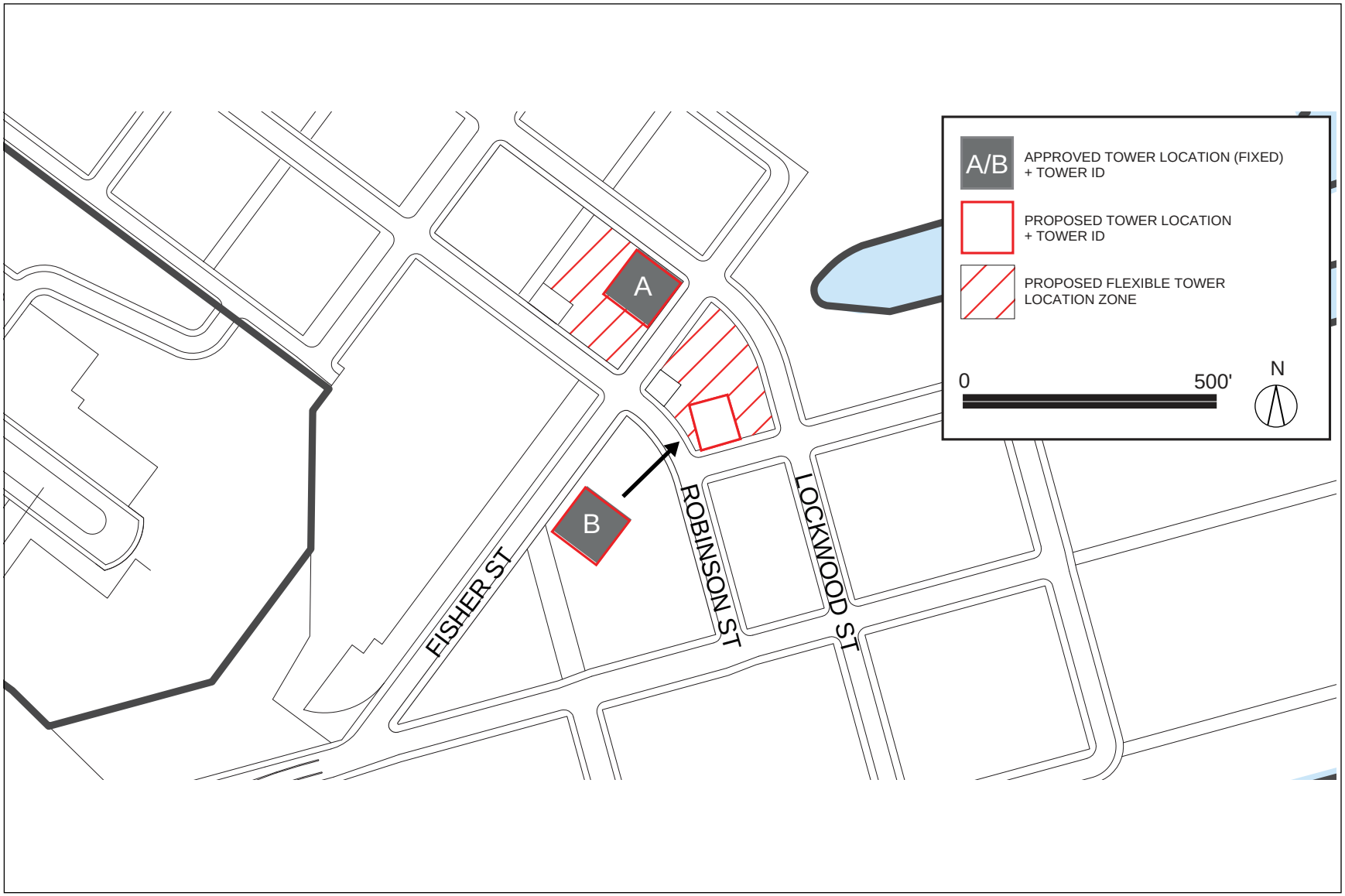
As shown in Table 2, community uses, artist uses, the arena, and the marina remain unchanged as compared to the 2010 Project. Parks and open space are discussed in "Parks and Open Space Plan," p. 22, and the water taxi and parking are discussed in "Transportation Plan," p. 27.

Tower Locations and Building Heights

Tower Location

The 2018 Modified Project Variant would modify the location of Towers A and B, as illustrated in Figure 7 (Tower Locations: Towers A and B).

[11] All land uses are described and defined in either the Bayview Hunters Point Redevelopment Plan or the Hunters Point Shipyard Redevelopment Plan.



SOURCE: FivePoint, 2018.

FIGURE 7 Addendum 6 to the CP-HPS2 2010 FEIR

TOWER LOCATIONS: TOWERS A AND B

Tower A would be located in the same location and on the same block as shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block. Tower B would be located one block north of its previously approved location, and a flexible tower location zone would also be created for the balance of this block. The establishment of a flexible tower location zone would provide flexibility in the geographic placement of Tower A and Tower B. If the zone is established, both Towers A and B could be located in any part of the flexible tower location zone subject to 2018 HPS D4D requirements. However, for purposes of environmental analysis, the towers are proposed at the locations depicted in Figure 7. While the heights of both towers would not change, the 2018 HPS D4D would allow screened mechanical equipment to be up to 10 percent of the total height of the building (within an area that represents 85 percent of the building floorplate).

Maximum Building Heights

The 2018 Modified Project Variant would change maximum building heights and/or bulk for HPS2 as compared to the 2010 Project (that included a stadium). This would both increase and decrease heights in various locations. Maximum building heights under the 2018 Modified Project Variant are shown in Figure 8 (Building Heights) and described below. Further, Figure 36 (Height Changes: 2018 Modified Project Variant vs. 2010 Project), p. 167, illustrates the change in maximum building heights throughout HPS2 when comparing the 2018 Modified Project Variant to the 2010 Project.

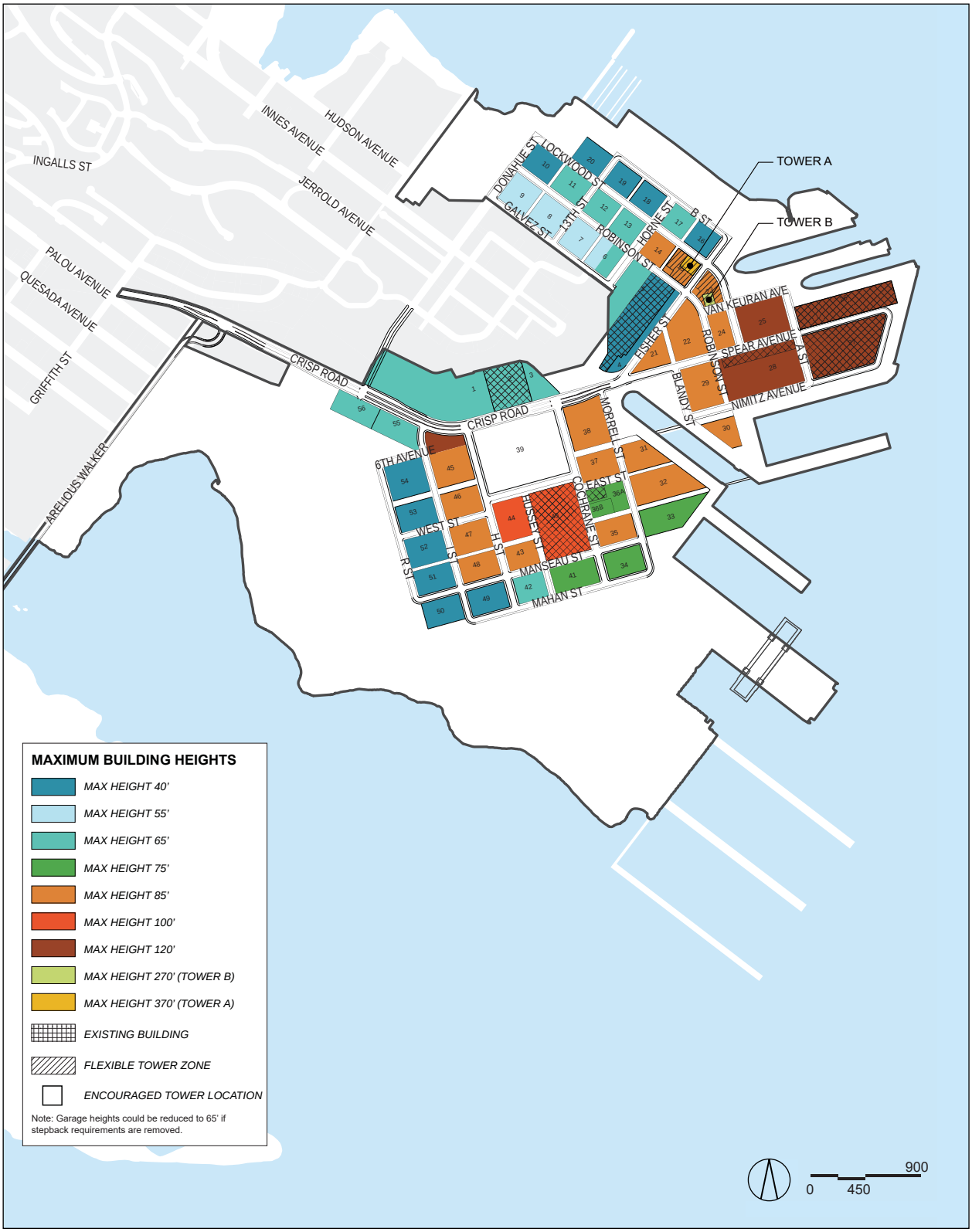
North Shoreline District

Under the 2018 Modified Project Variant, the maximum building heights in the North Shoreline District would be modified as illustrated by Figure 8 and generally described below:

- The maximum height of waterfront buildings in 2010 was 65 feet, and would generally be reduced to 40 feet, with the exception of one Agency Lot, which would remain at 65 feet.
- The maximum height of buildings along Galvez and Robinson Streets in 2010 was 65 feet for all blocks except two (on either side of Robinson/Horne intersection) which had a maximum height of 85 feet. Building heights along Galvez and Robinson Streets would generally remain at 65 feet or below, with the exception of Lots 14 and 15, which would have a maximum height of 85 feet. In 2010, Lot 14 had a maximum height of 85 feet, and as such, no height variance would occur.
- The location of Tower A, with a maximum (and unchanged) height of 370 feet, would be modified as described above.

Village Center District

Under the 2018 Modified Project Variant, building heights in the Village Center District are not proposed to change. Maximum building heights in this district would remain at 65 feet as illustrated by Figure 8.



SOURCE: FivePoint, 2018.

FIGURE 8 Addendum 5 to the CP-HPS2 2010 FEIR

BUILDING HEIGHTS

Wharf District

Under the 2018 Modified Project Variant, building heights in the Wharf District would be modified as illustrated by Figure 8 and generally described as follows:

- The location of Tower B, with a maximum (and unchanged) height of 270 feet, would be modified as described above.
- The remaining blocks (or portions thereof) within this district would generally increase in height. Height increases would be from a previous maximum height of 65 feet to 85 and 120 feet in height, and from 85 and 105 feet to 120 feet in height. A number of blocks would remain at 85 feet. Existing buildings would remain at 120 feet.

Warehouse District

Under the 2018 Modified Project Variant, building heights in the Warehouse District would be modified as illustrated by Figure 8 and generally described as follows:

- Under the 2010 Project, the area now known as the Warehouse District was proposed to only contain a Stadium with a maximum height of 156 feet. North of Crisp Road, the maximum building height was proposed to be 85 feet with small portions of land with a maximum building height of 65 feet. South of Crisp Road, but north of the Stadium, the maximum building height was proposed to be 65 feet at two portions of land directly abutting Crisp Road.
- Generally, the maximum height of the community use and residential blocks along the waterfront, west of H Street, would be 40 feet on some blocks and would be 85 feet on some blocks;
- Generally, the maximum height of the commercial blocks (which include R&D) and some residential blocks would be 75, 85, 100, or 120 feet; and
- For Lots 1, 2, 3, 55, and 56, which abut Crisp Road, maximum building heights would be 65 feet, with an interspersed existing building within this height parameter.

The arrangement of building heights throughout the Warehouse District would be adjusted to accommodate the revised street layout. The additional height would allow for a taller floor-to-floor height at ground level, provide flexibility for different commercial uses, amenities and a distinctive built form throughout the neighborhood. The reduction in height at the western perimeter reflects the programming for townhomes, and facilitates the "step down" of built form at the waterfront and park.

Parks and Open Space Plan

The 2018 Modified Project Variant would replace previously planned parks with new parks and reconfigure the design and sizes of parks and open space areas at HPS2. Table 4 (2018 Modified Project Variant Parks and Open Space Acreages) summarizes the acreage of parks and open space that would result from the 2018 Modified Project Variant. The difference in parks and open space acreage between the 2018 Modified Project Variant and the 2010 Project, 2010 R&D Variant

(Variant 1), and 2010 R&D/Housing Variant (Variant 2A) are provided in Table A-5 of Appendix A.[12] Further, Figure 9 (HPS2 Parks and Open Space) shows parks and open space at HPS2 for the 2018 Modified Project Variant and the 2010 Project. Overall, the 2018 Modified Project Variant would result in an increase of approximately 1.3 acres of new parks as compared to the 2010 Project. The increase in parks and open space is primarily attributed to the Grassland Ecology Park, Water Room/Dry Dock 4, and the Green Room. While there is an overall net increase in parks and open space acreage, there is a decrease of approximately 33.5 acres associated with sports fields and active urban recreational areas at HPS2 when comparing the 2018 Modified Project Variant to the 2010 Project; however, even with the reduction in acreage of sports fields and active urban recreational areas, the 2018 Modified Project Variant would accommodate the same number of sports fields as compared to the 2010 Project.

TABLE 4 2018 MODIFIED PROJECT VARIANT PARKS AND OPEN SPACE ACREAGES

	2018 Modified Project Variant
HPS2	
New Parks	
Grassland Ecology Park	106.8
Heritage Park	15.5
Hunters Point Mini Park	0
Hunters Point Neighborhood Park	0
Hunters Point Park Blocks	0
Hunters Point South Park	0
Hunters Point Wedge Park	0
Northside Park	12.8
R&D Plaza	0
Shipyard Hillside Open Space[a]	2.4
Water Room/Dry Dock 4	7.3
Waterfront Promenade	29.1
New Parks Subtotal	*173.9*
New Sports Fields and Active Urban Recreation	
Maintenance Yard	5.5
Multi-Use Lawn/Fields	20.5
Sports Field Complex	28.7
Waterfront Recreation and Event Pier	3.4
New Sports Fields and Active Urban Recreation Subtotal	*58.1*
HPS2 POSH Total	***232.0***

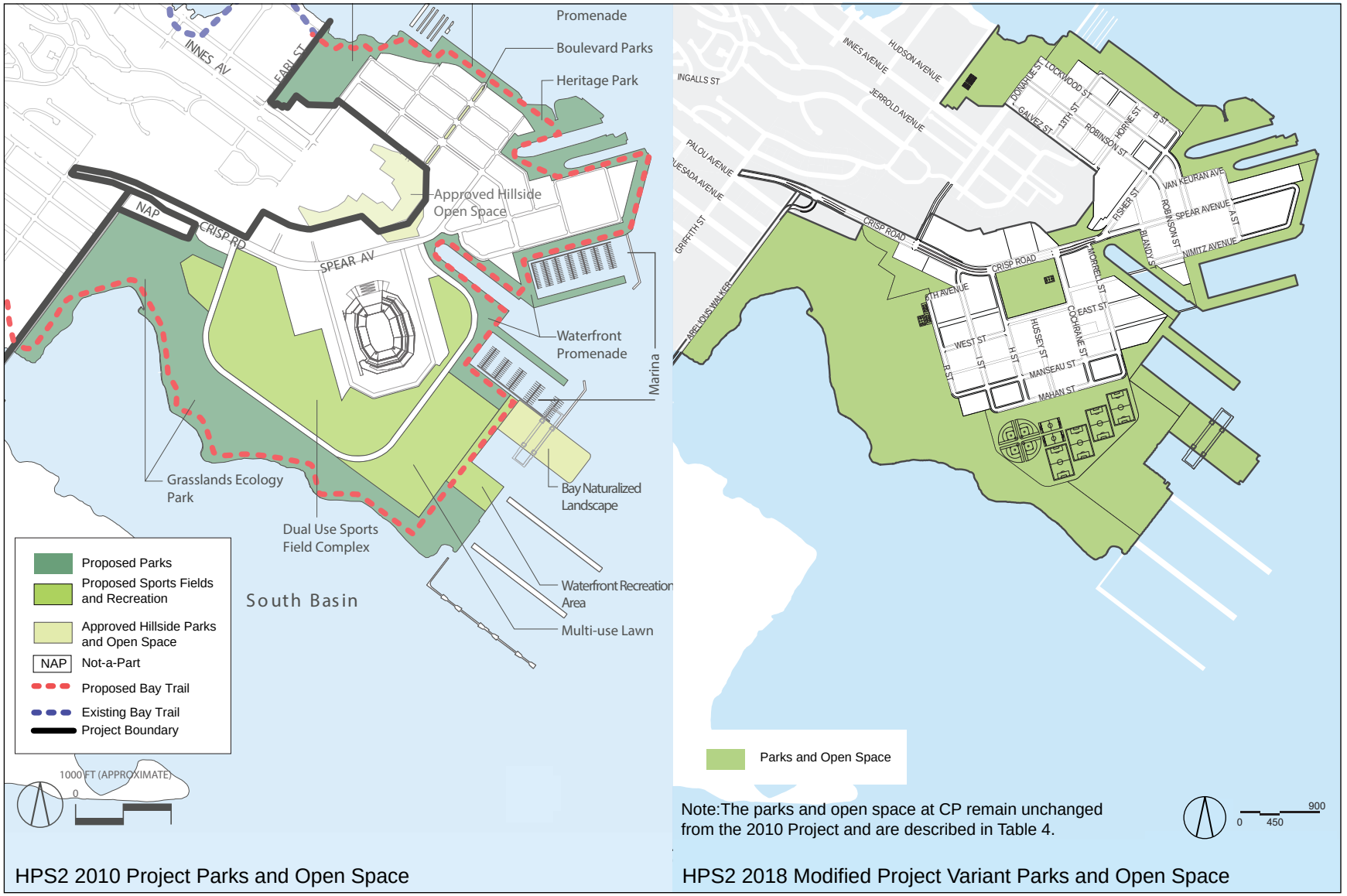
[12] The Shipyard Hillside Open Space, Horne Boulevard Park, and the Bay Naturalized Habitats below the Regunning Crane, were excluded from the total parks calculation in the 2010 FEIR because they were not considered to serve a functional active or passive recreation purpose due to topography and terrain. OCII has re-evaluated the Shipyard Hillside Open Space and determined that it does function as a park; accordingly, this acreage is included in the total parks calculations for the 2018 Modified Project Variant. Horne Boulevard Park was not included in the total acreage for either the 2010 FEIR or the 2018 Modified Project Variant because it was considered as part of the streetscape, rather than a separate park. In the 2018 Modified Project Variant, the new open space designated as the Green Room is also not included in the total acreage of new parks because it would be privately owned, although it would be publicly accessible.

TABLE 4 2018 MODIFIED PROJECT VARIANT PARKS AND OPEN SPACE ACREAGES

	2018 Modified Project Variant
Other Parks[b]	
Green Room (New)	8.1
Gunning Crane Pier Habitats	9.2
Shipyard Hillside Open Space	Provided under New Parks
Horne Boulevard Park	0.0
Other Parks Subtotal	*17.3*
HPS2 TOTAL	***249.3***
CANDLESTICK POINT	
New Parks	
Alice Griffith Neighborhood Park	1.4
Bayview Gardens/Wedge Park	3.7
Candlestick Point Neighborhood Park	3.1
Mini Wedge Park	0.8
New Parks Subtotal	*9.0*
State Park Land	
Bayview Gardens North	9.5
Grasslands South	10.3
The Heart of the Park (includes new State Park)	15.4
The Last Port (includes new State Park)	14.6
The Last Rubble	24.5
The Neck (includes new State Park)	4.9
The Point	6.1
Wind Meadow	11.4
State Park Land Subtotal	*96.7*
CP POSH Total	***105.7***
Other Parks[a]	
Bayview Hillside Open Space	3.5
Earl Boulevard Park	0.0
Jamestown Walker Slope	3.6
Other Parks Total	***7.1***
CP Total	**112.8**
CP-HPS2 TOTAL	***362.1***
Total Parks and Open Space (Excluding "Other Parks")	
New Parks	182.9
New Sports Fields and Active Urban Recreation	58.1
State Park Land	96.7
Total Parks and Open Space (Excluding "Other Parks") Total	***337.7***
Other Parks Total	**24.4**

a. The Shipyard Hillside Open Space was listed in “Other Parks” in the 2010 FEIR because OCII did not consider it as creditable parkland; however, OCII now considers the Shipyard Hillside Open Space as creditable park land, and, accordingly, it is now listed under “new parks.”

b. Other Parks are included for informational purposes only; they are not included in the final calculation of parks and open space.



SOURCE: Lennar Urban, RHAA, 2009; PBS&J, 2010 and FivePoint, 2018.

FIGURE 9 Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 PARKS AND OPEN SPACE

Green Room (Warehouse District)

As a result of retaining the existing street grid to reflect the historic shipyard configuration, the 2018 Modified Project Variant would remove three individual parks (Hunters Point Park Blocks, Hunters Point Wedge Park, and R&D Plaza) included in the 2010 Project and provide a new, consolidated 8.1-acre publicly accessible private open space (POPOS) on Crisp Road, known as the Green Room. The Green Room would be a key public space at HPS2 and would be privately maintained and programmed to provide amenities that serve both local and regional functions. Two existing buildings (#411 and #813) would continue to be located on the southern and northern edges of the park, respectively.

Waterfront Promenade North and Water Room

The Waterfront Promenade, which includes the Water Room/Dry Dock 4 area, would be modified under the 2018 Modified Project Variant to increase the acreage of the park by 6.9 acres, as compared to the 2010 Project. This increase in acreage is the result of the removal of a row of development blocks on the northern edge of the North Shoreline District, thereby increasing the setback of the development to the shoreline, as well as increasing in the open space area at the end of Dry Dock 4. A new civic square would be created in the Wharf District at the end of Dry Dock 4 near Fisher Street and Spear Avenue, known as the Water Room. The Water Room would wrap around Dry Dock 4 and be programmed to establish a central community gathering point. Dry Dock 4 would have two new bridges and new seating constructed for the full extent of the dock.

The design plans for the Water Room would be required by the proposed amendments to the DDA to comply with the Standards for Preservation outlined in the SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[13] and the preliminary Preservation Guidelines that have been developed to guide the design of the improvements associated with Dry Dock 4. The preliminary preservation guidelines are included in Appendix H (Historic Resources Memorandum) Table 2 (Dry Dock 4 Preservation Guidelines).

Grasslands Ecology Park

The Grasslands Ecology Park would be reconfigured to respond to the revised location of the sports field complex and the condensed street layout in the Warehouse District, and would increase in size by approximately 24.7 acres (from 82.1 acres under the 2010 Project to 106.8 acres).

Shipyard Hillside Open Space

The Shipyard Hillside Open Space would provide a pedestrian connection between Hilltop Park (HPS1) and the Water Room (HPS2), as envisioned in the 2010 Project. Also consistent with the 2010 Project, a pedestrian plaza would be created at the base of the hillside between Fisher Street and Building 101.

[13] U.S. Department of the Interior, 2017.

The Shipyard Hillside Open Space was listed in "Other Parks" in the 2010 FEIR because OCII did not consider it as creditable park land; however, proposed amendments to the Parks, Open Space, and Habitat Concept Plan considers the Shipyard Hillside Open Space as creditable park land since the stairway connecting the Hilltop Park and the Water Room provides an active recreational experience, and, accordingly, it is now listed under "new parks."

Sports Fields and Active Urban Recreational Areas

The sports field complex program would be accommodated in a more efficient layout than the 2010 Project because it co-locates the sports fields, rather than providing them in two different locations. The relocation of the sports fields would create greater connectivity of the parks and open space network along the waterfront; however, the size of this complex would be reduced by approximately 33.5 acres (from 91.6 acres in the 2010 Project to 58.1 acres), as shown in Table 5 (Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant (Variant 1), and Housing/R&D Variant (Variant 2A) (Parks and Open Space)).

Maintenance Yard

The maintenance yard, which would be 5.5 acres in size and would now provide services essential to the maintenance of all parks that were not considered under the 2010 Project (and hence, is considered additional parks and open space acreage under the 2018 Modified Project Variant). Crisp Road would provide access to the maintenance yard, allowing the facility to service the parks on both CP and HPS2.

TABLE 5 COMPARISON OF 2018 MODIFIED PROJECT VARIANT TO 2010 PROJECT, R&D VARIANT (VARIANT 1), AND HOUSING/R&D VARIANT (VARIANT 2A) (PARKS AND OPEN SPACE)

	2010 Project	*2010 R&D Variant (Variant 1)*	*2010 Housing/ R&D Variant (Variant 2A)*	*2018 Modified Project Variant*	*Net Change from 2010 Project to 2018 Modified Project Variant*
New Parks	148.1	160.5	159.0	182.9	34.8
New Sports Fields and Active Urban Recreation	91.6	69.8	70.9	58.1	(33.5)
State Park Land	96.7	96.7	96.7	96.7	0.0
Subtotal	*336.4*	*327.0*	*326.6*	*337.7*	*1.3*
Other Parks	19.8	19.8	19.8	24.4	4.6

Transportation Plan

The 2018 Modified Project Variant would incorporate changes to the approved 2014 Transportation Plan related to roadway location, function, configuration phasing, and cross-section at HPS2. These changes to roadway cross sections would encourage slow-speed auto traffic and better accommodate transit, bicyclists, and on-street parking based on recent San Francisco Municipal Transportation Agency (SFMTA) design guidance for travel lane widths.

The extension of existing transit lines and the proposed new transit lines remain consistent with the 2010 Project described in the 2010 FEIR and the 2014 Transportation Plan. However, the Transit Center, consisting of on-street bus layovers and other facilities, would be moved two blocks to the northeast and a modified bicycle network is proposed; both of these changes occurred in consultation with SFMTA staff. The proposed changes to the bicycle network are shown in Figure 26 (2018 Modified Project Variant Bicycle Network Plan).

Reconfiguration of Street Network in Warehouse District

Streets in the Warehouse District would be reconfigured to a pattern that is more consistent with the existing Navy street network and Navy parcel boundaries. The reconfigured street network would facilitate a more logical sequence of development and construction phasing consistent with the progressive transfer of land parcels from the Navy and would allow for additional existing buildings to be retained, including Building 351 and Building 411. Refer to Figure 6 (CP-HPS2 2018 Modified Project Variant Land Use Plan) for a depiction of the reconfigured street network under the 2018 Modified Project Variant.

Donahue Street Extension

The 2018 Modified Project Variant would extend Donohue Street from La Salle Avenue/Kirkwood Avenue southwards to Crisp Road, pending dedication of land from Mariners Village to the City. The extension would provide a new vehicular and pedestrian connection to HPS1 from the south, connect existing communities with future recreation areas and services in HPS2, and redirect bypass traffic.

The length of the extension would be approximately 750 feet. The width of the right-of-way would be 60 feet, made up of two 12-foot-wide travel lanes, two 6-foot-wide sidewalks and two 12-foot-wide grades accommodating the cut into the hillside.

Street Cross-Section Revisions

The 2018 Modified Project Variant reflects input from SFMTA staff, the San Francisco Planning Department, OCII, San Francisco Department of Public Works, and the San Francisco Fire Department regarding cross-section dimensions for various street components, such as width of parking lanes, width of travel lanes, and width of bicycle lanes. Additionally, Spear Avenue, Lockwood Street, and Donahue Street have been revised to include transit-only lanes to ensure efficient transit operation within the HPS2 site. While some refinements are proposed to specific lane dimensions, all auto and transit travel lanes would continue to be within a range of 10 to 12 feet, consistent with the range of widths analyzed in the 2010 FEIR. Parking lanes would be 8 feet wide, increasing to 9 feet wide when adjacent to Class II bicycle lanes. Class I, Cycletrack, and Class II bicycle lanes would generally be 6 to 7 feet wide, except when adjacent to (9-foot-wide) on-street parking or buffered from adjacent traffic, in which case they could be 5 feet wide. With the exception of the extension of Donahue Street, as noted above, sidewalk widths would range

primarily from 12 to 15 feet wide, throughout the HPS2 site, consistent with the range of sidewalk widths described in the 2010 FEIR (p. III.D-118).

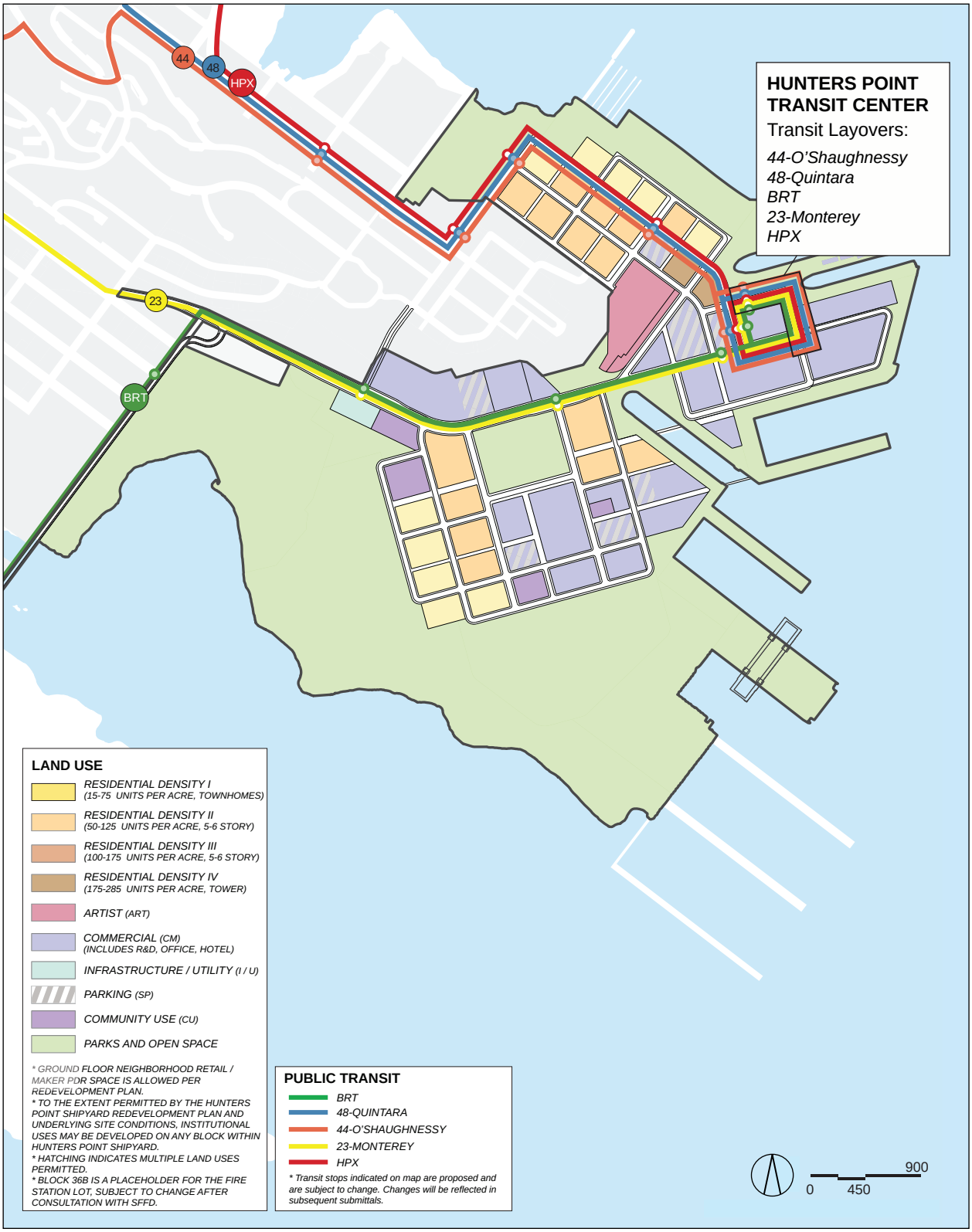
Transit Network Modifications

In the approved transit network, the Hunters Point Transit Center was located on the south side of Spear Avenue near the intersection of Lockwood Street. Under the 2018 Modified Project Variant, the Hunters Point Transit Center would be located on the north side of Spear Avenue, near Dry Dock 2, as indicated on Figure 10 (HPS2 Transit Improvements). The transit center would serve all transit lines serving HPS2 and would provide 14 bus bays (an increase of four bus bays over the 2014 Transportation Plan).

As shown on Figure 10 and Figure 11 (HPS2 Transit Layover Detail), in the 2018 Modified Project Variant, four existing MUNI-bus lines servicing the Shipyard (Route 44-O'Shaughnessy, Route 48-Quintara, Route 28R-19th, and Route 23-Monterey) would be extended to terminate and re-start at the Transit Center, and the proposed Hunters Point Express (HPX) bus service to Downtown San Francisco would also connect to the Transit Center.

Bicycle Network Modifications

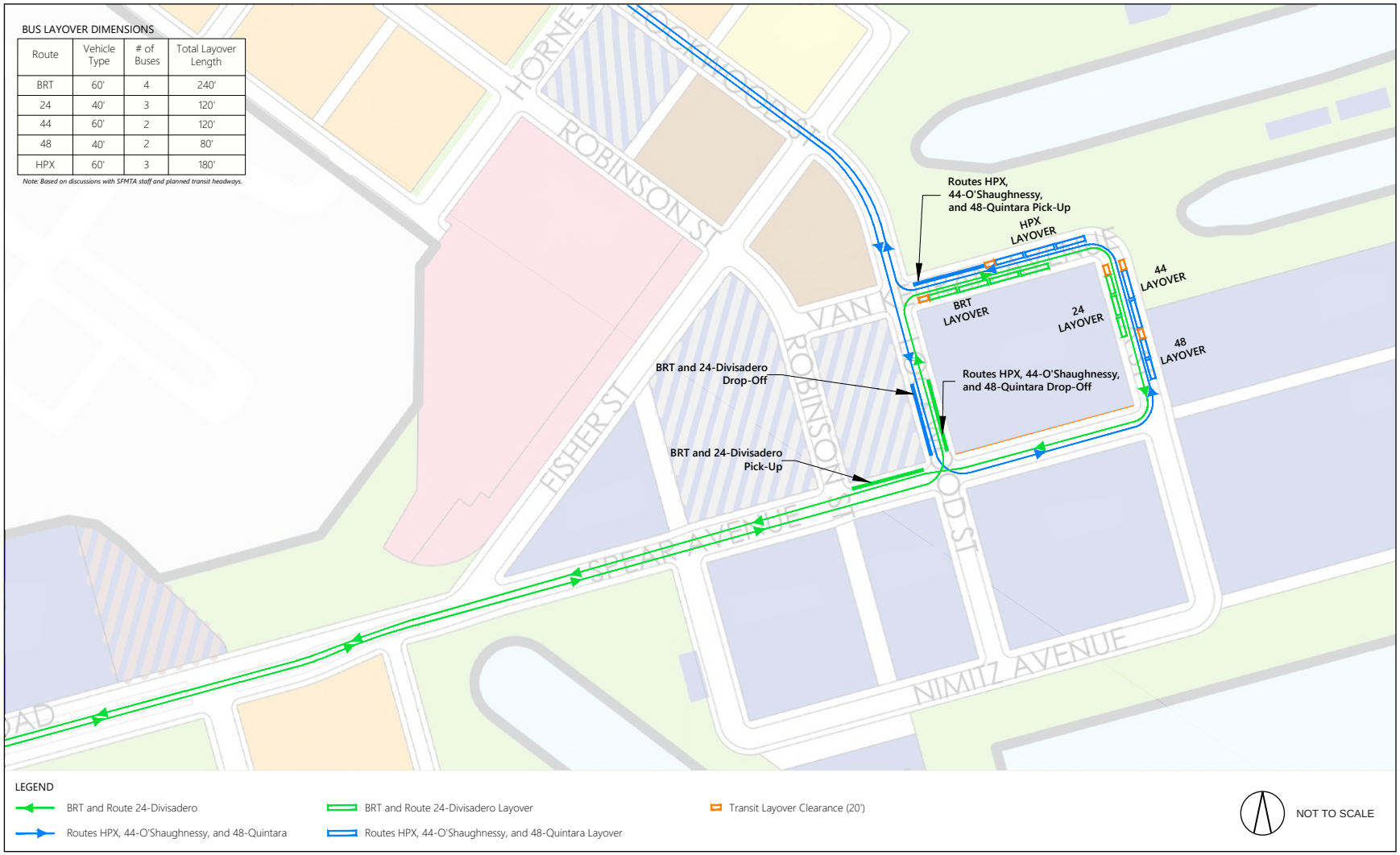
The primary change to the bicycle network in the 2018 Modified Project Variant as compared to the changes evaluated in Addendum 1 and approved in the 2014 modifications to the CP-HPS2 Transportation Plan (in Attachment 6-N to the 2014 Transportation Plan) would be the re-alignment of the cycletrack facility in the Warehouse District. The 2018 Modified Project Variant proposes an institutional/educational use and some R&D uses on the northern side of Crisp Avenue, which may require driveways or other curb cuts that could disrupt the cycletrack. Therefore, the 2018 Modified Project Variant proposes to align the cycletrack through the open space and park area south of Crisp Avenue and along one of the midblock breaks in the Warehouse District. From there, it would extend across the new pedestrian/bicycle bridge across Dry Dock 4, where it would connect to the planned portion of the Bay Trail traversing the perimeter of HPS and with proposed facilities on Robinson Street. The facility on Robinson Street would be constructed as a Class IV separated facility providing an additional buffer between cyclists and adjacent traffic. These changes would ensure a more direct route between HPS and CP and would ensure a complete connection within HPS and to proposed cycletrack facilities west of HPS within the proposed India Basin Mixed-Use Development Project. As a result, the 2018 Modified Project Variant would provide a more complete and connected network of routes and facilities and would penetrate through the center of the Warehouse District, instead of along its northern edge as had previously been contemplated. Other minor refinements would continue to improve the overall bicycle network in CP and HPS2.



SOURCE: FivePoint, 2018.

FIGURE 10 Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 TRANSIT IMPROVEMENTS



SOURCE: Fehr & Peers, 2018.

FIGURE 11 Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 TRANSIT LAYOVER DETAIL

Bridges Over Dry Dock 4

As previously mentioned, the 2018 Modified Project Variant would include construction of two bridges over Dry Dock 4, as depicted in Figure 12 (Bridge Locations). The first, the Water Room Bridge, would be a pedestrian and bicycle bridge located in the western portion of Dry Dock 4 near the Water Room. The second, the Eastern Bridge, would be a pedestrian bridge located in the eastern portion of Dry Dock 4, near the entry point to the San Francisco Bay. Only the Water Room Bridge would serve both bicycles and pedestrians. The Eastern Bridge would allow small vessels to pass underneath the bridge, and the clearance required for these vessels would render it unsafe for bicyclists.

The design plans for the bridges would be required by the proposed amendments to the DDA to comply with the Standards for Preservation outlined in the SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[14] and the preliminary Preservation Guidelines that have been developed to guide the design of the improvements associated with Dry Dock 4. The preliminary Preservation Guidelines are outlined in Table 21 (Dry Dock 4 Preservation Guidelines) of Section II.B.9 (Cultural Resources) and Table 2 (Dry Dock 4 Preservation Guidelines) of Appendix H.

Parking

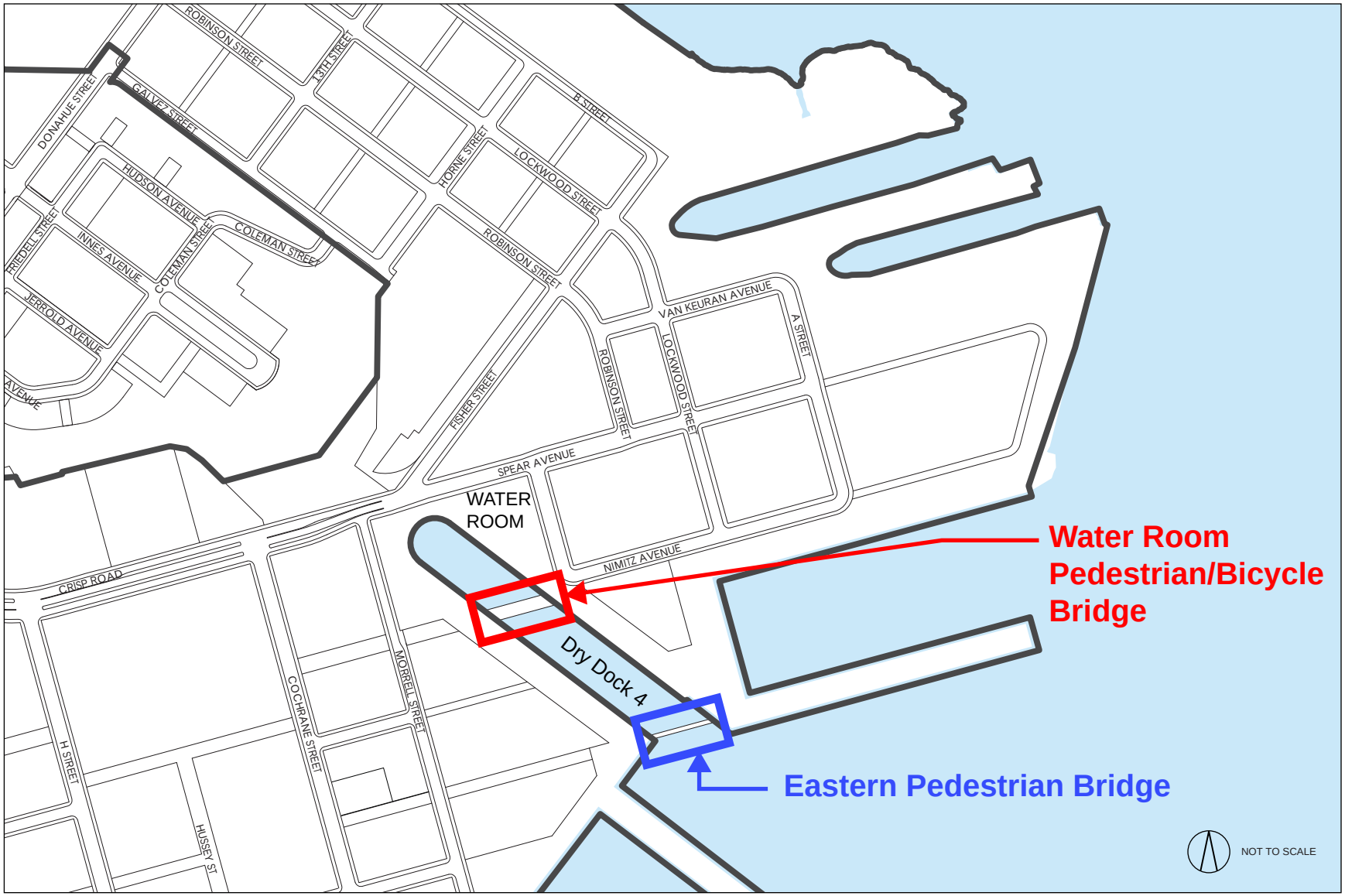
The total on- and off-street parking supply would be modified corresponding to changes in land use in the 2018 Modified Project Variant compared to the 2010 R&D Variant (Variant 1), which is most comparable to the 2018 Modified Project Variant because it does not include a stadium use. Specifically, there would be an overall increase in the maximum spaces allowed at Hunters Point Shipyard of 737 spaces and a corresponding decrease in the maximum amount of parking allowed at CP of 242 spaces. As shown in Table 6 (Maximum Allowed Parking Supply), the resulting maximum total of parking allowed within the 2018 Modified Project Variant would be 495 spaces more than allowed under 2010 FEIR Variant 1 (R&D).

TABLE 6 MAXIMUM ALLOWED PARKING SUPPLY

	2010 Project			*2010 R&D Variant (Variant 1)*			*2010 Housing/R&D Variant (Variant 2A)*			*2018 Modified Project Variant*		
	CP	***HP***	***Total***	***CP***	***HP***	***Total***	***CP***	***HP***	***Total***	***CP***	***HP***	***Total***
On-Street	1,360	683	***2,043***	1,360	1,678	***3,038***	1,360	1,428	***2,788***	1,360	1,487	***2,847***
Off-Street	10,196	6,678	***16,874***	10,196	9,678	***19,874***	8,571	8,703	***17,274***	9,954	10,606	***20,560***
Total	***11,556***	***7,361***	***18,917***	***11,556***	***11,356***	***22,912***	***9,931***	***10,131***	***20,062***	***11,314***	***12,093***	***23,407***

SOURCE: Candlestick Point–Hunters Point Shipyard Phase II Development Plan EIR, 2010; and FivePoint, 2018.

[14] U.S. Department of the Interior, 2017.



SOURCE: FivePoint, 2018.

FIGURE 12 Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 BRIDGE LOCATIONS

Commercial and Residential Structured Parking

The 2018 Modified Project Variant does not change the commercial or residential parking ratios required by the Transportation Plan and analyzed in the 2010 FEIR. The parking ratio for the new schools would be consistent with Planning Code provisions, and the parking ratio for regional retail uses would be consistent with those in the 2016 CP D4D. As shown in Table 2 (2018 Modified Project Variant Land Use Program) and Table 6 (Maximum Allowed Parking Supply), a total of 9,954 structured parking spaces would be provided at CP and a total of 10,606 structured parking spaces would be provided at HPS2, for a total of 20,560 structured parking spaces.

Table 6 and Appendix A Table A-2 show that the 2018 Modified Project Variant would result in a decrease of 242 structured parking spaces at CP and an increase of 928 structured parking spaces at HPS2, resulting in a total increase at the CP-HPS2 project site of 686 structured parking spaces, as compared to the 2010 R&D Variant (Variant 1).

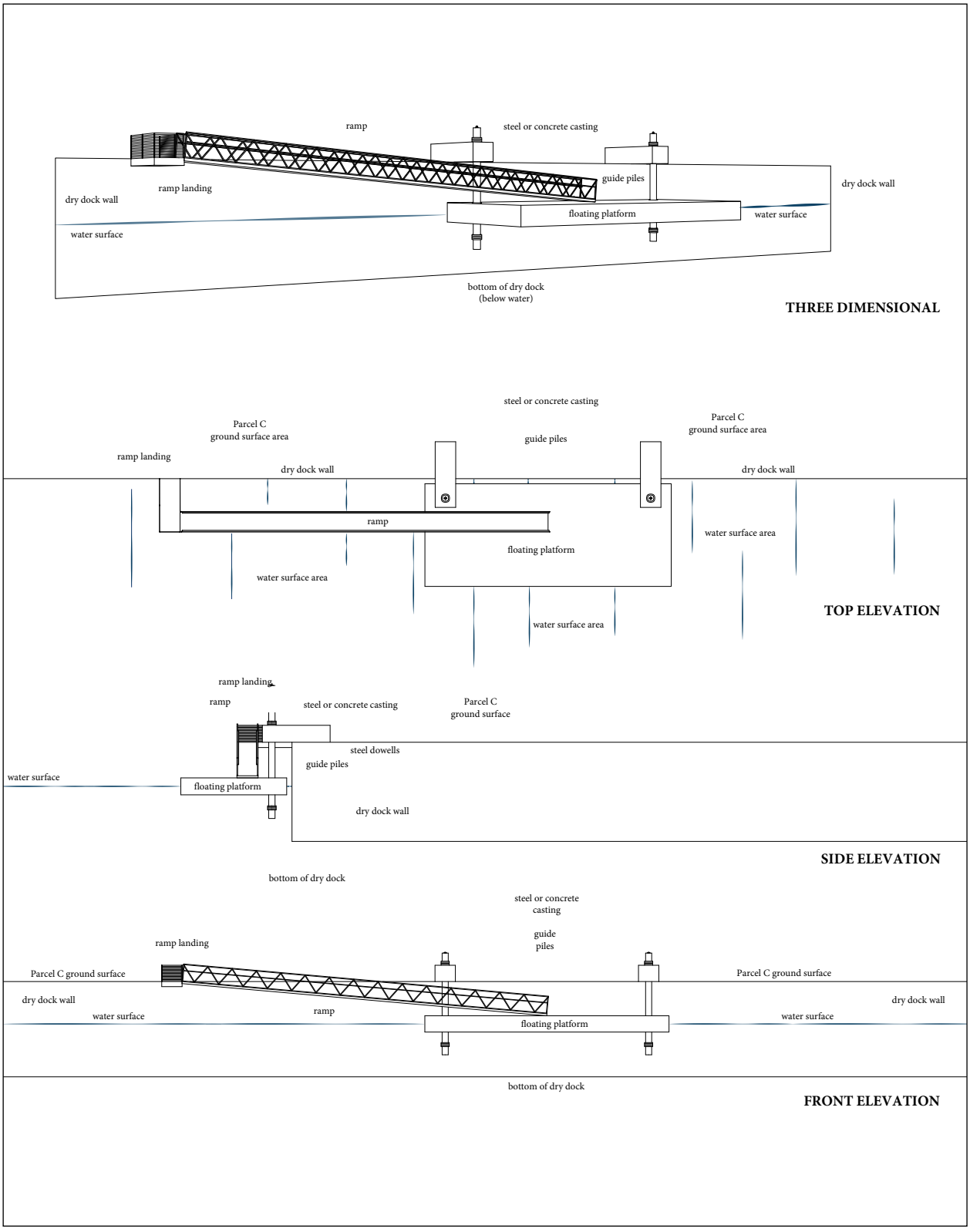
General and Commercial On-Street Parking

On-street parking was estimated using the linear feet of curbside space available for parking in the street cross sections. The 2018 Modified Project Variant includes revised street cross sections, which results in revised estimates of on-street parking availability. As more-detailed plans are developed, this estimate could change. As shown in Table 2 (2018 Modified Project Variant Land Use Program) and Table 6 (Maximum Allowed Parking Supply), a total of 1,360 on-street parking spaces would be provided at CP and a total of 1,487 on-street parking spaces would be provided at HPS2, for a total of 2,847 on-street parking spaces.

Table 6 and Appendix A Table A-2 show that the 2018 Modified Project Variant would result in a decrease of 191 on-street parking spaces at HPS2 as compared to the 2010 R&D Variant (Variant 1).

Water Taxi

The 2018 Modified Project Variant would establish a water taxi service to and from HPS2 at Dry Dock 4 to serve residents and visitors to the Project site. Water taxi services to and from HPS would dock at a landing at Dry Dock 4. New infrastructure on the land and in the water would be constructed to accommodate the services. Figure 13 (Water Taxi Dock at HPS2 Dry Dock 4) provides conceptual drawings depicting the design of the water taxi dock, including all of the elements described below (except the waiting area) in the sections entitled Infrastructure within the Water and Infrastructure on the Land.



SOURCE: Tideline Marine Group, 2016.

FIGURE 13 Addendum 5 to the CP-HPS2 2010 FEIR

WATER TAXI DOCK AT HPS2 DRY DOCK 4

Infrastructure within the Water

The water taxi would require infrastructure to be placed in the water adjacent to Dry Dock 4. The infrastructure would be similar to the water taxi facilities at Pier 1.5 in San Francisco. These items would include:

- **A floating platform**—A floating platform would be required for people to alight to and from the water taxi. The floating platform would be approximately 60 feet in length, approximately 25 feet in width and approximately 4 feet deep. The floating platform would sit on the surface of the water and move vertically with the rise and fall of the tide. It would be secured from horizontal movement by two guide piles (see immediately below) and would generally be offset approximately 1 foot from the wall of the dry dock.
- **Guide piles**—The floating platform would be secured from horizontal movement by two 25-foot guide piles that would connect to castings on the ground surface of Dry Dock 4. The bases of the guide piles would be inserted on the corners of the floating dock nearest the Dry Dock wall. The tops of guide piles would be affixed to castings that are joined to the land surface (see below, under the discussion of Infrastructure on Land). The bases of the guide piles would extend approximately 2 to 4 feet below the surface of the water depending on the height of tide. They would not touch the bottom of the dry dock.
- **Access ramp**—The floating platform and the land would be connected by a ramp that connects with a landing on the dry dock. The ramp would be approximately 90 feet in length and approximately 5 feet in width (approximately 450 sf in total). The ramp would be designed to satisfy ADA requirements by having a maximum grade of 1:20; railings that are approximately 4 feet in height above the walking deck surface; and a hand grip rail that would be attached to the railings above the walking deck surface.

All items of infrastructure within the water would be transportable. In the event that the floating platform, guide piles, or ramps would need to be moved, they could be safely stored in the water against a bulkhead until they could be reinstated back at the Dry Dock 4 landing area.

Infrastructure on the Land

The new landing area would require new items of infrastructure to be constructed on the landside of Dry Dock 4. These items are:

- **Floating Platform Castings**—To connect the guide piles that secure the floating platform with the land surface, two castings would be installed on the ground surface of Parcel C at the edge of the dry dock. Each casting would be approximately 5 feet wide by approximately 4 feet deep by approximately 16 feet in length, and cantilever approximately 7 feet beyond the edge of the dry dock wall. The castings would be anchored into the ground surface of the dry dock.
- **Access Ramp Landing Platform**—To connect the access ramp with the land surface, a landing platform would be constructed at the edge of the dry dock wall. The platform would cantilever approximately 13 feet beyond the edge of the dry dock and be approximately 5 feet in width (approximately 65 sf in total). The access ramp landing platform (or ramp

landing) would be designed to satisfy ADA requirements in the same manner as described for the access ramp in terms of railings and handgrip rails. The ramp landing would be anchored into the ground surface of the dry dock.

- **Waiting Area**—A waiting area of approximately 1,000 sf would be provided on Parcel C near the ramp landing platform.

Trips and Destinations

In the early stages, water taxi service would occur during weekday morning and evening peak hours to accommodate commuter traffic. Approximately 8 AM trips (4 inbound and 4 outbound) and 8 PM trips (4 inbound and 4 outbound), or a total of 16 trips, would be expected. The boat would have a maximum capacity for 22 passengers, as well as captain and crew. As the population at HPS2 grows, trips could occur throughout the day, as supported by demand. At this time, however, future demand is unknown.

Destinations for outbound trips and origins of inbound trips would depend on passenger demand, but are expected to include any of the docking locations in the San Francisco Bay, including San Francisco, Marin County, the East Bay, and the South Bay.

Alternative Utility System

The 2010 FEIR Utilities Variant 4, which was approved in 2010 (refer to Section I.B.2 [Previous Approvals and Development Status]), analyzed implementation of a district heating and cooling system, on-site wastewater treatment, and an automatic waste collection system (which is not proposed under the 2018 Modified Project Variant). Additionally, the 2010 FEIR acknowledged that the Project Sponsor would implement renewable energy strategies at HPS2, including the use of photovoltaic cells to reduce energy usage.

The 2018 Modified Project Variant includes a ground-source geothermal heating and cooling system as the primary source of heating and cooling for the development; solar electricity generation, distribution, and storage; and recycled water treatment and distribution. A general comparison of the alternative utility systems proposed under the 2010 Project as compared to the 2018 Modified Project Variant are provided in the next section, entitled "Comparison of 2010 Project and 2018 Modified Project Variant Alternative Utility Systems." Additional detail regarding the 2018 Modified Project Variant alternative utility systems is provided in the section entitled "2018 Modified Project Variant Alternative Utility Systems," which follows the comparative discussion.

The use of the term "alternative utility system" does not mean that these alternative systems would entirely supplant the use of traditional utility systems at CP and/or HPS2; instead, the alternative utility systems would be supplementary to traditional utility systems.

General Comparison of 2010 Project and 2018 Modified Project Variant Alternative Utility Systems

Heating and Cooling System

Under the 2010 Project, the district heating and cooling system would be provided from a centralized plant. One heating and cooling (district) plant was proposed to serve Candlestick Point and a second district plant was proposed to serve Hunters Point, with hot water (or steam) and chilled water distributed from the district plant to individual buildings via a pipe distribution network located under the streets. Heating was to be provided by natural gas-fired boilers that could generate either steam or hot water, while cooling was to be provided by natural gas-fired, steam-fired, or electrically driven chillers.

Under the 2018 Modified Project Variant, district heating and cooling would use a geothermal heating and cooling system that would include up to three small-scale (about 15,000 sf) central energy plants (CEPs), a vertical bore geothermal heat exchange system, a closed-loop pumping and piping system associated with each CEP that circulates through the boreholes and to residential and commercial buildings, and other systems that transfer heating and cooling to building HVAC systems.

Recycled Water System

The 2010 FEIR Utilities Variant would collect and route wastewater flows to eleven decentralized wastewater treatment plants, each sized to accommodate approximately 100,000 gallons per day of wastewater, with seven plants located in Candlestick Park and four plants in Hunters Point. The eleven decentralized plants would generate 1.05 mgd of reclaimed water. Under the 2010 FEIR Utilities Variant 4, each wastewater treatment plant would require approximately 6,250 sf of aboveground footprint to house the treatment plant components, pumps, and chemical storage area. Wastewater, recycled water, and sludge storage tanks could be located below-grade (e.g., under parking spaces or driveways) to reduce the footprint of the facilities. The estimated belowground footprint requirement for each facility would be approximately 30,000 sf. Thus, each plant would require approximately 36,250 sf and the proposed eleven plants would occupy approximately 400,000 sf.

Under the 2018 Modified Project Variant, the 2018 Modified Project Variant would include a single, dedicated 976,000 gpd central treatment plant at HPS2, rather than 11 decentralized plants, and the single plant would serve both CP and HPS2. Consistent with the Utilities Variant 4, the central treatment plant under the 2018 Modified Project Variant would divert wastewater from the sanitary sewer system for treatment. Rather than storing the solids (sludge) in a storage tank for periodic collection and transport off site for processing, as proposed for the treatment plants in the Utilities Variant 4, the solids removed from the water during treatment would be diverted back to the San Francisco Public Utilities Commission (SFPUC) sewer system.

The footprint area requirements for the 976,000 gpd water reuse facility would range from 10,000 to 82,000 sf, depending on the phase, actual capacity and a number of factors, including available tank depth, membrane type, and final storage area requirements among other area constraints/ considerations. A building containing blowers, pumps, treatment systems, and process controls would take up about one third of that footprint. Outside the building would be below-grade equalization tanks, below-grade sludge holding tanks, and above-grade reuse water tanks. The building would require 17-foot ceilings to accommodate necessary equipment, which would result in a building of approximately 20 feet to 35 feet in height.

Solar Photovoltaic System and Battery Storage Systems

As previously stated, the 2010 FEIR acknowledged that the Project Sponsor would implement renewable energy strategies at HPS2, including the use of photovoltaic cells to reduce energy usage. However, under the 2018 Modified Project Variant, the alternative utilities system incorporates a more robust program to incorporate building-scale solar photovoltaic (PV) systems that would generate renewable energy to supplement SFPUC's power supply to the site. The 2018 Modified Project Variant utilities system would also include a building-scale and utility-scale battery storage system.

2018 Modified Project Variant Alternative Utility Systems

Geothermal Heating and Cooling System

The 2018 Modified Project Variant includes a geothermal heating and cooling system. It includes four integrated components: (1) closed-loop vertical bore geothermal heat exchange systems; (2) water-to-water heat exchangers and pump systems located within the CEPs; (3) closed-loop piping systems for distributing hot and chilled water from the centralized plants to and from buildings within the project area; and (4) heat exchangers and air handling systems within buildings in the project area for the heating and cooling of those buildings.

The CEPs would house the essential plant and operational system infrastructure, including the geothermal source water pumps, distribution pumps, chillers, and heat exchangers associated with the geothermal HVAC system, and lithium ion batteries associated with the electricity storage system (described below). Up to three CEPs would be provided. Each CEP would be approximately 15,000 sf in area (typically 175 feet by 85 feet) with a floor-to-floor height between 18 feet and 25 feet. The CEPs are expected to be integrated with other buildings, such as in the ground floor of parking structures. All components would be entirely within the building footprint and screened to avoid being visible from the public realm. The plant would not contain any combustion or chemicals, and would have acoustic treatment applied to ensure noise does not exceed 40 decibels (dBA) at adjacent, nearby noise-sensitive outdoor use areas, following a detailed noise assessment to be completed upon final design. Potential sites for the CEPs could include Blocks 1, 7, 15, 22, 24, 35, 41, and 43.

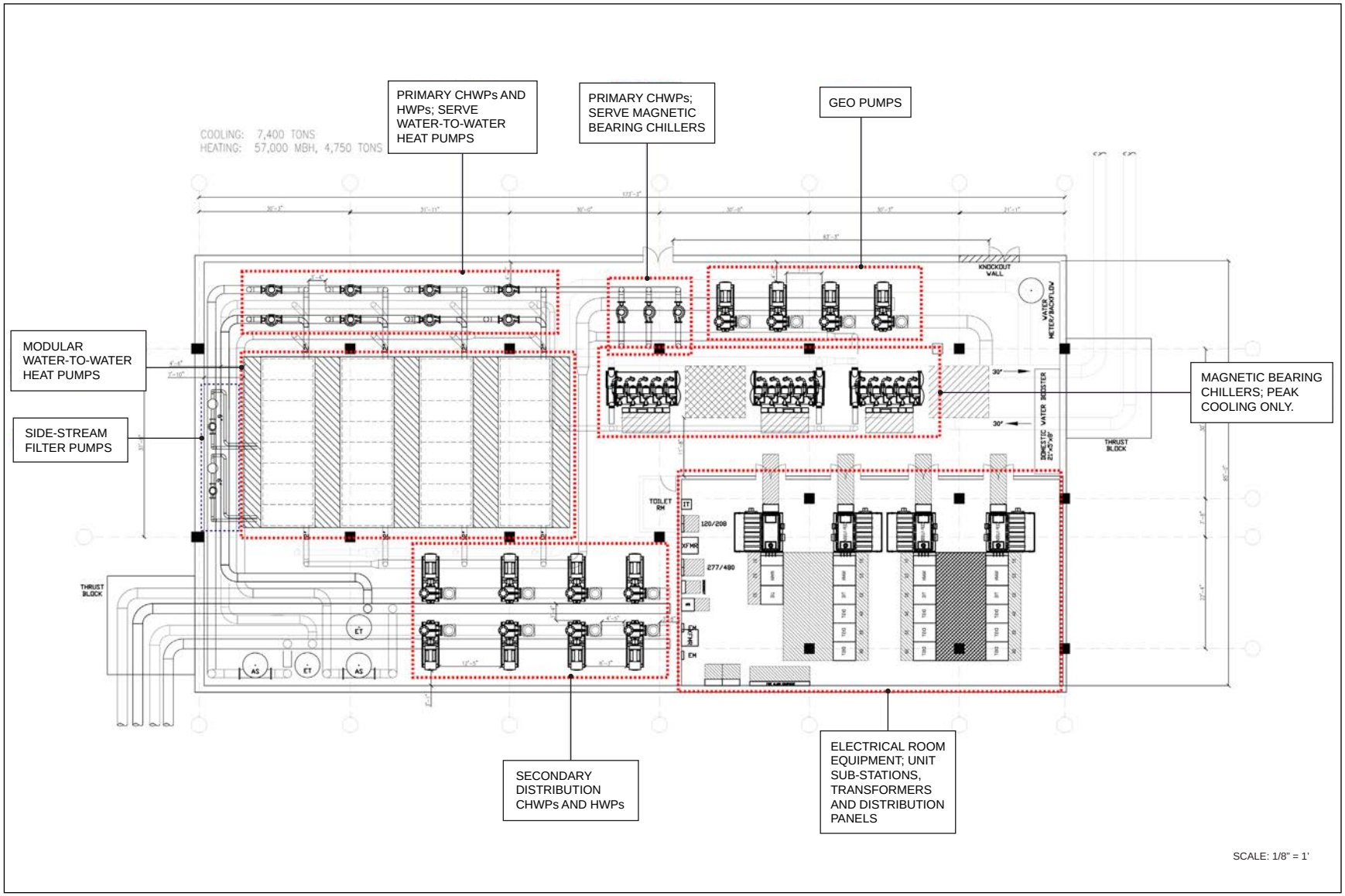
Figure 14 (Central Energy Plant Equipment Layout) shows how the pumps, chillers, heat exchangers, and electrical transformers and distribution panels may be configured within the CEP. The specific components of each element of the geothermal heating and cooling system are discussed below. Geothermal heat exchange systems are more efficient than traditional electric heating and cooling systems. A recent study by the California Energy Commission (CEC) indicates that geothermal heat pump systems for residential buildings should consume 65 percent less energy than conventional heating and cooling systems in the Bay Area region.[15] The key principle behind a geothermal heat exchange system is to utilize the sub-surface temperature of Earth for heating and cooling. Figure 15 (Geothermal Heating and Cooling System: Schematic) provides a conceptual depiction of the type of geothermal heating and cooling system proposed for HPS2. The proposed geothermal heat exchange system pumps a water-based fluid in a closed loop through a series of vertical bores that extend several hundred feet below the ground surface. During the winter, the water being pumped through the geothermal borehole absorbs the warmth of the Earth prior to being directed to water-to-water heat exchangers located in the CEP, where the heat would be extracted before returning the water to the borehole. The water-to-water heat exchangers in the CEP transfer heat from the geothermal loop to a closed loop piping system used to distribute hot water to HPS2 buildings. Electric-powered boilers at the CEP further heat the water in the hot water distribution loop as needed.

In summary, the process would be reversed as relatively cool water would be extracted from the Earth. Heat exchangers in the CEP transfer cooling to a chilled water distribution loop, which would be enhanced as needed by electric-powered chillers. Similar to the hot water loop, the chilled water loop transfers cooling energy to the building HVAC system, and the warmer water returning to the CEP would be replenished with cooling from the geothermal heat pump.

Vertical Bore Geothermal Heat Exchange System

The HPS2 geothermal system would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. Pumps would be located at the CEP, and boreholes would be located in clusters throughout HPS2 where they could be installed without conflicting with other uses of the site and in areas with minimal soil contamination or other environmental restrictions to the extent possible (for more detail on drilling techniques see Section I.D.3 [Construction Methods and Equipment]). Boreholes are anticipated to extend as deep as 600 feet, and would typically be 4 to 6 inches in diameter and spaced at least 15 to 20 feet apart. The conveyance piping that extends from the bores typically are buried a minimum of 3 feet deep and could be buried deeper to avoid conflicts with foundations, utility lines, and other shallow subsurface features if necessary. The geothermal boreholes would be located Warehouse in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited. Specifically,

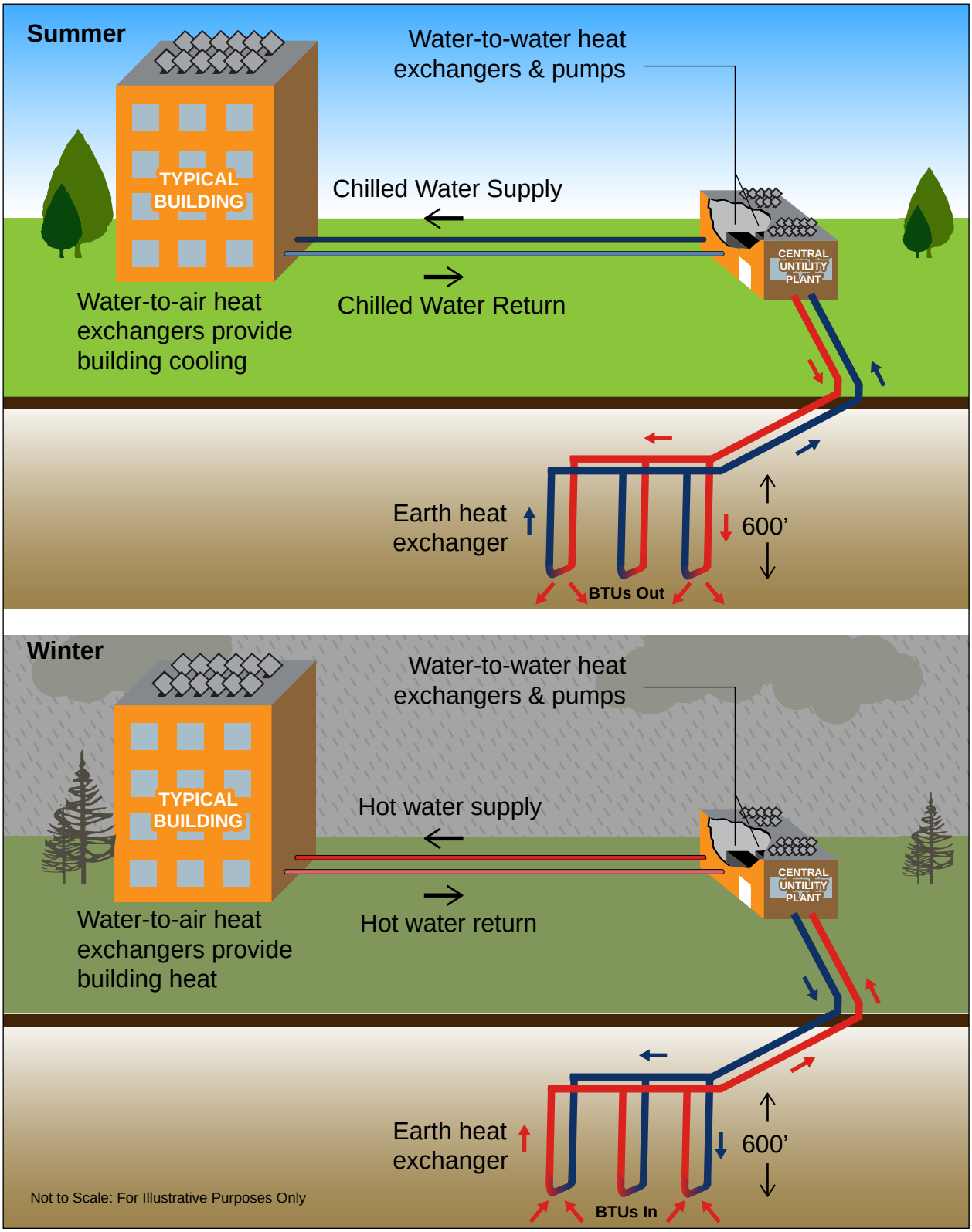
[15] California Energy Commission, *Assessment of California's Low Temperature Geothermal Resources: Geothermal Heat Pump Efficiencies by Region*, CEC-500-2014-060, April 2012, Table 3, p. 20.



SOURCE: MEP Associates, LLC, 2017.

FIGURE 14 Addendum 5 to the CP-HPS2 2010 FEIR

CENTRAL ENERGY PLANT EQUIPMENT LAYOUT



SOURCE: GI Energy and ESA, 2017

FIGURE 15 Addendum 5 to the CP-HPS2 2010 FEIR

GEOTHERMAL HEATING AND COOLING SYSTEM: SCHEMATIC

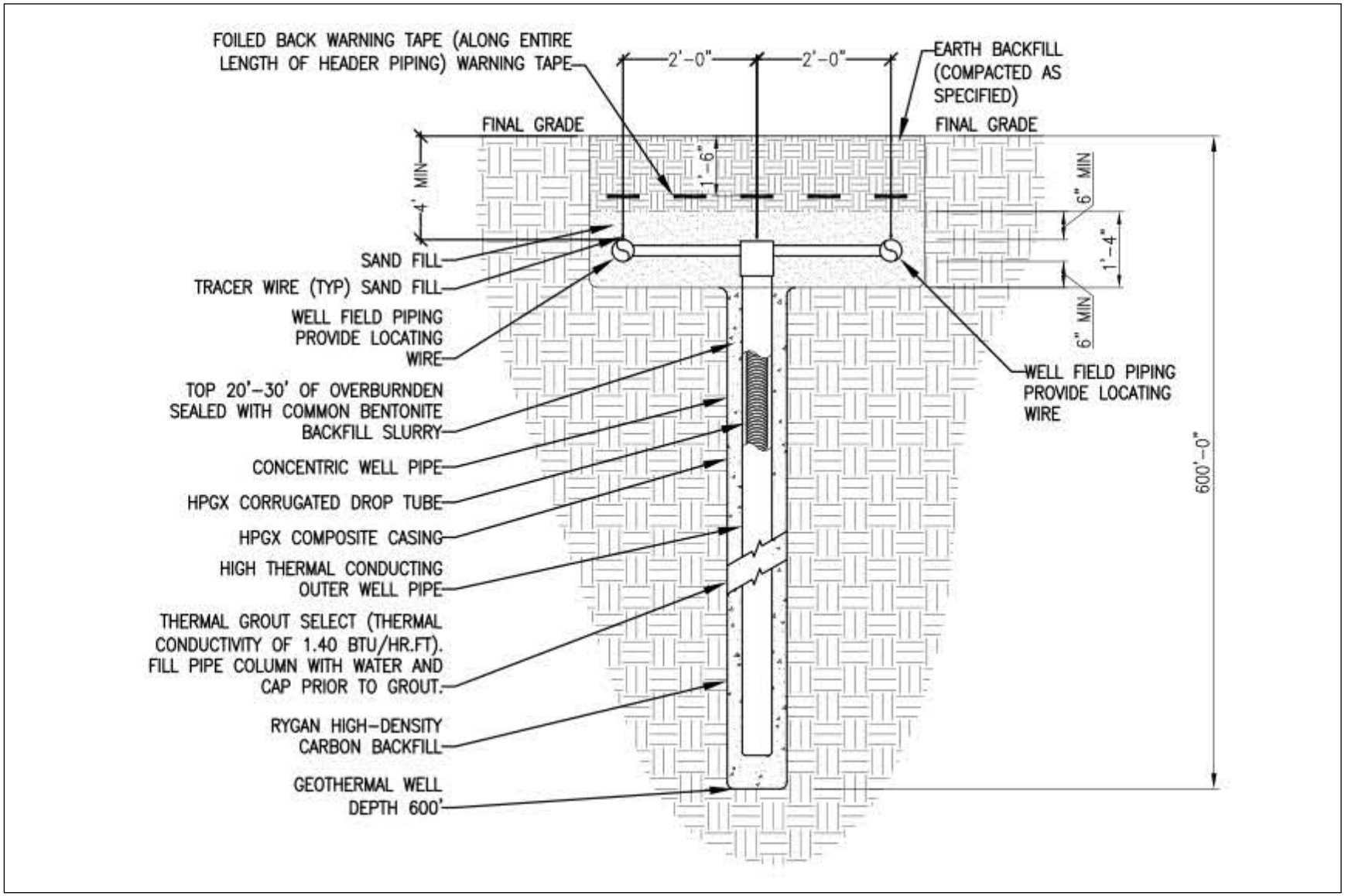
clusters of boreholes would be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. Generally, the environmental restrictions in these areas require regulators to approve workplans prior to disturbing existing fill soil and require maintenance of soil cover once work is completed. The borehole cluster locations would avoid other areas, as feasible, that have additional administrative and/or sub-surface restrictions. Examples of such areas are beneath public roads, public trust lands, radiological restricted areas, and other areas with additional soil or groundwater restrictions such as areas with groundwater monitoring wells or soil vapor mitigation beneath building foundations. Figure 16 (Geothermal Borehole Details) shows cross section details of geothermal borehole construction and associated piping.

The only mechanical equipment required for the heat exchange system would be the pumps used to induce flow through the closed loop of numerous interconnected vertical bores. Once installed, there would be no access or maintenance that would be required for the piping system, which means that it could be located beneath buildings and structures without causing any impact. The fluid inside the pipes would meet certain specifications and would be tested on an annual basis to verify the fluid continues to meet the design specifications.

An alternative approach to installation of the geothermal system (or loop) in a clustered borehole field would be to incorporate the use of "energy piles" that would co-locate the geothermal loop piping with the foundation support piles that are installed under building foundations. The key benefit of the energy pile approach on sites with building foundations is that, subject to the number, quantity, and size of foundations being constructed to support each building, the geothermal loop would be installed as part of the foundation, and not as a separate installation or construction process. In most cases, the foundation shape or size is not altered; therefore, no additional drilling is required. This approach would substantially reduce the amount of soil that is generated as compared to the clustered borehole field approach.

Heating and Cooling Distribution to Buildings

Heating and cooling fluid from the CEP would be pumped to end-user buildings using closed-loop piping systems. For commercial buildings, separate loops would deliver hot and chilled fluid to heat exchangers and air handling systems that control and distribute conditioned air throughout the building as needed. For residential buildings, a single closed loop would be used to deliver geothermal-sourced fluids to fluid-to-air heat pumps located at individual living units. As closed loop systems, fluid supplied to the buildings for heating and cooling would be returned to the CEP and reused. Pipelines connecting the CEP to buildings would be installed along with other utilities beneath roadways.



SOURCE: MEP Associates, LLC, 2017.

FIGURE 16 Addendum 5 to the CP-HPS2 2010 FEIR

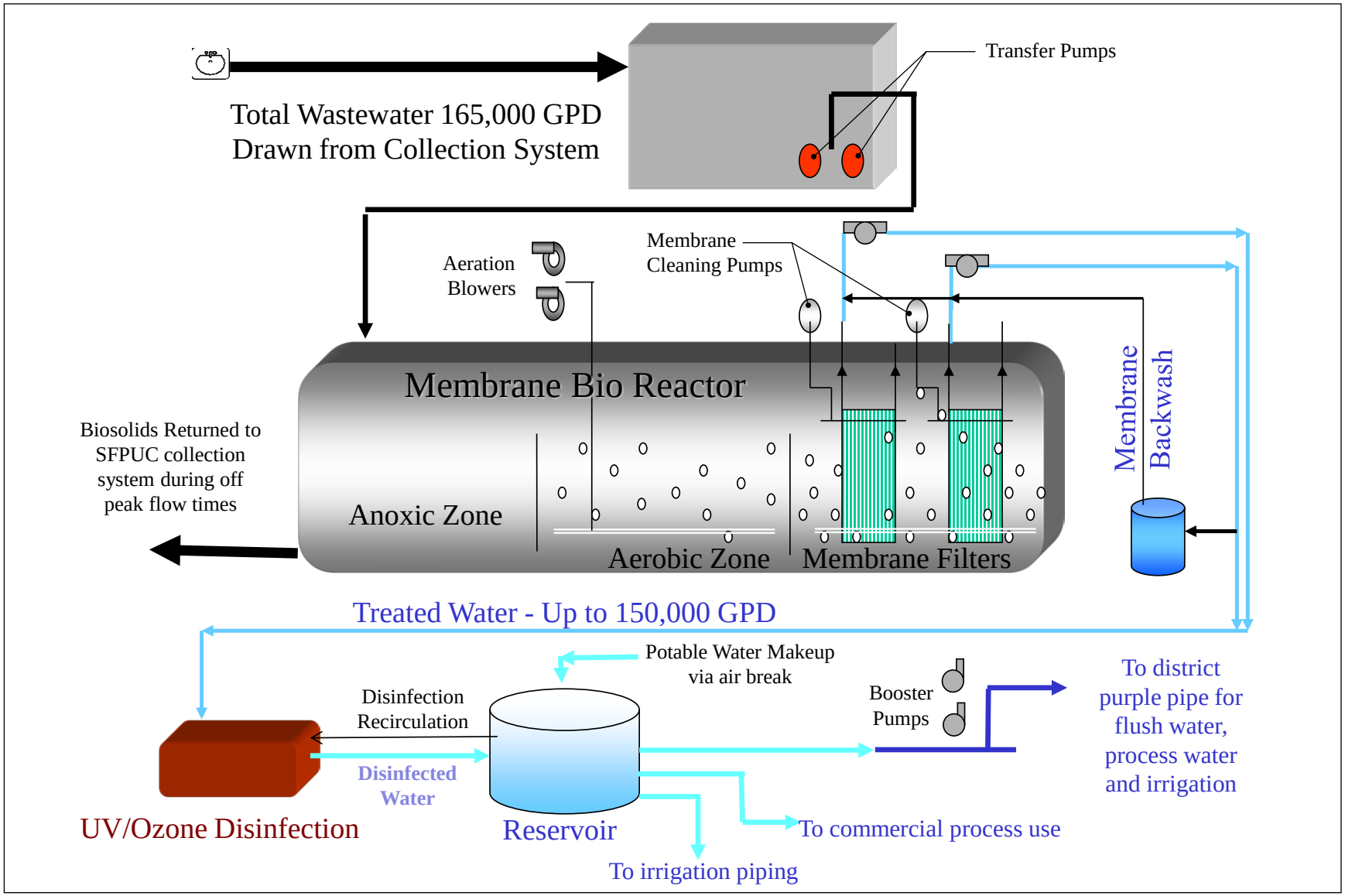
GEOTHERMAL BOREHOLE DETAILS

Recycled Water System

The 2018 Modified Project Variant would include a centralized recycled water system at HPS2, consisting of a dedicated 976,000 gpd central treatment plant and would serve both CP and HPS. The central treatment plant would divert wastewater from the sanitary sewer system for treatment using membrane bioreactor (MBR) technology to obtain a water quality appropriate for irrigation, toilet flushing and other nonpotable uses (i.e., recycled water). Rather than storing the solids (sludge) in a storage tank for periodic collection and transport off site for processing, as proposed for the treatment plants in the Utilities Variant 4, the solids removed from the water during treatment would be diverted back to the SFPUC sewer system.

A typical MBR facility schematic is included as Figure 17 (Distributed Water Reuse System Schematic). Wastewater processed for reuse would be diverted to a sewer collection pipe into the treatment facility. An MBR is divided into a number of steps that consist of:

- **Anoxic Treatment**—This first biological treatment step introduces the raw wastewater into a mixed anoxic, denitrifying bacteria chamber where nitrogen is removed and vented.
- **Aerobic Tank**—This second treatment step provides aerobic biological treatment where the wastewater undergoes carbonaceous oxidation and nitrification via a complete mix tank with air diffusers fed by blowers.
- **Membrane Filters**—This third step is a separate stage that includes ultrafiltration membrane filters that have a very fine pore size to remove virtually all particulate contaminants and produce a filtrate that is passed along for polishing. The membrane filters extract clear, treated water from the mixed liquor that is contained in the aeration tank via a membrane permeate pumping system. The filters are air scoured via air diffusers and can be backwashed in place.
- **UV/Ozone Disinfection**—Upon leaving the MBR, the filtered water can be disinfected further via units that subject the liquid contents to ultraviolet radiation and ozone treatment to oxidize any remaining compounds that impart color and/or odor in the treated water.
- **Storage Tanks**—The recycled water is stored in storage tanks. These storage tanks are kept nearly full at all times and a computer controller that operates the treatment system extracts wastewater from the wastewater collection pipeline for processing as the level in the storage tanks begins to drop. In addition, a continuous loop of water is taken from the tanks and reprocessed through the ultraviolet disinfection and ozone treatment to assure that the contents remain disinfected, clear, and odorless.
- **Water Return Distribution System**—A series of high-pressure pumps draws water from the storage tanks and distributes it via a piping network to the reuse district and irrigation and commercial uses that is labeled as "nonpotable" for reuse purposes.
- **Thermal Recovery System**—A thermal recovery system enables extraction of heat energy from the reclaimed water, which can be used to pre-heat domestic hot water systems along with space heating/cooling, etc. This option would be evaluated further when additional details are known about the HPS2 hot water systems and central plant configuration later in the detailed design process.



SOURCE: Natural Systems Utilities, 2017.

FIGURE 17 Addendum 5 to the CP-HPS2 2010 FEIR

DISTRIBUTED WATER REUSE SYSTEM SCHEMATIC

- **Odor Control Measures**—Odor control measures would be instituted to prevent emission of objectionable odors from the site of the recycled water facility. Treatment unit processes and raw sewage process tanks would be covered. An air collection system connected to the head space of tanks would be installed to keep a negative pressure on process tanks. Captured air would be conveyed to granular activated carbon air scrubbers. Scrubbed air would be discharged to the atmosphere. Scrubber monitoring and maintenance would be part of system operations. A more detailed description of odor control methods is provided in Addendum 5 Section II.B.7 (Air Quality), Impact AQ-8.

The MBR treatment system eliminates the need for secondary clarification and enables MBR facilities to operate at higher mixed-liquor-suspended-solids (MLSS) concentrations, which results in smaller process tanks and a smaller treatment plant footprint; less sludge production; a better ability to automate process control; and high-quality product water with low turbidity, bacteria, total suspended solids (TSS) and biochemical oxygen demand (BOD).

Preliminary design studies show that the recycled water facility, shown on Figure 18 (Location of Recycled Water Facility), could meet over 100 percent of nonpotable water demand through the first three sub-phases of development at HPS2 as determined by the SFPUC calculator. Provisions would be made to have potable makeup and supplemental supply if needed to meet peak or extraordinary demands. Connections to the sanitary collection system would be provided in the event the recycled water facility needs to be bypassed.

Based on current projected water demands, the recommended treatment system capacity for the first three sub-phases at HPS2 would be 150,000 gpd, eventually and potentially expanding to a final treatment system capacity of 976,000 gpd at full build-out. Full build-out includes provision for adding neighboring demands to the district. If a connection would be provided to CP, recycled water would be transported from the HPS2 plant to CP via a pipe attached to the bottom of the Yosemite Slough Bridge.

The 976,000 gpd treatment plant would be constructed in phases as one facility, starting with 150,000 gpd and then would be expanded incrementally as demand dictates. Final sizing would depend on confirmed phasing projections and detailed design calculations based on seasonal cooling demand estimates.

For each 150,000 gpd of recycled water produced, approximately 165,000 gpd of raw wastewater would be diverted from the SFPUC sewer system to the plant, which returns approximately 15,000 gpd of undigested biosolids to the sewer system.

The footprint area requirements for the 150,000 to 976,000 gpd water reuse facility would range from 10,000 to 82,000 sf, depending on the phase, actual capacity and a number of factors including available tank depth, membrane type, and final storage area requirements among other area constraints/considerations. A building containing blowers, pumps, treatment systems, and process

SOURCE: FivePoint, 2018.

FIGURE 18 Addendum 5 to the CP-HPS2 2010 FEIR

LOCATION OF RECYCLED WATER FACILITY

controls would take up about one third of that footprint. Outside the building would be below-grade equalization tanks, below-grade sludge holding tanks, and above-grade reuse water tanks. The building would require 17-foot ceilings to accommodate necessary equipment, which would result in a building of approximately 20 feet to 35 feet in height.

The recycled water would be pressurized and distributed to the demand district through a network of recycled water main lines that are connected to individual buildings. At present, planned uses include irrigation and toilet flush water. Commercial process water is also being contemplated. Actual requirements for commercial users may vary depending on the user, but uses such as specialized cooling, cleaning and washing, additional irrigation, and office uses are possible, either directly or via additional point-of-use treatment. It is possible that there would be a direct off-take to larger-scale irrigation as well.

Noise from equipment inside the recycled water treatment building would result in exterior noise levels that are at or below existing ambient conditions in the immediate vicinity of this building. The recycled water treatment building would be required to comply with Noise Ordinance Section 2909(b), which limits increases in noise levels at adjacent property lines to less than 8 dBA, and with Noise Ordinance Section 2909(d), which would require control of noise so that interior noise levels at the nearest residential receptor are less than 45 dBA.

Construction of the wastewater (or recycled water) treatment plant would begin when demand for recycled water reaches 150,000 gpd (currently projected at the beginning of Sub-phase HP-02). Prior to the operation of the recycled water facility, the low-pressure water system would supply water for irrigation and other nonpotable uses. Before the treatment plant is connected to the recycled water distribution system, the low-pressure water supply would be disconnected (via an air gap).

If the on-site recycled water system is not constructed, the recycled water lines would be interconnected and charged with potable water until SFPUC provides a source for recycled water to the project site. At this time, there are no long-term capital plans to provide such a source.

Solar Photovoltaic System and Battery Storage Systems

The utilities network would incorporate building-scale solar PV systems to generate renewable energy that could supplement SFPUC's power supply to the site. The utilities network would also include a building-scale and utility-scale battery storage system.

Solar Photovoltaic (PV) System

Solar PV systems would be installed on newly constructed buildings to maximize on-site renewable power output. Power produced by the PV cells would be delivered either directly to the building or directly to the local utility (SFPUC) distribution grid at street level utilizing industry standard bi-directional smart meters.

The solar PV system across HPS2 would have a 10.5- to 16.5-megawatt (MW) generating capacity. Figure 19 (Potential Areas of Solar Installation) depicts the aerial extent of the proposed solar PV arrays.

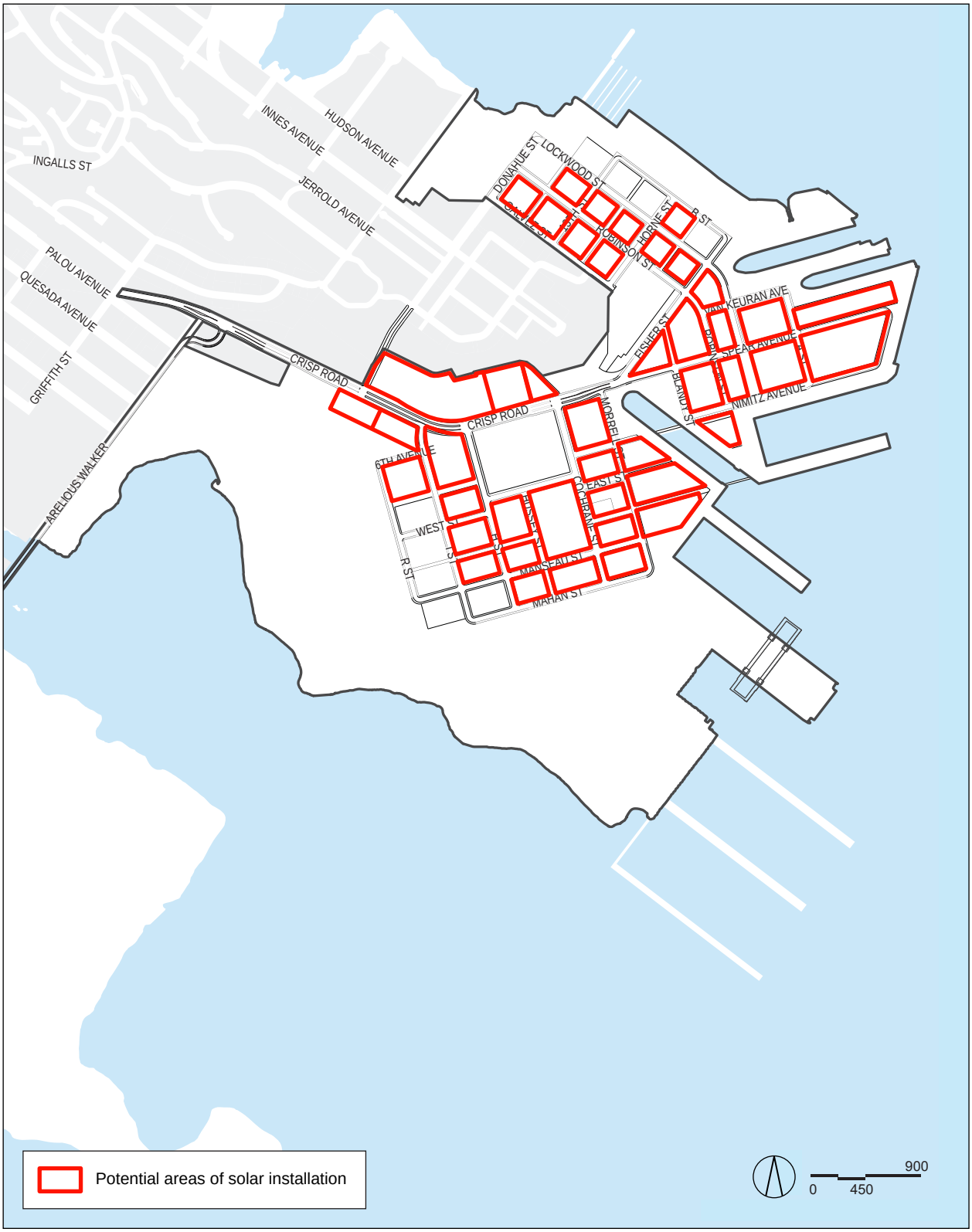
Solar panels would be installed in select areas where vertical PV elements could be integrated within building envelopes as a replacement for conventional building materials. These elements would be developed as buildings become available. The PV system would consist of mounted solar PV panels/tables, solar inverters, and cabling connecting the solar panels to inverters, batteries, and electric conduits in roadways. General building heights within the HPS2 site are anticipated to be between 40 feet and 120 feet high, with the exception of two towers that would be 270 feet and 370 feet tall, respectively. Each solar PV panel would be approximately 3 feet by 5 feet and depending on spacing and planning to optimize sunlight capture, may be grouped together as one larger "table" consisting of multiple panels. Panels/tables may be installed to be stationary and, when installed on rooftops, would be located within a couple feet above the rooftop surface or have the ability to tilt, in which case the panel tables may be up to 5 feet high as needed to optimize sunlight capture.

Photovoltaic arrays have minimal maintenance requirements and zero emissions associated with their operation. The panels would require occasional cleaning during their 20- to 30-year lifespan to ensure they continue to operate at optimal efficiency. The electronic components of the inverters would also need to be replaced during that lifespan; however, this would be infrequent and not cause any impacts to the panels and buildings.

Building-Scale and Utility-Scale Battery Storage System

Building-scale and utility-scale battery storage would be a component of the utility electricity systems to store surplus energy generated from the solar PV systems. The battery storage systems would enable better management of electricity loads during peak periods when electricity is typically most expensive.[16] Specifically, surplus energy stored in the batteries would be discharged into the network in lieu of importing electricity from the SFPUC grid. The battery storage systems could also provide backup power for critical customer loads at the Shipyard. In addition to demand reduction and limited backup power for HPS2 tenants, battery storage is increasingly being used to provide grid services to distribution utilities and transmission operators. The role of battery storage is rapidly evolving and future uses may include participating in demand response programs, providing ancillary services, such as frequency regulation and/or voltage support, and smoothing renewable generation to ease pressure on the grid. These services have traditionally been provided by central generators. However, distributed battery storage is increasingly being seen as a viable alternative provider of these services. In the initial phases of the project, advanced lithium-ion batteries would be used for energy storage due to their cost-effectiveness and space efficiency. Other battery technologies (e.g., reduction–oxidation flow batteries, molten salt batteries, and metal-air batteries) may be considered in future phases.

[16] Battery storage may occur "in front of the meter" and/or "behind the meter" depending on final design of the utility grid and integration with SFPUC's distribution management plan.



SOURCE: FivePoint, 2018.

FIGURE 19 Addendum 5 to the CP-HPS2 2010 FEIR

POTENTIAL AREAS OF HPS2 SOLAR INSTALLATION

The battery storage systems would be located at central plants enclosed in parking structures (discussed above) and in other buildings. Battery systems would consist of numerous battery cell "blocks," typically 10-by-10-foot cubes that may be wired in series, or parallel for increased voltage and amp hours. The blocks would have the ability to charge, store, and discharge energy in a self-sufficient manner. Other components of the battery storage system would include a power conditioning system for conversion between DC and AC power, control cabinets with computer and monitoring equipment, a HVAC system to maintain safe ambient operating temperature conditions, and a fire suppression system. Fire suppression equipment may include sprinklers or flame-retardant chemical dispersants.

I.C.2 CP Proposed Modifications

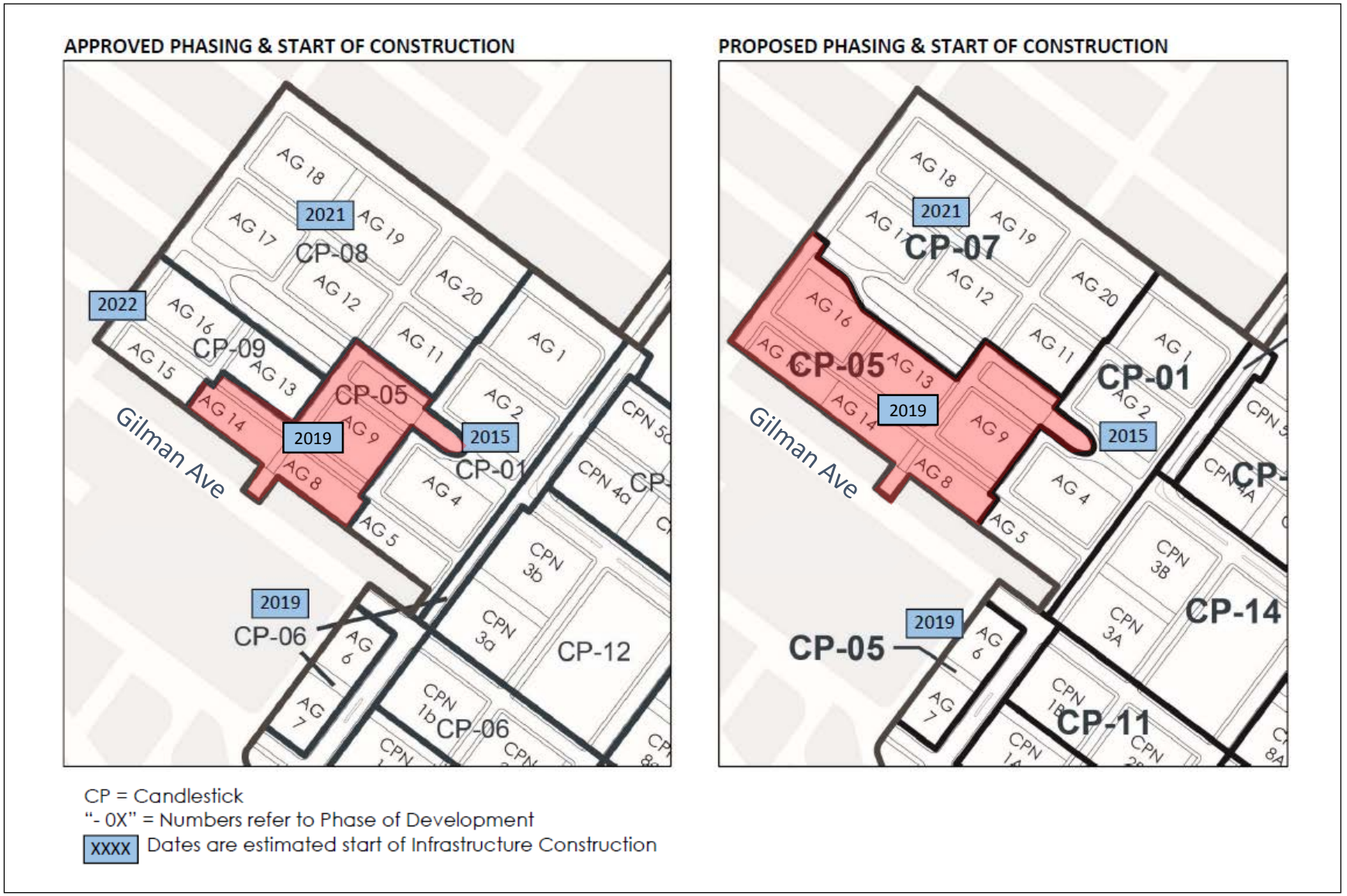
Land Use Plan

The 2018 Modified Project Variant would result in a total of 7,218 units at CP, which is 632 fewer units than assumed in the 2010 Project; however, the overall development program assumes 10,500 units between CP and HPS2, although an additional 172 units that were previously approved for HPS1 are assumed in HPS2, resulting in a total of 10,672 units. All other components of the development program remain the same as assumed in the 2010 Project (refer to Appendix A Table A-2); however, the configuration of the land uses and heights would follow the land use plan evaluated in Addendum 4 and approved in the 2016 CP D4D document by OCII and San Francisco Planning Commission.

The modifications associated with CP also include an updated phasing plan, which would re-order CP Major Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction and modify the boundary of CP-05.[17] Proposed changes to the CP-05 boundary are shown in Figure 20 (CP-05 Boundary and Phasing Modifications).The Jamestown Parcel, which is approximately 9.4 acres (2010 FEIR Table II-4, p. II-15), would be removed from the CP project boundary. Consequently, the Jamestown Parcel would be shifted from Zone 1 (the Candlestick Point Activity Node) to Zone 2 of the Bayview Hunters Point Redevelopment Plan Area (BVHP Project Area B) of the Bayview Hunters Point Redevelopment Plan (BVHP Plan).

The Jamestown Parcel was originally included in the BVHP Plan in 2006. In 2010, the BVHP Plan was amended to allow the development of the CP component of the CP-HPS2 project. The 2010 BVHP Plan amendments established two zones (Zone 1 and Zone 2) within the BVHP Project Area B of the BVHP Plan. Under the 2010 Plan amendments, the Jamestown Parcel was included within Zone 1. The 2010 Project proposed 325 residential units at Density Ranges I and II, with a maximum height of up to 65 feet (Density I) and 85 feet (Density II) for the Jamestown Parcel (2010 Project EIR, p. II-16).

[17] The Sub-phase CP-05 boundary has been expanded from three development blocks to eight development blocks, which allows for all 256 Alice Griffith Replacement Units and the Community Facility Lot to remain designated with the first major phase.



SOURCE: FivePoint, 2018

FIGURE 20 Addendum 5 to the CP-HPS2 2010 FEIR

CP-05 BOUNDARY AND PHASING MODIFICATIONS

Following approval of the proposed shift of the Jamestown Parcel from Zone 1 to Zone 2 of the BVHP Project Area B, this parcel would no longer be subject to the land use controls under the BVHP Plan, which apply only in Zone 1. Zone 2 is regulated by the San Francisco Planning Code. Consequently, the Jamestown Parcel zoning would revert to the underlying zoning of RH-2 District (Residential, House, Two-family). Under the Planning Code, up to one unit per 1,500 sf of lot area is permitted in the RH-2 District with Conditional Use authorization. The 2006 BVHP height limit of 40 feet would be reassigned to the Jamestown Parcel. Given these density and height limits and other Planning Code site development standards (e.g., open space, setbacks, rear yard, and parking), it is reasonable to assume that a conservative estimate of 200 units could be developed on the Jamestown Parcel under Planning Code requirements.

I.D HPS2 Construction Activities

I.D.1 Abatement and Demolition

Proposed demolition activities at HPS2 would include removal of structures and infrastructure to allow the construction of the new infrastructure. Demolition of existing structures within the Project site would occur from 2014 to 2034. The total quantity of construction debris generated by the removal of structures, roads, and infrastructure under the 2018 Modified Project Variant is estimated to remain approximately the same as with the approved plan. The 2010 CP-HPS2 Project called for removal of Piers B and C, removal of the timber cribbing associated with Dry Docks 5, 6, and 7,[18] and demolishing of five buildings due to radiological concerns, prior to the transfer of HPS2 to the City. The Navy has since completed these activities.

The Project Sponsor would demolish all other buildings proposed for removal. As necessary, abatement of hazardous building materials, such as lead and asbestos, would occur in buildings prior to demolition. Existing infrastructure would be demolished and removed or cut and capped. The Navy would remove most stormwater and sewer lines prior to transfer. The Project Sponsor would remove existing surface improvements such as asphalt and concrete pavement, concrete sidewalk and other surface improvements.

I.D.2 Site Preparation and Earthwork/Grading

Earthwork and Grading

For the 2018 Modified Project Variant, total quantity of excavated soil at the HPS2 site is estimated at approximately 100,000 cubic yards (cy) (as compared to 82,500 cy assumed for 2010 Project), with the increase primarily due to additional utility trenching, installation of the geothermal boreholes, and more refined information regarding construction activities. Excavation associated with the geothermal boreholes would result in approximately 12,250 cy of soil.

[18] Figures II-2 and II-19 of the 2010 FEIR depict the boundaries of Piers B and C, and Dry Docks 5, 6, and 7.

As with the 2010 Project, the 2018 Modified Project Variant would require up to 2,546,300 cy of imported fill for the developed areas and open space areas. Of this, up to 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Imported fill dirt and sand would be screened for contaminants in accordance with soil import criteria that would be developed for the project to comply with the regulatory requirements that would be applicable to the site through the CERCLA process and other local, state, and federal regulations.

In addition, locally excavated and imported fill would be used to add 5 to 10 feet of additional fill over existing ground surface, raising the site grade such that finished floor elevations would be 5.5 feet above the Base Flood Elevation (BFE) (as compared to 3.5 feet as analyzed by the Project in the 2010 FEIR) to complete surcharging and ground improvement, to elevate the site in compliance with new requirements for sea level rise (SLR) planning, and to provide the SFPUC with required freeboard and cover for utility systems.

Shoreline Protection Improvements and Sea-Level Rise Adaptation

Since certification of the 2010 FEIR, global sea levels have continued rising due to climate change, and they are expected to continue to rise at an accelerating rate for the foreseeable future. In December 2017, Moffatt and Nichol completed a supplement[19] to their 2009 project specific SLR study (Moffatt and Nichol 2009)[20] to provide updates to SLR projections, applicable policies, and design criteria for the HPS2 project that have occurred since 2010, when the 2010 FEIR, Infrastructure Master Plan, and Open Space and Parks Plan were prepared. The 2017 supplement reflects revised SLR projections from the National Research Council (NRC),[21] and subsequent policies and updated guidance from the California Ocean Protection Council, California Coastal Commission, San Francisco Bay Conservation and Development Commission (BCDC), and the City of San Francisco Planning Department, as they apply to the design and construction of the 2018 Modified Project Variant.

Under the revised design requirements for SLR, the HPS2 site would be graded such that finished floor elevations are a minimum of 5.5 feet above the base flood elevation (BFE), 2 feet higher than the 2010 FEIR requirement that finished floor elevations be 3.5 feet above BFE, to accommodate NRC's future SLR projections for the end of the century. In addition, to protect the perimeter of the HPS2 site and adjacent open space (shoreline areas), which have higher adaptive capacity and resilience compared to development areas, shoreline and public access improvements would be designed to allow for future SLR of 24 inches above the BFE, rather than the 16 inches required by the 2010 FEIR, to account for the NRC's mid-century SLR projection along with anticipated wave run-up along the shoreline.

[19] Moffatt & Nichol, *Memorandum: Sea Level Rise Supplement, Hunters Point Shipyard Development Project*, December 7, 2017.
[20] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment*, October 2009.
[21] National Research Council, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, Washington, DC: The National Academies Press, 2012. Available at https://www.nap.edu/catalog/13389/sea-level-rise-for-the-coasts-of-california-oregon-and-washington, accessed November 30, 2017.

Geotechnical Stabilization

Site preparation at HPS2 would include geotechnical treatments to address the potential hazard of liquefaction, settlement, and lateral spreading that may occur during a major earthquake. Where shallow foundations for low-rise and mid-rise structures would be underlain by artificial fill and the estimated settlement would be small, geotechnical treatment could employ a combination of removal and recompaction with the placement of geogrid[22] beneath structures to help distribute differential settlement that might occur.

In areas of the HPS2 site containing loose artificial fill with a greater risk of liquefaction and settlement, a range of ground improvement techniques could be used to densify the fill and reduce seismically induced settlement risk, including but not limited to Deep Dynamic Compaction (DDC),[23] static soil surcharging, Drilled Displacement Columns, Vibro-Compaction, Vibro-Densification, Deep Soil Mixing (DSM), Stone Columns, and Grout Columns. The use of DDC is identified as a potential solution to address seismically induced ground failure related to liquefaction, lateral spreading, and/or settlement in mitigation measure MM GE-5a of the 2010 FEIR. The use of DDC combined with static soil surcharging has now been advanced as likely ground improvement techniques at HPS2 and CP, consistent with mitigation measure MM GE-5a and, therefore, is evaluated in Addendum 5.

The performance of a full-scale test program (ENGEO 2017)[24] demonstrated that DDC is an appropriate method for densifying the upper 20 to 30 feet of artificial fill across portions of the CP site to mitigate liquefaction risks. In particular, DDC treats the fill sufficiently to allow mid-rise construction to be founded on a shallow foundation system as an alternative to deep foundation systems, which derive support on deeper competent material. In areas where soft young bay mud underlies the fill material, static soil surcharging would be implemented following DDC to provide additional ground improvement that would result in reduced settlement potential beneath building foundations. Static soil surcharging is accomplished by importing soil and placing it on the footprint of a proposed building location in a tall pile (surcharge pile) and leaving the surcharge pile in place for an extended period of time (typically 12 to 24 months depending on local conditions). The soil beneath the surcharge pile compresses under the weight of the pile and results in a stronger load-bearing soil profile. Wick drains are typically installed in the area of the surcharge pile to allow for groundwater to more easily redistribute throughout the soil as the soil becomes compressed. A subsequent technical memo[25] recommends that findings from the CP study could be used as

[22] Geogrids are synthetic fabrics (fiberglass, polyester, treated steel, etc.) formed into nets with openings more than ¼ inch in size to allow the fabric to interlock with surrounding soil, rock, and other below-ground-level materials and to function as reinforcement.
[23] DDC utilizes impact energy from a large weight free falling from a significant height to densify the ground. The weight is repeatedly dropped in a specific grid pattern at a defined drop height. At impact with the ground, energy is transmitted at depth to densify loose material.
[24] ENGEO, Inc., *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017.
[25] ENGEO, Inc., *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

reference for HPS2, but that site-specific studies should be performed to determine the efficacy of DDC and static soil surcharging for mitigating liquefaction and settlement risks at HPS2.

I.D.3 Construction Methods and Equipment

Borehole Installation

The geothermal boreholes would be located in clusters throughout HPS2 where they could be installed without conflicting with other uses of the site and in areas with minimal soil contamination or other environmental restrictions to the extent possible. As noted previously in the section describing the Geothermal HVAC System, approximately 2,800 boreholes would be installed. Each borehole would be approximately 6 inches in diameter and drilled to a depth of approximately 600 feet. The final location of boreholes may be adjusted as necessary based on further-refined engineering and design plans. The analysis in Addendum 5 already considers these location adjustments as the same construction methods and mitigation measures would apply.

Installation of the boreholes would generate approximately 12,250 cy of excavated soil. The excavated soil would be retained on site, as much as practical, for the purposes of raising the grade (see Section I.D.2). The excavated soil would be managed on site in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) land use and activity restrictions that apply to the specific location where the soil is generated (see Section II.B.10 [Hazards and Hazardous Materials]). Specific techniques for installing the boreholes are discussed below.

Multiple drilling rigs would be operational at the site at one time, depending on the final construction phasing and the need to avoid conflicts with other contractors on site. Each rig should be capable of completing two boreholes per day. Drilling techniques are summarized here for noncontaminated areas and for contaminated areas, in case such areas are included in the final system design. A cross-section of a typical geothermal well is included in Figure 16, showing construction details.

Six-inch-diameter boreholes would be drilled through unconsolidated material and into bedrock. During the drilling process, a bentonite clay and water mixture (drilling fluid) would be used to form a filter cake on the borehole wall. This would prevent the borehole from collapsing. Once the borehole is drilled to the design depth, the geothermal heat exchanger and grout pipe would be installed and pressure tested. Following pressure testing of geothermal heat exchanger, the borehole would be grouted in a continuous operation from the bottom to the top, until the grout flows from the borehole at the ground surface. If grout backfill settling occurs within the first 12 hours, then grout would be topped off to ground surface.

Although the boreholes are proposed in areas that avoid known contamination zones, in the event contaminated soil is encountered during drilling, a 7-inch-diameter permanent steel casing would be advanced and cemented in place to seal off and isolate the potentially contaminated soil and groundwater zones. The steel casing would extend from ground surface through the unconsolidated

material to first encountered bedrock. Following placement of the casing, the drill stem and bits would be decontaminated and the boring would be advanced from the base of the casing to its target depth using a 6-inch-diameter mud rotary/polycrystalline diamond compact (PDC) drill bit. Soil and rock cuttings and drilling fluid would be collected, contained, and managed in a controlled manner. Soil and rock cuttings may be used elsewhere on the development site in accordance with the Risk Management Plan. Drilling fluids (around 150 gallons per boring) would be contained and disposed of off site.

Once the boring has reached its design depth, the geothermal heat exchanger piping and tremie pipe (grout pipe) are installed. The geothermal heat exchanger piping would be pressure tested and, upon successful completion of the testing, the hole would be grouted to the surface with a cement-bentonite slurry.

Trenching

Approximately 30,800 linear feet of trenching would be needed along roadways for the installation of the sanitary sewer and utility system. Trenches would vary in dimensions, netting approximately 16,600 cy (924 dump truck loads) of spoils, which would be handled in accordance with the CERCLA environmental restrictions that apply to the specific location where the soil is generated (see Section II.B.10 [Hazards and Hazardous Materials]), adopted mitigation measures, and any additionally applicable federal, state, and local regulatory requirements. It is anticipated that a majority of the spoils would be managed on site by placing the spoils either back in the trench as backfill or elsewhere on the site in accordance with the regulatory requirements. Any spoils that cannot be reused on site would be disposed off site in accordance with regulatory requirements for land disposal. Approximately 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Import backfill sand would be screened for contaminants in accordance with the soil import criteria that would be developed for the project to comply with the CERCLA environmental restrictions that would be applicable to the site and other federal, state, and local regulations.

Water Taxi

Infrastructure associated with the water taxi would involve construction activities related to the floating dock platform and castings, the access ramp and landing platform, guide piles, and safety rails that would be manufactured and fabricated off site. These items would be delivered to the site for final assembly.

On-site work would take approximately 6 weeks. This work would consist of (1) placement of the concrete or steel floating platform and castings and the access ramp and landing platform; (2) placement of rebar and concrete form work; (3) form up and pouring of the guide pile pads; (4) drilling and grouting of the hold down bolts; (5) general trades, including crane operation, rigging, electrical, carpentry, and steel; (6) final assembly of the components; and (7) installation of the waiting area. It would be necessary to demolish short sections of the existing curb at the edge of the dry dock to accommodate the castings and ramp landing.

It is expected that the majority of the construction work associated with the water taxi would utilize conventional tools and equipment. A mobile crane would be required to unload and install the main components of the dock system, specifically lifting the gangway and placing the guide piles.

During construction, it would also be necessary to provide a floating work platform within the water so that workers could gain access beneath the ramp to install the fastenings. Additionally, a small workboat would be used to move equipment and materials within the water. The workboat would remain at the site for the duration of construction of the water taxi elements.

Donahue Street Extension

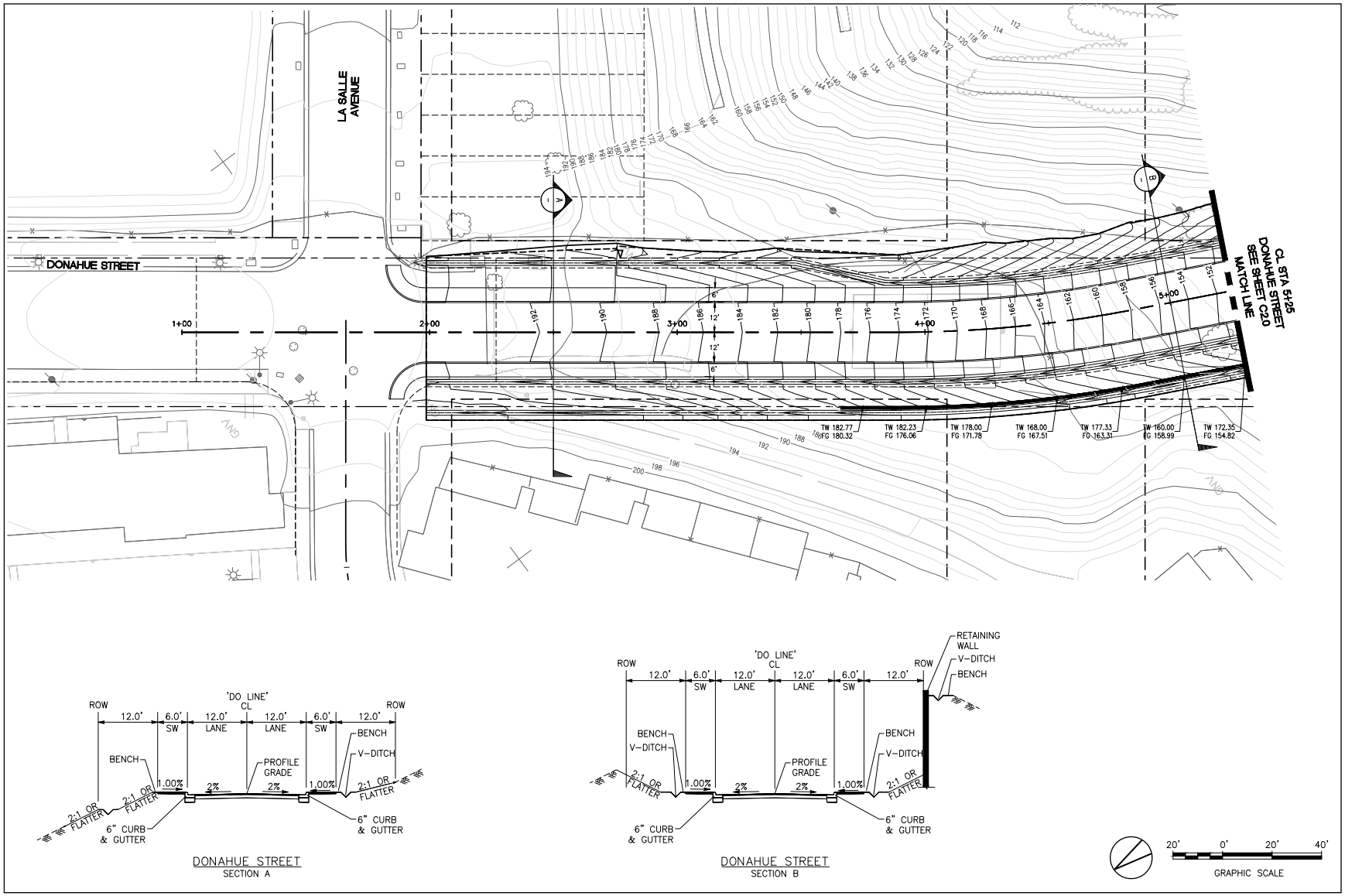
The 2018 Modified Project Variant would extend Donahue Street from La Salle Avenue/Kirkwood Avenue southwards to Crisp Road, pending dedication of land from Mariners Village to the City and determination that construction of the roadway extension is financially feasible. The length of the extension would be approximately 750 feet. The width of the right-of-way would be 60 feet, made up of two 12-foot-wide travel lanes, two 6-foot-wide sidewalks, and two 12-foot-wide grades accommodating the cut into the hillside. See Figure 21 (Donahue Street Extension—Conceptual Grading Plan [1 of 2]) and Figure 22 (Donahue Street Extension—Conceptual Grading Plan [2 of 2]). Other street infrastructure and utilities would be provided, including:

- Vertical curbs and gutters;
- Storm drain systems—12-inch and 18-inch high-density polyethylene [HDPE] pipe, v-ditch drains and inlets, curb inlets, manholes, bioretention, and sub-drains);
- Power—Single-phase power, 1.5-inch street light conduit, 17x30-inch SFPUC box, street light pull box, and street light poles, foundations, and luminaires;
- Landscaping—75x24-inch box trees, soil prep and finish grading, mulch topdressing, import soil, 2,200 1-gallon shrubs, and irrigation; and
- Potable Water Infrastructure—12-inch and 16-inch ductile iron pipe and associated appurtenances.

The road would slope downwards from a ground level of approximately 194 feet above sea level at La Salle Avenue to a ground level of approximately 106 feet above sea level at Crisp Road. A series of retaining walls extending a length of approximately 410 feet would be constructed to facilitate the road. The height of the retaining walls would vary from approximately 0.5 foot to 20 feet.

Construction activities associated with the road extension would include:

- Implementing stormwater pollution prevention and erosion control measures;
- Clearing all vegetation;
- Rough grading;
- Earthworks (excavation and backfill), retaining wall construction and fine grading;

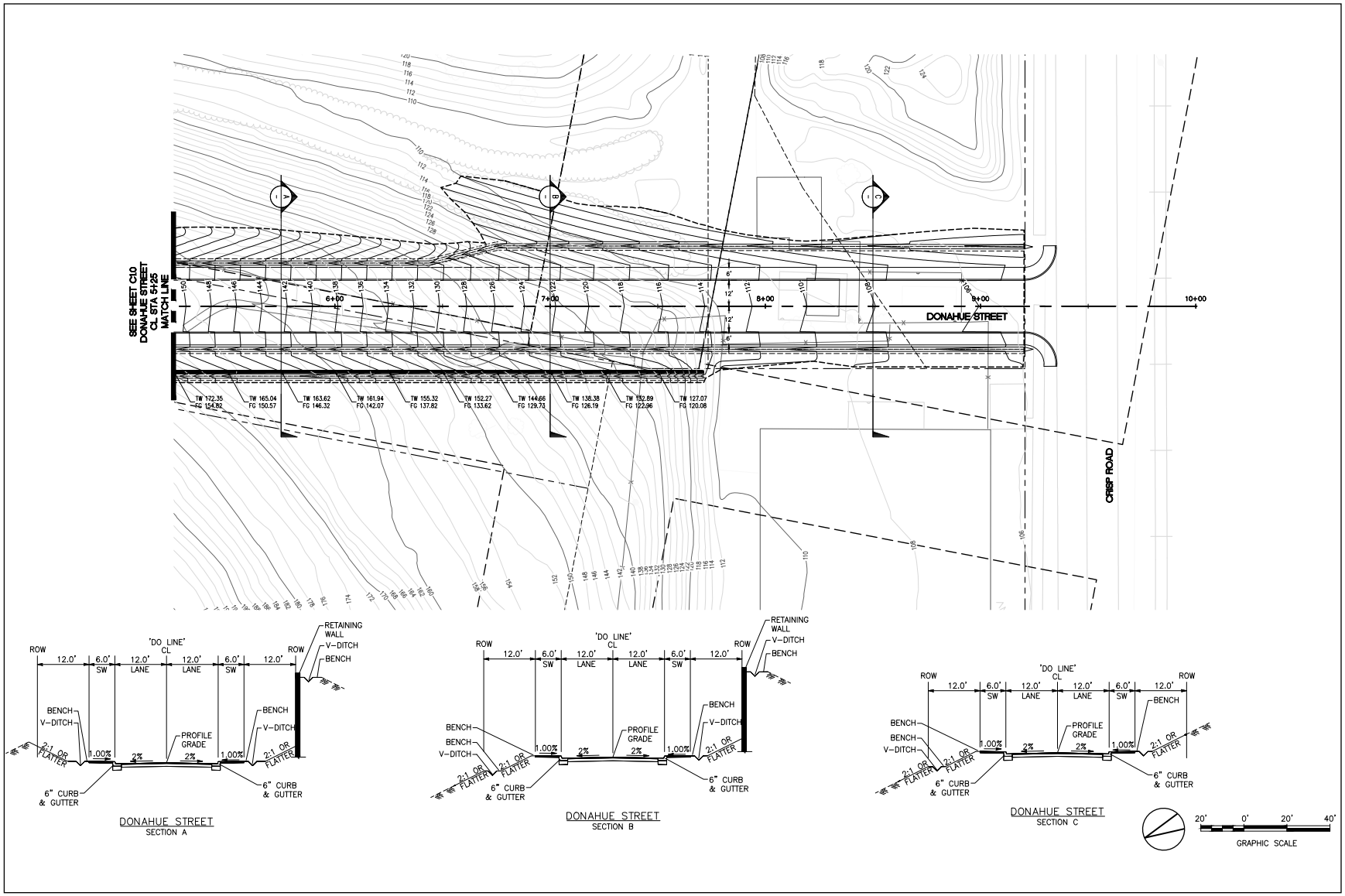


SOURCE: BFK, 2016.

FIGURE 21

Addendum 5 to the CP-HPS2 2010 FEIR

DONAHUE STREET EXTENSION — CONCEPTUAL GRADING PLAN [1 OF 2]



SOURCE: BFK, 2016.

FIGURE 22 Addendum 5 to the CP-HPS2 2010 FEIR

DONAHUE STREET EXTENSION — CONCEPTUAL GRADING PLAN [2 OF 2]

- Construction of 3 inches of asphalt concrete over 8 inches of road base; and
- Utility installation.

Pedestrian Bridges

Design and construction of both bridges at Dry Dock 4 would occur in a manner that is consistent with the Secretary of the Interior's Standards, as further discussed and described in Addendum 5 Section II.B.9 (Cultural Resources).

I.E CP and HPS2 Construction Phasing Plan

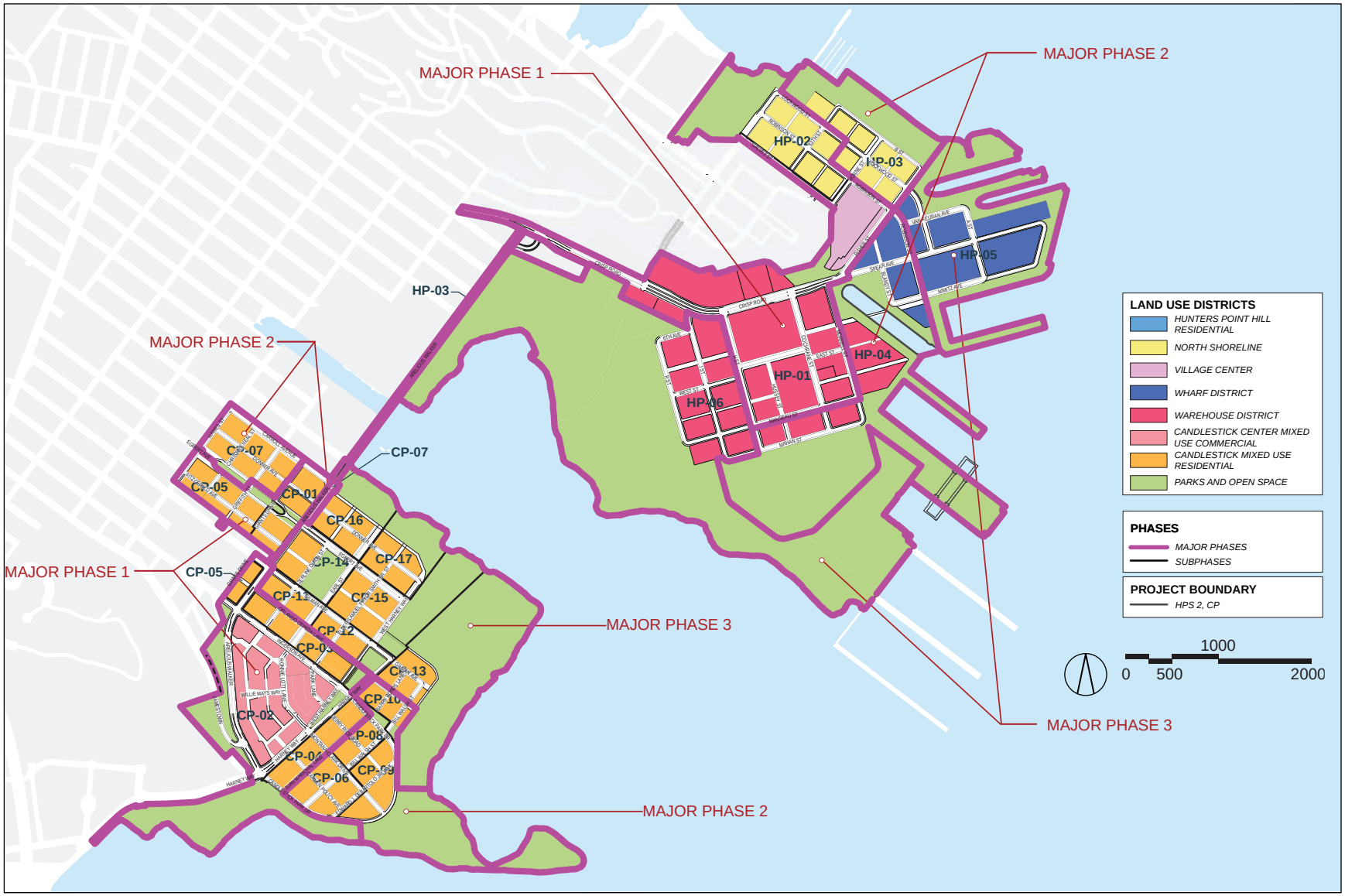
I.E.1 Amendments to Construction and Phasing Plan

The 2010 FEIR identified four major phases of development at both CP and HPS2. Each variant in the 2010 FEIR had a slightly different phasing and construction schedule. Addendum 1 also analyzed an updated phasing and construction schedule based on the Housing/R&D Variant (Variant 2A), which was approved with the Candlestick Point Major Phase 1 application. Addendum 5 proposes a new phasing and construction plan, which is described below. The construction schedule associated with the 2018 Modified Project Variant proposes that construction would begin later (in 2014, rather than 2011, as envisioned in the 2010 FEIR) and concludes later (in 2034, rather than 2031, as envisioned in the 2010 FEIR). Construction would continue to occur over a 21-year period.

HPS2 Phasing Plan

The HPS2 phasing plan under the 2018 Modified Project Variant would update the phasing and construction schedule for HPS2 by reducing the number of major phases from four to three, although it is anticipated that the three major phase applications would be submitted at the same time. Figure 23 (Construction Schedule) shows the delineation of the three major phases (1 through 3) and its six sub-phases (HP-1 through HP-06). Development would commence under Major Phase 1 with Sub-phases HP-01 and HP-02, followed by Major Phase 2 with Sub-phases HP-03 and HP-04, and Major Phase 3 with Sub-phases HP-05 and HP-06. Development of a sub-phase may begin before the development of a previous sub-phase is complete.

Phasing changes under the 2018 Modified Project Variant would distribute sub-phase development more evenly across the North Shoreline District and the Warehouse District than the previously approved phasing plan. This would allow for the concurrent development of a mix of uses, as well as the construction of infrastructure and circulation connections between the northern and southern portions of the Shipyard in the first and second sub-phases. By reducing the number of major phases and increasing the area of each sub-phase, development at the Shipyard would be accelerated.



SOURCE: FivePoint, 2018.

FIGURE 23 Addendum 5 to the CP-HPS2 2010 FEIR

CONSTRUCTION SCHEDULE

Sub-phase HP-01 includes the improvement of Fisher Street and Crisp Road, providing an infrastructure and transportation link between the northern and southern portions of the Shipyard. Sub-phase HP-01 also includes development blocks north and south of Crisp Road, as well as Buildings 813 and potentially Buildings 411 and 351, two existing buildings that would anchor the first sub-phase of development at the Shipyard. Sub-phase HP-02 includes development blocks along Robinson Street in the North Shoreline District and Sub-phase HP-03 includes the balance of development in that District. Sub-phase HP-04 includes the rehabilitation of Dry Dock 4 and the development of the surrounding blocks. Sub-phase HP-05 includes the development blocks in the Wharf District. Sub-phase HP-06 includes the balance of development in the southern portion of the Shipyard (Warehouse District).

CP Phasing Plan

The CP phasing plan under the 2018 Modified Project Variant would update the phasing and construction schedule for CP by reducing the number of major phases from four to three, consolidating Sub-phases CP-05 and CP-09 to advance the development of the Alice Griffith neighborhood and renumbering and resequencing the rest of the CP sub-phases to allow development to advance in an easterly rather than northern direction. The renumbering and resequencing reduces the number of sub-phases from 18 to 17.

I.F Project Approvals

The 2018 approvals required to implement the 2018 Modified Project Variant as addressed in Addendum 5 include the following:

	Project Approval	*Agency*
1	BVHP & HPS Redevelopment Plan Amendments	OCII Commission; Planning Commission; Board of Supervisors
2	HPS1 and CP-HPS2 Disposition & Development Agreement Amendments (including Phasing Plan & Schedule of Performance)	OCII Commission; Oversight Board; California Department of Finance
3	HPS2 D4D Amendments	OCII Commission; Planning Commission; Board of Supervisors
4	HPS2 Streetscape Master Plan & Signage Master Plan	OCII Commission; Art Commission; Board of Supervisors
5	Major Phases 1HP-3HP Application for Major Phases 1 through 3, submitted concurrently	OCII Commission
6	Sub-phases HP-01 to HP-06 Application(s)	OCII Commission
7	CP-HPS2 Transportation Plan	OCII Commission; SFMTA Board; Board of Supervisors
8	HPS2 Infrastructure Plan	Director of San Francisco Department of Public Works (SFDPW); SFMTA Board; Director of San Francisco Public Utilities Commission (SFPUC); Director of San Francisco Fire Department (SFFD); Board of Supervisors

	Project Approval	*Agency*
9	CP-HPS Below Market Rate Housing Plan	OCII Commission; Board of Supervisors
10	CP-HPS2 Parks, Open Space and Habitat Plan	OCII Commission; Board of Supervisor
11	CP-HPS2 Sustainability Plan	OCII Commission
12	General Plan Amendments: HPS Area Plan amended to remove the stadium; CP Sub-Area Plan amended to remove the Jamestown parcel; and CP Activity Node Special Use District amended to remove the Jamestown Parcel	Planning Commission; Board of Supervisors
13	Approvals Under 2011 Public Trust Exchange Agreement	State Lands Commission

I.G Future Approvals

The proposed amendments to the Hunters Point Shipyard Redevelopment Plan and the Bayview Hunters Point Redevelopment Plan provide limits of development within the respective plan areas consistent with the plan, plan documents, and applicable City regulations, limits that are analyzed in Addendum 5. The plans acknowledge that although these limits are the best estimates of development available at this time, the development program would be carried out over more than two decades, and to allow the ability to respond to future conditions, the plans include a provision that allows the OCII Commission to administratively approve future adjustments to the square footage limitations of individual land uses provided in the plans (with the exception of artists' and community use spaces) and attendant conversion of certain specified development uses to other allowed uses, provided that such adjustments do not exceed limits consistent with plan, plan documents, and applicable City regulations, and subject to any required additional environmental review. Additionally, the proposed plan amendments for both redevelopment plans include a provision allowing the OCII Commission to administratively approve a shift of R&D and office square footage from the Hunters Point Shipyard Redevelopment Plan area to those areas of Zone 1 of the Bayview Hunters Point Redevelopment Plan where such use is permitted, also subject to any require additional environmental review and subject to the limitation that the amount of square footage shifted would not exceed 10 percent, or 118,500 sf, of the maximum total nonresidential square footage permitted at CP, which is 1,185,000 sf. These provisions allow the Commission to consider and approve such future proposals without requiring an amendment of the plan sections that specify the square footage for various uses.

At this time, the developer has not made a specific proposal pursuant to these provisions. The provisions in the redevelopment plans provide a framework for future discretionary actions by the OCII Commission and require compliance with CEQA if and when an application is submitted pursuant to these provisions. Nonetheless, a programmatic analysis of the transfer of 118,500 sf of nonresidential uses from HPS2 to CP is provided in Addendum 5 for traffic, air quality, greenhouse gas emissions, and noise, as further described in Section II.A.2 (Approach to the Analysis, Analytic Method) and Appendix I (Transportation, Air Quality/Greenhouse Gas Emissions, and Noise

Analyses of the Transfer of Nonresidential Uses from HPS2 to CP). Section II.A.2 also describes why a programmatic evaluation of the other topical areas cannot be provided at this time.

II. ENVIRONMENTAL ANALYSIS

II.A Approach to the Analysis

As previously mentioned, the development plan analyzed in Addendum 5 is proposed by the Project Sponsor as a new variant, the "2018 Modified Project Variant," which includes revisions to land uses and some other changes from the Project and/or any of the land use variants proposed in 2010, and incorporates elements of the 2010 FEIR Candlestick Tower Variant 3D and certain components of the Utilities Variant 4. If approved, this new variant would be implemented instead of 2010 Project (the main, stadium project), R&D Variant (Variant 1), Housing Variant (Variant 2), or Housing/R&D Variant (Variant 2A), all of which were described and analyzed in the 2010 FEIR.

II.A.1 Authority for Use of an Addendum

CEQA Guidelines Section 15164 provides for the use of an addendum to document the basis for a lead agency's decision not to require a subsequent EIR for a project that is already adequately covered in a previously certified EIR. The lead agency's decision to use an addendum must be supported by substantial evidence that the conditions that would trigger the preparation of a subsequent EIR, as provided in CEQA Guidelines Section 15162, are not present. These conditions indicate that:

> (a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:
>
> (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
>
> (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
>
> (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
>
> (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
>
> (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
>
> (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Addendum 5 has been prepared to identify and assess the anticipated environmental impacts of the 2018 Modified Project Variant. The document relies on previous environmental documents[26] prepared to address in detail the effects or impacts associated with the project, as well as updated analysis prepared by qualified technical experts to address the 2018 Modified Project Variant. This document has been prepared to satisfy CEQA, (Public Resources Code Sections 21000 et seq.) and the CEQA Guidelines (14 CCR Sections 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects.

Where, as here, an EIR addressing an earlier version of the project has been previously prepared and certified, the lead agency considers the adequacy of that prior EIR in light of the current modified version of the project and changed physical circumstances since the time of the preparation of the prior EIR. Pursuant to CEQA Guidelines Section 15164, if the agency finds no basis for requiring the preparation of either a subsequent EIR or an EIR supplement, an EIR addendum shall be prepared. Accordingly, Addendum 5 describes the potential environmental effects of the 2018 Modified Project Variant compared to the impacts identified in the 2010 FEIR and explains how the proposed modifications would not result in any new significant environmental impacts or a substantial increase in the severity of previously identified environmental impacts and would not require the adoption of any new mitigation measures or alternatives to reduce previously identified significant effects.

II.A.2 Analytic Method

Baseline for Analysis

In Addendum 5, the 2018 Modified Project Variant is primarily described and assessed in relation to the 2010 Project (as described in 2010 FEIR Chapter II, Project Description). However, certain impacts are assessed in comparison to the 2010 FEIR R&D Variant (Variant 1), 2010 FEIR R&D/Housing Variant (Variant 2A), 2010 FEIR Utilities Variant 4, and/or the changes evaluated in Addendum 4 and approved by the 2016 D4D and amendments to the CP Major Phase 1 Application, which occurred subsequent to the 2010 FEIR where the impacts are more comparable to those variants or approvals instead of the 2010 Project. This analysis reflects the analytical approach mandated by the applicable sections of the CEQA Guidelines (Sections 15162 through 15164) and comprehensively reviews and compares the effects of the 2018 Modified Project Variant to those disclosed in the 2010 FEIR.

[26] http://sf-planning.org/environmental-impact-reports-negative-declarations, accessed on November 30, 2017.

Utility Systems

As further described in Section I (Project Description), Addendum 5 proposes an alternative utility system, which would complement the City's conventional system and would include a ground source geothermal heating and cooling system as the primary source of heating and cooling for the development, as well as solar power, recycled water, and building-scale and utility-scale battery storage.

A conventional utility system was analyzed as part of the 2010 Project, R&D Variant (Variant 1), and Housing Variant (Variant 2). In addition, certain components of the alternative utility system were also analyzed as part of 2010 Utilities Variant 4 (i.e., solar power, recycled water, and district heating and cooling plants, the latter of which did not, however, assume the use of a geothermal heating and cooling system composed of a vertical bore heat exchange process). The alternative utility system described in Addendum 5 Section I (Project Description), which include some components that were evaluated in the 2010 FEIR, are evaluated in Addendum 5.

Transfer of Nonresidential Uses from HPS2 to CP

The BVHP and HPS Redevelopment Plans allow for the transfer of up to 118,500 sf of nonresidential uses from HPS2 to CP, which represents approximately 10 percent of the total nonresidential land use program at CP of 1,185,000 sf, subject to future discretionary approval and environmental review, as necessary. The transfer of this nonresidential square footage is evaluated in Appendix I (Transportation, Air Quality/Greenhouse Gas Emissions, and Noise Analyses of the Transfer of Nonresidential Uses from HPS2 to CP) for traffic, air quality, greenhouse gas emissions, and noise. This analysis is based on the AM and PM peak hour trip generation associated with a transfer of 118,500 sf of nonresidential uses from HPS2 to CP (as part of the 2018 Modified Project Variant) and comparing that trip generation (and associated impacts) to what was disclosed in the 2010 FEIR, as further described in Addendum 5 Section II.B.3 (Transportation and Circulation).

Impacts related to cultural and paleontological resources, geology and soils, hydrology and water quality, and biological resources are based on the area of land disturbance. Since the transfer of nonresidential uses from HPS2 to CP would not result in a change in the area of land disturbance at either location, the impacts associated with these topical areas are accurately analyzed in the 2010 FEIR and Addendum 5. No further analysis is necessary based on the currently available information related to the transfer of land uses.

Other topical areas, including land use, population and housing, aesthetics, shadows, wind, hazards and hazardous materials, public services, recreation, and utilities, are based on specific locational and development (i.e., land use) information in order assess impacts. Similarly, localized operational and construction-related impacts related to traffic, air quality, and noise would also require specific locational and development information to assess impacts. Therefore, no further analysis can be provided in Addendum 5 based on the currently available information related to the transfer of land uses.

Internal Adjustment of Land Uses within HPS2 and CP

The BVHP and HPS Redevelopment Plans allow for the adjustment of uses within the HPS2 and CP project sites (but not between sites, beyond the ten percent transfer described above). For both CP and HPS2, the Commission may approve, without amendment to either Plan, but subject to any necessary environmental review, the adjustment of the nonresidential square footages over time (except artist or community use space), including the conversion to other nonresidential uses allowed by these Plans, provided the overall square footage limits for nonresidential specified in each Plan are not materially exceeded. However, because there is no information related to any potential "intra-site" adjustments, there is no analysis provided in Addendum 5 to address such adjustments. Any future adjustment of uses would be subject to potential, future discretionary and environmental review and approval, as necessary.

Jamestown Parcel

The 2006 Program EIR identified the zoning for the Jamestown Parcel as RH-2 (Residential, House, Two-family) with a height limit of 40 feet and evaluated proposed development under these zoning controls (see 2006 Program EIR, Figures III.B-1, IIIB-2, III.B-3, and III.B-4). The Jamestown Parcel area was undeveloped in 2006. In the 2006 Program EIR, the Jamestown Parcel was identified as part of the larger South Basin Activity Node.

The 2006 Program EIR evaluated the following proposed development in the South Basin Activity Node: 30,000 sf of Management and Information Professional Services; 100,000 sf of Production, Distribution, and Repair; 40,000 sf of Retail and Entertainment; and 600 Dwelling Units. The residential land uses were proposed to be located in the northeastern and southeast portion of the South Basin Activity Node, which included the Jamestown Parcel. Since 2006, approximately 300 to 310 housing units (of the 600 analyzed in the 2006 Program EIR) have been developed in the South Basin Activity Node.

The proposed shift of the Jamestown Parcel from Zone 1 to Zone 2 of the BVHP Project Area B would mean that this parcel would no longer be subject to the land use controls under the BVHP Plan, which apply only in Zone 1. Zone 2 is regulated by the San Francisco Planning Code. Consequently, the Jamestown Parcel zoning would revert to the underlying zoning of RH-2 District (Residential, House, Two-family). Under the Planning Code, up to one unit per 1,500 sf of lot area is permitted in the RH-2 District with Conditional Use authorization. The 2006 BVHP height limit of 40 feet would be reassigned to the Jamestown Parcel. Given these density and height limits and other Planning Code site development standards (e.g., open space, setbacks, rear yard, and parking), it is reasonable to assume that a conservative estimate of 200 units could be developed on the Jamestown Parcel under Planning Code requirements. The proposed boundary change to shift the Jamestown Parcel from Zone 1 to Zone 2 of the BVHP Project Area B does not require additional environmental review, because the impacts associated with development in the Jamestown Parcel under the 2006 zoning controls were evaluated in the Bayview Hunters Point Redevelopment Projects and Rezoning Program Environmental Impact Report (2006 Program EIR).

The 2010 FEIR considered the estimated development under the BVHP Redevelopment Plan in its cumulative analysis. The 2010 CP-HPS2 FEIR cumulative analysis was based on full buildout of the adopted plans in the project area, including the BVHP Redevelopment Plan. The 2010 FEIR evaluated cumulative impacts "based upon a list of related projects identified by the City and neighboring jurisdictions and/or on full implementation of the City's General Plan and/or other planning documents depending on the specific impact being analyzed." (2010 CP-HPS2 FEIR, III.A-6.) The 2006 BVHP Redevelopment Plan was adopted prior to the 2010 FEIR. Thus, the CP-HPS2 FEIR cumulative analysis accounted for the buildout of the 2006 BVHP Plan, including the development of the Jamestown Parcel.[27] Given that the anticipated residential development in the Jamestown Parcel was evaluated in the 2006 BVHP Redevelopment Plan Program EIR and was accounted for in the cumulative analysis in the 2010 CP-HPS2 FEIR, no additional environmental review of this proposed change is required, and it is not further addressed in Addendum 5.

Recycled Water Facility

Impacts associated with the 976,000-gpd central recycled water treatment facility are evaluated in Addendum 5 in terms of its location (e.g., size, height, geographic location) and/or ground disturbance in land use, aesthetics, shadows, wind, air quality, noise, cultural and paleontological resources, hazards and hazardous materials, geology and soils, hydrology and water quality, biological resources, public services, recreation, and energy. In terms of population, housing, and employment, the facility would require only one employee and, therefore, would not account for any noticeable increase in population, housing, employment, or related operational traffic impacts (or related operation air quality or noise impacts). Odor impacts associated with the operation of the recycled water facility are evaluated in the air quality section in Impact AQ-8. Lastly, the recycled water facility would not generate the need for any water, or, therefore, wastewater, and no further analysis is required in the utilities section of Addendum 5.

II.A.3 Format of Analysis

The analysis provided in Addendum 5 covers each of the technical issue areas addressed in the 2010 FEIR, including:

- Land Use and Plans (Section II.B.1)
- Population, Housing, and Employment (Section II.B.2)
- Transportation and Circulation (Section II.B.3)
- Aesthetics (Section II.B.4)
- Shadows (Section II.B.5)
- Wind (Section II.B.6)
- Air Quality (Section II.B.7)
- Noise (Section II.B.8)

[27] In effect, the CP-HPS2 FEIR evaluated the development of Jamestown in both the project level analysis and the cumulative analysis.

- Cultural and Paleontological Resources (Section II.B.9)
- Hazards and Hazardous Materials (Section II.B.10)
- Geology and Soils (Section II.B.11)
- Hydrology and Water Quality (Section II.B.12)
- Biological Resources (Section II.B.13)
- Public Services (Section II.B.14)
- Recreation (Section II.B.15)
- Utilities (Section II.B.16)
- Energy (Section II.B.17)
- Greenhouse Gas Emissions (Section II.B.18)

Each of the technical sections addresses (1) changes in the project proposed in the 2018 Modified Project Variant that are relevant to that particular issue area and (2) impacts associated with construction and implementation of the 2018 Modified Project Variant as compared to the Project and/or variants analyzed in the 2010 FEIR. To provide context, each impact discussion includes a brief summary of the conclusions of the 2010 FEIR relative to that particular impact discussion, either as an introductory paragraph or woven into the impact analysis itself if a side-by-side comparison to the 2010 FEIR provides a more useful analytical tool.

For most topical areas, the analysis focuses on HPS2 since that is where the land use changes proposed by the 2018 Modified Project Variant occur; the land use program associated with CP is the same land use program as approved by the 2016 D4D. However, the transportation analysis considers the combined CP and HPS2 sites for construction traffic, project-related trips (vehicular, transit, bicycle, and pedestrian), parking and loading, air traffic, design features, and emergency access; similarly, the air quality, greenhouse gas emissions, and noise analysis also considers the combined CP and HPS2 sites for any impacts related to vehicle trips. All other topical areas assume that impacts associated with CP are covered in the 2010 FEIR, unless specifically described and analyzed otherwise.

Decision-makers have relied on prior addenda prepared subsequent to the certification of the 2010 FEIR to demonstrate that previously proposed changes to the 2010 Project, as evaluated in those addenda, could be implemented without changing the conclusions of the 2010 FEIR. Addendum 5 includes all prior changes that were both proposed and evaluated in previous addenda but now carried forward, as well as the additional changes proposed in 2018. It evaluates all of those changes against the 2010 FEIR, including analyses in the variants analyzed in that document. The Project proposed in Addendum 5 represents the "Project."

CEQA Guidelines Section 15162(a)(2) states that for an EIR that has been certified, no subsequent EIR shall be prepared if there are no physical changes in circumstances under which the project is undertaken that give rise to a new significant environmental effect or a substantial increase in the severity of previously identified significant effects. The physical changes in circumstances at CP and HPS2 do not give rise to new significant environmental effects or a substantial increase in the

severity of previously identified significant effects related to the 2018 Modified Project Variant. These physical changes include:

- Additional remediation activities at HPS2 performed by the Navy;
- Demolition of the commercial kitchen at HPS2, which was located along Robinson Street, north of Fisher Avenue;
- Construction of a new commercial kitchen at HPS2 along Fisher Avenue near the intersection of Spear Avenue;
- Excavation of the artist building/plaza at HPS2, with soil being stockpiled behind Buildings 808 and 813;
- Installation of water and storm drain utilities on Galvez Avenue, Horne Avenue, and Robinson Street (with subsequent grading and paving of these roadways anticipated in 2018); and
- Demolition of the stadium, construction of the new Alice Griffith residential buildings, and various civil works associated with the CP Center, all at CP.

For three topical sections—Population, Housing, and Employment; Transportation and Circulation; and Biological Resources—a section entitled "Changes in Circumstances" is provided where specific information, beyond the summary outlined above, better describes physical changes in circumstances related to those particular topics. Similarly, a section entitled "new regulations" is only provided for those topical sections where new regulations are applicable. Again, neither the specific changes in physical circumstances nor any new regulations give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects related to the 2018 Modified Project Variant.

The analytic methods for each topical section follows the same methods used in the 2010 FEIR. Where the methods vary, the reasons why that is necessary are provided in the topical sections of Addendum 5.

The impact statements presented in Addendum 5 include only those that relate to the changes proposed by the 2018 Modified Project Variant. There are other impact statements provided in the 2010 FEIR that are not included in Addendum 5 because they relate to elements of the 2010 Project or its subsequent modifications (prior to 2018) that have not changed, which primarily relate to CP. Addendum 5 Appendix C (Impacts Evaluated in Addendum 5) identifies each of the impact statements provided in the 2010 FEIR and indicates whether they are evaluated in Addendum 5.

Lastly, any project modifications and revised mitigation measures that were identified in the previous addenda and subsequently approved for the CP-HPS2 Project are assumed as part of Addendum 5, and are found in Table A-1 of Addendum 5 Appendix A.

II.B Analysis of Environmental Effects

Sections II.B.1 through II.B.18 describe the environmental effects of the 2018 Modified Project Variant and conclude that the proposed modifications would not result in any new significant environmental impacts or a substantial increase in the severity of previously identified environmental impacts and would not require the adoption of any new mitigation measures or alternatives. Some mitigation measures are recommended for revision or deletion to account for new construction methods, updated technical reports, increased technical clarity, and land use program changes.

For purposes of Addendum 5, and consistent with the general definition in the 2010 FEIR, the "Project Sponsor" is assumed to be FivePoint. The "Project Applicant" is the vertical developer. In Appendix B (MMRP), some of the requirements would be assumed by the Project Applicant rather than the Project Sponsor.

II.B.1 Land Use and Plans

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
10.	**Land Use and Planning.** Would the project:					
B.a	Physically divide an established community?	2010 FEIR p. III.B-33 (Impact LU-1); Addendum 1 p. 28; Addendum 4 p. 13	No	No	No	None
B.b	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	2010 FEIR p. III.B-37 (Impact LU-2); Addendum 1 p. 28; Addendum 4 p. 13	No	No	No	None
B.c	Have a substantial adverse impact on the existing character of the vicinity?	2010 FEIR p. III.B-39 (Impact LU-3); Addendum 1 p. 28; Addendum 4 p. 13	No	No	No	None

Changes to Project Related to Land Use and Plans

The Project modifications related to land use and plans that are relevant to, and considered in, the discussion below include generally the proposed new uses, the density and intensity changes, the adjustment to district boundaries, revised configurations or locations of certain Project elements, the additional pedestrian and bicycle network improvements, the new circulation improvements and modifications, and the proposed recycled water facility.

Comparative Impact Discussions

Impact LU-1: Implementation of the Project would not physically divide an established community. ***[Criterion B.a]***

	2010 CP-HPS2 FEIR	2010 CP-HPS2 FEIR Addendum 5
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR determined the Project would have no impact with regard to the potential to physically divide an established community. The 2010 FEIR recognized the Project would change land uses in the area and increase the density and intensity of development on the Project site. Existing connections between the Project site and surrounding development, however, is limited. CP and HPS2 are physically isolated from nearby neighborhoods. Street connectivity between the CP and HPS2 and the surrounding neighborhoods is restricted. The limited access to CP and HPS2 interferes with access to the Candlestick Point State Recreation Area (CPSRA) and the shoreline.

The 2010 FEIR found the Project would develop new mixed-use districts, a new street grid, new pedestrian, transit, and bicycle access, public gathering places, and new open space and recreational uses that would facilitate connections between the Project site and the surrounding communities. The new land uses would provide services, recreational opportunities, and other amenities that would be used by the existing surrounding communities and the new Project residents. The 2010 FEIR found the Project would improve the connectivity of the site to the surrounding neighborhoods and the City. Consequently, the 2010 FEIR concluded the Project would not divide an established community.

Similar to the 2010 Project, the 2018 Modified Project Variant would develop a new mixed-use community with distinct districts accommodating a variety of residential uses, retail uses, research and development uses, open space, parks, and recreational uses, cultural uses, community uses, on- and off-street parking, and a marina. The 2010 Project included a new stadium in the Shipyard south area. Similar to the approved non-stadium land use Variants in the 2010 FEIR (R&D Variant [Variant 1] and Housing/R&D Variant [Variant 2A]), the 2018 Modified Project Variant would include housing and R&D uses in this area.

The addition of a hotel, school uses, regional retail use, and maker space would add to the diversity of uses in this new urban community and would serve and complement the planned residential and commercial uses at HPS2 and the surrounding neighborhoods. These uses would attract existing City residents and visitors to the site, thereby connecting the site to the larger surrounding community. The addition of maker space would accommodate a Citywide growing contemporary type of small-scale manufacturing uses that would be suitable for the mix of uses planned at HPS2. This use would complement the existing artists and artisans working at HPS2. None of these new uses would divide an established community.

Although the density and intensity of some of the uses proposed in the 2018 Modified Project Variant would vary from the Project, the overall balance of development uses generally would be maintained as square footage, as some uses would be reduced to accommodate the increase in other uses. Some residential units (172) and commercial space (71,000 sf) that were approved for HPS1, but were not constructed, would be accommodated in HPS2. These additional units and commercial space would be contained within and distributed throughout HPS2 and are accounted for in this analysis. Additionally, the changes in density and intensity of development would not interfere with the planned, new physical connections to surrounding neighborhoods, the improved vehicle, pedestrian, bicycle, and transit access to the site, or access to the shoreline. Thus, these Project modifications would not divide an established community.

The 2018 Modified Project Variant would modify the methodology for locating two high-rise towers within HPS2. Tower A would be on the same block as identified for the 2010 Project, but a flexible tower zone would be added to the entire block. Tower B would be moved one block north from the location shown in the 2010 FEIR for the 2010 Project and would include a flexible tower zone for the entire block. These towers would not be located adjacent to or near an existing community. The minor shift in the allowable location of the towers would not interfere with the planned, new physical

connections to surrounding neighborhoods, the improved vehicle, pedestrian, bicycle, and transit access to the site, or access to the shoreline. Thus, these Project modifications would not divide an established community.

The addition of a water taxi would expand transportation options to and from the site providing a service to the residents, commercial users, and visitors and generally increase the connectivity of the Project site to areas around the Bay. The proposed bridges across Dry Dock 4 would enhance the planned pedestrian/bicycle network along the shoreline area and Waterfront Promenade at HPS2. The proposed extension of Donahue Street would provide a new vehicle and pedestrian connection to HPS1 from the south and connect existing communities with future recreation area and services at HPS2. These proposed modifications would improve the connectivity of HPS2 to HPS1, surrounding neighborhoods, and nearby local communities.

The 2018 Modified Project Variant would include minor revisions to the boundaries of the land use districts to reflect the reconfigured limits of development and reconfigured parks and open space areas. In the North Shoreline District, development north of B Street has been removed, which would increase the size of the Waterfront Promenade in this area. The Waterfront Promenade would also increase due to the inclusion of a new civic square at the end of Dry Dock 4, known as the Water Room. These changes would increase the size of the Waterfront Promenade by approximately 4.4 acres. The Water Room would be a community gathering place, and Dry Dock 4 would include seating along the full extent of the dock.

As a result of retaining the existing street grid to reflect the historic shipyard configuration, the 2018 Modified Project Variant would remove three individual parks (Hunters Point Park Blocks, Hunters Point Wedge Park, and R&D Plaza) and provide a consolidated 8.1-acre publicly accessible private open space (POPOS) on Crisp Road, known as the Green Room. The Sports Field Complex would be relocated to the southern edge of the site. The Grasslands Ecology Park would be reconfigured due to changes in the Sports Field Complex and the street layout in the Warehouse District. The Hillside Open Space area would increase in size and would continue to create a pedestrian connection between the Hill Top Park (which is part of HPS1) and the proposed Water Room.

Overall, the amount of public or publicly accessible open space and park area at HPS2 would be 232.0 acres, an increase of 0.4-acre from the 2010 Project and an increase of 9.8 acres from the R&D Variant (Variant 1). These modifications would increase open space along the Waterfront Promenade and provide additional public amenities, including the Water Room. Compared with the 2010 Project, these proposed modifications would maintain or increase open space and public access opportunities to and within the site, particularly along the waterfront and, thus, would not divide an existing community.

The 2018 Modified Project Variant would include revisions to the roadway cross section dimensions and alignments at HPS2 and sidewalk widths. These modifications would maintain the multimodal nature of access to and through HPS2 and thereby increase connectivity with surrounding areas and

within the site over existing conditions by improving the quality of the facilities within the HPS2 site and the connections to the existing neighborhood streets. These modifications would be located within, and would facilitate circulation throughout, the Project site. Thus, these modifications would not divide an existing community.

The proposed reconfiguration of the street network within the Warehouse District would facilitate the sequence of development phasing based on the progressive transfer of parcels from the Navy and allow the retention of Buildings 351 and 411. Streets in the Hunters Point South neighborhood would be similar to what was proposed in 2010 FEIR Variant 1 (R&D) (2010 FEIR Figure IV 1, p. IV-7), but street alignments have been slightly modified to account for retention of these additional existing buildings. Overall, the size and density of the street grid in Hunters Point South is similar to what was originally approved in 2010 FEIR Variant 1 (R&D); therefore, transportation capacity is expected to be similar.

This reconfiguration would not interfere with or adversely affect the planned, new connections to the surrounding area or access to the Project site or shoreline. Additionally, the location of the Hunters Point Transit Center would shift from the south side of Spear Avenue near the intersection of Lockwood Street to the north side of Spear Avenue to near Dry Dock 2. The Transit Center would increase from 10 to 14 bays. The Transit Center would continue to be a Project element that would increase the connectivity of the Project to other neighborhoods throughout the City. The expanded number of bays would facilitate this connectivity. Thus, these modifications would not divide an existing community.

The 2018 Modified Project Variant includes a recycled water facility proposed to be located along Crisp Road. The 2010 FEIR Utilities Variant 4 analyzed on-site wastewater treatment at 11 decentralized facilities, four of which were located at HPS2 and found that these facilities would not divide an existing community. The proposed facility would be located within the Project HPS2 boundary at the edge of the development area in the Warehouse District and is not adjacent to surrounding off-site uses. Given its location, it would not interfere with new access to the Project site and would not divide an existing community.

The modification of the number of housing units proposed for CP, which includes a decrease of 632 units as compared to the 2010 Project, would be accommodated in the planned residential and mixed-use areas, excluding the Jamestown Parcel. This modification would be accommodated within the Project site and would not interfere with or reduce the new planned connections to the surrounding community or the new access to the CPSRA and the shoreline. Thus, this modification would not divide an existing community.

Similar to the 2010 Project, the 2018 Modified Project Variant would redevelop the largely vacant and underused Project site with an active urban community that would create greater connections within the site, with surrounding neighborhoods, and with the City as a whole. The existing site is isolated from surrounding neighborhoods and the City as a whole. Access to HPS2 remains restricted due to Navy remediation activities. Similar to the 2010 Project, the 2018 Modified Project

Variant would remove existing barriers to Project site access and circulation within the Project site. Vehicle, pedestrian, transit, water taxi, and bicycle access to the site would be provided. Access to the parks, open space, and shoreline would be provided. The mix of uses in the 2018 Modified Project Variant would draw people to the site and provide services, employment, entertainment, and recreational opportunities for those living in the Project site, the surrounding neighborhoods, and the city. There would continue to be no impact.

Impact LU-2: Implementation of the Project would not conflict with land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect. ***[Criterion B.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant.

The 2010 FEIR reviewed the Project's consistency with applicable land use plans and policies. The 2010 FEIR determined that the Project was generally consistent with applicable land use plans and recognized that various land use plans would be amended as part of the Project approval actions. No conflicts with plans, policies, or regulations adopted to avoid or mitigate environmental impacts were identified. This potential impact was determined to be less than significant.

At the time of Project approval in 2010, amendments to the Bayview Hunters Point Area Plan, Bayview Hunters Point Redevelopment Plan, Hunter Point Shipyard Redevelopment Plan and San Francisco Planning Code were adopted to reflect and accommodate the Project. Since 2010, the San Francisco Bay Plan, Map 5, Policy 22 (amended January 2012) and San Francisco Bay Area Seaport Plan (amended January 2012) were amended to reflect the redevelopment plans for the Project.

Additionally, as acknowledged in 2010 FEIR Addendum 4, the CPSRA General Plan was amended in 2013. The 2013 General Plan established goals and policies for the CPSRA consistent with the redevelopment of the CP and HPS2 sites. As noted in Addendum 4, the 2013 General Plan describes the vision and role of the park as "an urban state park" which would function as the intermediary between the shoreline and the adjacent large mixed-use development and provide "a green front lawn" for the planned community of townhomes, high rises, and shopping districts. There would be many more people visiting the park, looking to enjoy the incredible water's edge recreation, as well as contact with nature and respite from city life. Thus, future development of the park must carefully navigate this intermediary nature between the city and shoreline edges. CPSRA's spirit of place would continue to evolve, as a gradient of these urban and natural experiences" (CPSRA General Plan p. I-9).

The 2018 Modified Project Variant includes amendments to certain Project regulatory and entitlement documents, including, specifically, the BVHP Redevelopment Plan and HPS Redevelopment Plan, the HPS2 Design for Development, the CP-HPS2 DDA and exhibits thereto (Schedule of Performance, Phasing Plan, Design Review and Document Approval Procedure, Infrastructure Plan, Transportation Plan, Sustainability Plan, Parks and Open Space Plan, Community Benefits Plan, and Housing Plan), and revisions to certain trust boundaries pursuant to

the State Public Trust Boundary Agreement. Modifications are also being sought to remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02) and shift this parcel from Zone 1 and include it in Zone 2 of the BVHP Redevelopment Plan. These document amendments would accommodate the 2018 Modified Project Variant development proposal to allow for changes in the arrangement, density and intensity of uses (including height and bulk limits), the addition of compatible uses, an alternative utility system, and other infrastructure and design changes as described in Addendum 5.

The potential environmental impacts of these proposed modifications are analyzed in Addendum 5. No conflicts with any plans, policies, or regulations necessary to address the environmental impacts of the proposed modifications have been identified. The 2018 Modified Project Variant would be implemented consistent with the Project Mitigation Monitoring and Reporting Program (including proposed amendments as described in Addendum 6) and applicable environmental regulations. The impact would remain less than significant, and no mitigation would be required.

Impact LU-3: Implementation of the Project would not have a substantial adverse impact on the existing character of the vicinity. ***[Criterion B.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR acknowledged the Project would substantially alter the land use character of the Project site by replacing the existing character of the site with new mixed-use development, including a range of residential, commercial, cultural, and entertainment uses, infrastructure, and parks and open space. Additionally, the 2010 FEIR acknowledged the scale of development proposed by the Project would contrast with nearby residential neighborhoods and industrial area. The 2010 FEIR concluded the Project would improve existing land use conditions at the Project site and would not have an adverse effect on the Project site. Additionally, with respect to HPS2, the 2010 FEIR stated "[w]ith the transition in scale and uses, the extension of the existing street grid, and the connectivity of new open space with existing shoreline open space, the Project would be compatible with surrounding land uses. The Project would not result in a substantial adverse change in the existing land use character at the Project site or vicinity" (2010 FEIR p. III.B-40). Based on this analysis, the 2010 FEIR concluded that the Project would result in a less-than-significant impact on the existing character of the vicinity.

The 2018 Modified Project Variant also would result in an overall improvement of the site, redevelopment of vacant underutilized areas with a new mixed-use community, extension of the street grid, and creation of new connections to the Project site including access to the new parks and the shoreline. The 2018 Modified Project Variant would continue the pattern of locating lower-density residential and mixed-uses in the northern area of the site with a transition to higher-density and more intense commercial uses in areas of HPS2 further from existing development. The 2018 Modified Project Variant would add to the mix of uses on the site, which would expand visitor-serving uses (e.g., the hotel, the water taxi, expanded Waterfront Promenade, new bridges), retail options (e.g., regional retail and maker space), and educational options available to the surrounding community.

Similar to the 2010 Project, the 2018 Modified Project Variant would increase vehicle, pedestrian, bicycle, and transit access to the various urban uses on the site and to the open space and recreational opportunities, including shoreline access. Although the 2018 Modified Project Variant would modify certain aspects of the development plan, the general scale and intensity of uses and general arrangement of land uses would be similar to the 2010 Project and R&D Variant (Variant 1). In general, the 2018 Modified Project Variant would improve conditions at the Project site and connect the site to the larger urban fabric of the surrounding area and the city.

Under the 2010 FEIR Utilities Variant 4, wastewater treatment facilities were distributed among 11 locations across the Project site, with four locations in HPS2. The estimated size of each plant was 36,250 sf and each plant included underground facilities. The 2010 FEIR concluded that these facilities were consistent with the overall Project uses and building characteristics and thus would result in less-than-significant land use impacts. In the 2018 Modified Project Variant, one recycled water facility would be located along the south side of Crisp and across from planned R&D uses on the north side of Crisp and across I Street from planned high-density uses in the Shipyard South district. Some aspects of the facility would be located outside the structure and below grade. Above-grade reuse water tanks would be constructed. Design and landscaping for the structure would be required to comply with the HPS2 Design for Development standards.

Existing residential areas to the north of the recycled water facility site would be separated from the facility by topography and distance. HPS1 hilltop residential uses are located approximately 700 feet from the site. Off-site residential uses near Griffith Street in India basin are located approximately 1,200 feet from the site. The distance to nearby residential uses and the applicable design and landscaping requirements would reduce the potential for an impact on the existing character of the vicinity to a less-than-significant level. The facility would be consistent with nearby off-site industrial uses.

The closest on-site residential use near I Street and Crisp road is approximately 50 feet from the facility site. Two of the four previously proposed plants would have been located immediately adjacent to residential development in Shipyard North. Similar to the Utilities Variant 4, the recycled water facility would be consistent with the type of uses associated with a large-scale urban redevelopment project (refer to Sections II.B.7 [Air Quality] and II.B.8 [Noise and Vibration] for a discussion of potential environmental impacts associated with odor and noise). The impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to land use and plans impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a

substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to land use and plans, either on a project-related or cumulative basis.

II.B.2 Population, Housing, and Employment

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
13. Population, Housing, and Employment. Would the Project:					
C.a Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	2010 FEIR p. III.C-14 (Impact PH-1), p. III.C-20 (Impact PH-2); Addendum 1 p. 29; Addendum 4 p. 16	No	No	No	None
C.b Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing elsewhere?	2010 FEIR p. III.C-21 (Impact PH-3); Addendum 1 p. 29; Addendum 4 p. 16	No	No	No	None
C.c Displace substantial number of people, necessitating the construction of replacement housing elsewhere?	2010 FEIR p. III.C-21 (Impact PH-3); Addendum 1 p. 29; Addendum 4 p. 16	No	No	No	None

Changes to Project Related to Population, Housing, and Employment

The elements of the land use program evaluated in Addendum 5 that relate to population, housing, and employment are the number of residential uses, which relates to population and housing; the proposed land uses, which relates to Project employment; and the phasing plan and construction scenario, which relates to construction employment.

Population and Housing

The 2010 FEIR proposed 10,500 residential units over the entire Project site, including both CP and HPS. The current proposal includes 10,672 residential units.

The total number of units would be 172 units more than previously analyzed and disclosed in the 2010 FEIR, and the individual number of units on the CP and HPS sites would also change relative to the 2010 FEIR. The number of units at CP would decrease by 632 units (to 7,218 units), and the number of units at HPS would increase by 804 units (to 3,454 units); therefore, the population at CP would be 16,818[28] and the population at HPS would be 8,048,[29] resulting in 24,866 people.

The total projected population over HPS1 and HPS2 has not changed from what was analyzed and disclosed in the 2010 FEIR (for HPS2) and the 2000 Hunters Point Shipyard Reuse Final EIR[30] (for

[28] This assumes a conversation 2.33 people per household, as identified in 2010 FEIR Table III.C-6.
[29] This assumes a conversation 2.33 people per household, as identified in 2010 FEIR Table III.C-6.
[30] City and County of San Francisco, *Hunters Point Shipyard Reuse Final Environmental Impact Report,* February 8, 2000.

HPS1). But, the population from the addition of 172 units to HPS2 is being accounted for in Addendum 5 to reflect the 2018 Modified Project Variant.

Project Employment

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, the number of permanent jobs created as a result of the Project has also changed, as shown in Table 7 (Employment by Land Use). In summary, as compared to 2010 Project and the R&D Variant (Variant 1), which is provided in Table 7, the total number of permanent employment opportunities at CP and HPS2 would increase from 10,730 jobs under the 2010 Project to 16,618 jobs under the 2018 Modified Project Variant; however, the R&D Variant (Variant 1) would result in 16,635 jobs, which is comparable to the 2018 Modified Project Variant. The increase in jobs under both the 2018 Modified Project Variant and the R&D Variant (Variant 1) is primarily due to an increase in retail and R&D/offices uses at HPS2.

Construction Employment

Table 8 (Construction Employment) shows the yearly distribution of workers associated with the 2018 Modified Project Variant. It shows construction initiating in 2014 and extending to 2034, for a total of 21 years.[31] This same table shows that the 2010 Project included construction initiating in 2011 and extending to 2031, also for a total of 21 years.

In summary, the 2018 Modified Project Variant starts approximately 3 years later than the Project evaluated under the 2010 FEIR and would take approximately the same amount of time. Over the course of the entire project, the total number of daily construction workers under the 2018 Modified Project Variant is higher than what was identified in the 2010 FEIR due to the proposed accelerated construction schedule for several sub-phases, modified project land use in HPS, additional accounting for field management workers, and other construction elements, which are clarified below. The following total worker calculation assumes that all the maximum and average workers identified in Table 8 of the 2018 Modified Project Variant and 2010 FEIR Table III.C-8 were working for the duration of each year specified and are summarized below:

- Combined Maximum Daily Workers would increase by 1,356 over the course of the entire project:
  - 2010 FEIR shows 6,971 workers; and
  - 2018 Modified Project Variant shows 8,327 workers.

[31] Addendum 5 evaluates construction of the 2018 Modified Project Variant over a 21-year period (through 2034). The Schedule of Performance shows construction ending in 2036, which allows for potential delays in the transfer of land from the Navy, as well as potential construction delays. The addendum's use of a construction timeline ending in 2034 provides a conservative estimate of potential impacts.

TABLE 7 EMPLOYMENT BY LAND USE

Land Use	Employment Factor[a]	Candlestick Point		HPS2		Total		2010 Project	R&D Variant 1
		Development Program[b]	Employment (jobs)	Development Program[b]	Employment (jobs)	Development Program[b]	Employment (jobs)[c]	Employment (jobs)[c]	Employment (jobs)[c]
Residential	25 units/job	7,218 units	289	3,454 units	138	***10,672 units***	***427***	420	420
Regional Retail	350 gsf/job	635,000 gsf	1,814	100,000 gsf	286	***735,000 gsf***	***2,100***	1,814	1,814
Neighborhood Retail/Maker Space	270 gsf/job and 400 gsf/job[d]	125,000 gsf	463	301,000 gsf	1,025	***426,000 gsf***	***1,488***	926	926
Office	276 gsf/job	150,000 gsf	543	0 gsf	0	***150,000 gsf***	***543***	543	543
Research and Development[e]	400 gsf/job	0 gsf	—	4,265,000 gsf	10,663	***4,265,000 gsf***	***10,663***	6,250	12,500
Hotel	700 gsf/job	150,000 gsf	214	120,000 gsf	171	***270,000 gsf***	***386***	214	214
Football Stadium	2,915 jobs/event	0 events	—	0 events	—	***0 events***	***—***	359	—
Arena	750 gsf/job[f]	75,000 gsf	100	0 gsf	0	***75,000 gsf***	***100***	87	87
Institutional/Schools	2,050 gsf/job[g]	0 gsf	0	410,000 gsf	200	***410,000 gsf***	***200***	N/A[k]	N/A[k]
Water Taxi[h]	4 jobs/day	0 trips/day	0	16 trips/day	4	***16 trips/day***	***4***	N/A[k]	N/A[k]
Community Use	355 gsf/job	50,000 gsf	141	50,000 gsf	141	***100,000 gsf***	***282***	N/A[k]	N/A[k]
Artists' Studios	850 gsf/job[i]	0 gsf	0	255,000 gsf	300	***255,000 gsf***	***300***	N/A[k]	N/A[k]
Public Parking	270 spaces/job[j]	2,736 spaces	10	7,152 spaces	26	***9,888 spaces***	***37***	32	46
Parks and Open Space	0.26 job/acre	105.7 acres	27	232.0 acres	60	***337.7 acres***	***88***	87	85
Total			***3,601***		***13,014***		***16,618[l]***	***10,730***	***16,635***

SOURCES: Economic and Planning Systems, Inc., *Fiscal Analysis of the Candlestick Point/Hunters Point Shipyard Redevelopment Project*, 2018.

NOTES:

N/A = not available

a. Employment factors are from City and County of San Francisco, *Transportation Impact Analysis Guidelines*, October 2002, as well as more current industry standards and EPS studies for individual land use types. The recycled water facility would only result in one employee and, therefore, is not included in this table as it would not change any analysis or conclusions.

b. Based on build-out floor areas provided in Table 2 (2018 Modified Project Variant Land Use Program) of Addendum 5 Section I (Project Description).

c. The total employment is subject to mathematical rounding and may reflect a higher number than the addition of employment for CP and HPS2 individually, each of which may have been rounded down.

d. Includes 351,000 gsf for neighborhood retail between CP and HPS2 (at 270 gsf/job) and 75,000 gsf for maker space at HPS2 (at 400 gsf/job).

e. The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses.

f. Because the type of performance venue has changed since 2010 from a concert hall to a center with a focus on the arena, the employment estimated is based on EPS's study of movie and theater centers and is based on building square footage instead of number of events as was done in 2010.

g. Based on generalized population density at institutions, such as schools.

h. Assumes capacity for 22 passengers plus captain and crew members.

i. Based on information about number of studios and artists provided by FivePoint.

j. Includes all off-street parking.

k. The value for this land use category was not provided in the 2010 FEIR.

l. Total employment calculated by adding individual totals for each land use category. This number may reflect a higher number than the addition of employment for CP and HPS2 individually, each of which may have been rounded down.

TABLE 8 CONSTRUCTION EMPLOYMENT

	Candlestick Point		*Hunters Point Shipyard*		*Field Management*		*2018 Modified Project Variant Combined*		*2010 Project*	
Year	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*
2011	—	—	—	—	—	—	—	—	95	76
2012	—	—	—	—	—	—	—	—	83	66
2013	—	—	—	—	—	—	—	—	223	178
2014	43	34	0	0	15	12	58	46	363	278
2015	58	46	0	0	15	12	73	58	617	494
2016	142	112	0	0	15	12	157	124	609	488
2017	146	116	30	24	15	12	191	152	440	357
2018	210	168	30	24	25	20	265	212	456	366
2019	292	232	212	168	25	20	529	420	470	376
2020	212	170	342	271	25	20	579	461	460	368
2021	161	129	364	288	25	20	550	437	258	206
2022	172	136	467	365	25	20	664	521	443	355
2023	307	244	687	539	25	20	1019	803	434	348
2024	423	336	501	399	25	20	949	755	295	235
2025	379	301	272	216	25	20	676	537	264	212
2026	398	316	174	140	15	12	587	468	278	235
2027	455	377	110	88	15	12	580	477	235	187
2028	407	324	30	24	15	12	452	360	320	255
2029	173	138	33	26	15	12	221	176	348	278
2030	78	61	137	110	12	10	227	181	195	156
2031	51	40	167	134	12	10	230	184	85	68
2032	109	85	114	92	25	20	248	197	—	—
2033	0	0	33	26	12	10	45	36	—	—
2034	0	0	15	12	12	10	27	22	—	—
Total	***4,216***	***3,365***	***3,718***	***2,946***	***393***	***316***	***8,327***	***6,627***	***6,971***	***5,582***

SOURCE: MACTEC, 2010; TRC, 2018.

NOTE: Number of daily workers includes on-site construction, off-site roadway improvements, and shoreline improvements and assumes construction of the alternative utility system. Construction employment information is not available in the 2010 FEIR for the R&D Variant (Variant 1).

- Combined Average Daily Workers would increase by 1,045 over the course of the entire project:
  - 2010 FEIR shows 5,582 workers; and
  - 2018 Modified Project Variant shows 6,627 workers.

The increase in daily construction workers is primarily due to the accelerated schedule for several sub-phases of the project, modified project land use in HPS, and additional accounting for field management

workers. Other factors that affected the increase were the addition of the following infrastructure construction elements as presented in the Project Description:

- Dry Dock 4 bridges;
- Geothermal heating and cooling system;
- Geotechnical ground improvements; and
- Recycled water treatment system.

Changes in Circumstances

Environmental Setting

Population and Housing

As disclosed in the 2010 FEIR, the population in the city as of January 1, 2008, was 824,525, its highest population on record at that time.[32] The population in the city as of 2014 was 829,072,[33] an increase of approximately about 0.6 percent between 2008 and 2014, a 6-year period. According to ABAG *Projections 2013*, the population is expected to increase steadily through Year 2040.[34]

The 2010 FEIR indicated that in in 2005, San Francisco had a total vacancy rate of approximately 4.9 percent (including owner-occupied and rental units). Approximately 62 percent of the total housing stock consisted of rental units. By 2007, the 2010 FEIR indicated that the total vacancy rate, was even lower, at about 3 percent.[35] The low vacancy rates indicated that the demand for housing in the city, at that time, remained strong.

According to the Housing Element of the San Francisco General Plan,[36] in 2010, vacancy rates were at 5.4 percent for rentals and 2.3 percent for homeownership, for a total of about 8 percent. This is considered a healthy fractional rate in most housing markets in the United States. By 2012, the vacancy rate rose to a vacancy rate of 9.3 percent, which may suggest an increase in time-shares and corporate homes used for employee housing. Even with the increase in vacancy rates, And, by January 2016, according the U.S. Department of Housing and Urban Development,[37] vacancy rates for rentals were 0.8 percent and vacancy rates for homeownership was 3.1 percent, for a total of 3.9 percent. In summary, the vacancy rates fluctuate between 3 percent and 9.3 percent according to market conditions and the use of housing for time-shares and corporate homes, with most years reflecting vacancy rates below 8 percent, which is considered a healthy rate.

[32] California Department of Finance, *E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Change—January 1, 2008 and 2009*, 2009. Available at http://www.dof.ca.gov/research/demographic/reports/estimates/e-1_2006-07 (accessed June 12, 2009). Also cited by Economic and Planning Systems, Inc., *Fiscal Analysis of the Candlestick Point/Hunters Point Shipyard Redevelopment Project*, 2009.
[33] City and County of San Francisco, *India Basin Mixed Use Draft Environmental Impact Report*, September 13, 2017, Table 3.3-1.
[34] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-2.
[35] San Francisco Planning Department, *Downtown San Francisco Market Demand, Growth Projections and Capacity Analysis,* May 2008, p. III-15.
[36] City and County of San Francisco, *San Francisco General Plan*, Housing Element, April 27, 2015, p. I.36.
[37] U.S. Department of Housing and Urban Development, *Comprehensive Housing Market Analysis, San Francisco-San Mateo-San Rafael*, as of January 1, 2016.

By the end of 2015, there were approximately 379,597 dwelling units in the city. While there was a net addition of 2,954 units to the city's housing stock in 2015, it represented a 16 percent decrease from 2014's net addition of 3,514 units.[38] While this 1-year increase is higher than the 10-year average of 2,244 units/year, it represents a slowed but continuing upward trend in net unit production from the lowest production point of 2011.[39]

In summary, the demand for housing remains high, and the supply has not been able to keep up with the demand, which results in low vacancy rates and high housing costs, a similar condition as in 2010.

Employment

San Francisco is a primary employment hub for the Bay Area and contains regional employment centers. According to ABAG Projections 2013, San Francisco had about 617,420 jobs in 2015.[40] The city is projected to have a total of approximately 671,230 jobs by 2020, approximately 707,670 jobs by 2030, and approximately 759,500 jobs by 2040, resulting in an approximately 23 percent increase (142,080 total jobs) over the 25-year period.[41] Between 2015 and 2040, the total number of jobs in the nine-county Bay Area is expected to increase by almost 835,240 jobs, a 22.8 percent increase. During this period, San Francisco's share of regional employment is expected to increase slightly, from 16.8 percent in 2015 to 16.9 percent in 2040.[42]

At the time of the 2000 Census, the 2010 FEIR indicated that about 55 percent of the workers holding jobs in San Francisco lived in the city, while the remaining 45 percent lived in other jurisdictions.[43] For this reason, the daytime population associated with local employment substantially exceeded the residential (nighttime) population according to the 2000 census.

As of 2010, commuters into San Francisco held 27.3 percent of the jobs in San Francisco,[44] meaning that approximately 73 percent of workers resided in the city, showing an increase in resident workers as compared to the 2000 census. However, the share of San Francisco jobs held by residents from other Bay Area counties is expected to increase as compared to 2010 to approximately 43 percent by 2020, 40 percent by 2030, and 42 percent by 2040,[45] likely the result a low supply of housing relative to demand and the subsequent increase in housing costs. As a regional job center, San Francisco will continue to have a larger share of commuters than other cities in the Bay Area.[46]

[38] San Francisco Planning Department, *2014 San Francisco Housing Inventory*, April 2015, p. 5.
[39] San Francisco Planning Department, *2015 Housing Inventory*, April 2015, p. 5.
[40] ABAG, *Projections 2013*, p. 22.
[41] ABAG, *Projections 2013*, p. 75.
[42] ABAG, *Projections 2013*, p. 22.
[43] U.S. Department of Transportation, *Census 2000 Transportation Planning Package*, 2006. It should be noted that a certain percentage of San Francisco residents also commute to other communities.
[44] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-9.
[45] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-9.
[46] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-9.

Comparative Impact Discussions

Impact PH-1: Construction of the Project would not induce substantial direct population growth. ***[Criterion C.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As disclosed in the 2010 FEIR, there would be direct, but temporary, construction job growth at the Project site as a result of the Project. It was assumed that construction employees not already living in the Bayview Hunters Point neighborhood would commute from elsewhere in the Bay Area rather than relocate to the Bayview Hunters Point neighborhood for a temporary construction assignment, and construction hiring policies associated with the 2010 Project would aim to maximize hiring among local residents.

Table 8 shows the estimated average and maximum number of daily construction workers, for each Project year under the 2018 Modified Project Variant. The peak year for construction at CP is 2027, with 455 maximum daily workers (and 377 average daily workers), while the peak year for construction at HPS is 2023, with 687 maximum daily workers (and 539 average daily workers). The peak year for combined activities is in 2023, with 1,019 combined maximum daily workers (and 803 combined average daily workers), coinciding with the peak year at HPS.

The 2010 Project disclosed different peak years for CP and HPS. For CP, it was 2029 and for HPS it was 2015, with the peak combined year in 2015, also coinciding with the peak construction year at HPS.

Overall, the total number of daily construction workers (including all years of construction) has increased by approximately 27 percent when comparing the 2010 FEIR estimates to the 2018 Modified Project Variant estimates.

The increase in daily construction workers is primarily due to the accelerated schedule for several sub-phases of the project, modified project land use in HPS, and additional accounting for field management workers. Other factors that affected the increase were the addition of the following infrastructure construction elements as presented in the Project Description:

- Dry Dock 4 bridges;
- Geothermal heating and cooling system;
- Geotechnical ground improvements; and
- Recycled water treatment system and other green infrastructure elements.

If the conventional utility system were pursued, fewer construction workers would be required, which would likely be similar to the number of construction workers identified in the 2010 FEIR.

As assumed in the 2010 FEIR, it is anticipated that construction employees not already living in the Bayview Hunters Point neighborhood would commute from elsewhere in the Bay Area rather than relocate to the Bayview Hunters Point neighborhood for a temporary construction assignment, and

construction hiring policies associated would aim to maximize hiring among local residents. Thus, development of this Variant would not generate a substantial, unplanned population increase. Impacts associated with construction employment resulting from the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact PH-2: Operation of the Project would not induce substantial direct or indirect population growth. ***[Criterion C.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The total population would be 16,818 at CP and 8,048 at HPS2, for a total population of 24,866, an increase of 401 over the population of 24,465 disclosed in the 2010 FEIR. In addition, the number of permanent employment opportunities would increase by approximately 5,880, which is primarily due to an increase in neighborhood retail and R&D uses at HPS2.

Although the 2018 Modified Project Variant would result in an increase in population and employment at CP, growth in this area has long been the subject of many planning activities. The primary objective of the 2018 Modified Project Variant is to provide new housing and nonresidential uses in support of planned redevelopment. Planning activities pertaining to CP date to 1969, with initial adoption of the Hunters Point Shipyard Redevelopment Plan (later to be subsumed under the BVHP Redevelopment Plan). As discussed in Chapter I, development of CP was also anticipated in the BVHP Area Plan, and in a series of initiatives approved by San Francisco voters (Propositions D, E, and G).[47,48] The Hunters Point Shipyard Redevelopment Plan was updated in 2005, and uses approved for HPS1 under that plan are currently under construction. The 2018 Modified Project Variant, as proposed, was developed based on the land uses, number of housing units (10,672 units total at HPS2 and CP), and objectives approved by voters under Proposition G in 2008. In summary, the uses provided as part of the Project support planned growth at the Project site.

As a result of these ongoing planning activities, City service providers have been aware of, and have included future growth projections for CP, in their long-term operations plans. Planning department population projections[49] include the population growth associated with the Project and are the basis of the San Francisco Public Utilities Commission's *Water Supply Availability Study*. In addition, the Southeast Water Pollution Control Plant has capacity to treat wastewater from the Project site. The Project would provide all on-site infrastructure for connections to City mains, and would include on-site treatment of stormwater runoff. Refer to Section II.D (Project Objectives), Section III.O (Public Services), Section III.P (Recreation), Section III.Q (Utilities), and Section III.R (Energy) in the 2010 FEIR for further description of the Project's potential impacts on infrastructure and services. In summary,

[47] Candlestick Point is outside the boundaries of the HPS Redevelopment Plan.
[48] Proposition G repealed Propositions D and F.
[49] San Francisco Planning Department, Memorandum from Jon Rahaim, Director of Planning, to Michael Carlin, Deputy General Manager, San Francisco Public Utilities Commission, *Projections of Growth by 2030*, July 9, 2009.

the infrastructure needed to support the level of growth anticipated under the Project was planned based on population projections that included the housing and employment associated with the Project.

Employment growth would also be considered substantial if it resulted in housing demand that would exceed planned regional housing development. Table 9 (Housing Demand) estimates the number of housing units that would be needed to provide housing for employees of jobs created as a result of the Project. These calculations were derived from existing Census Bureau employment and U.S. Department of Transportation commuting pattern data.[50] The average household would be expected to have 1.36 workers. This rate is based on the Planning Department's projection of the number of workers in the average city household in 2025.[51] Utilizing the rate of 1.36 workers per dwelling unit, the Project, with a total employment of 16,618 workers, would require 0.74 housing unit per worker (calculated as 1 dwelling unit/1.36 workers equals the number of dwelling units per worker, which is 0.74). The calculations also assume a vacancy rate of 4.7 percent,[52] which requires an add-on demand to account for the vacancy rate (see footnotes c and d in Table 9). Based on these assumptions, and assuming the housing demand from other communities has remained relatively constant, the 2018 Modified Project Variant would result in a total demand for 12,791 housing units based on employee demand, and a total of 10,672 units would be provided.[53] However, as shown in Table 9, it is assumed that approximately 55 percent of the workers would seek housing in the city, consistent with existing commuting patterns.[54] As such, to meet housing demand of the 2018 Modified Project Variant within the City, approximately 7,035 housing units would be required. As discussed above, the 2018 Modified Project Variant would provide approximately 10,672 housing units, which would exceed estimated housing demand of 7,035 housing units. Therefore, the population increase associated with employment from the 2018 Modified Project Variant could be entirely accommodated. It is likely that some employees would elect to live elsewhere in the City or within surrounding Bay Area communities. Based on existing commuting patterns, the 2018 Modified Project Variant would generate a demand for about 5,756 units in surrounding Bay Area communities. This housing demand would be dispersed throughout the nine-county Bay Area, which would result in negligible potential increases in housing demand within the Bay Area. While the 2018 Modified Project Variant would generate more jobs than the CP-HPS2 Project (by approximately 5,880 jobs), it would generate fewer jobs than the R&D Variant (Variant 1) (by approximately 17 jobs). As with the R&D Variant (Variant 1), the total number of jobs generated by the 2018 Modified Project Variant would represent a fraction of the 748,100 jobs anticipated citywide in 2030 (the 2018 Modified Project Variant would represent 2.2 percent of the total jobs in the city in 2030 and the

[50] Census Bureau, 2009; US Department of Transportation, *Census 2000 Transportation Planning Package*, 2006.
[51] City and County of San Francisco, *General Plan Housing Element*, 2004, Table I-14.
[52] This rate is based on California Department of Finance, January 2008 Projections.
[53] It should be noted that one of the Project objectives is to provide employment opportunities for existing residents in the Bayview Hunters Point neighborhood; thus, it is anticipated that some of the future employees at Candlestick Point would include residents already living in the neighborhood. Although total housing demand could include existing households, this analysis conservatively assumes that all housing demand generated by the Project would need to be accommodated by new units.
[54] This assumption provides a conservative estimate of the housing demand that the Project would generate in other Bay Area communities, such as nearby cities in San Mateo County. Information pertaining to commuting trends was derived from US Department of Transportation, *Census 2000 Transportation Planning Package*, 2006.

R&D Variant (Variant 1) would also represent 2.2 percent of the total jobs in the city in 2030). Further, employment opportunities would be provided in an area that has been jobs-poor since WWII; it would provide a new employment center in the city, allowing commute patterns to be further dispersed into an area that has long been the subject of many planning activities. This variant, as with the R&D Variant (Variant 1), would provide all on-site infrastructure for connections to city mains and would include on-site treatment of stormwater runoff. Therefore, the 2018 Modified Project Variant would not encourage growth where appropriate infrastructure would not be available.

TABLE 9 HOUSING DEMAND

Analysis Area	*2018 Modified Project Variant Employment[a,b]*	*2018 Modified Project Variant Housing Demand, San Francisco[c]*	*2018 Modified Project Variant Housing Demand, Other Communities[d]*	*2018 Modified Project Variant Total Demand*	*2010 Project Total Demand*	*Variant 1 Total Demand*	*2018 Modified Project Variant Housing*	*2010 Project and Variant 1 Housing*
Candlestick Point	3,601	1,525	1,248	***2,773***	2,677	7,044	7,218	7,850
HPS2	13,014	5,510	4,508	***10,018***	5,586	5,763	3,454	2,650
Project Site Total	***16,618***	***7,035***	***5,756***	***12,791***	***8,263***	***12,807***	***10,672***	***10,500***

NOTES:

a. Does not include existing employment.

b. Project employment data are derived from Table 7, Employment by Land Use.

c. Calculated as the projected employment divided by 1.36, plus 4.7% additional housing units to account for vacancy rate, times 55% total demand in San Francisco.

d. Based on existing commuting patterns, housing demand in other communities is estimated to be 45% of total housing demand; calculated as projected employment divided by 1.36, plus 4.7% additional housing units to account for vacancy rate, times 45% total demand in other communities.

Therefore, the analysis and conclusions reached in the 2010 FEIR and the 2000 Hunters Point Shipyard Reuse Final EIR with respect to direct or indirect population growth would remain the same. The impact would be less than significant, and no mitigation would be required.

Impact PH-3: Implementation of the Project would not displace existing housing units or residents at HPS Phase II, necessitating the construction of new units elsewhere. ***[Criteria C.b and C.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

There are no existing housing units at HPS2, either when the 2010 FEIR was published or in 2018. Therefore, as with the Project, the 2018 Modified Project Variant would similarly not replace housing units with new uses, and no existing residents would be displaced. Because there would be no residential displacement at HPS, development of the 2018 Modified Project Variant would have no impact on displacement of housing and residents, and no mitigation would be required, which is the same conclusion reached in the 2010 FEIR.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to population, housing, and employment impacts. There is no new information of substantial

importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to population, housing, and employment, either on a project-related or cumulative basis.

II.B.3 Transportation and Circulation

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
17. Transportation and Circulation. Would the project:					
D.a Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	2010 FEIR p. III.D-69 (Impact TR-2), p. III.D-71 (Impact TR-3), p. III.D-81 (Impact TR-4), p. III.D-82 (Impact TR-5), p. III.D-83 (Impact TR-6), p. III.D-83 (Impact TR-7), p. III.D-84 (Impact TR-8), p. III.D-85 (Impact TR-9), p. III.D-85 (Impact TR-10), p. III.D-86 (Impact TR-11), p. III.D-90 (Impact TR-12), p. III.D-90 (Impact TR-13), p. III.D-94 (Impact TR-14), p. III.D-95 (Impact TR-15), p. III.D-96 (Impact TR-16), p. III.D-144 (Impact TR-51), p. IV-21 (Variant 1 Impacts); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	MM TR-2, MM TR-4, MM TR-6, MM TR-7, MM TR-8, MM TR-16, MM TR-17, MM TR-51, R&D Variant (Variant 1) Mitigation Measure
D.b Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways (unless it is practical to achieve the standard through increased use of alternative transportation modes)?	2010 FEIR p. III.D-71 (Impact TR-3), p. III.D-81 (Impact TR-4), p. III.D-82 (Impact TR-5), p. III.D-83 (Impact TR-6), p. III.D-83 (Impact TR-7), p. III.D-84 (Impact TR-8), p. III.D-85 (Impact TR-9), p. III.D-86 (Impact TR-11), p. III.D-90 (Impact TR-12), p. III.D-90 (Impact TR-13), p. III.D-94 (Impact TR-14), p. III.D-95 (Impact TR-15), p. III.D-144 (Impact TR-51), p. IV-21 (Variant 1 Impacts); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	MM TR-4, MM TR-6, MM TR-7, MM TR-8, MM TR-51, R&D Variant (Variant 1) Mitigation Measure
D.c Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that causes substantial safety risks?	2010 FEIR p. III.D-149 (Impact TR-56); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	No
D.d Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	2010 FEIR p. III.D-149 (Impact TR-57); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	No

	Criterion	*Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)*	*Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?*	*Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?*	*Any New Information of Substantial Importance?*	*Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant*
D.e	Result in inadequate parking capacity that could not be accommodated by alternative solutions?	2010 FEIR p. III.D-118 (Impact TR-35), p. III.D-124 (Impact TR-36), p. III.D-148 (Impact TR-55); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	No
D.f	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc.), or cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes?	2010 FEIR p. III.D-97 (Impact TR-17), p. III.D-99 (Impact TR-18), p. III.D-101 (Impact TR-19), p. III.D-102 (Impact TR-20), p. III.D-147 (Impact TR-52); Addendum 1 p. 10; Addendum 4, p. 18	No	No	No	MM TR-17; MM TR-23.1

The transportation and circulation impact findings herein are also based on the following significance criteria used by the San Francisco Planning Department for the determination of impacts associated with a proposed project:[55]

D.g Traffic—In San Francisco, the threshold for a significant adverse impact on traffic has been established as deterioration in the LOS at a signalized intersection from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. The operational impacts on unsignalized intersections are considered potentially significant if project-related traffic causes the level of service at the worst approach to deteriorate from LOS D or better to LOS E or LOS F and Caltrans signal warrants would be met, or causes Caltrans signal warrants to be met when the worst approach is already at LOS E or LOS F.

For an intersection that operates at LOS E or LOS F under existing conditions, there may be a significant adverse impact depending upon the magnitude of the project's contribution to the worsening of delay. In addition, a project would have a significant adverse effect if it would cause major traffic hazards, or would contribute considerably to the cumulative traffic increases that would cause the deterioration in LOS to unacceptable levels (i.e., to LOS E or LOS F).

The operational impacts on freeway mainline segments and freeway on-ramp merge and off-ramp diverge operations are considered significant when project-related traffic causes the level of service to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. In addition, a project would have a significant effect on the environment if it would contribute substantially to congestion at unacceptable levels.

It should be noted that the City of San Francisco Planning Department no longer uses intersection LOS as a metric for identifying significant traffic impacts. However, this is an addendum to an FEIR that did use LOS. Furthermore, OCII is the lead agency for this project and OCII does use LOS as described above; therefore, intersection LOS is an appropriate metric for Addendum 5.

D.h Parking—Parking supply is not considered to be a part of the permanent physical environment in San Francisco.[56] Parking conditions are not static, as parking supply and demand varies due to seasonal and temporal factors. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, as parking changes over time as people change their modes and patterns of travel.

Parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA. Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. Environmental documents should, however, address the secondary physical impacts that could be triggered by a social impact (CEQA Guidelines § 15131(a)). The social inconvenience of parking deficits, such as having to find a parking space when parking

[55] Five of the study intersections are in the City of Brisbane. The level of service standard for all arterial streets within the City of Brisbane is LOS D, except for the intersections on Bayshore Boulevard at Old County Road and San Bruno Avenue, which shall not be less than LOS C.

[56] Under California *Public Resources Code*, Section 21060.5, "environment" can be defined as "the physical conditions which exist within the area which will be affected by a Project, including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance."

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant

spaces are scarce, is not an environmental impact, but there may be secondary physical environmental impacts, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion. Scarcity of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot), and a relatively dense pattern of urban development, may cause drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service in particular, would be in keeping with the City's "Transit First" policy. The City's Transit First Policy, established in the City's Charter Section 16.102 provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is unavailable.

D.i Transit—The project would have a significant effect on the environment if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in operating costs or delays such that significant adverse impacts in transit service levels could result.

The project would also have a significant effect on the environment if it would increase transit travel times on a particular route such that existing (or proposed) headways could not be maintained based on the existing (or proposed) vehicle fleet.

D.j Pedestrians—The project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

D.k Bicycles—The project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

D.l Loading—The project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within the proposed on-site loading facilities or within convenient on-street loading zones, and if it would create potentially hazardous traffic conditions or significant delays affecting traffic, transit, bicycles or pedestrians.

D.m Emergency Vehicle Access—The project would have a significant impact on the environment if it would result in inadequate emergency vehicle access.

D.n Construction—Construction-related impacts generally would not be considered significant due to their temporary and limited duration. However, in circumstances involving large development plans where construction would occur over long periods of time, construction-related impacts may be considered significant.

Changes to Project Related to Transportation and Circulation

Compared to 2010 FEIR R&D Variant (Variant 1), the 2018 Modified Project Variant would relocate 632 residential dwelling units from CP to HPS, add a 175-room hotel in HPS, add 410,000 sf of institutional/educational uses in HPS, reduce R&D/Office in HPS from 5,000,000 sf to 4,265,000 sf, and increase the retail space in HPS from 125,000 sf to 391,000 sf. Furthermore, 71,000 sf of the new retail space and an additional 172 residential dwelling units at HPS would be space previously approved and no longer planned to be built as part of HPS1. This would result in changes to the overall site's vehicular traffic generation. In the AM peak hour, the 2018 Modified Project Variant would reduce trips in CP by 46 and in HP by 147, for a net increase of 101 trips. In the PM peak hour, the 2018 Modified Project Variant would reduce vehicle trips in CP by 31 and would increase vehicle trips in HP by 510, for a net increase of 479 vehicle trips. Increases in trips associated with the 2018 Modified Project Variant in the PM peak hour include approximately 100 AM peak hour and 200 PM peak hour vehicle trips for the 172 dwelling units and 71 ksf of retail space that was approved but not built, and no longer planned to be built, as part of the adjacent HPS Phase 1 project. These new trips would not affect the total amount of traffic in the area at Project buildout because they were previously included as part of a different project; however, they do represent an increase in the number of trips that are considered a

part of the 2018 Modified Project Variant. Although the 2018 Modified Project Variant's contribution in traffic is expected to increase by 101 vehicle trips in the AM peak hour and 510 vehicle trips in the PM peak hour, the total traffic volume in the area is expected to remain virtually unchanged in the AM peak hour and increase by approximately 280 vehicle trips in the PM peak hour, because the other vehicle trips were previously accounted for as part of Phase 1. The net increase would be nominal compared to the overall site's forecasted trip generation, and would likely to be dispersed among different roadways in the site, and is not likely to be perceptible to the public. The revised land uses would also result in a slight decrease in transit demand during both the AM and PM peak hours.

The 2018 Modified Project Variant would also include the potential for water taxi service at Dry Dock 4 in HPS2. As noted in the Project Description, the service would involve up to 8 trips in the AM peak hour and up to 8 trips in the PM peak hour, depending on demand. Vessels would accommodate up to 22 passengers each. To the extent this service affects any of the travel demand forecasts, it would serve to reduce vehicle trips and possibly accommodate travelers who would otherwise take transit, walk, or bike. In other words, the service would have relatively small effects on overall travel behavior at the site and, if anything, would tend toward easing traffic and transit congestion. Because the actual level of water taxi service is uncertain, and to ensure a worst-case assessment, this analysis conservatively assumes no effects associated with the water taxi service.

The 2018 Modified Project Variant would also include slight revisions to the construction phasing associated with the modifications to the land use program, which would change the way in which construction traffic demands are spread over time, and would include minor modifications to the phasing of roadway and transit infrastructure and service.

The 2018 Modified Project Variant would also include minor changes to roadway alignment and cross-sections in HP. Proposed changes in HPS South are associated with re-orientation of street grid in order to preserve some existing buildings on the site. Proposed changes in the R&D and HPS North areas are associated with improvements to the bicycle network to connect the proposed cycletrack through entire CP and HPS site. However, street design principles generally remain unchanged and facility capacity generally remains unchanged. Appendix D (Revised Roadway Cross-Sections) of Addendum 5 Appendix D (Analysis of Transportation Effects) includes the revised cross-sections. Changes within HP also include an optional extension of Donahue Avenue from its current terminus south to connect to Crisp Avenue as well as the provision of transit-only lanes along Lockwood Street and Donahue Street.

Bicycle and pedestrian facilities would be modified as a result of the roadway alignment and cross-sectional changes discussed above; however, changes would generally be minor. One exception is the proposed change to the proposed cycletrack. Changes are proposed in HP to realign the cycletrack away from Crisp Avenue, through the open space to the south, and to connect to a midblock break within HPS South. The cycletrack would continue through HPS South and across Dry Dock 4 as a two-way cycletrack, and then travel up Spear and Robinson Street as a directional separated bicycle facility to connect to the cycletrack planned in the Northside Park, west of Donahue Street.

The 2018 Modified Project Variant would also include changes to total parking supply associated with changes in land use and refinements to street and intersection designs. No changes to maximum parking rates by land use are proposed. Specifically, maximum parking supply (including on- and off-street supply) at CP would decrease by nearly 250 spaces and the maximum supply at HP would increase by approximately 750, resulting in a net site-wide increase of approximately 500 spaces. Generally, the 2018 Modified Project Variant would supply parking within or slightly above the range contemplated in the 2010 FEIR for R&D Variant (Variant 1) (3,000 to 23,000 on- and/or off-street parking spaces).

Changes in Circumstances

The transportation system in the vicinity of the project site has not substantially changed since certification of the 2010 FEIR, as there has been relatively little development in the study area. Exceptions to this are portions of HPS1 and the 267-unit Hunters View Project near the northern portion of the HPS site, which are minor.

Regional transportation demand has increased; as a result, traffic on regional transportation facilities, including public transit, regional freeways, and major local thoroughfares, has increased congestion and crowding somewhat on roadway facilities and transit service further from the project site.

However, the effects of regional growth were contemplated in the 2010 FEIR's cumulative analysis.

Comparative Impact Discussions

Impact TR-1: Construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity. ***[Criterion D.n]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity. The 2010 FEIR concluded implementation of mitigation measure MM TR-1, which would require the Applicant to develop and implement a Construction Traffic Management Plan to reduce the impact of construction activity on transportation facilities, would reduce the impacts caused by construction, but not to a less-than-significant level.

The overall amount of construction anticipated to occur as part of the 2018 Modified Project Variant would be the same as or less than originally conceived and described for the 2010 Project, although the sequencing would be different. The 2010 Project analysis anticipated development phasing that would create more construction activities in the HPS in the early years of project build-out, with increased construction levels at CP during later phases. Additionally, the 2010 Project also included construction of a new NFL stadium in the early phases of development, which would have resulted in more intense construction activities than would likely ever occur during any of the non-stadium variants.

The revised phasing proposed for the 2018 Modified Project Variant would reverse this, with more construction activities in CP during the earlier years and more activity in the HPS site during later years. Further, because the 2018 Modified Project Variant does not include a new NFL stadium, the overall construction activities would be more spread out over time and well below the peak levels anticipated for the 2010 Project.

Although the latest proposed phasing at CP is different from previous analyses of accelerated construction at CP, such as the evaluation outlined in 2010 FEIR Addendum 1, the overall construction activities and general proposal is similar to what was analyzed in 2010 FEIR Addendum 1. Portions of the construction activities outlined in Addendum 1, including demolition of Candlestick Park, have already occurred. Postponement of construction in HPS is primarily a result of delays in transferring land from the US Navy to the City and County of San Francisco. An estimate of construction activities during the course of project build-out associated with the 2010 Project and the 2018 Modified Project Variant, as well as a chart illustrating the difference in terms of construction truck trips over time between the two, is provided in Appendix C (Construction Activities) of Addendum 5 Appendix D.

In summary, there are no changes in the Project that would require revisions of the 2010 FEIR; accordingly, the impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-2: Implementation of the Project would cause an increase in traffic that would be substantial relative to the existing and proposed capacity of the street system, even with implementation of a Travel Demand Management Plan. ***[Criterion D.a]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that general traffic increases in the study area would be substantial compared to the existing setting and overall capacity of the street system. The 2018 Modified Project Variant would slightly increase forecasted traffic volumes from the Project, by approximately 2 percent in the AM peak hour and 6 percent in the PM peak hour. As noted earlier, although the 2018 Modified Project Variant's trip generation would be between 2 and 6 percent higher than contemplated in the 2010 FEIR in the AM and PM peak hours, it would include land uses that were previously approved but not built, and no longer planned to be built, at HPS Phase 1. Trips from these uses were previously included in the cumulative analysis in the 2010 FEIR, but were not associated with 2010 FEIR Variant 1 (R&D). The 2018 Modified Project Variant's vehicular trip generation would be between 2 and 6 percent than FEIR Variant 1 (R&D), which would cause a net increase to area-wide traffic of less than 3.5 percent. The Transportation Assessment conducted for the 2018 Modified Project Variant (p. 19), included as Appendix D, found that these types of fluctuations would be within the range of error of the overall project travel demand forecasts and would not likely to cause a perceptible difference to the public.

The 2010 FEIR's discussion of traffic impacts is based on project build-out. Refinements have been made to the internal roadway network, both to cross-section dimensions and roadway alignments. Refinements to roadway cross sections would be made to encourage slow-speed auto traffic, but also to better accommodate transit, bicyclists, and on-street parking based on recent SFMTA design guidance for travel lane widths. Some of these changes have been discussed in prior addenda. Specifically, Addendum 1 (p. 10) described some general categories of modifications, such as establishing consistent design principles, establishing a more consistent BRT alignment, the design of the Yosemite Slough Bridge, and reorientation of some streets in CP. These principles have not changed since Addendum 1, although some additional modifications to cross-sections have been proposed as a consequence of modification of some roadway alignments in HPS. Revised cross-sections associated with the 2018 Modified Project Variant are presented in Addendum 5 Appendix D.

However, other principles affecting the roadway designs described in Addendum 1, such as the revised bicycle network and the re-orientation of the street grid in Hunters Point South are no longer directly applicable, and additional modification is proposed as part of the 2018 Modified Project Variant. Those elements are described below:

- **Revised Bicycle Network.** Project modifications described in Addendum 1 included a new cycletrack facility that closed a gap in the bicycle network near the project's retail center. The cycletrack would extend west of the project site, along Harney Way toward US-101[57] replacing the originally proposed Class II bicycle lanes on both sides of the street. The cycletrack was also anticipated to travel along Crisp Road in HPS, before terminating near Spear Avenue. The modifications described in Addendum 1 related to the bicycle network revisions in CP remain unchanged since Addendum 1. Refer to Addendum 1, p. 26 for a comparison of the 2010 Project and the Addendum 1 refinements to the bicycle network. However, the 2018 Modified Project Variant proposes to realign the cycletrack through HPS such that it would traverse the open space to the south of Crisp Road, and then would use a neighborhood midblock break in Hunters Point South to travel parallel to Crisp Road. This modification is discussed in more detail in the bicycle impacts section.
- **Reorientation of Street Grid in the Warehouse District.** Streets in the Warehouse District neighborhood associated with the 2018 Modified Project Variant are similar to what was proposed in 2010 FEIR R&D Variant (Variant 1) (2010 FEIR Figure IV-1, p. IV-7), but street alignments have been slightly modified to account for retention of some additional existing buildings. Overall, the size and density of the street grid in Hunters Point South is similar to what was originally approved in 2010 FEIR R&D Variant (Variant 1); therefore, transportation capacity is expected to be similar.

[57] The EIR anticipated that Harney Way would be constructed in two phases. The first phase would construct two auto travel lanes in each direction (with two BRT lanes, on-street bicycle lanes, and a center turn lane). The changes proposed for the initial configuration of Harney Way do not affect auto capacity, but rather use land reserved for potential future expansion to extend the two-way Class I cycletrack from the project site west toward the Bay Trail. The Class I cycletrack would be removed if Harney Way were widened to its ultimate width because of the need for auto capacity. Under these circumstances, bicycle conditions along Harney Way would be identical to what was originally approved in the EIR.

- **Extension of Donahue Street South to Crisp Road.** Within Hunters Point, the 2010 Project provided one travel route to the north (via Donahue and Innes Avenue) and one travel route to the south (via Crisp Road and Palou Avenue). Travelers on the northern side of the HPS who wanted to travel south would have to travel through the entire Shipyard site to reach Crisp Avenue and Palou Avenue. Similarly, travelers in the southern part of Hunters Point who wish to travel north, would have to travel through the entire site to get to Innes Avenue. The extension of Donahue Street would provide a direct connection between Crisp Avenue and Innes Avenue, allowing for less circuitous travel and fewer vehicle trips through the center of the Shipyard site.

At build-out, project refinements, including both changes to land use that would slightly alter build-out traffic volumes and cause changes to internal roadway infrastructure, would result in very small changes to operating characteristics and would not cause this significant impact to be substantially more severe.

The 2010 FEIR also included an analysis of infrastructure phasing to ensure that the appropriate roadways were constructed along with land development to ensure adequate circulation. Although, for purposes of assessing transportation impacts, the 2018 Modified Project Variant would be similar to 2010 FEIR R&D Variant (Variant 1) at build-out, the project development phasing has changed. The initial phasing of traffic improvements was set forth in a memorandum included as 2010 FEIR Appendix A4 (Fehr & Peers, Roadway and Transit Phasing Plan, March 17, 2010).[58] An analysis of the 2018 Modified Project Variant phasing and infrastructure implementation timing was conducted to determine whether the 2018 Modified Project Variant would provide auto circulation and access at a level adequate to meet the travel demand throughout the build-out period.

Candlestick Point

As noted earlier, development at CP is anticipated to occur earlier than originally anticipated. As a result, and to respond to some of the changes in the order of development, revisions to the implementation phasing are proposed to better respond to land use phasing.[59] As shown in Table 10 (2018 Modified Project Variant Street Segment Improvements—Candlestick Point), most roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the 2010 FEIR, with the exception of Jamestown Avenue and Ingerson Avenue and the automobile route around Yosemite Slough. However, Jamestown Avenue and Ingerson Avenue improvements are largely streetscape improvements, designed to improve the overall urban design of the streets, and would not affect vehicular capacity along the streets, so in terms of assessing traffic impacts, this modification is not material. Furthermore, the need for the auto route around Yosemite Slough is driven by the need for connection between HP and CP. Since development at HP is somewhat delayed compared to the forecasted schedule from the 2010 FEIR, these improvements are not needed as quickly, and technical analysis has shown that they could be postponed until Sub-phase CP-07 (see discussion below).

[58] Fehr & Peers, *Roadway and Transit Phasing Plan*, March 17, 2010.

[59] Although previous EIR addenda also considered revisions to the project phasing compared to what was analyzed in the EIR, the comparison in Addendum 5 compares the 2018 Modified Project Variant with the 2010 Project, and not to previously contemplated revisions.

TABLE 10 2018 MODIFIED PROJECT VARIANT STREET SEGMENT IMPROVEMENTS—CANDLESTICK POINT

		Original Non-Stadium Option[a]		*2018 Modified Project Variant*	
Intersection	*Improvement*	*Traffic Volume Trigger?*[b]	*Trigger*	*Traffic Volume Trigger?*[b]	*Trigger*[c]
Arelious Walker Drive, Shafter Avenue to Carroll Avenue	Construct Yosemite Slough Bridge[d]	No	Implementation of BRT	No	Implementation of BRT (HP-04)
Arelious Walker Drive, Carroll Avenue to Gilman Avenue	Interim Two-Lane Condition (see Addendum 2)		N/A	No	CP-01 (Adjacency)
	Ultimate Condition (see description above)	No	Implementation of BRT	Yes	CP-07 (approximately 3,900 PM Peak Hour Vehicle Trips CP) or Implementation of BRT
Arelious Walker Drive, Gilman Avenue to Harney Way	Construct two travel lanes in each direction with center median/turn lane	No	Implementation of BRT	No	CP-02 (Adjacency)
Harney Way Widening, Arelious Walker Drive to Thomas Mellon Drive	Near Term (see Addendum 2)	Yes	3,537 PM Peak Hour Vehicle Trips or Implementation of BRT[b]	No	CP-02 (Adjacency)
	Long-Term (see Addendum 2)	TBD[e]	Per MM TR-16 (as modified by Addendum 5)	TBD[e]	Per MM TR-16 (as modified by Addendum 5)
Jamestown Avenue, Arelious Walker Drive to Third Street	Resurface and Restripe	No	Demolition of Candlestick Park	No	CP-07
Ingerson Avenue, Arelious Walker Drive to Third Street	Resurface and Restripe	No	Demolition of Candlestick Park	No	CP-07
Gilman Avenue, Arelious Walker Drive to Third Street	Reconstruct or Resurface and Restripe	No	TBD	No	CP-02
Carroll Avenue, Arelious Walker Drive to Ingalls Street	See Figures 2.1.2A–2.1.2G	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[b]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[b]
Ingalls Street, Carroll Avenue to Thomas Avenue	See Figures 2.1.2A–2.1.2G	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[c]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[c]

NOTES:

a. As summarized in the 2010 FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan, Fehr & Peers, March 17, 2010. Note that the "Original Non-Stadium Option" as presented in the FEIR and replicated here is applicable to all non-stadium options.

b. Based on trip rates by land use used in the 2010 FEIR for R&D Variant (Variant 1) and currently proposed phasing. See Appendix D for LOS calculation showing that approximately 85% of project-related growth (corresponding to approximately 7,700 vehicle trips) could be accommodated at this intersection before significant LOS impacts would occur.

c. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a sub-phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the sub-phase.

d. The cross-section for Yosemite Slough Bridge has been modified from what is shown in the 2010 FEIR for the Non-Stadium alternative. However, at 45 feet in width, the structure would be smaller than the bridge approved in the Stadium scenario.

e. The isolated intersection analysis conducted for this study shows that the two intersections along Harney Way would operate acceptably with the near-term configuration even with full build-out of the project. However, because Harney Way is part of a complex series of roadway improvements and due to the inherent uncertainty in traffic forecasts, a study would be conducted prior to construction of each development phase to determine whether conditions are better or worse than projected. The results of that study would indicate whether additional development could be accommodated under the near-term configuration while maintaining acceptable LOS or whether widening.

The major connections between the CP development and the external transportation network are expected to be developed as part of the first Major Phase. These include Arelious Walker Drive, the four-lane internal spine roadway that connects the smaller internal streets to the external roadways connecting to the rest of the City via Carroll, Gilman, Ingerson, and Jamestown Avenues.

Within Major Phase 1 in CP, the development would occur in five sub-phases, CP-01 through CP-05. CP-01 is already constructed or under construction, and includes 337 residential dwelling units on the Alice Griffith site, which would generate approximately 100 PM peak hour auto trips, based on the methodology described in the 2010 FEIR. As part of this sub-phase, a portion of Arelious Walker has been constructed, between Gilman Avenue and Carroll Avenue. Ultimately, as noted earlier, Arelious Walker Drive would be constructed to provide two travel lanes in each direction, separated by a median. However, as part of CP-01, only the two lanes west of the median were constructed. During this initial period, this segment of Arelious Walker provides one travel lane in each direction. Then, during later phases of development, as noted below, the remaining half of Arelious Walker Drive would be constructed such that two auto lanes would be provided in each direction. The construction of this interim portion of Arelious Walker Drive is consistent with and supports the final configuration of Arelious Walker Drive. Refer to Addendum 1 (Appendix A, Sub-appendix D) for figures showing the interim and final configuration of Arelious Walker Drive.

As proposed, providing only one travel lane in each direction along Arelious Walker Drive is adequate for this small number of units comprising CP-01, and essentially serves to connect the four development blocks together and provide connections to Carroll Avenue and Gilman Avenue, two primary east/west connections to the greater Bayview neighborhood.

Sub-phase CP-02 would develop the 635,000 sf regional retail center, a 220-room hotel, 419 residential units, 150,000 sf of office, and the 10,000-seat arena. To support this new development, the key transportation infrastructure connecting CP to external routes would be constructed, including Harney Way between the retail center and Thomas Mellon Drive and Arelious Walker Drive, between Harney Way and Gilman Avenue. This portion of Arelious Walker Drive would be constructed to its ultimate width of four lanes, and would connect to the interim two-lane portion to the north of Gilman. Harney Way would be constructed to its initial configuration with four lanes, as described in the 2010 FEIR.[60] Additionally, Gilman Avenue, between Arelious Walker and Third Street would be reconfigured to provide one travel lane in each direction, center turn lanes, on-street

[60] EIR Addendum 4 discussed the potential for the initial phase of Harney Way to be constructed in two sequences corresponding to the need for information from SFMTA regarding the ultimate interim routing of the 28R BRT route. Addendum 4 concluded that since the sequenced construction would still result in the same auto capacity at all times and would still complete the exclusive right of way for the BRT in advance of service, there would be a less-than-significant impact of this sequencing. The same conclusions still apply to the 2018 Modified Project Variant.

parking, and would retain the existing sidewalks on both sides of the street. Intersections along Gilman Avenue would be signalized between Arelious Walker Drive and Third Street.[61]

Other than ensuring that other existing east/west streets connect to Arelious Walker Drive, none of the project-proposed improvements to Carroll Avenue, Ingerson Avenue, or Jamestown Avenue would be constructed as part of Sub-phase CP-02. Carroll Avenue is at the northernmost portion of the CP site, and therefore, would not likely to be a desirable route to the CP retail center, which sits at the southern end of the CP site. Further, improvements proposed for Ingerson Avenue and Jamestown Avenue are generally streetscape improvements designed to improve the attractiveness of the streets and not to increase auto capacity; therefore, for purposes of discussing traffic impacts, the timing of improvements to these streets is not critical and most of the auto capacity connecting the CP site to the external roadway network would be constructed as part of Sub-phase CP-02 with the described improvements to Harney Way and interim improvements to Arelious Walker Drive.

At this point, prior to occupancy of Sub-phase CP-02, with the exception of the interim portion of Arelious Walker Drive between Gilman Avenue and Carroll Avenue, all of the major auto traffic infrastructure in CP required to connect project-related traffic to the external roadway network would be constructed, as would most of the off-site capacity enhancements, including Harney Way and Gilman Avenue.

Sub-phase CP-03 involves construction of the blocks directly opposite the retail center across Ingerson Avenue. No additional transportation improvements are proposed as part of CP-03 because the major improvements needed to serve CP-03 would be constructed earlier, as part of CP-01 and CP-02.

With the opening of CP-04, the first four sub-phases would generate about 3,750 vehicle trips, which would exceed the trigger point identified in the 2010 FEIR of approximately 3,150 vehicle trips that would require improvements to the auto route around the Yosemite Slough, that includes Carroll Avenue, Ingalls Street, Thomas Avenue, and Griffith Avenue.[62] The analysis conducted for the 2010 FEIR was based on the original phasing, which as noted earlier, would develop in the HPS site faster than currently proposed. As a result, the automobile route around Yosemite Slough was identified as appropriate infrastructure to provide access to CP and US-101 from the development at HPS. The trigger in the 2010 FEIR was identified as the appropriate time when the improvements would be necessary.

However, based on current proposed phasing, the previously identified trigger point for the auto route around Yosemite Slough would be met with less development in the HPS and substantially more development in CP than originally anticipated. As a result, there would likely be less auto demand for travel between the Hunters Point site and US-101 or between the CP and HPS sites, making the auto route around Yosemite Slough less critical during an early stage.

[61] This is different from the EIR proposal for Gilman Avenue. The proposed changes were evaluated in EIR Addendum 4, which showed the revised design would operate similar to the originally proposed configuration, with less disruption to the neighborhood due to construction.

[62] Fehr & Peers, *Roadway and Transit Phasing Plan*, March 17, 2010, p. 5, Table 4.

The improvements around Yosemite Slough would be required when approximately 85 percent of the total forecasted increase in vehicle traffic at the intersection of Carroll Avenue and Ingalls Street would occur. Based on currently proposed phasing, this would occur around CP-07, which is also when the northern portion of Alice Griffith development adjacent to Carroll Avenue is scheduled to be constructed. Thus, the trigger for improvements to Carroll Avenue and the automobile route around Yosemite Slough has been modified based on the revised phasing.

The remaining auto capacity enhancements on Arelious Walker Drive, between Gilman Avenue and Carroll Avenue would also be required to be constructed prior to occupancy of Sub-phase CP-07. At the end of Sub-phase CP-06 in CP, which represents the condition at which the most traffic would be using the interim portion of Arelious Walker Drive, the intersection of Arelious Walker Drive and Gilman Avenue would operate within acceptable level of service; therefore, no significant impacts would occur as a result of providing this interim condition through Sub-phases CP-01 through CP-06.

As a result, the roadways that facilitate travel between the project site and the external roadway network would generally provide their full capacity prior to any new trips being generated from Major Phase 2, with the exception of the portion of Arelious Walker between Gilman and Carroll. This segment would be widened to its full capacity near the beginning of Major Phase 2, at which point all major roadways in the CP portion of the project site would be at their full capacity. Otherwise, as shown in Figures 3 to 5, Major Phases 2 and 3 would only add internal circulation roadways adjacent to new development parcels to connect to the major roadways built as part of Major Phase 1. As a result, auto capacity in the CP area would be greater than or similar to what was described in the 2010 FEIR throughout the development build-out.

Hunters Point Shipyard

As noted earlier, development at HPS is anticipated to occur later than originally anticipated. As a result, and to respond to some of the changes in the order of development, revisions to the 2010 FEIR improvement phasing requirements are proposed to better respond to land use phasing. As shown in Table 11 (2018 Modified Project Variant Street Segment Improvements—Hunters Point Shipyard), similar to the proposed changes at CP, all roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the 2010 FEIR.

At build-out, the primary access routes to the HPS site include the four-lane Innes Avenue and the two-lane Palou Avenue. The main southern access route to the Shipyard Site, Crisp Avenue, would also be constructed as part of Major Phase 1. Improvements to Crisp Avenue, Spear Avenue, and a portion of Robinson Street, and associated internal streets to connect between them, would be constructed as part of Sub-phase CP-01, prior to any new trips generated by development in the HPS site. The remainder of Robinson Street, and improvements to Donahue Street and Innes Avenue would be reconstructed as part of HP-02, when the first nearby developments as part of HP-02 are constructed. With the improvements constructed in HP-02, the roadway network would provide a complete, continuous route from Innes Avenue to Crisp and Palou avenues. This access route would account for the total auto

capacity of the HPS site to connect with the surrounding neighborhoods and would be adequate to serve the development proposed as part of Major Phase 1 in HPS. Internal streets proposed as part of Major Phase 1 in HPS would connect between Donohue Street and Innes Avenue.

TABLE 11 2018 MODIFIED PROJECT VARIANT STREET SEGMENT IMPROVEMENTS—HUNTERS POINT SHIPYARD

		Original Non-Stadium Option[a]		*2018 Modified Project Variant*	
Intersection	*Improvement*	*Traffic Volume Trigger?*[b]	*Trigger*	*Traffic Volume Trigger?*[b]	*Trigger*[c]
Palou Avenue, Griffith Avenue to Third Street	Resurface and Restripe, Streetscape Amenities	Yes	TBD—Based on Transit Phasing	No	HP-05 or Based on Transit Phasing to coincide with improved service frequencies
Thomas Avenue, Ingalls Street to Griffith Street	Resurface and Restripe, Streetscape Amenities	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[d]	Yes	CP-07[e]
Griffith Street, Thomas Street to Palou Street	Resurface and Restripe, Streetscape Amenities	Yes	Reconstruction of Crisp Avenue	Yes	CP-07[e]
Innes Avenue, Donahue Street to Earl Street	Resurface and Restripe, Streetscape Amenities	Yes	1,000 PM Peak Hour Vehicle Trips	No	HP-02
Crisp Avenue, Palou Avenue to Fischer Street	Resurface, Restripe, Realign	No	Adjacency	No	HP-01
Innes Avenue/Hunters Point Boulevard/Evans Street, Earl Street to Jennings Street	Resurface and Restripe, Streetscape Amenities	Yes	1,000 PM Peak Hour Vehicle Trips	No	HP-02
Donahue Street, LaSalle Avenue/Kirkwood Avenue to Crisp Road	Extend Street		N/A	No	None; Optional Improvement

NOTES:

a. As summarized in the 2010 FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan, Fehr & Peers, March 17, 2010. Note that the "Original Non-Stadium Option" as presented in the 2010 FEIR and replicated here is applicable to all non-stadium options.

b. Based on trip rates by land use used in the 2010 FEIR for R&D Variant (Variant 1).

c. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a sub-phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the sub-phase.

d. Combined total from CP and HP

e. Although these two segments are technically part of the HP improvements, they are part of an overall strategy to provide increased auto capacity between HP and CP and should be implemented simultaneously with other improvements on Carroll Avenue and Ingalls Street that are triggered by development in CP.

Other than the optional extension of Donahue Street to Crisp Avenue, subsequent phases would build out the internal roadway network adjacent to individual development parcels, all of which would connect to the major access routes. Therefore, the major pieces of auto infrastructure connecting HPS with the external roadway network would be constructed as part of Major Phase 1 in HPS; therefore, auto capacity would be greater than (meaning more capacity would be provided) or similar to what was described in the 2010 FEIR during all phases of development.

As noted earlier, the 2018 Modified Project Variant includes an optional extension of Donahue Street to provide a better connection between the northern and southern portions of HPS. The technical

analysis conducted as part of this letter report does not include this extension and conclusions are not premised on its completion.

However, the decision to implement this extension would not alter impact conclusions. For example, under conditions without the extension, traffic from the southern portion of HPS destined for Innes Avenue and points north would drive through the site, "around the hill" (likely via Fischer Street, Robinson Street, and Donahue Street) to reach Innes Avenue. With the extension, this traffic could simply drive along Crisp Road to Donahue Street and drive directly "over the hill" to Innes Avenue. Traffic on external roadways would likely be similar, and traffic within the site would likely be less, as there would be less need for circuitous travel within the site. Thus, the extension of Donahue Street would likely reduce congestion within the site.

As a result of the analysis described above, no new or substantially increased significant traffic impacts are expected as a result of the 2018 Modified Project Variant or the modified phasing compared to the traffic impacts described in 2010 FEIR R&D Variant (Variant 1). Conditions would continue to operate similarly to conditions described in the 2010 FEIR. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

The 2010 FEIR also called for the Project to develop and implement a Transportation Demand Management Plan. This Plan is still applicable, and although it would reduce the severity of the Project's significant impact, the impact would remain significant and unavoidable.

Impact TR-3: Implementation of the Project would contribute traffic to significant cumulative impacts at intersections in the Project vicinity. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR identified significant project-specific impacts and considerable contributions to significant cumulative impacts at eleven study intersections projected to operate at acceptable LOS without the project and unacceptable LOS with the project, where no feasible mitigation was identified. This includes nine intersections that were identified for the 2010 Project, as well as two additional intersections (Ingalls/Carroll and Bayshore/Oakdale) that were identified specifically for 2010 FEIR R&D Variant (Variant 1). As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-4: At the intersection of Tunnel/Blanken, implementation of the Project would result in significant Project AM peak hour traffic impacts, and would contribute to cumulative PM peak hour traffic impacts. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersection of Tunnel/Blanken. The 2010 FEIR identified mitigation measure MM TR-4, which consisted of striping changes at the intersection, to reduce the severity of the impact; however, the Mitigation Measure would not reduce the impact to less-than-significant levels. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-5: Implementation of the Project would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR identified considerable contributions to significant cumulative impacts at 17 study intersections projected to operate at unacceptable LOS under conditions without the project, and where no feasible mitigation was identified. This includes 16 intersections that were identified for the 2010 Project, as well as one additional intersection (Evans/Jennings) that was identified specifically for 2010 FEIR R&D Variant (Variant 1). As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-6: Implementation of the Project could contribute traffic at the intersections of Geneva/US-101 Southbound Ramps and Harney/US-101 Northbound Ramps, which would operate at LOS F under 2030 No Project conditions. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersections of Geneva/US-101 Southbound Ramps and Harney Way/US-101 Northbound Ramps. The 2010 FEIR identified mitigation measure MM TR-6, which called

for the Project to pay a fair-share contribution to construction of the Geneva Avenue extension and reconstruction of the Geneva Avenue/Harney Way/US-101 interchange; however, the impact would remain significant and unavoidable. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would increase traffic volumes slightly compared to 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, even with implementation of the identified mitigation measure.

Impact TR-7: Implementation of the Project could contribute traffic to the intersections of Amador/Cargo/Illinois, which would operate at LOS E under 2030 No Project. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersection of Amador/Cargo/Illinois. The 2010 FEIR identified mitigation measure MM TR-7, which consisted of striping changes at the intersection, to reduce the severity of the impact; however, the impact would remain significant and unavoidable since its feasibility was uncertain. The 2010 FEIR noted that if it were found to be feasible, the Mitigation Measure would reduce the Project's impact at this intersection to less-than-significant levels. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-8: Implementation of the Project could contribute traffic to the intersections of Bayshore/Geneva, which would operate at LOS F under 2030 No Project. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersection of Bayshore/Geneva. The 2010 FEIR identified mitigation measure MM TR-8, which called for the Project to contribute a fair share contribution toward improvements along Geneva Avenue associated with its extension to Harney Way, and would account for projected traffic volume increases to improve forecasted operations at the intersection. However, the impact would remain significant and unavoidable. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-9: Implementation of the Project would have less-than-significant Project and cumulative impacts at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR identified a number of intersections where the Project would have a less-than-significant impact. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. Furthermore, to be thorough in its assessment, that study conducted an analysis of intersection LOS at a subset of the 2010 FEIR study intersections to demonstrate whether the slight changes would affect intersection LOS. The study found that the slight increases would not create significant transportation-related impacts at the subset, which could reasonably be extrapolated to suggest that none of the study intersections that were forecasted to experience a less-than-significant impact due to the 2010 FEIR R&D Variant (Variant 1) would now experience a new significant impact associated with the 2018 Modified Project Variant. There would continue to be no impact.

Impact TR-10: Implementation of the Project would result in significant Project traffic spillover impacts and contribute to cumulative traffic spillover impacts. ***[Criterion D.a]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

In addition to the specific intersection impact analysis, the 2010 FEIR identified Impact TR-10, which noted that Project-related traffic may result in significant "spillover" traffic into neighborhood streets. Mitigation measures MM TR-2 and MM TR-17 were identified as likely to reduce the overall effects of traffic spillover by encouraging use of nonautomobile modes; however, the impacts were expected to remain significant and unavoidable with these mitigation measures. Note that minor modifications to mitigation measure MM TR-17 associated with changes to the Transit Operating Plan are included here. Those changes are discussed in greater detail in the discussion under Impact TR-17; however, the changes have minimal effect on the discussion of impacts associated with Impact TR-10.

As discussed Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public.

In summary, there are no changes in the Project that would require revisions of the 2010 FEIR; accordingly, the impact would remain significant and unavoidable even with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM TR-17: Implement the Project's Transit Operating Plan. The Project Applicant shall work with SFMTA to develop and implement the Project's Transit Operating Plan. Elements of the Project Transit Operating Plan shall include:

- Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard.
- Increased frequency on the 24-Divisadero to ~~6~~10 minutes in the AM and PM peak periods. Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District (to the proposed terminus at Lincoln Drive and Pershing Drive in the Presidio) at 10-minute headways.
- Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement. Extension of the 28L-19th Avenue Limited from its TEP-proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue across US-101 via the proposed Geneva Avenue extension and new interchange with US-101, to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross over Yosemite Slough into the Hunters Point Shipyard transit center.
- The 28L-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28L-19th Avenue Limited by reducing headways between buses from 10 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station. Every other bus would continue to the Sunset District (to the proposed terminus at North Point Street and Van Ness Avenue) at 10-minute headways. If the TEP-proposed extension of the 28L has not been implemented by the SFMTA by the time implementation of this measure is called for in ~~the Transportation Study (Appendix D)~~ Addendum 5, based on the revised project phasing, the Project Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard.
- New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at the Transbay Terminal.
- New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops at the India Basin and Hunters View areas, before continuing

along Evans Avenue to Third Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.

Impact TR-11: Implementation of the Project would contribute to significant cumulative traffic impacts at four freeway segments. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts on freeway segments. No mitigation measures were identified to reduce the severity of these impacts. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measure to reduce the level of this impact.

Impact TR-12: Implementation of the Project would result in significant impacts at four freeway on-ramp locations. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts on freeway on-ramps. No mitigation measures were identified to reduce the severity of these impacts. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR Variant (R&D Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measure to reduce the level of this impact.

Impact TR-13: Implementation of the Project would contribute to significant cumulative traffic impacts at 12 freeway ramp locations. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts on freeway ramps. No mitigation measures were identified to reduce the severity of these impacts. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measure to reduce the level of this impact.

Impact TR-14: Implementation of the Project could result in significant impacts related to freeway diverge queue storage at the Harney/US-101 Northbound Off-ramp. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant traffic impact related to freeway diverge segment and queue storage at the off-ramp to Harney Way from northbound US-101. Mitigation measure MM TR-6, identified as part of the Project's impacts to the interchange intersections at Harney Way, would also serve to reduce impacts to the off-ramp diverge section and queue storage. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-15: Implementation of the Project could contribute to significant cumulative traffic impacts related to freeway diverge queue storage at some off-ramp locations (US-101 Northbound off-ramp to Harney Way, and US-101 Southbound Off-ramp to Harney Way/Geneva Avenue). ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts related to freeway diverge segment and queue storage at the off-ramps to Harney Way from northbound and southbound US-101. Mitigation measure MM TR-6, identified as part of the Project's impacts to the interchange intersections at Harney Way, would also serve to reduce impacts to the off-ramp diverge sections and queue storage capacities. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes slightly compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-16: Implementation of the Project would increase traffic volumes, but would not make a considerable contribution to cumulative traffic volumes on Harney Way. ***[Criterion D.a]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR found that the Project would increase traffic volumes along Harney Way from northbound and southbound US-101. Mitigation measure MM TR-16, identified as part of the Project's impacts to the interchange intersections at Harney Way, would also serve to reduce impacts to the off-ramp diverge sections and queue storage capacities.

Harney Way was proposed to be constructed in two phases. The first phase, shown in Figure 5 in the Project's Transportation Plan, approved as part of the Project in 2010, called for the BRT lanes, two travel lanes in each direction, on-street Class II bicycle lanes in each direction, and a landscaping strip on the southern edge of Harney Way, adjacent to the State Parks property. The 2010 FEIR identified mitigation measure MM TR-16, which called for conversion of a portion of the bicycle lanes and the landscape strip into a travel lane such that Harney Way would have two travel lanes in the eastbound and three travel lanes in the westbound direction, shown in Figure 7 in the Transportation Study.

The 2010 FEIR Addendum 1 refined the design of Harney Way Phase 1 to incorporate a two-way cycletrack on the south side of the street, but maintaining the two BRT lanes on the north side and the four auto travel lanes. Mitigation measure MM TR-16 was revised to reflect this modified cross-section for Phase 1. Phase 2 would remain the same as per the 2010 FEIR.

The 2010 FEIR Addendum 4 did not modify any of the cross-sections for Harney Way, but did note that Phase 1 would be constructed in two sub-phases, Phases 1A and 1B. Phase 1A would construct the segment between Arelious Walker Drive and Executive Park East, while Phase 1B would construct the segment between Executive Park East and Thomas Mellon Drive. The purpose for splitting construction of Phase 1 into two sub-phases was to reflect the potential that the San Francisco County Transportation Authority (Transportation Authority) may wish to refine the routing for the BRT, and if so, the design of the westernmost segment (between Executive Park East and Thomas Mellon Drive) may be revised. The 2010 FEIR Addendum 4 noted that since both sub-phases of Phase 1 would be required to be constructed prior to operation of the BRT service, which would cause a less-than-significant impact.

Because the phasing of the 2018 Modified Project Variant is different than the phasing analyzed in 2010 FEIR Addendum 4, when mitigation measure MM TR-16 was last modified, additional modifications are proposed as part of Addendum 5 to link the construction of Harney Way Phase 1B with the revised "trigger" point for implementation of the BRT. These proposed changes are reflected below. The full length of Harney Way Phase 1 would be completed prior to implementation of the BRT service under the new phasing and revised language for MM TR-16; therefore, the phasing plan for Harney Way would continue to have a less-than-significant impact.

Otherwise, at build-out, as discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would increase traffic volumes slightly compared to 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM TR-16: Widen Harney Way as shown in Figure 5 in the Transportation Study.** The Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study with the modification to include a two-way cycle track, on the southern portion of the project right-of-way. The portion between Arelious Walker Drive and Executive Park East

(Phase 1-A) shall be widened to include a two-way cycle track and two-way BRT lanes, prior to issuance of an occupancy permit for Candlestick Sub-phase CP-02. The remaining portion, between Thomas Mellon Drive and Executive Park East (Phase 1-B), shall be widened prior to implementation of the planned BRT route which coincides with construction of ~~CP-07 and~~ HP-04 ~~in 2023~~, as outlined in the transit improvement implementation schedule identified in Addendum 1, based on the alignment recommendations from an ongoing feasibility study conducted by the San Francisco County Transportation ~~Agency~~ Authority.

Prior to the issuance of grading permits for Candlestick Point Major Phases 2~~,~~ and 3~~, and 4~~, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersection on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.

Impact TR-17: Implementation of the Project would not exceed available transit capacity, because the Project and the Project's contribution to cumulative demand would be accommodated within the existing transit service, proposed TEP service, plus the service proposed as part of the Project. ***[Criterion D.f]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Similar to traffic impacts, the 2018 Modified Project Variant's transit impacts at build-out would be similar to what was described in the 2010 FEIR for R&D Variant (Variant 1), although two minor changes have been proposed. Specifically, the 2018 Modified Project Variant proposes minor changes to the proposed routes for the 29 Sunset in CP and to all routes in the HPS associated with a shift of the Hunters Point Shipyard Transit Center. As these routes were part of the Project's Transit Operating Plan, which was required as part of mitigation measure MM TR-17, the changes described below, are considered changes to the mitigation measure itself (although no changes to the text of the measure in the 2010 FEIR are required). Changes described herein have been developed in consultation with SFMTA. Refer to the original Transit Operating Plan, which was included as Appendix A to the Project's Transportation Plan, approved in 2010 as part of the 2010 Project for details on the original transit plan. Refer to the revised Transit Operating Plan, included as Appendix A to the 2018 Modified Project Variant's Transportation Plan, which has been prepared as part of the 2018 Modified Project Variant, for a more detailed presentation of the 2018 Modified Project Variant transit service plan.

The modification to the 29 Sunset was evaluated as part of 2010 FEIR Addendum 1 (pp. 19-24), which found that the revisions to the route would offer similar or better transit service levels to the route evaluated in the 2010 FEIR. The 29 Sunset routing proposed as part of the 2018 Modified Project Variant is identical to what was evaluated in Addendum 1 and approved by OCII and SFMTA.

The changes to routes in HPS involve moving the Hunters Point Transit Center two blocks to the north from the original EIR proposal. The 28R BRT route and the 23 Monterey/24 Divisadero would travel an additional two blocks along Spear Street to reach the center. Routes approaching the Transit Center from Innes Avenue would travel along Lockwood Street to reach the Transit Center instead of Robinson Street, as originally proposed in the 2010 FEIR. Land uses along Lockwood Street and Robinson Street are similar, so no change to transit mode share is expected as a result of this change. In Hunters Point South, transit (the 28R BRT and the 23 Monterey/24 Divisadero) would travel along Crisp Avenue along the northern edge of Hunters Point South. This is similar to the original EIR proposed routing in Hunters Point South.

The land use changes contemplated as part of the 2018 Modified Project Variant would not substantially change transit demand compared to 2010 FEIR R&D Variant (Variant 1). Furthermore, the proposed changes in routing would not likely have an effect on mode share. Therefore, the proposed modifications would not likely result in additional or substantially more severe significant impacts beyond those identified in the 2010 FEIR under build-out conditions as it relates to transit capacity impacts.

As noted above, the 2018 Modified Project Variant would increase traffic volumes within the Hunters Point Shipyard site, possibly increasing delays to transit serving the Hunters Point Shipyard site. However, the 2018 Modified Project Variant includes several features designed to ensure that transit within and around the Hunters Point Shipyard site is not adversely affected by increased traffic. Internal to the site, all transit would operate in transit-only lanes, as the 2018 Modified Project Variant includes new transit only lanes along Lockwood Avenue that were not part of the 2010 FEIR Variant 1 (R&D), as well as the transit lanes along Crisp Avenue that have always been a part of the project.

External to the site, mitigation in the form of transit-only lanes was identified for the Palou Avenue routes in the 2010 FEIR, and monitoring would be required to determine when or if the mitigation is needed. To the extent changes in Addendum 5 increase conflicts and delay to transit, the mitigation measure would simply be triggered sooner, as identified by the monitoring. Therefore, the delay to transit along Palou would not get worse than what the 2010 FEIR contemplated.

Similarly, the 2010 FEIR identified mitigation in the form of transit-only lanes along Evans Avenue. A similar monitoring program was established, such that if transit delays associated with the 2018 Modified Project Variant are greater (or materialize more quickly in the buildout stages of the 2018 Modified Project Variant) than identified in the 2010 FEIR, the mitigation measure would simply be implemented sooner, meaning that excessive transit delays would still be avoided.

Furthermore, although not required as part of the 2010 FEIR R&D Variant (Variant 1) or the 2018 Modified Project Variant, a nearby development project has been proposed, called the India Basin Mixed-Use Development Project, and would developed within India Basin along Innes Avenue, west of HPS2 site. A Draft EIR for the India Basin Mixed-Use Development Project has recently been published for public review and comment, although as of the preparation of this analysis, the India Basin Mixed-Use Development Project Draft EIR has not been certified nor has the associated project been approved. However, the India Basin Mixed-Use Development Project Draft EIR identified a significant impact to transit associated with movements into and out of the India Basin project's site. The India Basin Mixed-Use Development Project Draft EIR has called for conversion of one lane in each direction on Innes Avenue to be converted to transit-only as mitigation for that project's transit impacts. That mitigation measure, if approved, would ensure a continuous transit-only lane between the 2018 Modified Project Variant and Third Street, potentially resulting in increased traffic congestion and more efficient transit service.

While implementation of the India Basin Mixed-Use Development Project's mitigation measure for transit-only lanes along Innes Avenue would be an additional benefit to transit, the analysis herein does not assume that mitigation measure to be in place because it has not yet been approved. If those transit-only lanes are not implemented, transit conditions along the Innes Avenue corridor would be similar to those identified in the 2010 FEIR for Variant 1 (R&D) as the amount of traffic increase along Innes Avenue associated with the 2018 Modified Project Variant would be relatively small (i.e., less than 100) since the 2018 Modified Project Variant represents a net increase of only approximately 250 vehicle trips in the PM peak hour compared to 2010 FEIR Variant 1 (R&D), and only approximately half of those trips would occur along Innes Avenue, and only a fraction of the trips along Innes Avenue would occur in the peak direction. Therefore, the 2018 Modified Project Variant would not increase transit delays associated with traffic congestion, and mitigation measure MM TR-17, which calls for the Project Applicant to work with SFMTA to implement the proposed transit service increases, would still apply.

Similar to the Project's roadway infrastructure, the Project's transit network was proposed to be implemented at various levels throughout the development as described in the Transit Operating Plan. As a result of proposed changes to the development phasing, the transit phasing has been modified in order to ensure that the appropriate transit service is provided throughout the development as currently envisioned. Mitigation measure MM TR-17 notes that the transit operating plan may be modified from what was approved in the 2010 FEIR "to address changes in the operating environment and service demands" based on SFMTA's planning methodology and public input if modifications result in:

- Similar or higher transit mode share to what was projected in the 2010 FEIR
- Adequate capacity to serve projected transit ridership
- Similar or less severe traffic impacts to those identified in the 2010 FEIR

Although the changes to the Transit Operating Plan are not specifically to address current or observable changes in the operating environment and service demands, the Project Sponsor and SFMTA believe that the proposed changes to development phasing would affect the future operating environment and service demands, and are thus proposing changes to the Transit Operating Plan to better meet those future demands consistent with the provisions in mitigation measure MM TR-17.

The 2010 Project and 2018 Modified Project Variant transit phasing are shown in Table 12 (Transit Phasing). Generally, changes to the transit phasing delay the provision of transit service to the HPS site, due to the delay in development there. In response to the acceleration of planned development in CP, transit service at CP would be accelerated, compared to the 2010 FEIR phasing plan. Overall, the revised phasing has been developed in collaboration with SFMTA service planning staff to retain a relatively close approximation to the level of transit demand that would be generated for each level of transit service between the 2010 Project and 2018 Modified Project Variant, combined with engineering judgment to account for the unique development phasing currently proposed. Additionally, at build-out, slightly higher service frequency would be provided on the HPX Hunters Point Downtown Express Route, with slightly less frequent service on the 24 Divisadero. This minor change would provide a similar amount of service, but better target that service to serve expected market demands. These changes are expected to provide even better matches between service and demands, and thus, would not likely to decrease transit usage at the site or deteriorate the quality of transit service provided such that new significant impacts would occur.

Addendum 1 modified the Transit Operating Plan to include a privately funded shuttle, available complimentary for the general public, including existing neighbors, future residents, and shopping center patrons and employees, to provide service between the project site and the Balboa Park BART station, replicating service that will ultimately be offered by the 28R BRT route. This shuttle would be provided by the Project Sponsor or other on-site tenant. Service would be offered at 7.5-minute frequency with approximately 30-passenger vehicles. This service would provide interim service until the 28R BRT route, or other comparable transit service is implemented. Although the shuttle service would initially be oriented to the Balboa Park BART Station, the site's TDM coordinator would retain the ability to reroute the shuttle to other regional transit hubs to better match patron and employee demand, with the mutual agreement of the Environmental Review Officer. This shuttle service would remain in the Transit Operating Plan as part of the 2018 Modified Project Variant.

Addendum 1 also modified the Transit Operating Plan to include a temporary extension of the 56 Rutland route into the CP site to provide additional connections to Caltrain and other regional transit. However, that modification called for the extension to be implemented temporarily, only until such time as the CPX was implemented. Since the 2018 Modified Project Variant phasing includes implementation of the CPX early on, the 56 Rutland extension would no longer be necessary, and that would be removed from the Transit Operating Plan, consistent with the 2010 FEIR Transit Operating Plan.

TABLE 12 TRANSIT PHASING

Route	Frequency	2010 Project/Approved Transit Operating Plan		2018 Modified Project Variant	
		Major Phase	Approx. Year	Major Phase/ Sub-phase	Approx. Year
Hunters Point Shipyard					
Hunters Point Express (HPX)	20	1	2017	1 / HP-01	2021[d]
	10	1[a]	2019[a]	2 / HP-04	2025
	6	N/A	N/A	3 / HP-06	2026
23 Monterey	20	1	2017	1 / HP-01	2021
23 Monterey or 24 Divisadero[b]	15	2	2023	2 / HP-04	2025
	10	2	2025	3 / HP-06	2026
48 Quintara	15	1	2015	1 / HP-01	2021
	10	1	2019	2 / HP-03	2025
44 O'Shaughnessy	10	N/A	N/A	1 / HP-02	2022
	7.5	1	2017	2 / HP-03	2025
	6.5	1	2019	3 / HP-06	2026
Candlestick Point					
Privately Funded Shuttle[c]	7.5	N/A	N/A	1 / CP-02	2022
Candlestick Point Express (CPX)	20	2	2021	N/A	N/A
	15	2	2022	1 / CP-03	2021
	10	3	2027	1 / CP-02	2022
29 Sunset	10	2	2021	1 / CP-03	2021
	5	2	2022	1 / CP-02	2025
Routes Serving Both Sites					
28R/BRT (Includes Construction of Yosemite Slough Bridge)	8	2	2021	2 / HP-04	2025
	5	2	2022	3 / CP-07	2028
T Third	6	2	2020	No Change—Not triggered by project development	
	5	3	2025		

NOTES:

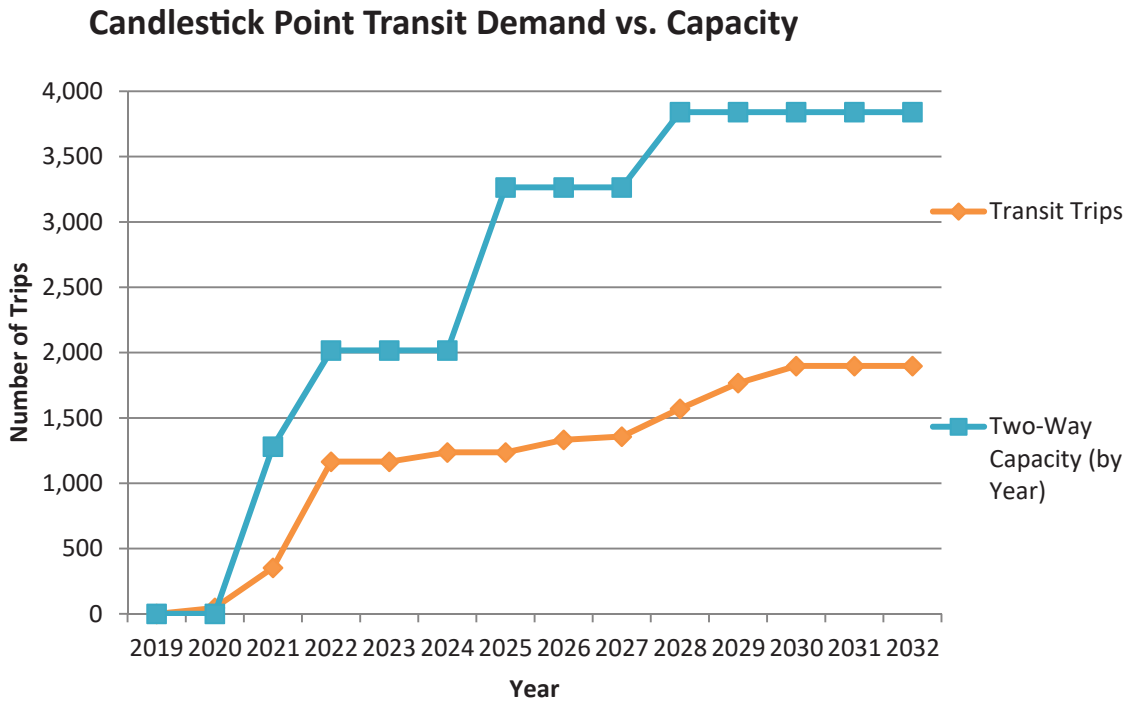
a. Approved Transit Operating Plan called for service increases to 12-minute headways. This has been revised to 10-minute headways as part of the 2018 Modified Project Variant.

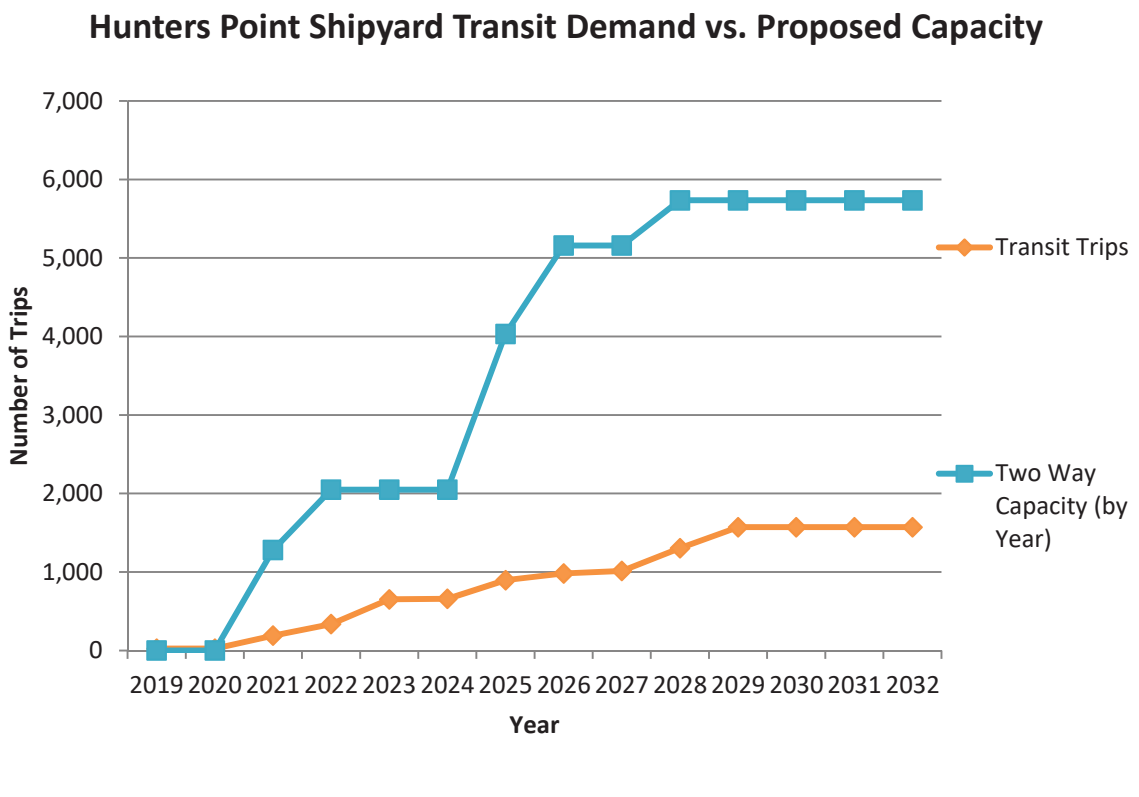
b. The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for an Overhead Contact System (OCS) wires extended into the HPS site, at which point the 24 Divisadero would be extended and the 23 Monterey would return to its original (existing) routing. Note that the Approved Transit Operating Plan also called for three levels of service, corresponding to 15-, 10-, and 7.5-minute frequencies. The Modified Transit Operating Plan has been changed to reduce service levels on this route and increase service levels on express bus routes based on direction from SFMTA staff.

c. Temporary until initiation of BRT.

d. Although the anticipated development schedule calls for the first portions of HP-01 to be complete in 2019, that portion is primarily reconstruction of existing artists' studios. The first portion of new development is scheduled to be complete by approximately 2021, which is when new transit service would likely be warranted.

Figure 24 (Transit Service Comparison) summarizes the level of transit supply proposed to be implemented over time relative to the expected transit ridership demand, based on the development phasing schedule and the transit implementation triggers described above, for CP and HPS. Whereas most of the transportation analysis compares the Modified Project to the R&D Variant





SOURCE: Fehr &Peers, 2018.

FIGURE 24 Addendum 5 to the CP-HPS2 2010 FEIR

TRANSIT SERVICE COMPARISON

(Variant 1), the assessment of changes to transit phasing compares the revised phasing to the phasing proposed and analyzed as part of Addendum 1 because the changes included as part of the Modified Project are relatively minor compared to Addendum 1. Transit service and phasing associated with the R&D Variant (Variant 1) was deemed to be an unrealistic base against which to compare Modified Project changes because SFMTA has been planning for the changes included as part of Addendum 1 since its approval.

The figures illustrate that with the proposed changes in development and transit phasing, the level of transit service proposed over time would increase generally proportionally to (and where possible, in advance of) increases in development and associated transit demand. The CP portion shown in Figure 24 illustrates that with the 2018 Modified Project Variant development schedule and transit phasing, the level of transit service relative to demand would remain substantially higher than the demand at the CP site. For example, the transit service capacity increases substantially in 2021 and 2022, coincident with substantial increases in demand over those same two years. Transit service increases again in 2025, in advance of increases in demand in years 2027 through 2030. The alignment of transit service increases with land use development throughout the development process and at build-out, which means the transit would remain an attractive option for travelers in the area.

The HPS half of Figure 24 similarly illustrates that transit service relative to development at HPS would generally increase along with, and where possible, in advance of development.

Therefore, transit capacity would be adequate to serve the expected demand, and the mode split (i.e., the percentage of trips made by transit) would remain similar, meaning that there would not be additional significant transit impacts beyond those described in the 2010 FEIR, nor would the 2018 Modified Project Variant substantially increase the severity of significant impacts identified in the 2010 FEIR. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM TR-17, Implement the Project's Transit Operating Plan**, was provided in full on p. 111 under Impact TR-10.

Impact TR-18: With full implementation of the Project with proposed transit improvements, the Project demand and the Project's contribution to cumulative demand would not exceed the proposed transit system's capacity at the study area cordons. ***[Criteria D.f, D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit crowding, with implementation of the Project's Transit Operating Plan, identified as mitigation measure MM TR-17. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would very slightly decrease transit demand compared to 2010 FEIR R&D Variant (Variant 1); therefore,

transit capacity would continue to remain adequate to serve the 2018 Modified Project Variant. Impacts would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM TR-17, Implement the Project's Transit Operating Plan, was provided in full on p. 111 under Impact TR-10.

Impact TR-19: Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips to the Downtown Screenlines would not increase demands in excess of available capacity. ***[Criterion D.f, D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit crowding at the Downtown Screenlines. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly decrease transit demand compared to the 2010 FEIR R&D Variant (Variant 1); therefore, transit capacity would continue to remain adequate to serve the 2018 Modified Project Variant. There would continue to be no impact.

Impact TR-20: Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips would not contribute significantly to Regional Screenlines conditions where overall ridership is projected to exceed available capacity. ***[Criterion D.f, D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit crowding on regional transit providers. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would very slightly decrease transit demand compared to 2010 FEIR R&D Variant (Variant 1); therefore, transit capacity would continue to remain adequate to serve the 2018 Modified Project Variant. There would continue to be no impact.

Impact TR-21: Implementation of the Project could increase congestion and contribute to cumulative conditions at intersections along San Bruno Avenue, which would increase travel times and impact operations of the 9-San Bruno. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 9-San Bruno due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-21.1 and MM TR-21.2, which called for physical

improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-22: Implementation of the Project would contribute traffic to cumulative conditions at intersections along Palou Avenue, which would increase travel times and impact operations of the 23-Monterey, 24-Divisadero, and the 44-O'Shaughnessy. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on Palou Avenue due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-22.1 and MM TR-22.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-23: Implementation of the Project would increase congestion at intersections along Gilman Avenue and Paul Avenue, which would increase travel times and would impact operations of the 29-Sunset. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 29-Sunset due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-23.1 and MM TR-23.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As part of 2010 FEIR Addendum 4, the proposed configuration of Gilman Avenue between Arelious Walker and Third Street was revised to retain a single traffic lane in each direction, with on-street parking, center turn lanes, and installation of new traffic signals at all intersections. The transportation analysis conducted as part of Addendum 4 showed that operations with this modification would be the same as or better than those forecasted to be in place under original 2010 Project conditions with mitigation measure MM TR-23.1 in place. Thus, mitigation measure MM TR-23.1 was revised as part of Addendum 4 to remove requirements for changes to Gilman Avenue between Arelious Walker and Third Street. Improvements to other portions of the corridor, such as Paul Avenue, remained in

mitigation measure MM TR-23.1. The impact was considered to remain significant and unavoidable because the feasibility of improvements to Paul Avenue was not certain.

As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-24: Implementation of the Project would increase congestion at intersections along Evans Avenue, which would increase travel times and impact operations of the 48-Quintara-24th Street. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on Evans Avenue due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-24.1 and MM TR-24.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-25: Implementation of the Project would increase congestion at intersections in the study area, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the 54-Felton. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 54-Felton due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measure MM TR-25, which called for additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-26: Implementation of the Project would increase congestion at intersections along Third Street, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the T-Third. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the T-Third due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-26.1 and MM TR-26.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-27: Implementation of the Project could increase congestion at the intersection of Geneva Avenue and Bayshore Boulevard. This would increase travel times and impact operations of the 28L-19th Avenue/Geneva Limited. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 28R-19th Avenue/Geneva Rapid due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-27.1 and MM TR-27.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-28: Implementation of the Project would increase congestion on US-101 mainline and ramps, which would increase travel times and impact operations of the 9X, 9AX, 9BX-Bayshore Expresses, and 14X-Mission Express. The Project would also contribute to cumulative impacts on these transit routes on US-101. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 9X, 9AX, 9BX-Bayshore Express and 14X Mission Express routes for the portions of those routes on US-101 due to delays associated with Project-related traffic congestion. (The 9X San Bruno

Express has been renamed the 9R San Bruno Rapid, and the 9AX and 9BX have been renamed the 8AX Bayshore A Express and the 8BX Bayshore B Express, respectively, with slight changes to routing and service since publication of the 2010 FEIR). For purposes of Addendum 5, the impacts previously identified for the 9 Bayshore Routes would apply to the 8 Bayshore routes.

The 2010 FEIR determined that no feasible mitigation existed to improve operations on these routes. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-29: Implementation of the Project would not contribute to cumulative impacts on the 14X-Mission Express transit route when on I-280. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit service on the 14X Mission Express routes on I-280 due to delays associated with Project-related traffic congestion. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. There would continue to be no impact.

Impact TR-30: Implementation of the Project would increase congestion and contribute to cumulative congestion on US-101 and on Bayshore Boulevard, which would increase travel times and adversely affect operations of SamTrans bus lines on these facilities. No feasible mitigation has been identified. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would cause a significant impact related to regional transit service on Bayshore Boulevard and US-101. The 2010 FEIR determined that no feasible mitigation existed to improve operations on these routes. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-31: During implementation of the Project, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the Project. ***[Criterion D.k]***

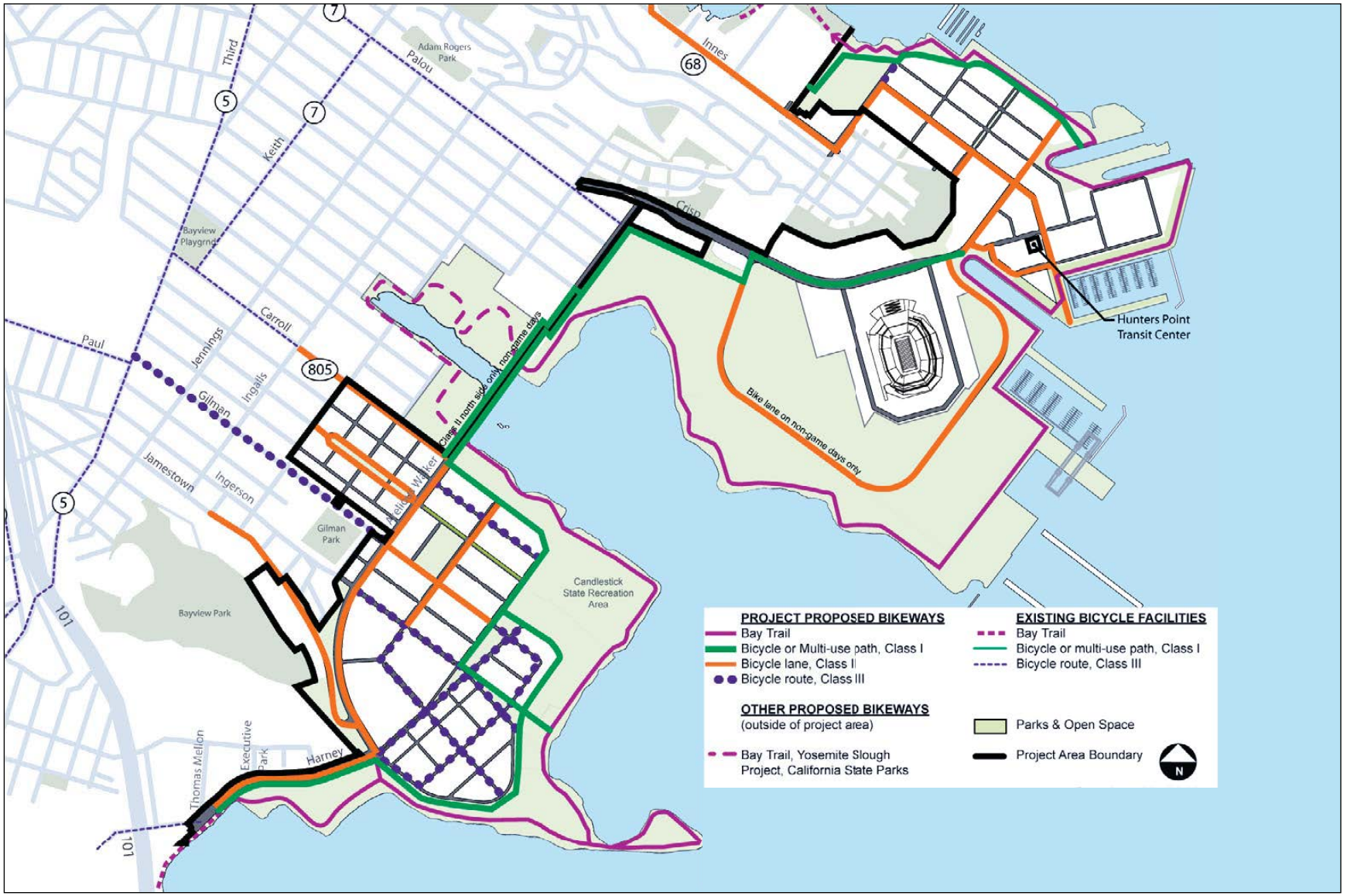
	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As shown in Figure 25 (2010 Project Bicycle Network Plan) and Figure 26 (2018 Modified Project Variant Bicycle Network Plan), the 2018 Modified Project Variant includes refinements to the proposed bicycle network. Many of these changes—particularly those in CP—were addressed in and approved as part of Addendum 1 (pp. 25–27), and would not be changed further as part of the 2018 Modified Project Variant being assessed herein. Therefore, they are not discussed further here.

The primary change to the bicycle network in the 2018 Modified Project Variant compared to the changes approved as part of Addendum 1 would be the re-alignment of the cycletrack in HPS South. One of the primary modifications approved as part of Addendum 1 was a new two-way cycletrack connecting the CP and HPS neighborhoods. Within HPS, the cycletrack was to travel along the northern side of Crisp Avenue.

However, the 2018 Modified Project Variant proposes an institutional/educational use and some R&D uses on the northern side of Crisp Avenue, which may require driveways or other curb cuts that may disrupt the cycletrack. Therefore, the 2018 Modified Project Variant proposes to align the cycletrack through the open space and park area south of Crisp Avenue, and along one of the midblock breaks in HPS South. From there, it would extend across the new bridges across Dry Dock 4, where it would connect to the planned portion of the Bay Trail traversing the perimeter of HPS and with proposed facilities on Robinson Street. The facility on Robinson Street would be constructed as a Class IV separated facility providing an additional buffer between cyclists and adjacent traffic. These changes would ensure a more direct route between HPS and CP, and would ensure a complete connection within HPS, and to proposed cycletrack facilities west of HPS, within the proposed India Basin Mixed-Use Development Project. As a result, the 2018 Modified Project Variant would provide a more complete and connected network of routes and facilities, and would penetrate through the center of HPS South, instead of along its northern edge as had previously been contemplated.

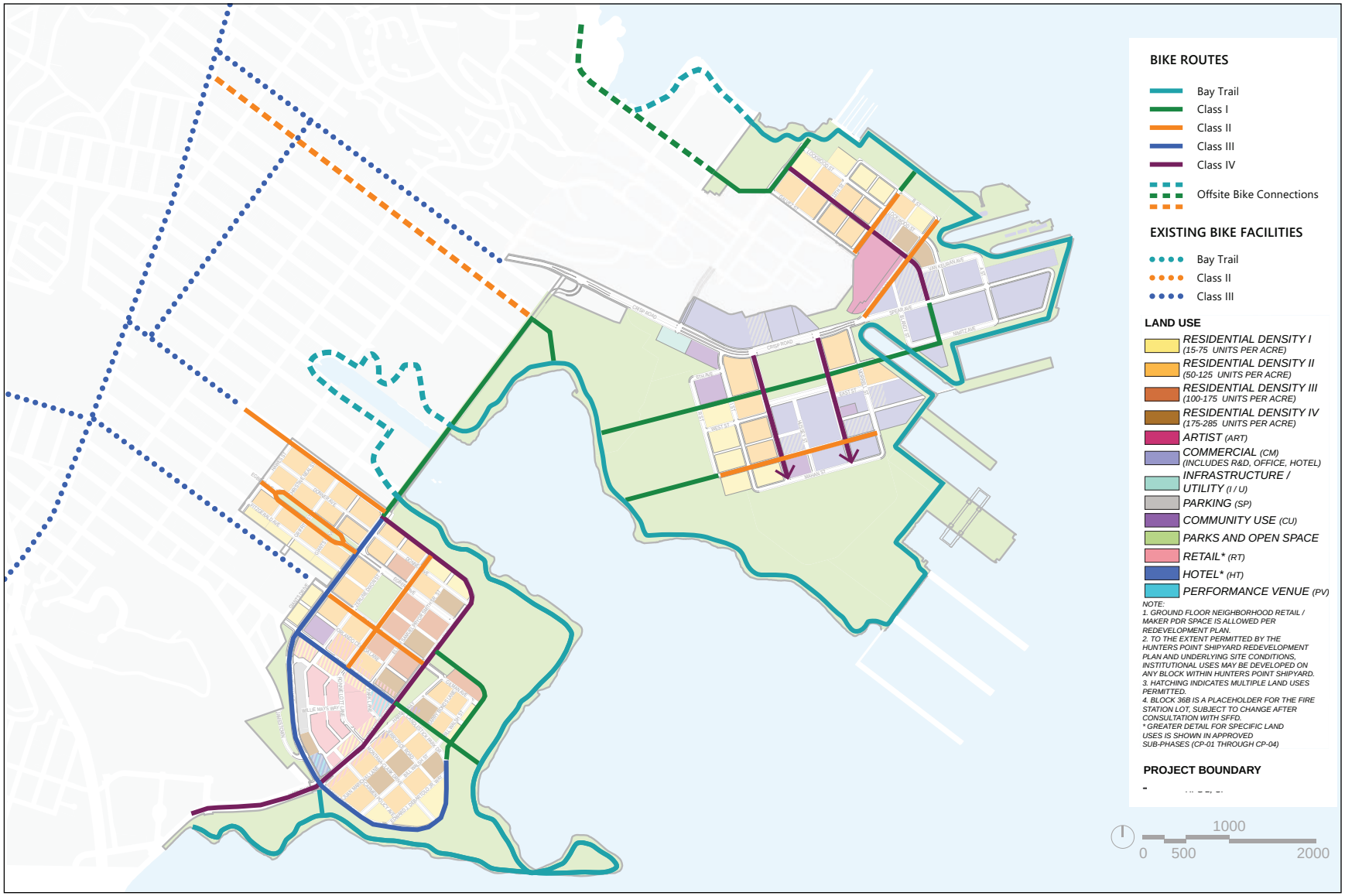
Overall, the project refinements would continue to improve the overall bicycle network in the study area and facilities would be adequate to meet bicycle needs, and Impacts TR-31 and TR-32 would remain unchanged. Mitigation measure MM TR-32 would also still apply, and as part of the requirements of MM TR-32, SFMTA has already initiated conversations with the Project Sponsor regarding a study to consider relocating the existing bicycle route on Palou Avenue to Quesada Avenue, immediately to the south, and part of the City's Green Connections project. As noted in the 2010 FEIR, this study must be complete prior to issuance of the grading permit for Major Phase 1 at HPS. No new significant impacts beyond those identified in the 2010 FEIR would result from the 2018 Modified Project Variant and the 2018 Modified Project Variant would not make bicycle impacts substantially more severe than identified in the 2010 FEIR, and therefore, there would continue to be no impact.



SOURCE: Lennar Urban, 2010

FIGURE 25 Addendum 5 to the CP-HPS2 2010 FEIR

2010 PROJECT BICYCLE NETWORK PLAN



SOURCE: FivePoint, 2018; Fehr & Peers, 2018.

FIGURE 26

Addendum 5 to the CP-HPS2 2010 FEIR

2018 MODIFIED PROJECT VARIANT BICYCLE NETWORK PLAN

Impact TR-32: Implementation of the Project's proposed transit preferential treatments and significant increases in traffic volumes on Palou Avenue could result in impacts on bicycle travel on Bicycle Routes #70 and #170 between Griffith Street and Third Street. ***[Criterion D.k]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to bicycle circulation related to traffic volume increases on Palou Avenue. The 2010 FEIR identified mitigation measure MM TR-32, which called for relocating the bicycle facility on Palou Avenue to another, less-congested, parallel street. Because the feasibility of relocating the facility was uncertain, the impact was considered significant and unavoidable. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-33: During implementation of the Project, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the Project. ***[Criterion D.j]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR noted that the Project would generally improve pedestrian conditions in the area by widening existing sidewalks and creating a pedestrian-oriented neighborhood within the project site, therefore creating a beneficial impact. The 2018 Modified Project Variant maintains the project's goals of prioritizing the pedestrian realm through provision of generous sidewalks with streetscape amenities and safety measures, such as bulbouts at key locations. Sidewalks would generally remain between 12 and 15 feet, within the range of sidewalks considered in the original plan.

Overall, the 2018 Modified Project Variant includes minor changes with respect to the pedestrian realm, such as slightly modified sidewalk widths and reoriented streets and the beneficial impact of the 2018 Modified Project Variant are expected to be similar to those identified for the 2010 FEIR R&D Variant (Variant 1). There would continue to be no impact.

Impact TR-34: Implementation of the Project would result in traffic volumes on area roadways that would not substantially affect pedestrian circulation and safety in the Project vicinity. ***[Criterion D.j]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that although the Project would be increasing conflicts between pedestrians, bicycles, and autos, the overall benefits to pedestrian safety associated with the project's

proposed improved pedestrian facilities would result in a less-than-significant impact. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain less than significant, and no mitigation would be required.

Impact TR-35: Implementation of the Project would not result in significant impacts associated with a lack of an adequate supply of parking that could not be accommodated within alternative modes. ***[Criteria D.e and D.h]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that although the Project would result in a shortfall of parking spaces compared to its projected demand, the Project's impacts to parking conditions would be less than significant. The 2018 Modified Project Variant would potentially result in slightly fewer parking spaces on-street than the maximum envelope anticipated as part of 2010 FEIR R&D Variant (Variant 1). Specifically, the 2010 FEIR identified that R&D Variant (Variant 1) would include approximately 3,000 on-street parking spaces (roughly evenly split between CP and HPS) and between zero and approximately 20,000 off-street spaces. Therefore, the 2010 FEIR concluded there would be a range of between approximately 3,000 spaces and 23,000 spaces in the entire development area.

The 2018 Modified Project Variant would reduce new on-street parking supply by up to several hundred spaces between CP and HPS based on more detailed designs prepared as part of sub-phase applications and the desire to provide separated bicycle facilities along Robinson Street (a precise count is unknown because the actual number of spaces that would have been provided cannot be determined until more detailed final designs are complete). Although the range of off-street parking spaces constructed was projected to be between zero and approximately 20,000 spaces in the 2010 FEIR, it is reasonable to expect that the 2018 Modified Project Variant would build at least as many off-street spaces as on-street spaces that would be removed through the minor design changes, such that with the loss of a few hundred on-street spaces, the 2018 Modified Project Variant would still contain between 3,000 spaces and 23,000 spaces.

Furthermore, as discussed in Addendum 5 Appendix D, there would be an overall increase in the maximum spaces allowed at Hunters Point Shipyard of 737 spaces and a corresponding decrease in the maximum amount of parking allowed at CP of 242 spaces. The resulting maximum total of parking allowed within the 2018 Modified Project Variant would be 495 spaces more than allowed under 2010 FEIR Variant 1 (R&D).

Therefore, since the 2018 Modified Project Variant would still provide parking within or slightly above the range identified in the 2010 FEIR, conclusions in the 2010 FEIR related to parking remain valid. The impact would remain less than significant, and no mitigation would be required.

Impact TR-36: Implementation of the Project roadway improvements would displace on-street parking spaces, and the existing demand could be accommodated in the nearby vicinity. ***[Criteria D.e and D.h]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project would remove some existing on-street parking associated with project-proposed off-site improvements and with mitigation measures, particularly those geared toward transit priority treatments. However, the 2010 FEIR determined that those impacts would be less than significant as vehicles would be able to park in other nearby streets. The 2018 Modified Project Variant would not affect the off-street parking supply and thus, does not create any changes to this impact discussion. The impact would remain less than significant, and no mitigation would be required.

Impact TR-37: Implementation of the Project would not result in significant impacts associated with a lack of adequate supply of loading spaces. ***[Criterion D.l]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project would provide adequate loading supply and, therefore, concluded that impacts related to loading would be less than significant, and no mitigation measures would be required. As the 2018 Modified Project Variant would not change the overall loading requirements, implementation of the 2018 Modified Project Variant would not result in any new significant impacts related to loading. The impact would remain less than significant, and no mitigation would be required.

Impacts TR-38 through TR-50: Transportation impacts related to the Proposed NFL Stadium.

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	N/A	N/A

The 2010 FEIR included a number of impacts related to operation of the proposed new NFL stadium in the HPS site. However, the stadium is not part of the 2018 Project Modification Variant, and these impacts and associated mitigation measures no longer apply.

Impact TR-51 through TR-55: Transportation impacts related to the proposed new arena. ***[Criteria D.a, D.b, D.e, D.f, D.g, D.h, D.i, D.j, D.k]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation (Impacts TR-51 and TR-52), Less than Significant (Impacts TR-53 to TR-55)	Significant and Unavoidable with Mitigation (Impacts TR-51 and TR-52), Less than Significant (Impacts TR-53 to TR-55)

The 2010 FEIR determined that the Project's proposed 10,000-seat Arena use would create new significant impacts associated with events at the arena not captured in the typical day-to-day operations at the site with no arena event. The 2018 Modified Project Variant does not propose any changes to the arena location, capacity, or operational characteristics compared to the 2010 FEIR. Therefore, the 2018 Modified Project Variant would not create any new significant impacts or substantially increase the severity of a significant impact associated with events compared to what was described in the 2010 FEIR. Therefore, impacts would remain significant and unavoidable with respect to Impacts TR-51 and TR-52, even with implementation of the identified mitigation measures. Impacts would remain less than significant with respect to Impacts TR-53, TR-54, and TR-55, and no mitigation would be required for these impacts.

Impact TR-56: Implementation of the Project would not impact air traffic. ***[Criterion D.c]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project would have a less-than-significant impact on air traffic. The 2018 Modified Project Variant would contain the same overall land uses and general development form and would not change the 2010 FEIR's conclusion regarding air traffic. The 2018 Modified Project Variant would not create any new significant impacts with respect to air traffic and no additional mitigation measures are required. Impacts would remain less than significant, and no mitigation would be required.

Impact TR-57: Implementation of the Project would not create hazards due to any proposed design features. ***[Criterion D.d]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project's transportation infrastructure would be designed in accordance with City standards, and would be reviewed and approved by the City prior to construction. As a result, the Project's impacts to hazards would be less than significant. The 2018 Modified Project Variant would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, the impact to design features would remain less than significant, and no mitigation would be required.

Impact TR-58: Implementation of the Project would not result in significant emergency access impacts. ***[Criterion D.m]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project's transportation infrastructure would adequately facilitate emergency access and be designed to City standards, which include provisions that address emergency vehicles. The 2018 Modified Project Variant would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, the impact to emergency access would remain less than significant, and no mitigation would be required.

Additional Intersection Impacts for R&D Variant (Variant 1): The R&D Variant (Variant 2) and Housing/R&D Variant (Variant 2A) would worsen degraded traffic conditions at the intersection of Crisp and Palou. The R&D Variant (Variant 1) would cause acceptable traffic conditions to become unacceptable at the intersection of Innes and Earl. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR identified a number of intersections where the 2010 Project would create significant impacts for which mitigation measures were available. The 2010 FEIR identified two additional intersections where R&D Variant (Variant 1) would create significant impacts and where mitigation measures were also available to reduce the R&D Variant (Variant 1) impacts to less-than-significant levels.

As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1). Although the slight increases in total volumes would be generally imperceptible to the public, the changes in specific movement volumes at the intersection of Crisp/Palou would require slight modification to the mitigation measure from the 2010 FEIR in order to ensure the mitigation measure continues to reduce the 2018 Modified Project Variant impact to a less-than-significant level at that intersection. With the modification shown below, the intersection of Crisp/Palou would continue to operate at acceptable level of service with implementation of the 2018 Modified Project Variant, and the impact at this intersection would be reduced to a less-than-significant level.

The intersection of Innes/Earl would also operate at acceptable levels with implementation of the 2018 Modified Project Variant and the associated mitigation measure (a new traffic signal) at that intersection from the 2010 FEIR without any modifications to the measure. Overall, these additional intersection impacts would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

R&D Variant (Variant 1)/Housing/R&D Variant (Variant 2A)/2018 Modified Project Variant Mitigation Measure MM TR-VAR1:

(a) Under the R&D and Housing/R&D Variants, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated left-turn lane and a shared through/right-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues. Under the 2018 Modified Project Variant, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated right-turn lane and a shared through/left-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues, and constructing the westbound approach on Crisp Avenue to provide two dedicated left-turn lanes and one shared through/right-turn lane. Implementation of this mitigation would reduce impacts from these variants to a less-than-significant level.

(b) Under the R&D Variant (Variant 1) and the 2018 Modified Project Variant, the Project Applicant would be required to fund the installation of a traffic signal at the intersection of Innes and Earl when warranted by traffic conditions. Implementation of this mitigation would reduce impacts from this variant to a less-than-significant level.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to transportation and circulation impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. Conclusions from this analysis remain the same as those reached in the 2010 FEIR related to transportation and circulation, both on a project-related and cumulative basis.

II.B.4 Aesthetics

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
1. Aesthetics. Would the project:					
E.a. Have a substantial adverse effect on a scenic vista?	2010 FEIR p. III.E-50 (Impact AE-1), p. III.E-53 (Impact AE-4), p. III.E-65 (Impact AE-6b); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	None
E.b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting?	2010 FEIR p. III.E-50 (Impact AE-1), p. III.E-59 (Impact AE-5b); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	None
E.c. Substantially degrade the existing visual character or quality of the site and its surroundings?	2010 FEIR p. III.E-51 (Impact AE-2), p. III.E-60 (Impact AE-6); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	MM AE-2
E.d. Create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties?	2010 FEIR p. III.E-53 (Impact AE-3), p. III.E-74 (Impact AE-7b); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	MM AE-7b.1, MM AE-7b.2

Changes to Project Related to Aesthetics

The 2018 Modified Project Variant includes changes in the height and bulk of certain buildings at HPS2 (with some buildings increasing in height and others decreasing in height), and the specific location of buildings within HPS2, including adjustments to the two high-rise towers at HPS2. The visual simulations provided in Addendum 5 made reasonable assumptions about the bulk of the proposed buildings in order to achieve the identified heights.

HPS2 proposed modifications would also establish a water taxi service to and from HPS2 at Dry Dock 4. New infrastructure on the land and in the water would be constructed to accommodate the services. In addition, two bridges would be provided over Dry Dock 4.

The proposed heights at CP have remained the same since the CP height changes evaluated in Addendum 4 and approved by the 2016 D4D and amendments to the CP Major Phase 1 Application, which occurred subsequent to the 2010 FEIR. Therefore, there are no height changes at CP to evaluate in this section of Addendum 5.

Comparative Impact Discussions

Impact AE-1: Construction activities associated with the Project would not have a substantial adverse effect on a scenic vista or scenic resources. ***[Criteria E.a and E.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the 2010 Project, construction activities would occur under the 2018 Modified Project Variant. Demolition of existing buildings would occur, and site preparation, excavation, and grading would occur to accommodate new development. Construction workers and equipment would be parked and staged within the Project construction site. Construction-related visual impacts that would be seen with implementation of the 2018 Modified Project Variant, and similar to the 2010 Project, include exposed staging areas, on-site construction equipment, the inclusion of temporary structures throughout the duration of construction phases, exposed trenches, exposed soil, and debris/material piles. As with 2010 Project, a construction-related visual impact would occur on Project site. However, the change in visual conditions would be temporary and typical of construction activities in already developed areas. Scenic vistas of the Bay, the East Bay hills, and the San Francisco downtown skyline would not be impacted by construction activities. Consequently, as with the 2010 Project, the visual impact from construction activities under the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact AE-2: Construction activities associated with the Project would not result in temporary degradation of the visual character or quality of the site. ***[Criterion E.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the 2010 Project, construction activities would occur under the 2018 Modified Project Variant. Demolition of existing buildings would occur, and site preparation, excavation, and grading would occur to accommodate new development. Construction workers and equipment would be parked and staged within the Project construction site. As with the Project analyzed in the 2010 FEIR, construction-related visual impacts that would be seen with implementation of the 2018 Modified Project Variant include exposed staging areas, on-site construction equipment, the inclusion of temporary structures throughout the duration of construction phases, exposed trenches, exposed soil, and debris/material piles. To address these impacts, mitigation measure MM AE-2 is prescribed under the 2010 FEIR. MM AE-2 would require temporary screening of a particular construction or staging site, as outlined below. MM AE-2 would also require the Project Applicant to stage all construction equipment on the Project site and to keep all construction equipment egressing the Project site to be free of mud. Incorporation of MM AE-2 would ensure that impacts related to construction activities would not result in temporary degradation of the visual character or quality of the site. Consequently, as with the 2010 Project, the impact to the visual character or quality of the

site from construction activities under the 2018 Modified Project Variant would remain less than significant with implementation of the identified mitigation measure.

Impact AE-3: Construction activities associated with the Project would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties. ***[Criterion E.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the 2010 Project, construction activities would occur during daylight hours, generally between 7:00 a.m. and 8:00 p.m. or as otherwise allowed by the City (San Francisco Police Code Article 29, Section 2908). A negligible amount of glare could occur from reflection off windows of trucks but would not affect daytime views in the area. Security lighting comparable to the level of existing night lighting levels in urban areas would be provided after hours on all construction sites. Night lighting would be minimal and restricted to the Project site. Consequently, as with the 2010 Project, impacts from construction activities related to substantial light and glare adversely affecting day or night views in the area associated with the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact AE-4: Implementation of the Project would not have a substantial adverse effect on a scenic vista. ***[Criterion E.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2018 Modified Project Variant includes changes in the height of certain buildings at HPS2 (with some buildings increasing in height and others decreasing in height), and the specific location of buildings within HPS2, including adjustments to the location of two high-rise towers at HPS2. Under the 2010 FEIR Tower Variant (Variant 3), four different tower variants were introduced and analyzed. Each of these variants would have the same land use program as with the Project, but would have different locations, massings, heights, and number of residential towers at Candlestick Point.

Three of the tower locations were subsequently adjusted and analyzed in Addendum 4 to the 2010 FEIR. Tower G, at CP Center, would be moved west from the middle of the block to a location on Arelious Walker Drive. Towers J and K would be relocated in CP-04 immediately southeast of the previously approved locations. Refer to Exhibit C, Tower Location Analysis, of Addendum 4 for a graphical representation of the tower relocation.

Under the 2018 Modified Project Variant, Tower A would be located in the same location and on the same block as an encouraged tower location as shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block. Tower B would be located one block north of its previously approved location, and a flexible tower zone would also be created for the balance of this

block. The establishment of a flexible tower location zone would provide flexibility in the geographic placement of Tower A and Tower B. If the zone is established, both Towers A and B could be located in any part of the flexible tower location zone. However, for purposes of this environmental analysis, the towers are proposed at the locations depicted in Figure 7 (Tower Locations: Towers A and B), p. 19. The heights of both towers would not change. While the heights of both towers would not change, the 2018 HPS D4D would allow screened mechanical equipment to be up to 10 percent of the total height of the building (within an area that represents 85 percent of the building floorplate).

HPS2 proposed modifications would also establish a water taxi service to and from HPS2 at Dry Dock 4. At Dry Dock 4, two bridges would be built over the water inlet to provide direct access to either side of the marina area. As with the project analyzed in the 2010 FEIR, views of Bayview Hill and Hunters Point Hill would be partially obstructed under the 2018 Modified Project Variant, but not to the extent to be considered significant. As with the 2010 Project, the two most prominent features under the 2018 Modified Project Variant would be the high-rise residential towers, which would represent a considerable change in the existing low-scale pattern of development on the Project site. As with the 2010 Project, implementation of the residential towers would be similar to other developed areas of San Francisco and would not substantially obstruct existing views of Bayview Hill and Hunters Point or other scenic vistas. Consequently, the 2018 Modified Project Variant would not have a substantial adverse effect on a scenic vista. The impact would remain less than significant, and no mitigation would be required.

Impact AE-5b: Implementation of the Project at HPS Phase II would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting. ***[Criterion E.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the 2010 Project, implementation of 2018 Modified Project Variant would include redevelopment of HPS and would remove old, deteriorating structures associated with ship repair, piers, dry docks, storage, and administrative uses. As noted in the 2010 FEIR, HPS2 currently contains limited landscaping and is primarily a degraded industrial area. There are several proposed components of the Project that would alter the overall aesthetics of the area, but no significant adverse impacts would occur.

As discussed above, views of Hunters Point Hill and Bayview Hill would remain largely intact with implementation of 2018 Modified Project Variant. Obstructed views of Bayview Hill would occur from close-in vantage points. The Project would demolish Building 253, which is not identified as a scenic resource, but some viewers may use the building as visual orientation. Structures at the potential HPS Drydock Historic District and the Re-gunning crane would remain intact.

Under the 2018 Modified Project Variant, and similar to the 2010 Project, development of HPS2 would result in new and renovated parkland and open space, along with shoreline improvements. The new and renovated open space would improve the scenic quality of the area by providing natural and landscaped parkland, sports fields, active urban recreational areas, and other public gathering places. Further, shoreline improvements would remove debris, reduce erosion, revegetate areas with marsh plantings, and would increase the visual quality of the shoreline. Overall, as also concluded in the 2010 FEIR, addition of new and renovated parkland and shoreline improvements would increase the scenic quality of the area.

Consequently, 2018 Modified Project Variant would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting. The impact would remain less than significant, and no mitigation would be required.

Impact AE-6b: Implementation of the Project at HPS Phase II would not substantially degrade the visual character or quality of the site or its surroundings. ***[Criterion E.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

Five visual simulation viewpoints from the 2010 FEIR where changes under the 2018 Modified Project Variant could be visible were selected: Views 14, 15, 18, 19, and 20. Figure 27 (Viewpoint Locations) illustrates the location of these viewpoints. Changes that would occur with implementation of the 2018 Modified Project Variant are not expected to be noticeably visible from the remaining viewpoints.

View 14

As shown in Figure 28 (Existing and Proposed Views from View 14: Southeast from CPSRA), under existing conditions, Yosemite Slough is seen in the foreground with shipyard structures (primarily the Re-gunning crane) in the background. The East Bay hills are visible in the long-range view from Candlestick Point State Recreation Area (CPSRA).

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from this viewpoint include the Yosemite Slough bridge, the new 49ers stadium, the new marina, residential towers at HPS2, the demolition of Building 253 (which was proposed to be demolished as part of the 2010 Project), and associated landscaping. Additionally, to the north, the development undergoing construction at HPS1 (not a part of this Project) would be visible. Short- and mid-range views of the Slough would be slightly altered with the inclusion of the Yosemite Slough bridge, but relatively unchanged when compared to current conditions. New structures would not obstruct existing views of the East Bay hills. Building 253 is prominently seen under existing conditions, but does not make a substantial contribution to the public scenic setting. The demolition of Building 253 would not degrade the existing visual character of the site. The 2010 FEIR concluded that the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

SOURCE: Clement Designs, 2009; ESA, 2018

FIGURE 27 Addendum 5 to the CP-HPS2 2010 FEIR

VIEWPOINT LOCATIONS

Under the 2018 Modified Project Variant, additional buildings are proposed to be added. These buildings are medium-height buildings, similar in height to the 2010 proposed building shown in Figure 28. These buildings would be seen most prominently in the mid-range viewshed, in the same viewshed as the Re-gunning crane. Under the 2018 Modified Project Variant, the Yosemite Slough bridge would remain in the same proposed location. New structures would not obstruct existing views of the East Bay hills or the Re-gunning crane. Overall changes between the 2010 Project and the 2018 Modified Project Variant would be minimal, mostly affecting the mid-range viewshed, as seen from View 14. The most notable difference between the 2010 Project and the 2018 Modified Project Variant would be the development of buildings in place of the stadium. The construction of newly proposed buildings and the Yosemite Slough Bridge would slightly alter mid-range views of the Slough, but not to an extent that would degrade the existing visual character or quality of the site or its surroundings; as such, the impact would remain less than significant.

View 15

As shown in Figure 29 (Existing and Proposed Views from View 15: Southeast from Palou Avenue), under existing conditions, residential streetscape with overhead utility lines dominate the short- and mid-range viewshed, with distant views of the Bay and the East Bay hills.

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 15 include streetscape improvements in the short- and mid-range viewshed. In the long-range viewshed, a part of the previously proposed 49ers stadium would be partially visible, but would not obstruct the view of the Bay or the East Bay hills. The streetscape improvements include parking improvements, bicycle lanes, pavement treatments, and street trees. Streetscape improvements proposed under the 2010 Project would be considered to improve the visual character of the Palou corridor. The 2010 FEIR concluded that the Project would not would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings.

Under the 2018 Modified Project Variant, there are few notable changes to the viewshed. In the short- and mid- range viewshed, proposed streetscape improvements to the Palou Corridor would remain, thus improving the visual character of the viewshed if implemented. The 49ers stadium is no longer proposed under the 2018 Modified Project Variant. However, new medium-height buildings are proposed under the 2018 Modified Project Variant in the same relative location as the previously proposed 49ers stadium, and are visible in the long-range viewshed, as seen from View 15. Implementation of the newly proposed medium-height buildings and the previously proposed streetscape improvements would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings; as such, the impact would remain less than significant.

2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 28

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 14: SOUTHEAST FROM CPSRA

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2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 29

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 15: SOUTHEAST FROM PALOU AVENUE

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View 18

As show in Figure 30 (Existing and Proposed Views from View 18: South from Hilltop Open Space), existing conditions are shown from hilltop open space that would be implemented as a result of HPS1 (not a part of this Project). Existing conditions show existing buildings, shipyard structures, and the Re-gunning crane to the south in the mid-range viewshed. In the long-range viewshed are the Santa Cruz Mountains.

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 18 include the 49ers stadium and associated parking area and dual-use fields. These previously proposed developments would be seen in the short-, mid-, and long-range viewshed. The stadium would partially obstruct the view of the Santa Cruz Mountains. The waterfront area near the Re-gunning crane would become a new recreation area. The Re-gunning crane and the new marina would be visible, with mid-range views of currently degraded and unmaintained areas. These mid-range views would be replaced with modern, aesthetically pleasing development. As concluded in the 2010 FEIR, the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

Under the 2010 R&D Variant (Variant 1), which did not include a stadium, development would be visible in the short-, mid-, and long-range viewshed. Ornamental trees and grass would be lined along roadways and would be seen from the short- and mid-range viewshed. Mid-range views of the Regunning crane would be partially obstructed, although views of the Regunning crane would remain largely intact, distinct, and preserved. Long-range views of the Santa Cruz Mountains would remain unobstructed. A visual simulation showing views from the Hilltop Open Space under the 2010 R&D Variant (Variant 1) is provided in the 2010 FEIR on p. IV-29, Figure IV-6 (R&D Variant South from Hilltop Open Space).

Under the 2018 Modified Project Variant, views from View 18 looking toward the exact same direction as previously analyzed in the 2010 FEIR would be substantially different. Existing views would be largely blocked by newly proposed development that would be located where the stadium would have been located, with partial views of the Re-gunning crane and surrounding area remaining. Newly proposed development would include new medium-height buildings although taller and closer in to the open space area than would have occurred under the various land use variants analyzed in 2010, along with and ancillary open space, landscape improvements, and a portion of the water taxi docking area. To the south, in the long-range viewshed, the uppermost portion of the Re-gunning crane is visible, but not the Santa Cruz Mountains.

The 2010 View 18 from the yet-to-be-constructed hillside open space area (in HPS1) was from a point a few feet south of the now existing and newly constructed path that is part of the hillside open space (and off the path). The view presented includes the Re-gunning crane and distant South Bay mountains and is looking southwest toward South Basin. Dry Dock 4 and the Water Room, although just to the left of the edge of the photo, were not included in the baseline photograph.

Since 2010, the hillside park associated with HPS1 (not a part of this project) has been constructed, which includes a pathway. As a result, the baseline condition on the site have changed. The 2010 FEIR View 18 location is now on an unimproved slope (within the Hilltop Park) that is not intended as the main public access. Further, this area is intended for native plants that would provide natural character and habitats; therefore, not only would the original viewpoint location be unimproved, but it is intended for native plants, further rendering the location unsuitable for viewing purposes. And, the constructed pathway leads to an overlook that is specifically intended for views of the Bay and other locations. To account for this, two alternative viewpoints were proposed and analyzed under the 2018 Modified Project Variant from the new pathway: View 18 Alternative A and View 18 Alternative B. These alternatives are better suited to analyze the proposed development program because they represent views from the location where pedestrians access is provided. Further, beyond views from this particular location (whether from View 18, or Alternative A or B), there are other locations within the CP-HPS2 project site that provide aesthetically pleasing views of the Bay, the city, and surrounding points of visual interest. The locations and viewsheds of the View 18 alternatives are shown in Figure 31 (Locations and Viewsheds of View 18 and View 18 Alternatives A and B).

View 18 Alternative A

This alternative viewpoint is shown in Figure 32 (Existing and Proposed Alternative A Views from View 18: South from Hilltop Open Space) and as View 18 Alternative A on Figure 31. This alternative viewpoint presents baseline conditions as they are currently, and is taken from the currently existing path that did not exist in 2010 and is in a more easterly direction than View 18. View 18 Alternative A is taken 45 feet to the north of the 2010 View 18, and is 3 feet higher in elevation. It provides a more complete version of the Dry Dock 4 viewshed, framing the Re-gunning crane, Dry Dock 4, and the East Bay hills.

As shown in Figure 32, 2010 views show unmaintained remnants of the shipyard in the short- and mid-range viewshed. To the south, in the long-range viewshed, is the Re-gunning crane. Across the bay, the East Bay hills can be seen in the distance.

As shown from View 18 Alternative A, existing shipyard structures and buildings would be replaced with medium-height buildings on either side of the water taxi docking area. These medium-height buildings in the short- and mid- range viewshed would not substantially obstruct views of the Bay, the Re-gunning crane, or the East Bay hills. In the mid-range viewshed, two bridges would be built over the water inlet to provide direct access to either side of the marina area. Under the 2018 Modified Project Variant, views of the East Bay hills would be partially obstructed by the proposed medium-height buildings. Views of the Regunning crane would be partially obstructed by the new development, but would remain largely intact, similar to Variant 1. Thus, overall views of the Bay, the Re-gunning crane, and the East Bay hills would remain largely intact, distinct, and preserved. Implementation of the 2018 Modified Project Variant would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact remains less than significant, and no mitigation would be required.

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 30

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 18: SOUTH FROM HILLTOP OPEN SPACE

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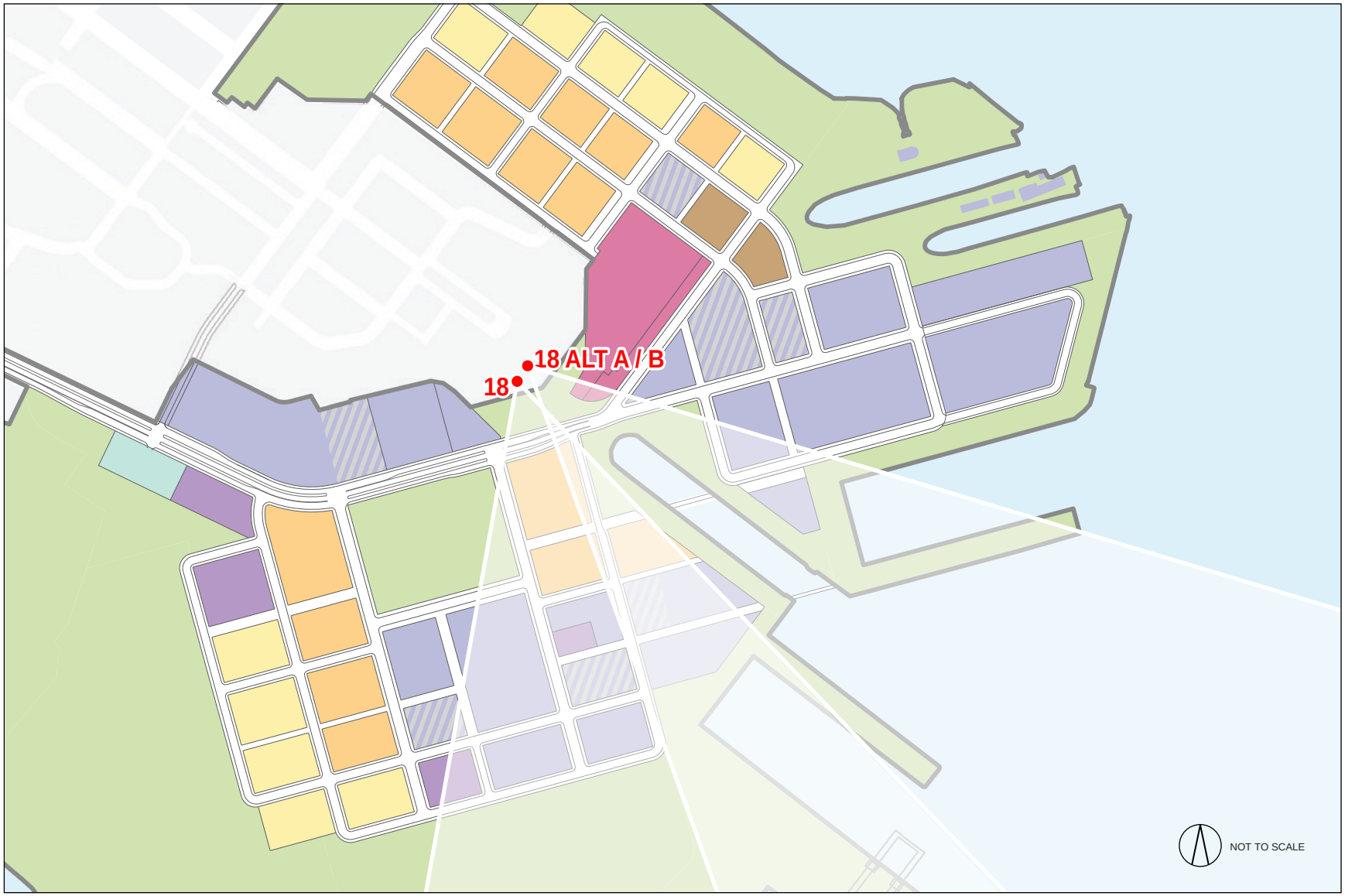


SOURCE: FivePoint, 2018.

FIGURE 31

Addendum 5 to the CP-HPS2 2010 FEIR

LOCATIONS AND VIEWSHEDS OF VIEW 18 AND VIEW 18 ALTERNATIVES A AND B

View 18 Alternative B

This alternative viewpoint is shown from Figure 33 (Existing and Proposed Alternative B Views from View 18: South from Hilltop Open Space) and on Figure 31. This alternative viewpoint presents baseline conditions as they are currently, and is taken from the currently existing hilltop open space Hilltop Park viewing overlook that did not exist in 2010. It is a standout vantage point from which one would look onto the scenic vista of Dry Dock 4 and the Re-gunning crane. View 18 Alternative B is taken 45 feet to the north of the 2010 View 18, and is 15 feet higher, as it is taken from the hilltop open space overlook. It provides a more complete version of the viewshed, framing the Re-gunning crane, Dry Dock 4, the mountains in the south bay, and the mountains in the east bay.

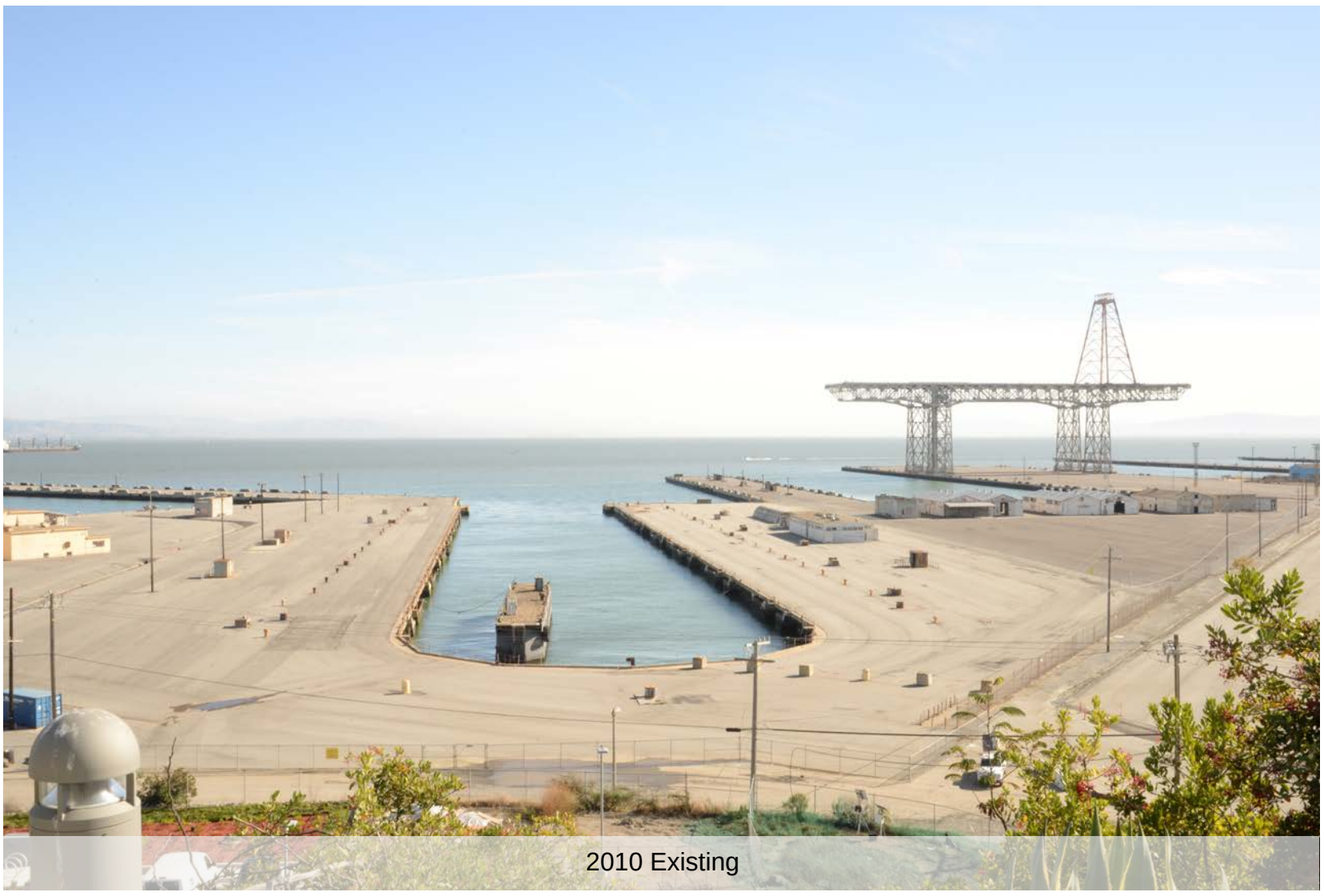
As shown in Figure 33, existing views show unmaintained remnants of the shipyard in the short- and mid-range viewshed. To the south, in the long-range viewshed, is the Re-gunning crane. Across the bay, the East Bay hills can be seen in the long-range viewshed.

View 18 Alternative B is substantially similar to View 18 Alternative A. However, due to the fact that View 18 Alternative B is taken at a higher elevation than View 18 Alternative A, the Bay, the Re-gunning crane, and the East Bay hills are slightly more visible in Alternative B as compared to Alternative A.

As shown from View 18 Alternative B, existing shipyard structures and buildings would be replaced with medium-height buildings on either side of the water taxi docking area. These medium-height buildings in the short- and mid- range viewshed would not substantially obstruct views of the Bay, the Re-gunning crane, or the East Bay hills. In the mid-range viewshed, two bridges would be built over the water inlet to provide direct access to either side of the marina area. Under the 2018 Modified Project Variant from View 18 Alternative B, overall views of the Bay, the Re-gunning crane, and the East Bay hills would remain largely intact and preserved. Views of the Re-gunning crane would be partially obstructed by the new development, but would remain largely intact, similar to 2010 Project Variant 1. Implementation of the 2018 Modified Project Variant would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact would remain less than significant, and no mitigation would be required.

View 19

As shown in Figure 34 (Existing and Proposed Views from View 19: East from Hunters Point Hill Open Space), existing conditions are seen from an area of open space on Northridge Road on Hunters Point Hill looking southeast. From this viewpoint, existing structures and open area at HPS Phase I can be seen in the short- and mid-range viewshed. Across the Bay is the East Bay hills.



2010 Existing

2018 Proposed Alternative

Note: The bridges and seating plan are illustrative only (for environmental review purposes). No final designs have been prepared.

SOURCE: Square One Productions, 2018

FIGURE 32

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED ALTERNATIVE A VIEWS FROM VIEW 18: SOUTH FROM HILLTOP OPEN SPACE

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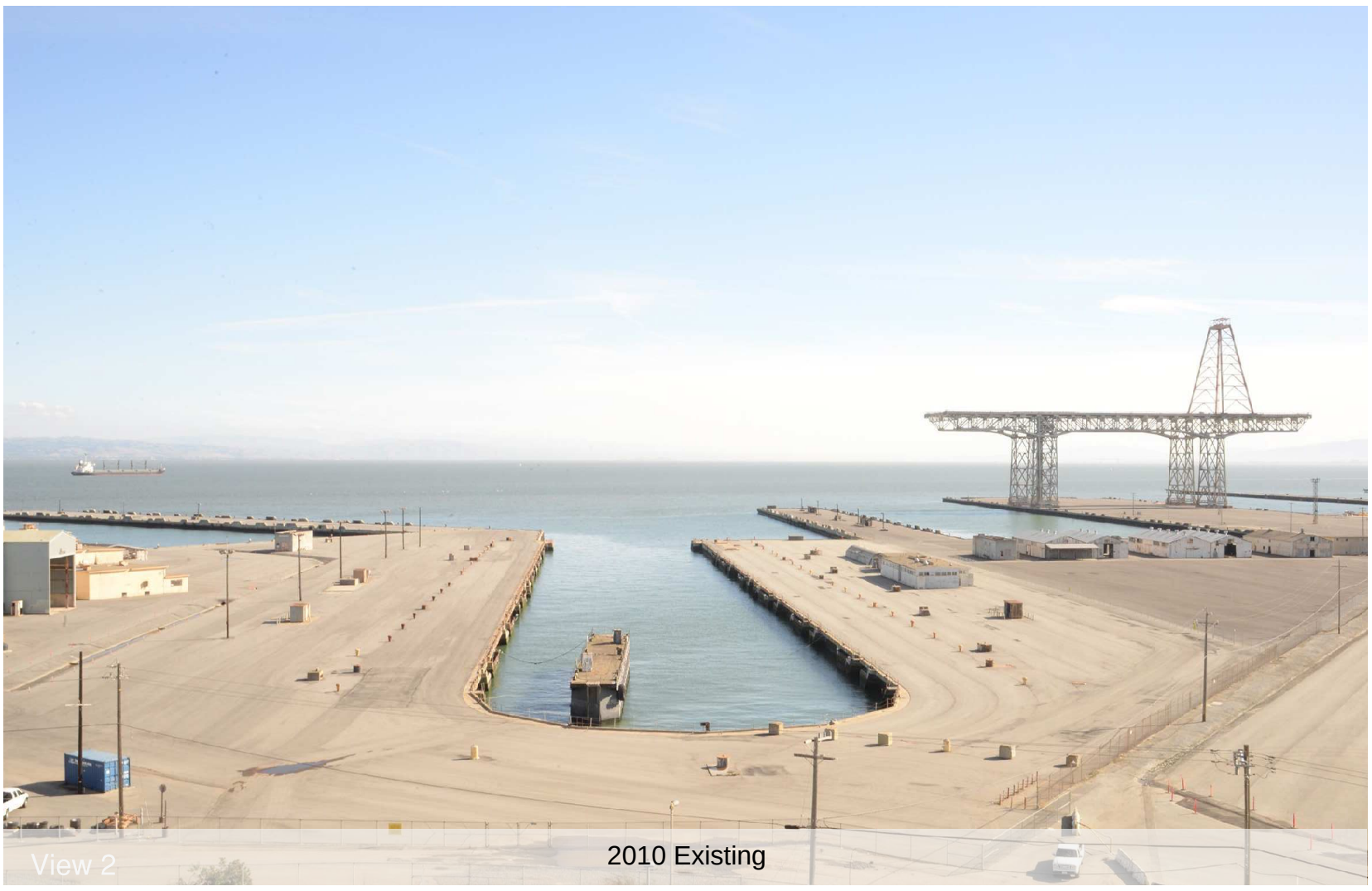

Note: The bridges and seating plan are illustrative only (for environmental review purposes). No final designs have been prepared.

SOURCE: Square One Productions, 2018

FIGURE 33

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED ALTERNATIVE B VIEWS FROM VIEW 18: SOUTH FROM HILLTOP OPEN SPACE

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2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 34

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 19: EAST FROM HUNTERS POINT HILL OPEN SPACE

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The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 18 would be the two residential towers, one tower up to 270 feet in height, and one tower up to 370 feet in height, along with new open space at the Shipyard. Development from HPS1 (not a part of the Project and currently under construction) would be seen in the mid-range viewshed. The 2010 FEIR concluded that the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

Under the 2018 Modified Project Variant, the proposed maximum building heights are similar in height to the HPS1 development in the mid-range viewshed. The height of the two residential towers remains unchanged, while their locations have been shifted. Views of the Bay and the East Bay hills remain intact. Implementation of the building heights and ancillary landscaping would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact would remain less than significant, and no mitigation would be required.

View 20

As shown in Figure 35 (Existing and Proposed Views from View 20: Southeast from Heron's Head Park), existing conditions are seen from Heron's Head Park, looking southeast, towards the Shipyard. From this viewpoint, wetlands are seen in the short-range viewshed, Shipyard structures including the Re-gunning crane are seen in the mid-range viewshed, and the Bay and the East Bay hills are seen in the long-range viewshed.

The proposed changes between the 2018 Modified Project Variant and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 20 would primarily be the residential towers, up to 370 feet in height. These residential towers are seen distinctly and clearly as two separate buildings. Additional Project-related medium-height structures would be seen, along with HPS1 development. Views of the Re-gunning crane would remain intact. Mid-range views of degraded, vacant, and unmaintained areas would be replaced with well-designed development. Long-range views of the Bay and the East Bay hills would remain intact. The 2010 FEIR concluded that the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

Under the 2018 Modified Project Variant, there are relatively few changes from Viewpoint 20 with the exception of the proposed changes to the high-rise tower locations. Under the 2018 Modified Project Variant, view of the residential towers as modeled in the preferred tower location within the allowable tower zone would overlap, and, as such, previously analyzed impacts to the visual character of the mid-range viewshed would be less than previously determined. However, the flexible tower zones allow the two residential towers to be located anywhere on their respective development blocks. As such, it is possible that when the design and development process for the towers proceeds, and more information is known about their particular sites, the two towers may be located in such a way that they are seen as distinct buildings from the vantage of View 20, as they were in the 2010 Project (refer to Figure 35). Consequently, impacts to the visual character of the mid-range viewshed would be consistent with those previously determined to be less than significant in the 2010 FEIR. Short-range

views of the wetlands and long-range views of the Bay and East Bay hills remain intact. Implementation of the 2018 Modified Project Variant would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact would remain less than significant, and no mitigation would be required.

Height Changes

Figure 36 (Height Changes: 2018 Modified Project Variant vs. 2010 Project), p. 167, compares the 2018 Modified Project Variant to the 2010 Project. Under the 2018 Modified Project Variant, when compared to the 2010 Project, proposed building heights change throughout HPS2, as discussed below.

In the North Shoreline District, the maximum height of waterfront buildings would generally decrease to 40 feet from an approved 2010 height of 65 feet, with the exception of one Agency Lot, which would remain at 65 feet. The maximum height of buildings along Galvez and Robinson Streets in 2010 was 65 to 85 feet, depending on location. Heights in this area would remain at 65 feet or below, with the exception of Lots 14 and 15, which would have a maximum height of 85 feet. In 2010, Lot 14 had a maximum height of 85 feet. The height of Tower A would remain at 370 feet.

In the Wharf District, the height of Tower B would remain at 270 feet. The remaining blocks (or portions thereof) within this district would generally increase in height. Height increases would be from a previous maximum height of 65 feet to 85 and 120 feet in height, and from 85 and 105 feet to 120 feet. Although a number of blocks would remain at 85 feet. Existing buildings would remain at 120 feet.

The area now known as the Warehouse District was proposed to only contain a stadium with a maximum height of 156 feet. North of Crisp Road, the maximum building height was proposed to be 85 feet with small portions of land with a maximum building height of 65 feet. South of Crisp Road, but north of the stadium, the maximum building height was proposed to be 65 feet at two portions of land directly abutting Crisp Road. Generally, the maximum height of the community use and residential blocks along the waterfront, west of H Street, would be 40 feet on some blocks and would be 85 feet on some blocks. Generally, the maximum height of the commercial blocks (which include R&D) and some residential blocks would be 75, 85, 100, or 120 feet. For Lots 1, 2, 3, 55, and 56, which abut Crisp Road, maximum building heights would be 65 feet, with an interspersed existing building within this height parameter.

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 35

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 20: SOUTHEAST FROM HERON'S HEAD PARK

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Public Trust Views

Although the 2010 FEIR did not provide visual simulations specifically from public trust view vantage points, as it is not required for CEQA compliance, such visual simulations were provided separately in support of the State Lands Commission decision-making process. These simulations have been updated to illustrate the 2018 Modified Project Variant and are now voluntarily provided in Addendum 5 Appendix E (Public Trust View Corridors Visual Simulations) for informational purposes only. The following discussion identifies the separate public trust viewpoint process in order to provide context associated with the visual simulations that are provided in Appendix E.

To maintain and protect view corridors of San Francisco Bay for visitors to the Hillside Open Space (which is located outside of the CP-HPS2 Project Site, but on public trust lands), the construction of new buildings within HPS2 shall conform to height limits identified in the *Hunters Point Shipyard/Candlestick Point Title Settlement, Public Trust Exchange and Boundary Line Agreement*, recorded June 27, 2011. Deviations from the building height limits may be allowed if approved by the State Lands Commission. Visual simulations for the three public trust viewpoint locations that were prepared in connection with the 2010 Project (but submitted to the State Lands Commission separately from the 2010 FEIR) have also been prepared for the 2018 Modified Project Variant and are included in Addendum 5 Appendix E for informational purposes only.

Impact AE-7b: Implementation of the Project at HPS Phase II would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties. ***[Criterion E.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant

As with the Project analyzed in the 2010 FEIR, implementation of 2018 Modified Project Variant would include lighting for public areas that would increase ambient lighting. These new sources of light would be typical of urban development seen in San Francisco and would not generate obtrusive lighting that would adversely affect day or night views or negatively affect other neighborhoods.

The 2010 Project originally included a new proposed San Francisco 49ers stadium. Under the 2010 FEIR, stadium lighting occurring from stadium uses and parking uses was extensively analyzed, and two mitigation measures were prescribed to mitigate light and glare impacts from the proposed stadium.

Under the 2018 Modified Project Variant, the 49ers stadium is no longer proposed. As such, stadium lighting is no longer a consideration. Under the 2018 Modified Project Variant, impacts would be less than the analyzed impacts in the 2010 FEIR. The impact would subsequently be less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to aesthetics impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to aesthetics, either on a project-related or cumulative basis.

II.B.5 Shadows

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
16. Shadows. [The City and Agency have not formally adopted significance standards for impacts related to wind.] Would the project:					
F.a Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas?	2010 FEIR p. III.F-26 (Impact SH-1b); Addendum 1 p. 34; Addendum 4 p. 33	No	No	No	None

Changes to Project Related to Shadows

The 2018 Modified Project Variant includes the following activities related to shadows:

- Changes in the height of certain buildings (with some buildings increasing in height and others decreasing in height); and
- The specific location of buildings, including adjustments to the two high-rise towers at HPS2.

Comparative Impact Discussions

Impact SH-1b: Implementation of the Project at HPS2 would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space. ***[Criterion F.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that construction of the Project features would not create adverse shadow effects on existing open space. Construction activities and equipment would not cast substantial shadows on existing open spaces under the jurisdiction of the San Francisco Recreation and Parks Department (SFRPD) that are near HPS2. Some construction equipment, such as cranes, would exceed 40 feet in height, but would not cause substantial shadow casting due to the crane's lack of bulk. Additionally, use of equipment in excess of 40 feet would be limited to the period of construction.

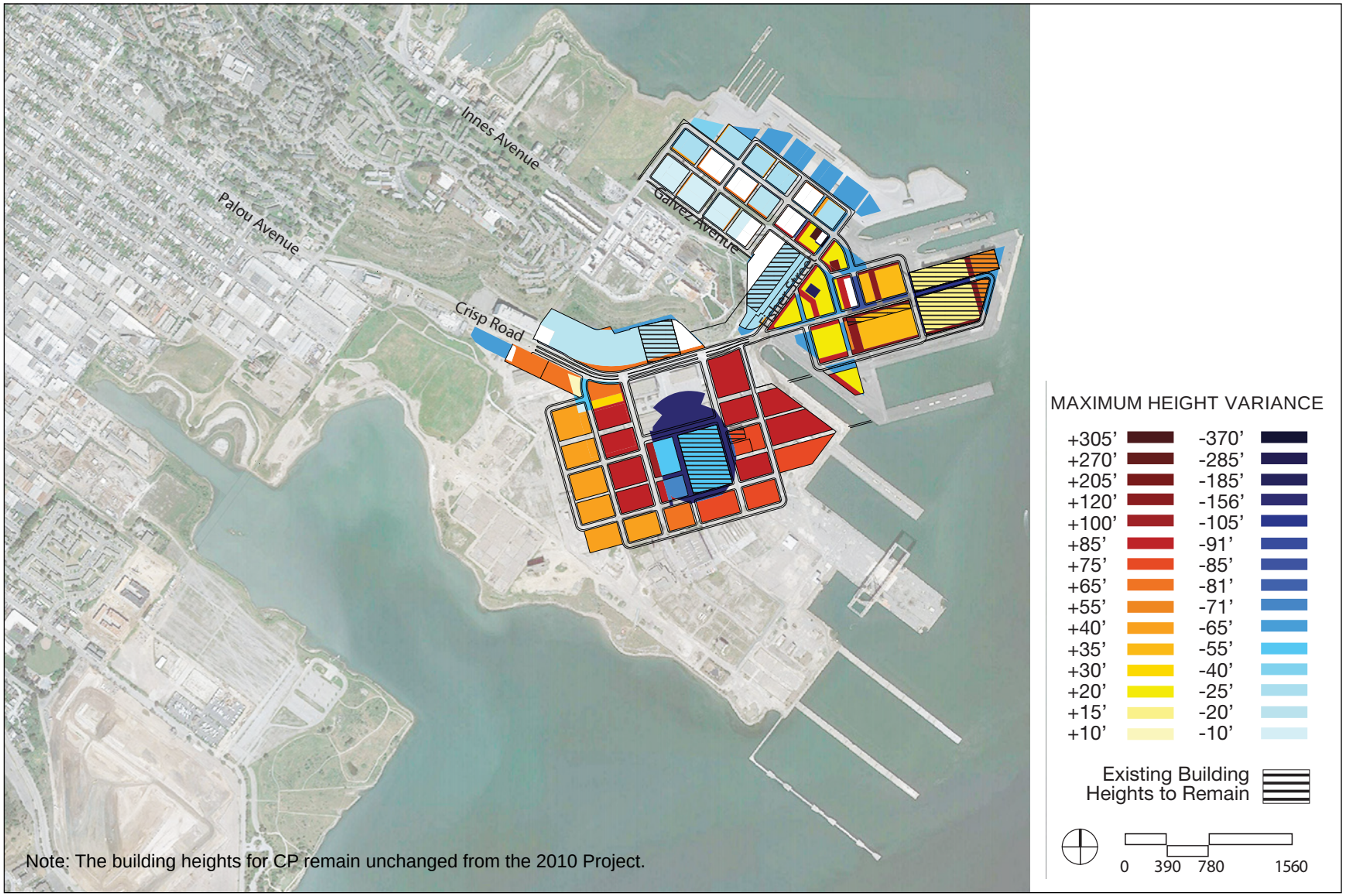
The 2010 FEIR also concluded that implementation of the Project at HPS2 would result in less-than-significant shadow impacts to SFRPD public open space in the Project vicinity, which include India Basin Shoreline Park and India Basin Flats. These parks, subject to Planning Code Section 295, are located northwest of Earl Street and generally north of Crisp Road, just outside of the Project boundaries. The 2010 FEIR determined that no Project building or structure in excess of 40 feet in height would be nearby these parks so as to create shadow effects. Additionally, there are no changes in height at CP, and the less-than-significant conclusions of the 2010 FEIR remain unchanged.

Building heights at HPS2 would change under the 2018 Modified Project Variant, as shown in Figure 36 (Height Changes: 2018 Modified Project Variant vs. 2010 Project). India Basin Flats and India Basin Shoreline park, the closest Section 295 parks to HPS2, are located northwest of Earl Street and north of Crisp Road, beyond Northside Park (a park proposed as part of the CP-HPS2 Project). The buildings closest to both of these Section 295 parks would be reduced in height from between 10 feet to 40 feet. While some buildings along Galvez Avenue would increase in height by about 15 feet, they would not extend shadow lengths beyond what was disclosed in the 2010 FEIR. The most substantial height increases (from 40 feet to 120 feet) are proposed to occur south of Crisp Road, with interspersed proposed height decreases (from 10 feet to 120 feet). The 2010 FEIR R&D Variant (Variant 1) identified two high-rise towers at HPS2. Tower A was shown in a fixed location within the North Shoreline District on the corner of Fisher Avenue and Lockwood Street (with maximum height of 370 feet), and Tower B was shown in a fixed location within the Wharf District on the corner of Fisher Avenue and Galvez Avenue (with maximum height of 270 feet). The 2018 Modified Project Variant would modify the location of Towers A and B, as illustrated in Figure 7 (Tower Locations: Towers A and B).

Tower A would be located in the same location and on the same block as an encouraged tower location shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block. Tower B would be located one block north from the approved location shown in the 2010 FEIR. A flexible tower location zone would also be created for the balance of this block. The heights of both towers would not change. While the heights of both towers would not change, the 2018 HPS D4D would allow screened mechanical equipment to be up to 10 percent of the total height of the building (within an area that represents 85 percent of the building floorplate). Due to the minor change in location for Tower B, and even allowing for a change in tower locations within a limited flexible tower zone, the proposed or potential modifications to tower locations would not result in changes to shadow effects.

With respect to Planning Code Section 295 parks, and as concluded in the 2010 FEIR, HPS2 would not add shade to existing SFRPD (Section 295) open space due to the provision of reduced building heights nearest to those parks as compared to the 2010 Project and variants (Variants 1 and 2).

As shown in Figure 9 (HPS2 Parks and Open Space), the 2010 Project would develop new parks and open space, including neighborhood parks, destination parks, boulevard parks, and waterfront trails. These parks are not subject to Planning Code Section 295. The parks would include a range of passive and active recreation facilities, playgrounds, walks, and other features. The majority of these proposed public open spaces would experience little to no new shade throughout the year, but would not adversely affect the public's use of the open spaces. While new Project buildings and proposed height variances could add shade to new Project open space, at certain times of the year, over certain hours, and only in locations were building heights are increased (largely, south of Crisp Road), the Project would increase overall open space in the area, when compared to existing conditions, as well as R&D Variant (Variant 1) and the Housing/R&D Variant (Variant 2A).



SOURCE: FivePoint, 2018.

FIGURE 36

Addendum 5 to the CP-HPS2 2010 FEIR

HEIGHT CHANGES: 2018 MODIFIED PROJECT VARIANT VS. 2010 PROJECT

Proposed open space would be beneficial to Project residents, visitors, and employees. Shading of sidewalks along street corridors in the Project area could increase in certain areas, but in other areas would decrease, but not in excess of that which would be expected in a highly urban area.

As with the 2010 FEIR, the impact on existing and proposed open space from shadow effects as a result of construction and implementation at HPS2 under the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to shadows impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to shadows, either on a project-related or cumulative basis.

II.B.6 Wind

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
19. Wind. [The City and Agency have not formally adopted significance standards for impacts related to wind.] Would the project:					
G.a Alter wind in a manner that substantially affects public areas?	2010 FEIR p. III.G-8 (Impact WI-1b); Addendum 1 p. 35; Addendum 4 p. 35	No	No	No	MM W-1a

Changes to Project Related to Wind

The 2018 Modified Project Variant includes the following activities related to wind:

- Changes in the height of certain buildings (with some buildings increasing in height and others decreasing in height); and
- The specific location of buildings, including adjustments to the two high-rise towers at HPS2.

Comparative Impact Discussions

Impact W-1b: Implementation of the Project at HPS Phase II would not include tall structures that would result in ground-level equivalent wind speed exceeding 26 mph for a single hour of the year in pedestrian corridors and public spaces. ***[Criterion G.a]***

	2010 CP-HPS2 FEIR	2010 CP-HPS2 FEIR Addendum 5
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR acknowledged that buildings near or greater than 100 feet in height could affect pedestrian-level conditions such that the wind hazard criteria of 26-mph-equivalent wind speed for a single hour of the year would be exceeded. In the 2010 FEIR, the proposed building heights at HPS would range from 65 feet to 105 feet. Two towers, ranging from 370 feet (Tower A) to 270 feet (Tower B), were included at HPS. The 2010 Project also included the proposed 156-foot-high stadium, which is no longer included in the Project. The 2010 FEIR noted that the degree of changes in pedestrian-level wind conditions would be influenced by building design, such as building height, shape, massing, setbacks, and location of pedestrian area. Mitigation measure MM W-1a requires a wind study for structures over 100 feet in height to assess whether a building would exceed the wind hazard threshold and, if so, requires design changes to mitigate the adverse wind impact. The 2010 FEIR concluded, with the implementation of MM W-1a, the potential adverse wind impacts at HPS would be reduced to a less-than-significant level.

The 2018 Modified Project Variant proposes building heights at HPS that range from 45 feet to 120 feet (refer to Project Description Figure 8 [Building Heights]). Thus, some areas of HPS would have slightly lower heights and some slightly higher heights than the 2010 Project. The tower heights have not

changed. Tower A has a maximum height of 370 feet and Tower B has a maximum height of 270 feet. Both Towers would be located on blocks that have a flexible tower zone, rather than a fixed location. Tower B would be located one block north of the location shown in the 2010 FEIR.

Mitigation measure MM W-1a has been adopted for the Project and would require wind studies for buildings over 100 feet and implementation of design changes to ensure the wind hazard threshold would not be exceeded. Under both the 2010 Project and the 2018 Modified Project Variant, there would be buildings over 100 feet, including the two towers (with unchanged heights of 270 feet and 370 feet). Consequently, there would be no new impacts or a substantial increase in the severity of previously identified impacts related to wind. As such, the impact would remain less than significant with implementation of the identified mitigation measure.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to wind impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to wind, either on a project-related or cumulative basis.

II.B.7 Air Quality

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
3. Air Quality. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:					
H.a. Conflict with or obstruct implementation of the applicable air quality plan?	2010 FEIR p. III.H-33 (Impact AQ-4), p. III.H-38 (Impact AQ-9); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	None
H.b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	2010 FEIR p. III.H-25 (Impact AQ-1), p. III.H-35 (Impact AQ-5); Addendum 1 p.36; Addendum 4 p. 37	No	No	No	MM HZ-15
H.c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	2010 FEIR p. III.H-33 (Impact AQ-4); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	None
H.d. Expose sensitive receptors to substantial pollutant concentrations?	2010 FEIR p. III.H-25 (Impact AQ-1), p. III.H-29 (Impact AQ-2), p. III.H-31 (Impact AQ-3b), p. III.H-36 (Impact AQ-6), p. III.H-37 (Impact AQ-7); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	MM AQ-2.1, MM AQ-6.1, MM AQ-6.2, MM HZ-15
H.e. Create objectionable odors affecting a substantial number of people?	2010 FEIR p. III.H-38 (Impact AQ-8); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	None

Changes to Project Related to Air Quality

The 2018 Modified Project Variant includes the following activities related to air quality:

- Modifications to the land use program;
- Changes in traffic volumes and traffic distribution;
- Inclusion of the central energy plants and recycled water facility; and
- Changes in construction activity, including the use of deep dynamic compaction (DDC) and the installation of geothermal boreholes.

Comparative Impact Discussions

Impact AQ-1: Construction activities associated with the Project would not result in short-term increases in emission of criteria air pollutants and precursors that exceed BAAQMD CEQA significance criteria. ***[Criteria H.b and H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2018 Modified Project Variant would not change the conclusions of the 2010 FEIR. As discussed in the 2010 FEIR, heavy construction activity on dry soil exposed during construction would cause emissions of dust. As also discussed in the 2010 FEIR, heavy-duty equipment, material transport, and employee commutes would result in emissions of criteria air pollutants (e.g., CO) and precursors (e.g., ROG and NO_x). However, these are included in regional emissions inventory, which serves as the basis for air quality plans, and BAAQMD had not adopted mass emissions thresholds for construction at the time of the 2010 FEIR. Thus, conclusions were based on fugitive PM_{10} dust. Implementation of MM HZ-15 reduced the impacts caused by construction dust to a less-than-significant level in the 2010 FEIR. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-2a: Construction at Candlestick Point would not result in impacts to off-site populations from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, construction impacts at CP would not exceed BAAQMD CEQA thresholds for cancer risk or chronic noncancer health indices (HI) after mitigation. DPM emissions were modeled for operation of off-road construction equipment and on-road hauling trucks. Risk was assessed at off-site sensitive receptors, workers, and potential on-site residents at the Alice Griffith parcels. The maximum exposed individual (MEI) cancer risk would be 3.3 in one million, while the maximum chronic noncancer HI would be 0.007, well below the BAAQMD significance thresholds of 10 in one million and 1.0, respectively.

Land use at CP is the same for the 2018 Modified Project Variant as was analyzed in the 2010 FEIR; thus, construction activity will be the same as analyzed in the 2010 FEIR. Therefore, construction impacts for CP will not change for the 2018 Modified Project Variant.

Impact AQ-2b: Construction at HPS Phase II would not result in impacts to off-site populations from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, construction impacts at HPS2 would not exceed BAAQMD CEQA thresholds for cancer risk or chronic noncancer health indices (HI) after mitigation. DPM emissions were modeled for operation of off-road construction equipment and on-road hauling trucks. Risk was assessed at off-site sensitive receptors, workers, and potential on-site residents at the Alice Griffith parcels. The maximum exposed individual (MEI) cancer risk would be 3.8 in one million, while the maximum chronic noncancer HI would be 0.01, well below the BAAQMD significance thresholds of 10 in one million and 1.0, respectively.

Revised construction modeling and health risk assessments were performed for the 2018 Modified Project Variant. Because the major changes to construction occur on the HPS section of the Project, the revised construction HHRA is focused only on this portion of the Project. Impact AQ-2a evaluated impacts at CP. The 2018 Modified Project Variant reduces the land use of CP and thus would reduce construction impacts. Therefore, construction at CP was not evaluated quantitatively.

Detailed assumptions and results are described in Appendix F1 (Air Quality Construction Methods Memorandum). Because the construction of HPS begins after the phase in of the emission control device requirement in MM AQ-2.1, 100 percent of equipment was assumed to meet USEPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent).

The MEI cancer risk for the 2018 Modified Project Variant is 3.5 in one million at a worker location. This is less than the MEI for the 2010Project. The revised construction schedule resulted in cleaner off-road construction equipment than modeled for the 2010 Project and moved more equipment away from the perimeter of the site. Because the construction impacts from HPS have decreased and construction at CP is similar to what was analyzed previously, the combined impact of HPS and CP construction is expected to be lower than reported in the 2010 FEIR.

Due to the decrease in cancer risk with the 2018 Modified Project Variant and the minimal impact of the chronic HI, the chronic HI would also continue to be below thresholds. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-2c: Construction activities associated with the Project would not result in impacts to the existing Alice Griffith Public Housing from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, the cancer risk at the MEI inside Alice Griffith would be 4.5 in one million. Due to its proximity, Alice Griffith would be most impacted by construction at CP. Since the construction at CP is not changing from the 2010 Project and impacts from HPS have generally decreased, the impact at Alice Griffith would not change as a result of the 2018 Modified Project Variant.

Impact AQ-2: Construction activities associated with the Project would not result in impacts to on-site and off-site populations from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, the maximum inhalation cancer risk at the on-site and off-site MEI would be 4.5 in one million. Construction at CP is not changing with the 2018 Modified Project Variant. Impacts at the MEI for HPS would be lower for the 2018 Modified Project Variant than for the 2010 Project. Thus, the combined impact from CP and HPS would not change with the 2018 Modified Project Variant.

Impact AQ-3: Construction activities associated with the Project would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, historical operations within the site have increased the concentrations of certain metals and/or organic compounds in the on-site soils, and construction activities could release these chemicals into the air. The 2010 Project included an evaluation of the health impact of the release of these chemicals in fugitive dust as a result of construction activity. This evaluation was based on all organic chemicals detected within the 0- to 10-foot depth in Navy environmental investigations of the soil. The analysis in the 2010 FEIR assumed soil disturbance on the entirety of every parcel.

The 2018 Modified Project Variant covers the same land area as analyzed in the 2010 FEIR. Thus, the evaluation and mitigation measures for the 2010 Project still apply, which include mitigation measure MM HZ-15 (Asbestos Dust Mitigation Plans and Dust Control Plans). The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-4: Operation of the Project would violate BAAQMD CEQA significance thresholds for mass criteria pollutant emissions from mobile and area sources and contribute substantially to an existing or projected air quality violation at full build-out. ***[Criteria H.a and H.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

As discussed in the 2010 FEIR, project operational emissions for HPS2 and CP would exceed the BAAQMD CEQA significance threshold for ROG, NO_X, PM_{10}, and $PM_{2.5}$. The 2010 FEIR reports daily emissions of ROG and NO_X under summer conditions since ozone concentration is highest during this season, and it reports daily emissions of PM_{10} and $PM_{2.5}$ under winter conditions when ambient concentrations of pollutants are highest. The estimated daily ROG emissions were 921 lb/day, above the BAAQMD significance threshold of 80 lb/day. Primary sources of ROG include area sources like natural gas combustion for heating/cooling purposes, consumer product use in residences etc. The total daily NO_X emissions for the project were 384 lb/day, exceeding the BAAQMD threshold of 80 lb/day. Daily PM_{10} emissions were 1,453 lb/day higher than the BAAQMD threshold of 80 lb/day. Daily $PM_{2.5}$ emissions were 278 lb/day. BAAQMD did not have a threshold for $PM_{2.5}$ emissions at the time of the 2010 FEIR. Mobile sources contribute a large fraction of PM_{10}, $PM_{2.5}$, and NO_X for the Project. However, no additional feasible mitigation measures were identified for the 2010 Project that would reduce the Project's operational emissions below the BAAQMD thresholds.

Emissions of the operation of the 2018 Modified Project Variant were estimated, as described in Appendix F2 (Air Quality Operational Emissions Data). CalEEMod was used to estimate operational emissions because tools used for the 2010 FEIR analysis are no longer available. CalEEMod incorporates new regulations such as California Air Resources Board (CARB) In-Use Off-Road Diesel Vehicle Regulation and CARB Statewide Truck and Bus Regulation as well as CARB's Advanced Clean Cars (ACC) program from 2012.

Consistent with the 2010 Project, daily ROG and NO_X emissions are reported under summer conditions, and daily PM_{10} and $PM_{2.5}$ emissions are reported under winter conditions. Daily ROG emissions for the 2018 Modified Project Variant are 428 lb/day, which is lower than the ROG emissions in the 2010 FEIR. Daily NO_X emissions for the 2018 Modified Project Variant are 340 lb/day, which is lower than the NO_X emissions in the 2010 FEIR. While NO_X emissions at HPS2 increase, total NO_X emissions are lower for the 2018 Modified Project Variant compared to the 2010 Project. Daily PM_{10} and $PM_{2.5}$ emissions are, 397 lb/day and 125 lb/day, respectively, which are all below the emissions reported for the 2010 Project.

Emissions have decreased from those disclosed for the 2010 Project largely due to the delay in implementation of the Project, land use and vehicle trip generation changes and updated calculations methodology for mobile emissions that incorporate new regulations (e.g., EMFAC2007 emission factors in the 2010 FEIR and EMFAC2014 emission factors in the addendum). For most pollutants, the majority of emissions are from vehicular travel. Newer vehicles tend to emit less pollutants than older vehicles, so the vehicle fleet would emit less when the Project is built out

compared to the build-out assumed for the 2010 Project. Emissions from the 2018 Modified Project Variant continue to exceed the BAAQMD significance threshold for all criteria air pollutants, but are below emission levels estimated for the 2010 Project. Results comparing the 2010 Project and Addendum 5 are shown in Table 13 (Emissions Comparison). The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measure to reduce the level of this impact.

TABLE 13 EMISSIONS COMPARISON

	2010 Project (Operational Emissions for Project, Build-Out 2030)[a]				*Addendum 5 (Operational Emissions for 2018 Modified Project Variant, Build-Out 2032[b]*			
Analysis Area	*ROG (lb/day)*	*NO_x (lb/day)*	*PM_{10} (lb/day)*	*$PM_{2.5}$ (lb/day)*	*ROG (lb/day)*	*NO_x (lb/day)*	*PM_{10} (lb/day)*	*$PM_{2.5}$ (lb/day)*
Candlestick Point	666	265	1,029	197	215	164	203	66
HPS2	255	119	424	81	213	176	193	59
Project Site Total	***921***	***384***	***1,453***	***278***	***428***	***340***	***397***	***125***

Daily ROG and NO_X emissions are calculated under summer conditions and daily PM_{10} and $PM_{2.5}$ emissions are calculated under winter conditions.

ROG = reactive organic gases; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter.

a. Emissions from *Candlestick Point–Hunters Point Shipyard Phase II Development Plan EIR*, Section III.H (Air Quality), Table III.H-5 (2009).

b. Operational emissions calculated with CalEEMod® version 2016.3.2.

c. Emissions were calculated for the entire project for operational year 2032, although construction goes to 2034. Construction after 2032 only includes parks. Using an earlier operational year is more conservative because emissions tend to decrease with time.

Impact AQ-5: Operation of the Project would not cause local concentrations of CO to exceed State and federal ambient air quality standards due to motor vehicles trips. ***[Criterion H.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As discussed in the 2010 FEIR, localized CO emissions were modeled using CALINE4 dispersion modeling at four intersections. These intersections were selected because they represent the locations where Project traffic would produce the greatest change in traffic level of service associated with the Project (and, therefore, the greatest increase in congestion, which would produce the greatest increase in CO emissions) and/or the highest total traffic volumes of all intersections in the Project vicinity. Modeling of the localized CO concentration was completed for the existing (2009), future baseline (2030), and future project (2030) cases and then added to the background CO concentrations for San Francisco.

The maximum 1-hour CO concentration (including the background concentration) of the four modeled intersections was 3.1, 3.0, and 3.2 ppm for the existing, future baseline, and future project cases, respectively. The maximum 8-hour CO concentration (including the background concentration) of the four modeled intersections was 2.0, 2.0, and 2.1 ppm for the existing, future baseline, and future project cases, respectively. These are all below the state and federal ambient air quality standards due to motor vehicle trips of 20 ppm and 35 ppm, respectively for 1-hour concentrations and 9 ppm for 8-hour concentrations.

Revised concentrations for the 2018 Modified Project Variant were calculated by scaling the previous concentrations by the percent change in traffic at the selected intersections. The existing and future baseline cases have not changed with the 2018 Modified Project Variant so those CO concentrations remain the same when compared to the 2010 Project. For the future project case, traffic at the selected four intersections increased on a range of 1 percent to 32 percent compared to the 2010Project.

The maximum future project 1-hour and 8-hour CO concentrations (including the background concentration) of the four modeled intersections was 3.2 ppm and 2.1 ppm, respectively. These values are below the state and federal ambient air quality standards due to motor vehicle trips. Table 14 (CO Concentration Comparison—Future Project) shows the comparison of the 1-hour and 8-hour CO concentrations at the four intersections for the 2010 Project and 2018 Modified Project Variant. The impact would remain less than significant, and no mitigation would be required.

TABLE 14 CO CONCENTRATION COMPARISON—FUTURE PROJECT

	1-hour Average CO Concentration (ppm)				*8-hour Average CO Concentration (ppm)*		
Analysis Area	*2010 Project*[a]	*2018 Modified Project Variant*[b]	*State Standard*	*Federal Standard*	*2010 FEIR*[a]	*2018 Modified Project Variant*[b]	*State and Federal Standard*
Arelious Walker Dr/Gilman Ave	3.1	3.1	20	35	2.0	2.0	9
Third St/Gilman Ave	3.2	3.2			2.1	2.1	
Griffith St/Palou Ave	2.8	2.9			1.8	1.9	
Evans Ave/Jennings St	3.0	3.1			2.0	2.1	

a. FEIR CO concentrations are from 2010 FEIR Table III.H-6
b. 2018 Modified Project Variant CO concentrations are scaled EIR values based on the traffic study changes.

Impact AQ-6: Implementation of HPS Phase II would not expose nearby receptors to an increase in local concentrations of toxic air contaminants due to the operation of Research and Development uses. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR included an evaluation of toxic air contaminants (TACs) released in R&D buildings to determine health impact on nearby receptors. The combined impact of each R&D area was modeled to determine the combined impact of the R&D areas. Due to the number of facilities that could emit TACs, this impact was considered potentially significant, but an explicit analysis of unmitigated impacts was not performed. The analysis was based on the assumption that no individual TAC emission source could exceed 10 in a million cancer risk (1×10^{-5}) or a 1.0 chronic noncancer HI for a receptor at the boundary of each site, which is consistent with MM AQ-6.2. This scenario is consistent with BAAQMD requirements for sources equipped with best available control technology for toxics (T-BACT), and would be a requirement for sources in the R&D areas. With this mitigation measure, the impact in the 2010 FEIR (for the 2010 Project) was less than significant as estimated risk at residential locations were below thresholds.

The 2018 Modified Project Variant contains less R&D square footage as compared to R&D Variant (Variant 1) and does not introduce new locations for R&D as compared to the R&D Variant (Variant 1) land use plan. Figure 3-1b-of 2010 FEIR Appendix H1 Attachment III shows the areas analyzed to have TAC emissions from R&D in the 2010 FEIR and the R&D areas proposed now. As shown in Figure 4-1a of 2010 FEIR Appendix H1 Attachment III, cancer risk from TAC emissions from R&D is below the threshold of 10 in a million at all proposed residential locations, except the north eastern portion of HPS-5. Mitigation measure MM AQ-6.2 of the Development Agreement restricts land uses with TAC emissions within 300 feet of any residence. This mitigation measure reduced risk to below thresholds in this area. The 2018 Modified Project Variant does not propose R&D in any locations that were not previously analyzed and does not place residences in any new areas that were not previously analyzed. Thus, the analysis in the 2010 FEIR (for the 2010 Project) would be inclusive of the 2018 Modified Project Variant. The evaluation and conclusion in the 2010 FEIR would still apply, and the 2018 Modified Project Variant would not pose a human health risk as a result of hazardous air emissions within 0.25 mile of a school. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-7: Operation of the Project would not expose receptors to concentrations of $PM_{2.5}$ above a 0.2 $\mu g/m^3$ action level for $PM_{2.5}$ and, therefore, would not substantially affect the health of nearby receptors as a result of an increase in local concentrations of vehicle emissions ($PM_{2.5}$) associated with vehicle use attributable to operation of the Project. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As disclosed in the 2010 FEIR, operational traffic impacts would not exceed the SFDPH $PM_{2.5}$ localized concentration threshold for potential health effects of 0.2 $\mu g/m^3$. $PM_{2.5}$ concentration levels were evaluated at nearby roadways and intersections that Project-related traffic would use to access neighboring freeways and other areas of San Francisco. The maximum $PM_{2.5}$ concentration would be 0.2 $\mu g/m^3$, which would not exceed the SFDPH's threshold.

Revised $PM_{2.5}$ concentrations for the 2018 Modified Project Variant were calculated by scaling the 2010 Project $PM_{2.5}$ concentrations by the respective percent change in annual average daily traffic (AADT) along each of the previously modeled road sections and also by the change in emission factors. The change in the AADT was determined using traffic volumes provided by Fehr & Peers and is different for each modeled road segment. AADT generally increased along Innes, Palou, and Gilman Avenues, but AADT generally decreased on Third Street. The change in emission factors take into account the reduction in exhaust emissions that have been realized from emissions control requirements since the 2010 FEIR was published. Figure 4-3 of 2010 FEIR Appendix H3 Attachment IV shows the roadways and receptors modeled.

The resulting maximum $PM_{2.5}$ concentration is 0.211 $\mu g/m^3$, 0.011 $\mu g/m^3$ over the threshold used in the 2010 FEIR. This maximum occurs on Innes Avenue, near the intersection with Arelious Walker

and is on the roadway segment with the maximum percent increase in AADT. There are three total points with a concentration greater than the 2010 FEIR threshold of 0.2 μg/m^3, with 0.211 μg/m^3 as the maximum and all points are located on Innes Avenue, near the intersection of Arelious Walker. All other locations are below the threshold.

The SFDPH $PM_{2.5}$ localized concentration threshold for potential health risks of 0.2 μg/m^3 was used as a health protective proxy in the 2010 FEIR due to the absence of a threshold established by the BAAQMD for this type of analysis at the time of the 2010 FEIR. However, impacts to a person's health better correlate with the cumulative total impact from all sources rather than impacts from one individual source. Accordingly, the City of San Francisco now evaluates a project's significance for health impacts on a cumulative basis in combination with nearby sources. The City performed citywide modeling in 2012 to determine the cumulative impact of all sources known at the time and created thresholds based on cumulative $PM_{2.5}$ concentrations. The threshold used in the 2010 FEIR was a temporary proxy due to the lack of a threshold established by BAAQMD, The City now uses a cumulative approach, which is based on the scientific evidence discussed below. The City of San Francisco's current cumulative threshold approach is more appropriate to use to determine significance here, and the 2018 Modified Project Variant effects are assessed below using this approach.

San Francisco Modeling of Air Pollution Exposure Zones and Thresholds

In an effort to identify areas of San Francisco most adversely affected by sources of TACs, the City and County of San Francisco (the Planning Department and Department of Public Health) partnered with BAAQMD to conduct a citywide health risk assessment based on an inventory and assessment of air pollution and exposures from mobile, stationary, and area sources within San Francisco. Citywide dispersion modeling was conducted using AERMOD[63] to assess emissions from the following primary sources: roadways, permitted stationary sources, port and maritime sources, and Caltrain. Emissions of DPM (which represent PM_{10} exhaust emissions from diesel-fueled engines), $PM_{2.5}$ (including brake and tire wear), TOG, and other TACs from stationary sources were modeled on a 20-by-20-meter receptor grid covering the entire city. The results represent a comprehensive assessment of existing cumulative exposures to air pollution throughout the city. The methodology and technical documentation for modeling citywide air pollution are available in the document titled *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*.[64] Model results were used to identify areas in the city at the lot level with poor air quality, termed the Air Pollutant Exposure Zone (APEZ), based on the following health-protective criteria:

[63] AERMOD is the USEPA's preferred or recommended steady state air dispersion plume model. For more information on AERMOD and to download the AERMOD Implementation Guide, see https://www3.epa.gov/ttn/scram/7thconf/aermod/aermod_implmtn_guide_3August2015.pdf.

[64] BAAQMD, San Francisco Department of Public Health, and San Francisco Planning Department, *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*, December 2012.

- **Excess Cancer Risk.** The 100 per one million persons (100 excess cancer risk) criterion is based on USEPA guidance for conducting air toxic analyses and making risk management decisions at the facility- and community-scale level.[65]
- **Fine Particulate Matter.** In April 2011, USEPA published *Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards*. In this document, USEPA staff concludes that the then-current federal annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ should be revised to a level within the range of 13 to 11 $\mu g/m^3$, with evidence strongly supporting a standard within the range of 12 to 11 $\mu g/m^3$. APEZ designations within San Francisco are based on the health-protective $PM_{2.5}$ standard of 11 $\mu g/m^3$, as supported by USEPA's Particulate Matter Policy Assessment, but then the standard is lowered further to 10 $\mu g/m^3$ to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.
- **Health Vulnerable Locations.** Also included in the APEZ were lots within San Francisco ZIP codes that were in the lowest 20 percent of Bay Area Health Vulnerability scores (ZIP codes 94102, 94103, 94105, 94124, and 94130). For lots within both an APEZ and Health Vulnerability ZIP code, the standard for identifying areas as being within the zone was lowered to (1) excess cancer risk from the contribution of emissions from all modeled sources greater than 90 per one million persons, and/or (2) cumulative $PM_{2.5}$ concentrations greater than 9 $\mu g/m^3$.[66]

The thresholds of significance used to evaluate health risks from new sources of TACs are based on the potential for the project to substantially affect the extent and severity of an existing APEZ at sensitive receptor locations or create a new APEZ. The Project site is not within the APEZ (as mapped by the San Francisco Planning Department), but is in a Health Vulnerability zone (ZIP code 94124). Therefore, the relevant threshold would be cumulative $PM_{2.5}$ concentration of 9 $\mu g/m^3$, which is the standard for becoming an APEZ in a Health Vulnerability ZIP code. While the Project is not in an APEZ, the intersection of Third Street and Gilman Avenue is within an APEZ. The relevant threshold for this area for the Project impact would be 0.2 $\mu g/m^3$.

As discussed in Appendix F2, the maximum cumulative $PM_{2.5}$ concentration near the maximum impact from the Project would be 8.8 $\mu g/m^3$, which includes ambient concentrations, nearby sources, and the 2018 Modified Project Variant. This concentration is below the cumulative threshold of 9 $\mu g/m^3$ for the health protective ZIP code, which applies to this area.

The maximum concentration due to the 2018 Modified Project Variant inside the APEZ would be 0.17 $\mu g/m^3$, which is below the APEZ threshold of 0.2 $\mu g/m^3$. According to the CRRP, the maximum concentration along Third Street from the existing sources is just below the APEZ threshold of 9 $\mu g/m^3$. However, traffic along Third Street from the 2018 Modified Project Variant would be lower than traffic analyzed in the 2010 FEIR (for the 2010 Project). Thus, this area would not have an

[65] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009, p. 67.
[66] San Francisco Planning Department and San Francisco Department of Public Health, 2014 Air Pollutant Exposure Zone Map (Memo and Map), April 9, 2014. These documents are part of San Francisco Board of Supervisors File No. 14806, Ordinance No. 224-14, Amendment to Health Code Article 38.

increased impact from what was analyzed in the 2010 FEIR for the 2010 Project. Therefore, the $PM_{2.5}$ concentration from the 2018 Modified Project Variant would be below this threshold.

Furthermore, proposed mitigation measures for the nearby India Basin project, should it be approved and implemented, would reduce the number of travel lanes on the nearby roads to provide for bus rapid transit along Innes, indirectly reducing the amount of traffic and, therefore, further reducing the localized $PM_{2.5}$ concentrations. The Project impact would remain less than significant, and no mitigation would be required.

Impact AQ-8: Implementation of the Project would not generate objectionable odors affecting a substantial number of people. ***[Criterion H.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

In the 2010 FEIR, this impact was considered less than significant, and mitigation was not required. The 2010 Project assumed a large mixed-use development containing residential, office, retail, R&D, recreational, entertainment uses, and a large centralized recycled water facility. The 2010 FEIR concluded that although there may be some potential for small-scale, localized odor issues to emerge around Project sources such as solid waste collection or food preparation, substantial odor sources and consequent effects on on-site and off-site sensitive receptors would be unlikely and/or would be resolved by appropriate and effective intervention after receipt of any complaints. The 2018 Modified Project Variant includes most of the same land uses, but adds a hotel, schools, and a geothermal heating and cooling system. Hotels and schools are not expected to be significant sources of odors. The primary source of odors from hotels and schools would be from solid waste collection and food preparation; however, these source of potential odors would be collected in closed containers and would be disposed of on a regular basis.

The recycled water facility, which was proposed as part of the 2010 FEIR Utilities Variant 4, is also proposed as part of the 2018 Modified Project Variant. Under Utilities Variant 4, four decentralized treatment plants were proposed at HPS2 and seven decentralized treatment plants were proposed at CP, each with a capacity of approximately 100,000 gallons per day (gpd) of wastewater, totaling 1.1 million gpd. The 2018 Modified Project Variant, by comparison, proposes one 976,000 gpd centralized treatment plant at HPS2. This plant has been designed to minimize and/or eliminate perceptible odors to nearby sensitive uses. All exhaust air associated with the recycled water treatment process would be conveyed to a granular-activated carbon scrubber system before being released to the environment. Water would enter the facility through a screen box, which would remove any large solid materials from the water flow. The large solid materials would go straight to an enclosed container and exhaust air would be routed to the carbon scrubber system. The water then would enter a series of tanks, all of which would be completely enclosed. The air in the area above the water line in the tanks would be captured via a suction blower and conveyed to the carbon scrubber system.

Raw sewage would be conveyed to equalization tanks. The tanks would be covered and exhaust air would go through the carbon scrubber system. The anoxic tank would treat water at low oxygen concentrations. Mixing would occur in this tank, which would have air going through the scrubber system. The water then would enter the aeration and membrane tanks where air would pass through the tank to activate the biological process and to scour membranes. These tanks would be covered and all exhaust air would go through the carbon scrubber. Sludge that is generated as part of the treatment would be directly released into the San Francisco Public Utilities Commission (SFPUC) sewer system in enclosed pipes. None of the sludge would be processed on site. The treated water would be conveyed to finished water tanks, which typically do not have an odor, but would be enclosed in an abundance of caution.

The design of the recycled water facility thus substantially minimizes the potential for waste-related odors using the odor control technologies described above and in Table 15 (Odor Control Technologies Used for Waste-Related Odors).

TABLE 15 ODOR CONTROL TECHNOLOGIES USED FOR WASTE-RELATED ODORS

Technology	*Description of Technology*
Enclosed tank/systems	All treatment unit processes and raw sewage process tanks would be located in enclosed buildings or under covers, limiting the amount of waste that comes into contact with the ambient environment and reducing the potential for odors to escape from the system.
Negative pressure	Tank headspace would be kept under negative pressure, which reduces the amount of air that can escape from the tank and reduces the potential for odors to be released.
Sludge would not be processed on site	By processing the sludge off site, the potential for odors would be reduced.
Carbon Scrubber	All captured air would be routed through granular-activated carbon air scrubbers. Carbon scrubbers use activated carbon as the adsorption medium to remove odors, gases, and other VOCs. Activated carbon has a complex pore structure with a very large surface area. As the air is forced through the carbon bed, odorous compounds are transferred from the air to the surface of the carbon though a physical attraction called adsorption. The odor compounds would continue to adsorb onto the surface of the carbon until all the pore space in the carbon is saturated, at which point the carbon would be replaced (or reused after regeneration, which restores the adsorption capacity of the saturated activated carbon). The system would be monitored to determine when replacement of carbon is necessary. Scrubbed air would be discharged to the atmosphere.
Monitoring and Maintenance	Monitoring and maintenance would be part of the system operations to reduce and address odors in a timely manner. The operators would manage the facility to minimize odors and address odor complaints, if any.

Addendum 5 Appendix F3 (Recycled Water Facility Location and Odor Control) confirms that the proposed HPS2 recycled water facility would not have any objectionable or detectable odor at the perimeter of the facility that would be noticed by the public. Appendix F3 states that odor has not been an issue at other facilities that Natural Systems Utilities has previously completed. Three example facilities, noted below, have a similar design to but are somewhat smaller than the recycled water facility that is proposed at HPS2. All are in close proximity to residences and businesses and have been in operation for over 15 years without any odor complaints:

- **Battery Park, New York City, New York:** Six complete water reuse systems located inside the buildings of high-end residential apartment complexes with a total capacity of 165,000 gpd.
- **Queset Commons, North Eaton, Massachusetts:** Wastewater treatment plant for a mixed-used development located directly adjacent to homes and commercial establishments with 150,000 gpd capacity;
- **Gillette Stadium, Foxboro, Massachusetts:** On-site water reuse facility for the New England Patriots with the treatment facility located within the commercial district and immediately adjacent to surrounding restaurants with 250,000 gpd capacity; and

Addendum 5 Appendix F4 (Recycled Water Facility Odor Control Measures) describes the design features of the recycled water facility that would reduce odors.

The recycled water facility at HPS2 would be designed and constructed with the same standards and design principles as the three example facilities. The recycled water facility at HPS2 would be constructed as separate modules, each about the size of the Queset Commons facility. Due to the modular design and similar capacity, the lack of odor complaints at these facilities are representative of what would be expected at HPS2.

Due to the enclosed design and the use of a granular activated carbon system, the recycled water facility would not would not generate objectionable odors affecting a substantial number of people.

Furthermore, the recycled water facility would comply with the 2010 FEIR conclusion that effects "would be resolved by interventions after receipt of any complaints." The HPS Redevelopment Plan requires that any recycled water treatment facility comply with additional odor control measures established in the D4D, which requires the establishment of a point of contact for odor control complaints, post-contact information for such point of contact, and implement additional odor control measures until odor issues are addressed. In addition, complaints could be addressed to BAAQMD to be handled under BAAQMD Regulation 7 (Odorous Substances), which establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds. The enforcement of these limitations is provided on a complaint-based system. If the Air Pollution Control Officer (APCO) receives odor complaints from 10 or more complainants within a 90-day period alleging odors are perceived at or beyond the property line and are deemed to be objectionable by the complainants in the normal course of their work, travel, or residence, Regulation 7 provides for a collection, analysis, and evaluation process to determine whether there are, in fact, odors and/or whether they exceed established discharge concentrations. The monitoring mandated by the Regulation shall remain effective until such time as no citizen complaints have been received by the APCO for one year. The limits of this Regulation shall become applicable again when the APCO receives odor complaints from five or more complainants within a 90-day period.

The impact would remain less than significant, and no mitigation would be required.

Impact AQ-9: The Project would conform to the current regional air quality plan. *[Criterion H.a]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

In the 2010 FEIR, the Project was compared against the Bay Area 2005 Ozone Strategy and the then draft 2009 Clean Air Plan. The Project was determined to conform to the 2005 Plan in that it promotes the use of alternative transportation modes, such as transit, biking and walking. In addition, it puts housing in close proximity with jobs and retail establishments, reducing the length of trips and further reducing reliance on single-occupancy vehicles. The project characteristics are the same for the 2018 Modified Project Variant, so the 2018 Modified Project Variant would also conform to the 2005 Plan.

The 2010 FEIR also contained a comparison to the then draft 2009 Clean Air Plan (CAP). The comparison focused on transportation control measures and land use and local impact measures. As discussed above for the 2005 Plan, the 2018 Modified Project Variant does not change transportation goals. The 2018 Modified Project Variant continues to improve transit services by adding and expanding certain transit routes, improve system efficiency and encourages sustainable travel behavior by locating residences near jobs and services, and support focused growth. The 2018 Modified Project Variant also does not change conformity with the land use and local impact measures. As discussed in the analysis for other impacts above, the 2018 Modified Project Variant does not increase exposure to air pollution compared to the analysis for the 2010 Project.

Since the 2010 FEIR was certified, the Bay Area Air Quality Management District (BAAQMD) developed the 2017 CAP. The 2017 CAP is an update to the 2010 Clean Air plan and is the most recently adopted strategy by the Bay area to meet air quality standards. The 2017 plan serves to protect public health and the environment by using a multipollutant air quality plan with new measures in sectors including transportation, energy, buildings, water, and natural working lands.

The proposed project supports the primary goals of the Clean Air Plan, in that it proposes to reduce impacts by implementing transportation control measures, energy and building measures and water conservation measures. The proposed extension supports the development of transit ways that would encourage use of local bus routes (MUNI bus lines to downtown) and promotes the development of multi-use pathways encouraging pedestrian and bicycle usage. *This would help reduce vehicle trips, vehicle usage and traffic congestion.* The proposed project would result in decarbonizing buildings by using geothermal HVAC systems reducing the need for use of natural gas fired boilers and in turn reducing overall energy consumption by 65 percent, which are consistent with the building control measure goals delineated in the 2017 CAP. In addition, the generation of on-site renewable energy through solar photovoltaics to supplement on-site power supply from SFPUC, and the use of lithium-ion batteries for storing surplus energy generated by PV systems supports the plan to decarbonize electricity production. Surplus energy stored in the batteries would also be discharged back into the grid in place of the electricity imported from the PG&E grid.

Finally, the proposed project also improves water efficiency and supports water conservation, thus resulting in an overall GHG emissions reduction and water conservation. In particular, use of a centralized treatment plant for sanitary sewer water to be used for nonpotable uses as opposed to multiple decentralized treatment systems would result in limiting methane emissions from the treatment facilities. The impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to air quality impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to air quality, either on a project-related or cumulative basis.

II.B.8 Noise and Vibration

	Criterion	*Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)*	*Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?*	*Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?*	*Any New Information of Substantial Importance?*	*Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant*
12.	**Noise and Vibration.** Would the project result in:					
I.a	Result in exposure of persons to or generation of noise levels in excess of standards established in the Environmental Protection Element of the *San Francisco General Plan* or San Francisco Noise Ordinance (Article 29, *San Francisco Police Code*)?	2010 FEIR p. III.I-30 (Impact NO-1b); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	MM NO-1a.1, MM NO-1a.2
I.b	Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	2010 FEIR p. III.I-32 (Impact NO-2), p. III.I-40 (Impact NO-5); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.c	Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	2010 FEIR p. III.I-39 (Impact NO-4), p. III.I-40 (Impact NO-6); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.d	Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	2010 FEIR p. III.I-36 (Impact NO-2c), p. III.I-38 (Impact NO-3), p. III.I-44 (Impact NO-7); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	MM NO-1a.1, MM NO-1a.2, MM NO-2a
I.e	For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the Project expose people residing or working in the area to excessive noise levels?	2010 FEIR p. III.I-51 (Impact NO-8); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.f	For a project located in the vicinity of a private airstrip, would the Project expose people residing or working in the project area to excessive noise levels?	2010 FEIR p. III.I-51 (Impact NO-8); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.g	Be substantially affected by existing noise levels	2010 FEIR p. III.I-51 (Impact NO-8); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None

Changes to Project Related to Noise and Vibration

The 2018 Modified Project Variant includes the following activities related to noise and vibration:

- Modifications to the land use program, including a decrease in R&D uses, an increased number of residential units, and the addition of a hotel and schools that were not envisioned in the 2010 FEIR;
- Changes in traffic volumes and traffic distribution;
- Revised design details on central energy plants and recycled water plant and the addition of a ground source geothermal heating and cooling system; and
- Changes in construction activity and methods, including the use of deep dynamic compaction (DDC) at CP and HPS2 and the installation of geothermal boreholes at HPS2.

Comparative Impact Discussions

Noise impacts associated with the 2018 Modified Project Variant are evaluated in this section. An assessment of noise impacts at CP is not provided because the 2018 Modified Project Variant results in fewer noise-sensitive receptors at CP as compared to both the 2010 Project and the R&D Variant (Variant 1); the number of dwelling units are decreased and there are no additional sensitive receptors or sensitive receptors provided in different locations. Further, there are no changes to the land use program relative to the 2010 Project at CP that would result in different noise impacts. Therefore, the potential for noise impacts at CP would either be the same or less than was identified in the 2010 FEIR.

The 2018 Modified Project Variant includes an assessment of noise from new construction techniques at HPS2 that were not previously analyzed in the 2010 FEIR, including the use of a drill rig truck during the installation of geothermal boreholes. The assessment of vibration impacts for the 2018 Modified Project Variant includes HPS2 and CP as it relates to the use of deep dynamic compaction (DDC) to stabilize loose soils throughout the site, which represents a new source of vibration that was not previously analyzed in the 2010 FEIR.

Impact NO-1b: Construction at HPS Phase II would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would be temporary, they would also not occur during recognized sleep hours, and would be consistent with the requirements for construction noise that exist in Sections 2907 and 2908 of the *Municipal Code. [Criterion I.a]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The potential for construction noise related impacts is based on comparison with the San Francisco Noise Ordinance, as summarized in Sections 2907 and 2908. Further, construction activities would occur during daylight hours, generally between 7:00 a.m. and 8:00 p.m. or as otherwise allowed by the City (i.e., no nighttime construction work is anticipated). Because construction of the 2018 Modified Project Variant would occur during daytime hours it would be subject to a limit of 80 dBA at 100 feet

for individual, non-impact construction equipment. The following assessment provides a summary of expected noise levels from construction equipment, and the potential for construction noise impact at existing off-site and future on-site receivers. Illustrations of the 2018 Modified Project Variant's sensitive land uses are provided in Figure 37 (Locations of Noise-Sensitive Receptors at HSP2) and Figure 38 (Locations of Noise-Sensitive Receptors at CP). While the 2018 Modified Project Variant proposes a modification of the land use program, it would not place noise-sensitive receptors closer to sources of construction noise and vibration than were evaluated in the 2010 FEIR.

Table 16 (Construction Equipment Noise Emission Levels) provides a list of powered equipment that would be used during construction, and includes typical noise levels as measured at 50 and 100 feet from each source. The equipment and noise levels in Table 16 are similar to those identified in the 2010 FEIR and are based FTA noise guidance.[67] Additional equipment not identified previously include drill rig trucks that would be used when installing boreholes. As in the 2010 FEIR, these sound levels are considered representative of the equipment that would be used during construction of the 2018 Modified Project Variant. See Addendum 5 Appendix G (Noise Data) Table G-1 (Project Related Construction Equipment) for a full list of the construction equipment, quantities, construction phases, and noise levels used for this assessment.

TABLE 16 CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS

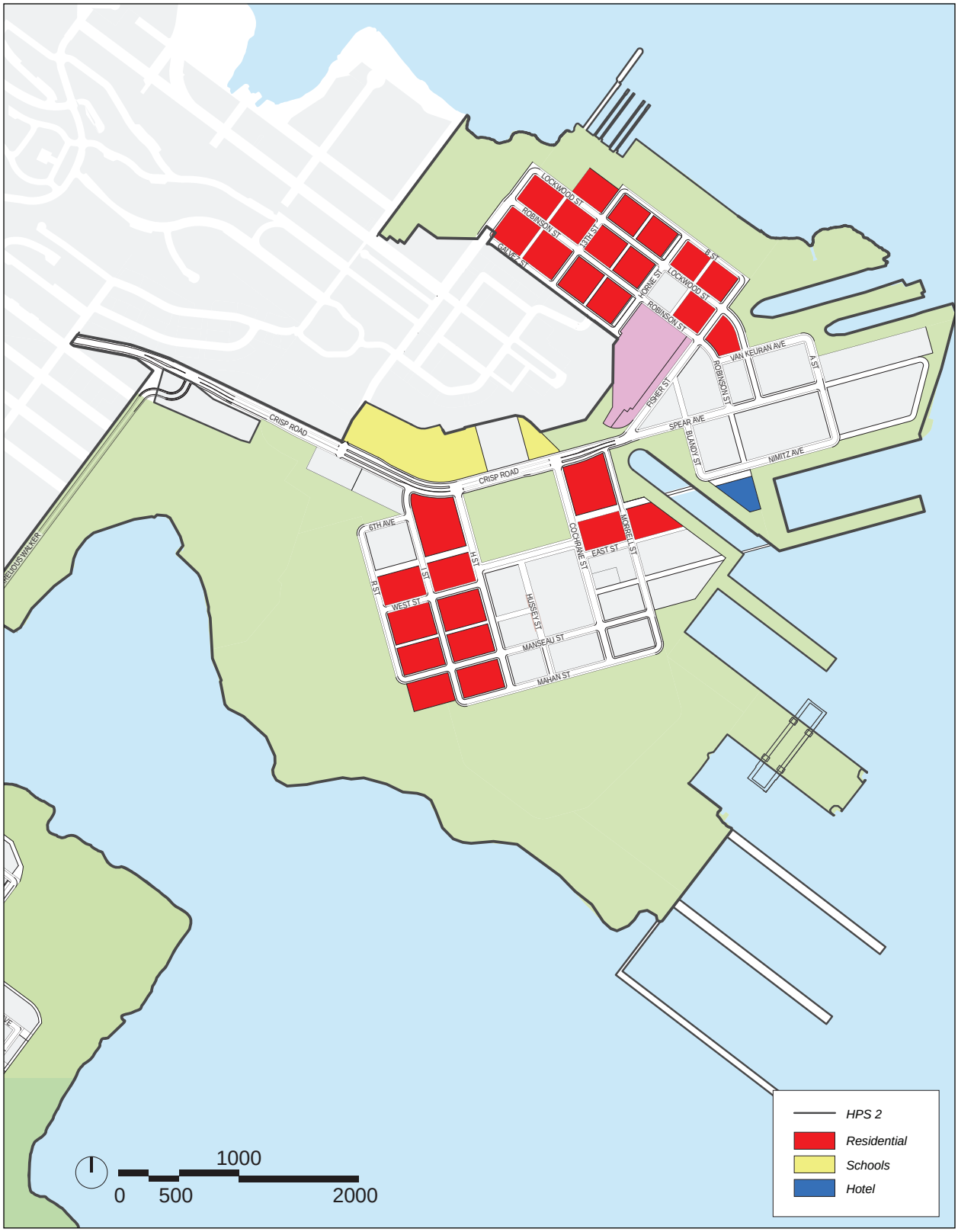
Equipment	*Typical Noise Level (dBA) 50 Feet from Source*	*Typical Noise Level (dBA) 100 Feet from Source*
Compactor	82	76
Concrete Mixer	85	79
Concrete Pump	82	76
Crane, Mobile	83	77
Dozer	85	79
Grader	85	79
Loader	85	79
Paver	89	83
Pile-driver (Impact)	101	95
Drill Rig Truck[a]	79	73
Roller	74	68
Scraper	89	83
Truck	88	82

SOURCE: FTA, *Transit Noise and Vibration Guidance Handbook*, May 2006.

NOTE:

[a] "Drill Rig Truck" noise level not found in FTA manual; sound level data from Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). Sound level data found online at https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm.

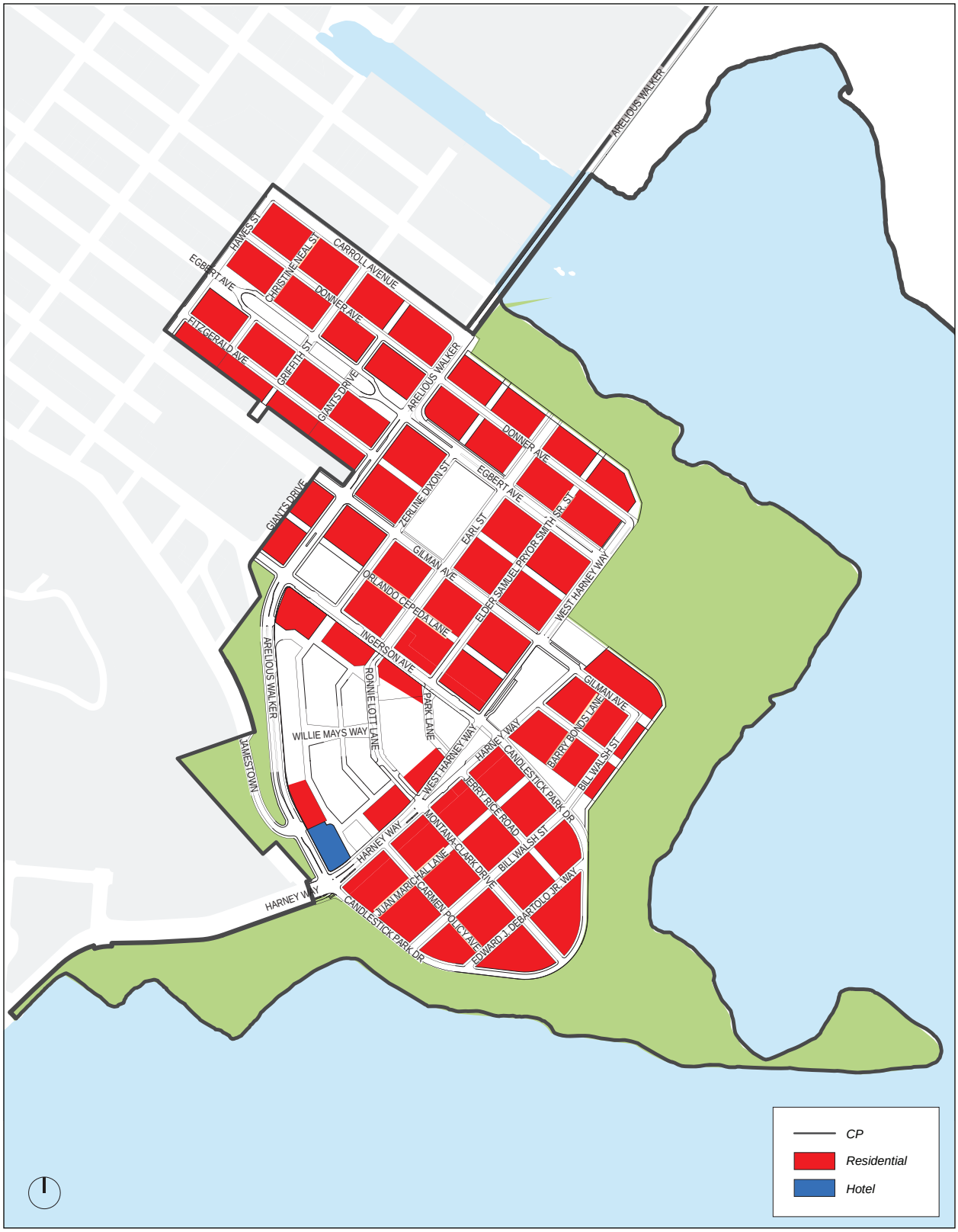
[67] U.S. Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006. Available at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf.



SOURCE: Ramboll. 2018; FivePoint, 2018.

FIGURE 37 Addendum 5 to the CP-HPS2 2010 FEIR

LOCATIONS OF NOISE-SENSITIVE RECEPTORS AT HPS2



SOURCE: FivePoint, 2018.

FIGURE 38 Addendum 5 to the CP-HPS2 2010 FEIR

LOCATIONS OF NOISE-SENSITIVE RECEPTORS AT CP

Construction Noise Impacts at Off-Site Receivers

Existing off-site noise-sensitive receivers near the HPS2 developments, such as the residences in HPS1, the surrounding Bayview and Hunters Point neighborhoods, including existing and proposed residences adjacent to the proposed Northside Park along Innes Avenue, could be exposed to elevated levels of noise during some construction activities.

During grading of the Northside Park, residences along Innes Avenue may experience noise levels of up to 91 dBA when both graders and scrapers operate at the same time, approximately 50 feet from these residences (nearest and worst-case construction noise levels).

At existing off-site residences and places of worship that are within 25 feet of the proposed Donahue Extension, or the Palou and Innes Avenue improvements, exposure to activity from graders and from pavement crushers could result in noise levels of up to 91 dBA under worst-case operating conditions.

At the geothermal borehole locations, drill rigs would be used to drill approximately 2,800 boreholes for the proposed geothermal heat exchange system. The 2010 FEIR did not assume installation of boreholes; noise emissions from this new construction activity has been included in assessment of the 2018 Modified Project Variant. The boreholes would be located in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited. Specifically, clusters of boreholes would be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. The borehole cluster locations would avoid other areas, as feasible, that have unsuitable administrative and/or sub-surface conditions, such as beneath public roads, State Trust lands, radiological restricted areas, and other areas of extensively restricted soil and groundwater contamination. The nearest off-site receptors that would be exposed to drilling noise are located to the north, at the Hunters Point neighborhood. Based on the noise levels presented in Table 16 and in Addendum 5 Appendix G Table G-1 (Project Related Construction Equipment) for a "drill rig truck," a drill rig truck operating 200 feet from a noise sensitive receptor would result in a noise level of 67 dBA.

The above construction noise levels would represent the worst-case construction noise levels that would be experienced at these off-site receivers. During most of the 2018 Modified Project Variant construction program, noise from construction activities, as received off site, would be lower as equipment operates farther from these receiving areas. In addition, all project-related construction equipment would be required to adhere to the noise limits identified in Section 2907, limiting individual, non-impact construction equipment noise to 80 dBA at 100 feet.

The equipment that would generate impact-type noise emissions identified in Table 16, and which are exempted from the noise limits provided in Section 2907 of the City's Municipal Code, include pile drivers. Note that DDC is considered an impact-type activity, however the impact from weight drops result in noticeable levels of vibration, but not noise. That is, weights generally land on soils that absorb the impact and sound of the weight drop (i.e., impact noise from dropping of a weight is

a low-level "thud" sound). Steady noise emissions from DDC is emitted at relatively low levels from mobile cranes that move and drop weights during DDC activities, and this activity has been included in the assessment of construction noise. Mobile cranes were evaluated in the 2010 FEIR, although not associated with DDC. Vibration emissions from DDC have been evaluated for the 2018 Modified Project Variant under Impact NO-2c.

A detailed summary of off-site construction impacts is found in Addendum 5 Appendix G Table G-2 (Construction-related Noise Results, by Activity and Area).

Construction Noise Impacts at On-Site Receivers

The 2018 Modified Project Variant would include additional on-site noise-sensitive receivers, including 802 new residential units, a 175-room hotel, and potentially schools, which may include live-in dormitories. The hotel could be occupied as early as 2022, and the schools, constructed under Sub-phase HP-01, may be occupied as early as 2021.

Depending on the location of the potential schools, the loudest construction activities would occur during use of pile drivers for installation of foundation piles. Pile driving would occur during development of structures and rough-in construction of the Shipyard Hillside Open Space and Green Room park developments. Pile driving activities at the Shipyard Hillside Open Space could be located as close as approximately 50 feet from a school and pile-driving activities at the Green Room could be located as close as approximately 150 feet from a school. Based on FTA noise levels for impact pile driving, the potential school use may be exposed to noise levels of 101 and 91 dBA, respectively. However, note that these sound levels would be lower as pile-driving equipment are located farther from the schools. As noted, impact equipment, such as noise from pile drivers, is not subject to the limits in Noise Ordinance Section 2907. However, noise from pile driving would be subject to the mitigation measures identified in the 2010 FEIR under MM NO-1a.2 (reduce noise during pile driving).

Residential units developed for the 2018 Modified Project Variant would be constructed in various phases. As units are developed, they may be exposed to construction noise from development of subsequent phases. Residential units are proposed within all sub-phases except Sub-phase HP-05, however the 175-room hotel to be located in Sub-phase HP-05 is considered a noise-sensitive receiving location. At all proposed residential units (with the exception of residential units constructed in Sub-phase HP-06) and the hotel, there is potential for noise impact during use of impact pile driving and heavy equipment operated during construction of adjacent sub-phases, constructed after residences or hotel units are occupied. As summarize in Table 16, noise from impact pile driving could reach 101 dBA at a distance of 50 feet, or as high as 107 dBA assuming a distance of 25 feet (similar to what was presented in the 2010 FEIR).

Construction activities, including abatement, demolition, grading, and structural finishes would result in noise levels from individual equipment that would range from between 82 dBA and 95 dBA at the nearest adjacent on-site noise-sensitive receivers. Of these activities using non-impact equipment,

grading is expected to result in the highest levels of construction noise, specifically when scrapers are used, resulting in a noise level of 95 dBA at distance of 25 feet. However, as noted above, sound levels during most construction activities would be lower as equipment are located farther from impacted residential area. Also, noise from standard construction equipment would be subject to the limits in Noise Ordinance Section 2907 and would be required to meet these standards, if necessary through the mitigation measures identified in the 2010 FEIR within MM NO-1a.1 (reduce noise during construction).

Construction of Tower A, which would be located adjacent to Tower B under the 2018 Modified Project Variant, could be completed up to 5 years before the completion of Tower B. Pile driving equipment are anticipated during construction of Tower B foundations, and could result in noise levels at Tower A of approximately 95 dBA from Tower B (based on a distance of approximately 100 feet between Towers A and B). Noise from pile driving would be subject to the mitigation measures identified in the 2010 FEIR under MM NO-1a.2.

A detailed summary of on-site construction impacts is found in Addendum 5 Appendix G Table G-2 (Construction-Related Noise Results, by Activity and Area). The impact would remain less than significant with implementation of the identified mitigation measures in MM NO-1a.1 and MM NO-1a.2.

Impact NO-2c: Construction at HPS Phase II would create excessive groundborne vibration levels in existing residential neighborhoods adjacent to the Project site and at proposed on-site residential uses should the latter be occupied before Project construction activity on adjacent parcels is complete. Although the Project's construction vibration impacts would be temporary, would not occur during recognized sleep hours, and would be consistent with the requirements for construction activities that exist in Sections 2907 & 2908 of the Municipal Code, vibration levels would be significant. ***[Criterion I.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

Construction-related vibration impacts that are disclosed in the 2010 FEIR would result primarily from pile driving activities, specifically when pile driving occurs within 50 feet of a building, and from heavy equipment such as trucks and bulldozers, when operating very near a structure or sensitive receiving location. The potential for vibration-related impacts from these activities would remain under the 2018 Modified Project Variant, and the mitigation measures that are referenced within Impact NO-2c would continue to apply, including MM NO-1a.1, MM NO-1a.2, and MM NO-2a. Under the 2018 Modified Project Variant, DDC, a construction technique not specifically analyzed in the 2010 FEIR, but identified by mitigation measure MM GE-5a as one of several techniques to reduce impacts related to liquefaction, could also have vibration impacts on structures as discussed below. The 2010 FEIR concluded vibration impacts would remain significant and unavoidable to off-site sensitive receptors even with implementation of all mitigation measures. Noted adjustments to MM NO-2a, specific to the 2018 Modified Project Variant, are described below.

Pile Driving

The 2018 Modified Project Variant would require the use of impact pile driving similar to what was disclosed and analyzed in the 2010 FEIR. Pile driving would be required for new development in the 2018 Modified Project Variant, such as buildings and shoreline improvements, and perhaps the water taxi docks and the pedestrian bridge, and/or pedestrian/bicycle bridges, depending on final design.

The potential for significant and unavoidable impacts relative to distance from a pile driving vibration source would be the same for the 2018 Modified Project Variant. Specifically, vibration from impact pile drivers would range from 103 VdB at 50 feet to 85 VdB at 100 feet. The threshold established in the 2010 FEIR is 80 VdB for vibration-related impacts at residences and buildings where people normally sleep and is based on infrequent events (less than 30 vibration events per day of the same source). To mitigate the potential for structural damage from vibration related to pile driving activities associated with the 2018 Modified Project Variant, MM NO-2a, as established in the 2010 FEIR, requires that vibration monitoring be conducted when impact pile driving occurs within 50 feet of new or existing structures. This mitigation measure would continue to apply for the proposed Addendum 5 revisions to the Project.

Deep Dynamic Compaction

The 2018 Modified Project Variant uses DDC as a means to densify soils in the project area to reduce the risk of liquefaction during an earthquake. As summarized by ENGEO, DDC "utilizes impact energy from a large weight free falling from a significant height to densify the ground. The weight is repeatedly dropped in a specific grid pattern at a defined drop height; the number of drop times at each location is determined based on using the principles of transforming potential energy to kinetic energy. At impact with the ground, the energy is transmitted at depth to densify loose material. The drop height and weight is initially determined by empirical formulas based on material types and the desired depth of improvement and then modified as appropriate during the process based on observed craters that form during the DDC process. Since the impact force is at the surface, the effective depth of improvement is typically limited to the upper 20 to 30 feet. The height and weight for the test section were selected by the ground improvement contraction, Hayward Baker."[68]

DDC currently is considered for most of the project area, including both HPS2 and CP, as a means to densify soils prior to construction of project buildings. DDC could generate high levels of vibration in the immediate vicinity of the compaction event, and there is potential for vibration impacts at existing and new structures. Distances at which vibrations from DDC may result in damage or perception are provided in Table 17 (Deep Dynamic Compaction Vibration Impact Distance Thresholds). Note that Table 17 details vibration levels in PPV, or peak particle velocity, and not VdB, as were evaluated in the 2010 FEIR and above for pile driving. PPV is often is used to evaluate the potential for temporary vibration impacts from construction-related activities.

[68] ENGEO Incorporated, *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017, p. 4.

TABLE 17 DEEP DYNAMIC COMPACTION VIBRATION IMPACT DISTANCE THRESHOLDS

Building Category	*PPV (in/sec)*	*Min. Distance from DDC (feet)*
Reinforced-concrete, steel, or timber (no plaster)	0.5	125
Engineered concrete or masonry (no plaster)	0.3	150
Non-engineered timber and masonry buildings	0.2	225
Buildings extremely susceptible to vibration damage	0.12	275
Perception in occupied building	0.04	400

SOURCE: ENGEO Incorporated, *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017, Table 3.3.3-1 (Vibration Impacts), p. 9.

As noted in Table 17, the distance at which vibration impacts may occur from DDC depends on the materials used to construct the impacted building and the distance between the building and the locations where DDC would be used. Where DDC is proposed closer to existing or proposed structures than the distances identified in Table 17, MM NO-2a is proposed to be modified to identify measures that would be implemented to protect structures from structural damage caused by DDC-related vibration impacts.

In areas where soil compaction is required, but DDC is not proposed, alternate methods of compaction would be implemented. A list of alternate compaction methods is summarized in Section III.L (Geology and Soils) on pp. III.L-41 to III.L-42 as mitigation measure MM GE-5a. As provided in Section III.L, compaction methods, such as vibro-compaction, stone columns, soil-cement columns, and deep displacement grout columns do not require use of excessive vibration-generating equipment or activities, and no structural damage would be anticipated at nearby structures. The impact would remain significant and unavoidable even with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM NO-2a: Pre-construction Assessment to Minimize Pile Driving and Deep Dynamic Compaction Impacts. The Project Applicant shall require its geotechnical engineering contractor to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving and deep dynamic compaction (DDC) impacts prior to receiving a building permit. The building surveys will review existing conditions and confirm whether fractures in building footings or walls existed prior to pile driving and/or DDC activities.

If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving, the Project Applicant shall require groundborne vibration monitoring of nearby structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following:

- Pre-pile driving surveying of potentially affected structures
- Underpinning of foundations of potentially affected structures, as necessary

- The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of an excavation. Monitoring results shall be submitted to DBI. In the event of unacceptable ground movement, as determined by DBI inspections, all pile driving work shall cease and corrective measures shall be implemented. The pile driving program and ground stabilization measures shall be ~~reevaluated~~ reviewed and approved by ~~DBI~~OCII.

For DDC work, the Project Applicant shall prepare and implement a construction plan that includes a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of DDC activity. Structures in the vicinity of DDC work shall be defined as reinforced-concrete, steel, or timber structures within 125 feet, engineered concrete or masonry structures within 150 feet, non-engineered timber and masonry structures within 225 feet, or other structures that are extremely susceptible to vibration damage within 275 feet of DDC activities as determined by the Project Applicant's geotechnical engineer or structural engineer. The DDC program shall be evaluated and approved by DBI and results of the monitoring program shall be submitted to OCII. In the event of unacceptable ground movement, as determined by DBI inspection and review, all DDC work shall cease and corrective measures shall be implemented. A geotechnical engineer approved by OCII shall determine which of the following ground stabilization measures or alternate measures would be necessary to avoid structural impacts related to DDC activities:

- Underpinning of foundations of potentially affected structures, as necessary to avoid structural impacts
- If deemed necessary by the geotechnical engineer, based either on proximity of DDC to a structure and/or on potential for damage to a structure, a cutoff trench shall be installed between the DDC activity and the structure. The cutoff trench should be at least 10 feet deep and 2 feet wide.[69] The trench should be long enough to effectively shield the structure from DDC vibrations.

Impact NO-3: Construction activities associated with the Project would result in a substantial temporary or periodic increase in ambient noise levels. ***[Criterion I.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

Noise generated during construction of the 2018 Modified Project Variant would result in substantial increases in the ambient noise environment at both off-site and on-site receivers when construction equipment operate nearest these noise-sensitive uses. Construction noise levels would vary by construction equipment type and proximity to nearby noise-sensitive uses. As identified in Impact NO-1b, noise from construction activities may substantially exceed the existing ambient sound levels that are summarized in 2010 FEIR Table III.I-3 (Existing Day-Night Noise Levels [L_{dn}]). In some locations, use of multiple equipment at any one time could result in combined noise levels

[69] ENGEO Incorporated, *Potential Constraints on Implementation of Deep Dynamic Compaction*, December 14, 2017, p. 1.

that would exceed those identified in Table 16. The highest level of construction noise for the 2018 Modified Project Variant are anticipated to occur from pile driving activities, as was similarly concluded in the 2010 FEIR.

Construction of the 2018 Modified Project Variant is anticipated to last approximately 14 years. Off-site receivers that are exposed to multiple years of construction, even if sound level from construction vary over time, may experience increased sensitivity and thus perceived noise impacts, due to the length of the construction program.

As in the 2010 FEIR, noise mitigation measures MM NO-1a.1, MM NO-1a.2, and MM NO-2a (as proposed for revision in Addendum 5) have been identified to reduce overall construction noise, and the potential for noise impact at nearby off-site and on-site noise-sensitive receivers but the impact to human receptors would remain significant and unavoidable even with mitigation. As previously mentioned, while the 2018 Modified Project Variant proposes a modification of the land use program, it would not place noise-sensitive receptors closer to sources of construction noise and vibration than were evaluated in the 2010 FEIR; nonetheless, the impact would remain significant and unavoidable even with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

> **MM NO-2a, Pre-construction Assessment to Minimize Pile Driving Impacts**, is provided in full on p. 195 under Impact NO-2c.

Impact NO-4: Implementation of the Project, including the use of mechanical equipment or the delivery of goods, would not expose noise-sensitive land uses on or off site to noise levels that exceed the standards established by the City. ***[Criterion I.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

Utility Systems

Sources of operational noise that were identified in the 2010 FEIR included mechanical cooling systems (i.e., HVAC), deliveries of retail and commercial products and activities such as trash collection. As stated in the 2010 FEIR, noise levels from these activities and systems would be similar throughout the entire Project site on a daily basis, and the daily noise environment would be typical of an urban area with average noise levels ranging between 60 and 70 dBA.

The 2018 Modified Project Variant would include features not previously evaluated in detail in the 2010 FEIR. Modifications include three central energy plants (CEPs) to provide heating and cooling for the entire district. The CEPs would include essential plant and operational system infrastructure, including circulation pumps, chillers, and heat exchangers associated with the geothermal HVAC system, and lithium ion batteries associated with the electricity storage system. It is important to note that all components of the CEPs would be located entirely within each building footprint where

a CEP is housed, and screened to avoid being visible. The CEPs would have acoustic treatment applied to ensure noise does not exceed 40 dBA at adjacent, nearby noise-sensitive outdoor use areas, following a detailed noise assessment to be completed upon final design.

Electric power for the utilities network of the 2018 Modified Project Variant would be provided by solar photovoltaic (PV) systems located throughout the 2018 Modified Project Variant to supplement SFPUC's power supply to the site. Power generated by the PV system would be stored in batteries. Operation of PV panels and batteries are not anticipated to generate noise that would be audible at any nearby noise-sensitive area. Occasional noise may be generated from cleaning of PV panels, possibly through use of pressure washers. Noise from pressure washers would include noise from gasoline-powered motors and from water striking the panels. These activities, however, would be infrequent and would be exempted from the limits in Noise Ordinance Section 2909 Appendix C (Exceptions), identified as "landscaping and property maintenance equipment."

Battery storage within the 2018 Modified Project Variant would replace the need for emergency generators assumed as part of the 2010 FEIR analysis. The battery storage would reduce the potential for noise generated during emergency power use and during testing of generators. Batteries would be stored within CEPs enclosed within parking structures and in other buildings. Ancillary equipment supporting battery storage would include, among others, HVAC units to maintain an adequate climate within the battery storage room. HVAC units would be required to operate in compliance with Noise Ordinance Section 2909.

Use of geothermal heating would negate the need for natural-gas-fired boilers, therefore removing the potential for noise emissions from boiler exhausts. The principal source of noise associated with the geothermal heating system is related to electric pumps that pump water through a closed-loop system, including pumps for a network of vertical boreholes extending several hundred feet underground, and pumps to pump the heated water through the distribution system to each of the project buildings. All electric pumps would be located within the CEPs, and noise from this equipment would be shielded by the acoustical treatment described above. All piping would be located underground; therefore, noise from fluid moving through these pipes would not be audible.

Heating and cooling distribution to the project buildings would be provided by fluid pumped from the geothermal boreholes, through the CEP, to the buildings. Water-water or water-air heat exchangers would provide hot and cold water, as well as comfort heating and cooling. Heat exchangers, which could include HVAC systems, are expected to be located on building rooftops, and would be subject to Noise Ordinance Section 2909.

The modifications also include an on-site recycled water system capable of treating 976,000 gallons of water per day, diverting water from the sanitary sewer system for treatment using membrane bioreactor (MBR) technology. The treated water would be used for irrigation, toilet flushing, and other nonpotable uses. The recycled water system would be located within a central treatment plant, to be located southwest of Crisp Road and north of project 6th Avenue, as illustrated in Section I (Project

Description) Figure 18 (Location of Recycled Water Facility), p. 48. The treatment plant would include an anoxic treatment facility, aerobic tanks, membrane filters, OV/Ozone disinfection, storage tanks, a water return distribution system, and a thermal recovery system. All blowers, pumps, treatment systems, and process controls would be located inside the treatment building, a completely enclosed building with a 17-foot-tall ceiling, which would result in a building of approximately 20 feet to 35 feet in height and range in footprint area between 10,000 and 30,000 square feet. Outside of the treatment building would be located various tanks, but no pumps or other sources of noise.

Noise from equipment inside the recycled water treatment building is anticipated to result in exterior noise levels that are at or below existing ambient conditions in the immediate vicinity of this building. The recycled water treatment building would be required to comply with Noise Ordinance Section 2909(b), which limits increases in noise levels at adjacent property lines to less than 8 dBA, and with Noise Ordinance Section 2909(d), which would require control of noise so that interior noise levels at the nearest residential receptor are less than 45 dBA.

As stated in the 2010 FEIR, large HVAC systems associated with the residential, retail and commercial buildings could result in noise levels that average between 50 and 65 dBA L_{eq} at 50 feet from the equipment. HVAC systems associated with the heat exchange system described above may generate similar or lower levels of noise. Noise from mechanical equipment associated with operation of the 2018 Modified Project Variant would be required to comply with California Building Code Title 24 requirements pertaining to noise attenuation, requiring that residential units achieve an interior noise level of 45 dBA during nighttime hours. HVAC equipment would not be anticipated to produce noise levels that would be 5 dBA above the ambient noise level, the threshold under Noise Ordinance Section 2909(a).

Servicing

The 2018 Modified Project Variant, as with the 2010 FEIR, would include servicing of commercial and retail operations associated with the project including delivery of goods and food stuffs, as well as refuse pick up for both the commercial and residential project components. The 2018 Modified Project Variant would include residential units, a hotel, and two schools that also would require servicing of goods and food stuffs.

Delivery of goods and food stuffs would be provided by truck delivery. Noise from truck operations, including diesel engine noise and backup alarms, would be similar to what was evaluated in the 2010 FEIR, and would be temporary, typically lasting no more than 5 minutes. As with the 2010 FEIR, loading docks associated with the 2018 Modified Project Variant would be screened from sensitive receptors both on site and off site by intervening structures and design of the loading spaces. In addition, as noted in the 2010 FEIR, noise generated by authorized City of San Francisco refuse collectors would be limited to 75 dBA per Noise Ordinance Section 2904.

In general, noise associated with servicing residential, hotel, schools, retail and commercial facilities would be similar to what was identified in the 2010 FEIR, comparable to a typical urban environment.

Transit

The 2018 Modified Project Variant would include extensions to four existing MUNI-bus lines, including Route 44-O'Shaughnessy, Route 48-Quintara, BRT Route 28R-19th, and Route 24-Divisidero. Buses traveling along these routes would access the 2018 Modified Project Variant transit center, located on the north side of Spear Avenue, near Dry Dock 2. Buses would drive along new on-site roadways, primarily along two main routes: the North Transit Route, from Innes Avenue to Donahue Street to Lockwood Street to the new transit center (including the 44-O'Shaughnessy, 48-Quintara, and Hunters Point Express routes), and the South Transit Route from Palou Avenue to Crisp Road to Spear Avenue to the new transit center (including 24-Divisadero and San Francisco Rapid Transit routes).

On-site traffic noise from the proposed transit line extensions was evaluated to determine the potential for impacts at future on-site noise-sensitive receiving locations (residences). On-site travel speeds were assumed at 30 mph. Transit noise modeling was completed using the same noise model described in Impact NO-6, the FHWA TNM Lookup tool, version 2.1 (TNM Lookup). Hourly L_{eq} data from TNM Lookup were converted to L_{dn} using the methodology summarized in Impact NO-6.

Future L_{dn} levels along the North Transit route are anticipated to reach up to 62.2 dBA at the nearest residential receivers, assumed to be as near as 30 feet to the center of the roadway at Donahue Street. Actual sound levels may be lower if actual residential setback are farther, or if transit does not reach speeds of 30 mph along this stretch of road.

Future L_{dn} levels along the South Transit route are anticipated to reach up to 60.0 dBA at the nearest residential receivers, assumed to be as near as 50 feet to the center of the roadway at Crisp Road. Actual sound levels may be lower if actual residential setbacks are farther, or if transit does not reach speeds of 30 mph along this stretch of road.

Noise from transit activity may exceed general plan compatibility criteria for residential use at locations nearest the north and south transit routes. However, noise impacts identified above would be at the exterior use areas of the affected residences (e.g., balconies, if applicable). New residential units would be required to adhere to Title 24 noise insulation standards, ensuring indoor noise levels do not exceed 45 dBA L_{dn} with window and doors closed.

Indoor Noise Environments: Noise-Sensitive Uses

Noise-sensitive uses associated with the 2018 Modified Project Variant include residential units, a hotel, and schools. At all locations where people may reside or sleep, such as residential units, the hotel, and school residences, interior noise levels are required to comply with California Building Code Title 24 requirements pertaining to noise attenuation, requiring that interior noise levels do not exceed 45 dBA L_{dn}, and Noise Ordinance Section 2909, which limits noise from fixed sources, as received at interior sleeping or living spaces, to 45 dBA during nighttime hours. There are no major sources of nighttime noise expected as part of the 2018 Modified Project Variant, and future ambient

noise levels are expected to be typical of an urban environment. Further, the 2018 Modified Project Variant would not exacerbate noise conditions for future residents relative to the 2010 FEIR.

The impact would remain less than significant, and no mitigation would be required.

Impact NO-5: Implementation of the Project would not generate or expose persons on or off site to excessive groundborne vibration. ***[Criterion I.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2018 Modified Project Variant does not introduce new operational activities or equipment that would expose persons, either on or off site, to excessive groundborne vibration. As summarized under Impact NO-4, operational equipment associated with 2018 Modified Project Variant CEPs and related infrastructure would be located inside the CEP buildings, and shielded from exposure to sensitive receivers. Further, pumps, blowers, and other equipment associate with the CEPs would not generate substantial levels of vibration, even within the CEP buildings.

The 2018 Modified Project Variant also would include trucks for deliveries and servicing of retail and other commercial facilities, the hotel, and schools. In addition, buses would be present, accessing the project's proposed transit center located on the north side of Spear Avenue, near Dry Dock 2. The transit center would service four existing MUNI-bus lines, including Route 44-O'Shaughnessy, Route 48-Quintara, BRT Route 28R-19th, and Route 24-Divisidero.

In general, and as described in the 2010 FEIR, vibration levels from trucks and buses are relatively low and generally consistent with existing vibration levels in the project area, as well as what would be expected in the project during operation of the 2018 Modified Project Variant. Vibration from trucks and buses would be well below the FTA vibration impact criteria of 80 VdB for human annoyance, as described in the 2010 FEIR, and below the Caltrans perceptibility standards, as defined in Table 16. No other substantial sources of vibration are anticipated with the 2018 Modified Project Variant. The impact would remain less than significant, and no mitigation would be required.

Impact NO-6: Operation of the Project would generate increased local traffic volumes that could cause a substantial permanent increase in ambient noise levels in existing residential areas along the major Project site access routes. ***[Criterion I.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2018 Modified Project Variant would not change the 2010 FEIR's findings of significant and unavoidable impact with respect to operational traffic noise in existing residential areas along the major Project site access routes. Additionally, the operational traffic noise cumulative impact conclusions would similarly not be altered.

The 2010 FEIR documented a significant increase in traffic noise at selected area roadways due to project-related traffic volume increases. The 2010 FEIR analysis was based on the FTA noise impact criteria that evaluate the existing and future noise environments, and allowed increases in traffic noise based on comparisons between future baseline (i.e., 2030 without project) and future baseline plus project, as well as existing and existing plus project conditions.

Similar to the traffic impact discussion in the 2010 FEIR, the 2018 Modified Project Variant would add to existing traffic volumes along roadways in the project vicinity. Project-related traffic volumes would increase slightly when compared to the 2010 FEIR due to the addition of residential units, retail spaces, and schools, as well as additional parking capacities. Traffic Report Table 2 specifically compares the 2018 Modified Project Variant to the 2010 Project and the R&D Variant (Variant 1) in terms of both vehicle trips and transit trips.

The 2010 FEIR evaluated impacts along ten roadway segments, including near the Candlestick Point and the Hunters Shipyard regions of the 2010 FEIR study area. For the 2018 Modified Project Variant, a smaller set of intersections was evaluated, focusing on roadways in the immediate vicinity of the 2018 Modified Project Variant area that would be most affected by Project-related changes in traffic compared with the 2010 FEIR. The roadway segments evaluated for this project included Innes Avenue south of Earl Street, Palou Avenue east of Third Street, Gilman Avenue east of Third Street, Jamestown Avenue north of Harney Way, and Harney Way west of Jamestown Avenue.

The following impact analysis compares traffic noise based on existing and future traffic volumes identified in the 2010 FEIR (i.e., based on 2009 existing data, and on 2030 future baseline data) with traffic noise based on project-related traffic volumes identified in the 2018 Modified Project Variant Traffic Report. Traffic Noise levels were calculated using the FHWA Traffic Noise Model (TNM) Lookup tool, version 2.1 (TNM Lookup).[70] Traffic compositions were assumed to be 97 percent light-duty vehicles, 2 percent medium duty vehicles, and 1 percent heavy duty vehicles, based on existing uses in the project area. The 2018 Modified Project Variant was conservatively assumed to result in similar future traffic compositions along area roadways. Existing area speed limits were derived through site observations and/or though review of Google Earth Street View. Setback distances from roadway centerline to the nearest affected noise-sensitive receiver were based on the same distance setbacks provided in the 2010 FEIR. A detailed summary of traffic data used for this assessment is provided in Addendum 5 Appendix G Table G-3 (Traffic Volumes, Composition, and Speeds Assumed for Operational Impact Assessment).

Buses were included in the traffic noise assessment for 2018 Modified Project Variant traffic volumes. Existing transit volumes were included in existing and future traffic scenarios.[71] As noted,

[70] Note that the 2010 FEIR employed the full version of the FHWA TNM noise model, Version 2.5 (TNM 2.5), which is based on the same traffic noise calculation algorithms that are used in TNM Lookup. The 2018 Modified Project Variant employed TNM Lookup in lieu of TNM 2.5 because TNM Lookup allowed for a more streamlined assessment of traffic noise through increased flexibility and ease of use during assessment of traffic data.

[71] San Francisco Municipal Transportation Agency, Muni System Map. Available at https://www.sfmta.com/maps/muni-system-map, accessed December 20, 2017.

the 2018 Modified Project Variant would include extension of four existing MUNI-bus lines, including Route 44-O'Shaughnessy, Route 48-Quintara, BRT Route 28R-19th, and Route 24-Divisidero.

Afternoon peak-hour L_{eq} traffic noise levels, as determined using the TNM Lookup model, were converted to 24-hour L_{dn} values using the same procedure identified in the 2010 FEIR. That is, L_{dn} values were computed through comparison of peak-hour L_{eq} noise model data and the nearest long-term sound level measurement data. The relative change in existing diurnal sound levels over a 24-hour period was used to calculate hourly L_{eq} over a 24-hour period, and then to compute the L_{dn}. The long-term measurement data and locations are documented in the 2010 FEIR Appendix I1 (Wilson Ihrig San Francisco 49ers Stadium Operational Noise Study, October 15, 2009).

The 2010 FEIR applied FTA noise impact criteria to determine traffic noise impacts at nearby receivers. Therefore, these same criteria were applied for the 2018 Modified Project Variant, applying the modeling methods described above. Results of this modeling assessment, compared with 2010 FEIR impact determinations, are provided in Table 18 (Modeled Traffic Noise Levels Compared with the 2010 FEIR). A summary of cumulative impacts, compared with 2010 FEIR impact determinations, is provide in Table 19 (Modeled Traffic Noise Levels Compared with the 2010 FEIR, Cumulative).

The FTA impact criteria (i.e., allowable increase) are based on either existing sound levels, or future 2030 baseline sound levels (as identified in Table 18 and Table 19, respectively). Noise modeling results of existing sound levels and future 2030 baseline sounds levels, for the *same* roadway segments identified in the 2010 FEIR, yielded generally higher sound levels for the 2018 Modified Project Variant, and may be due to differing traffic compositions. Regardless, the 2018 Modified Project Variant's higher existing and future baseline sound levels result in lower (i.e., more stringent) FTA impact criteria at four of the five roadways segments identified in Table 18. In addition, Project-related noise is predicted to increase more than was assumed in the 2010 FEIR at the three roadway segments identified in Table 18 (due to revised project-related traffic projections), resulting in a significant impact along roadway segments where the previous analysis indicated there would not be a significant impact. Therefore, more roadway segments would be expected to experience noise impacts than predicted in the 2010 FEIR under Project conditions (see Table 18). Impact NO-6, however, broadly found that there would be a significant and unavoidable permanent noise impact "in existing residential areas along the major Project site access routes," rather than individual locations. Additionally, the 2030 buildout date for the Project, which was used above in Table 18 to identify 2018 Modified Project Variant project-level contributions to the noise impacts at selected locations along the Project access routes, coincides with the cumulative buildout year of 2030. As shown in Table 19, below, all of the selected study locations were identified in the 2010 FEIR and in Addendum 5 as significant and unavoidable under the 2030 cumulative plus Project scenario.

TABLE 18 MODELED TRAFFIC NOISE LEVELS COMPARED WITH THE 2010 FEIR

Roadway[a]	*Existing Noise Level*	*2030 Without Project (as modeled in 2018)*	*2030 With Project (as modeled in 2018)*	*2018 MPV Increase over Future Background (as modeled in 2018)*	*Allowable Increase*[b]	*2018 MPV Significant Impact?*	*2010 Project Increase over Future Background (as modeled in 2010)*	*2010 Project Significant Impact?*
Innes Avenue south of Earl Street[c]	65.9	74.6	76.5	1.9	0	**Yes**	N/A	N/A
Palou Avenue east of Third Street	61.9	65.5	67.3	1.8	1	**Yes**	0.5	No
Gilman Avenue east of Third Street	61.4	64.3	68.0	3.7	2	**Yes**	4.0	**Yes**
Jamestown Avenue north of Harney Way	58.3	64.9	66.6	1.7	1	**Yes**	5.7	**Yes**
Harney Way west of Jamestown Avenue	57.1	67.8	70.6	2.8	1	**Yes**	0.6	No

NOTES:

1. All sound levels are L_{dn}, dBA.
2. Noise modeling was completed for the 2010 FEIR and separately for the 2018 Modified Project Variant. This table includes a summary of results from both modeling studies, indicated as either "as modeled in 2010" or "as modeled in 2018."
3. Noise levels calculated for the 2018 Modified Project Variant were computed using TNM Lookup based on traffic volumes provided within the Project traffic assessment report. L_{dn} computed through comparison with existing sound level measurements reported in 2010 FEIR Appendix I1 (Wilson Ihrig San Francisco 49ers Stadium Operational Noise Study, October 15, 2009). Note that traffic noise levels calculated for the 2010 FEIR were computed using the FHWA Traffic Noise Model, Version 2.5, which is based on the same traffic noise calculation algorithms that are used in TNM Lookup.
4. Traffic composition for the 2018 Modified Project Variant assumes 97 percent light duty vehicles, 2 percent medium duty vehicles, and 1 percent heavy duty vehicles.

a. The 2010 FEIR evaluated impacts along ten roadway segments, including near the Candlestick Point and the Hunters Shipyard regions of the 2010 FEIR study area. For the 2018 Modified Project Variant, the analysis focuses on roadways in the immediate vicinity of the Project area (CP and HPS2) that would be most affected by changes in Project-related traffic when compared with the 2010 FEIR.

b. Allowable increase thresholds based on FTA criteria specified in Table III.1-9 of the Transit Noise Impact and Vibration Assessment, May 2006.

c. Previous study included "Innes north of Carroll Avenue." However, because these two streets do not meet, Ramboll analyzed the next closest intersection on Innes to the Hunter's Point Development.

As noted in Table 19, cumulative plus Project increases in traffic noise over existing conditions range from 5.4 to 13.5 dBA. Cumulative increases in traffic noise over existing conditions is approximately consistent with the range of increases identified for most roadway segments identified in the 2010 FEIR. For Harney Way west of Jamestown Avenue, the cumulative noise increase over existing conditions increased from 7.0 dBA in the 2010 FEIR to 13.5 dBA for 2018 Modified Project Variant. The higher increase in noise is due to a combination of increases in cumulative background traffic and Project-related traffic above what was predicted for the 2010 FEIR.

TABLE 19 MODELED TRAFFIC NOISE LEVELS COMPARED WITH THE 2010 FEIR, CUMULATIVE

Roadway[a]	*Existing Noise Level*	*2030 Without Project (as modeled in 2018)*	*2030 With Project (as modeled in 2018)*	*2018 MPV Cumulative + Project Increase over Existing (as modeled in 2018)*	*Allowable Increase*[b]	*2018 MPV Significant Impact?*	*2010 Cumulative + Project Increase over Existing (as modeled in 2010)*	*2010 Significant Cumulative Impact?*
Innes Avenue south of Earl Street[c]	65.9	74.6	76.5	10.6	1	**Yes**	7.6	**Yes**
Palou Avenue east of Third Street	61.9	65.5	67.3	5.4	2	**Yes**	5.3	**Yes**
Gilman Avenue east of Third Street	61.4	64.3	68.0	6.6	2	**Yes**	6.9	**Yes**
Jamestown Avenue north of Harney Way	58.3	64.9	66.6	8.3	3	**Yes**	9.8	**Yes**
Harney Way west of Jamestown Avenue	57.1	67.8	70.6	13.5	3	**Yes**	7.0	**Yes**

NOTES:

1. All sound levels are L_{dn}, dBA.
2. Noise modeling was completed for the 2010 FEIR and separately for the 2018 Modified Project Variant. This table includes a summary of results from both modeling studies, indicated as either "as modeled in 2010" or "as modeled in 2018."
3. Noise levels calculated for the 2018 Modified Project Variant were computed using TNM Lookup based on traffic volumes provided within the Project traffic assessment report. L_{dn} computed through comparison with existing sound level measurements reported in 2010 FEIR Appendix I1 (Wilson Ihrig San Francisco 49ers Stadium Operational Noise Study, October 15, 2009). Note that traffic noise levels calculated for the 2010 FEIR were computed using the FHWA Traffic Noise Model, Version 2.5, which is based on the same traffic noise calculation algorithms that are used in TNM Lookup.
4. Traffic composition assumes 97 percent light duty vehicles, 2 percent medium duty vehicles, and 1 percent heavy duty vehicles

a. The 2010 FEIR evaluated impacts along ten roadway segments, including near the Candlestick Point and the Hunters Shipyard regions of the 2010 FEIR study area. For the 2018 Modified Project Variant, the analysis focuses on roadways in the immediate vicinity of the Project area that would be most affected by changes in Project-related traffic when compared with the 2010 FEIR.

b. Allowable increase thresholds based on FTA criteria specified in Table III.1-9 of the Transit Noise Impact and Vibration Assessment, May 2006.

c. Previous study included "Innes north of Carroll Avenue." However, because these two streets do not meet, Ramboll analyzed the next closest intersection on Innes to the Hunter's Point Development.

Note that the 2010 FEIR states that "Project operations would create a substantial permanent increase in traffic noise levels that would affect existing and future residential uses along all Project site access roads" (2010 FEIR, p. III.I-53). Thus, a conclusion of significant unavoidable impacts for residential uses along all Project site access roads was identified in the 2010 FEIR and that conclusion remains unchanged with the 2018 Modified Project Variant. Additionally, there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact NO-8: Implementation of the Project would not expose residents and visitors to excessive noise levels from flights from San Francisco International Airport such that the noise would be disruptive or cause annoyance. ***[Criteria I.e, I.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR describes the location of the project as being well outside of the San Francisco International Airport's (SFO) existing and foreseeable future 65 dBA CNEL noise contour. The 65 dBA CNEL noise contour is described by the Federal Aviation Authority (FAA) as the impact threshold level for noise-sensitive land use such as residences.

New buildings constructed for the 2018 Modified Project Variant, including where people may sleep (residences, hotel, school dormitories), must be constructed according to the Title 24 Noise Insulation Standards. These standards require that interior spaces do not exceed 45 dBA L_{dn} (or CNEL, depending on which descriptor is used in the applicable general plan noise element) in any habitable room, with all doors and windows closed. Therefore, proposed noise-sensitive uses where aircraft may be audible would require sufficient noise insulation to meet the Title 24 requirements.

In summary, there are no changes to the Project that would require revisions of the 2010 FEIR; accordingly, the impact would remain less than significant, and no mitigation would be required.

II.B.9 Cultural Resources and Paleontological Resources

	Criterion	*Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)*	*Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?*	*Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?*	*Any New Information of Substantial Importance?*	*Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant*
5.	**Cultural Resources.** Would the project:					
J.a	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5, including those resources listed in Article 10 or Article 11 of the *San Francisco Planning Code*?	2010 FEIR p. III.J-33 (Impact CP-1b); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-1b.1, MM CP-1b.2
J.b	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	2010 FEIR p. III.J-39 (Impact CP-2b); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-2a
J.c	Disturb any human remains, including those interred outside of formal cemeteries?	2010 FEIR p. III.J-35 (Impact CP-2a); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-2a
J.d	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature as defined in CEQA Guidelines Section 15064.5 (3)?	2010 FEIR p. III.J-41 (Impact CP-3b); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-3a

Changes to Project Related to Cultural Resources and Paleontological Resources

The 2018 Modified Project Variant would include new construction in and around Dry Dock 4, an individually eligible historical resource. These Project changes, analyzed below, include construction of Water Room, including seating surrounding Dry Dock 4, two bridges (including the Water Room Bridge and Eastern Bridge), and a water taxi service at Dry Dock 4.

Comparative Impact Discussions

Impact CP-1b: Construction at HPS Phase II could result in a substantial adverse change in the significance of an historical resource. ***[Criterion J.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Less than Significant with Mitigation

The 2018 Modified Project Variant would include new construction in and around Dry Dock 4, an individually eligible historical resource. These Project changes include construction of Water Room, including seating surrounding Dry Dock 4, two bridges including the Water Room Bridge and

Eastern Bridge, and a water taxi ramp at Dry Dock 4. These Project changes are currently conceptual and their design is under development. However, the Project changes would not adversely impact Dry Dock 4 because the Project would adhere to the Secretary of the Interior's Rehabilitation Standards (SOI Standards) and would, thereby, protect the historic significance of Dry Dock 4. Project conformance with the SOI Standards would be governed by Preservation Guidelines that have been prepared by a qualified preservation consultant and would be required by the proposed amended DDA. The Preservation Guidelines are supported by substantial information on the history, eligibility, character-defining features, and condition of Dry Dock 4, and are provided in Addendum 5 Appendix H (Historic Resources Memorandum). Therefore, with incorporation of the Preservation Guidelines as a Project Design Feature, the Project would conform to the SOI Standards and would have a less-than-significant impact on Dry Dock 4, and after Project completion, the historic significance of Dry Dock 4 would be retained and would be materially unimpaired.

As described on 2010 FEIR p. III.J-21, two historical resources are situated within the vicinity of the HPS2 project site, including the Hunter's Point Commercial Dry Dock and Naval Shipyard Historic District (District), and Dry Dock 4 that is an individual resource.

The District, described in greater detail in Addendum 5 Appendix H, consists of 11 contributing buildings, structures, and objects associated with the area's "transition from early commercial dry-dock operation to high tech naval repair and Radiological research" (Circa Historic Property Development, *Hunter's Point Commercial Dry Dock and Naval Shipyard Historic District DPR Form*, October 31, 2008).

Dry Dock 4 and six buildings and structures in the District were previously determined eligible for the National Register of Historic Places (National Register) by consensus through the Section 106 process and are, therefore, automatically listed in the California Register of Historical Resources by act of law (Bonnie I. Baumberg, Urban Programmers, *Historical Overview of Hunters Point Annex, Treasure Island Naval Base and Descriptions of Properties that Appear to Qualify for Listing in the National Register of Historic Places*, 1988; Letter, Louis S. Wall, Department of the Navy to Lee Keatings, Advisory Council on Historic Preservation, October 15, 1998—findings of May 29, 1998, letter from SHPO to Navy are stated in this letter). Later, five additional structures were identified as contributors to the District in the 2008 survey.

Of these, only Dry Dock 4, as shown in Table 20 (Identified Historical Resources) and discussed below, would be potentially impacted by the 2018 Modified Project Variant. However, the Project would include Preservation Guidelines for Dry Dock 4 that would ensure the proposed improvements would conform to the SOI Standards; therefore, potential impacts would be less than significant pursuant to CEQA.

TABLE 20 IDENTIFIED HISTORICAL RESOURCES

Structure	*Date*	*CRHR Status Code*	*Eligibility*	*Resources Affected under Addendum 5*
140	1918	2D2*	NR/CR District Contributor	No Adverse Impact
204	1901	2D2*	NR/CR District Contributor	No Adverse Impact
205	1901	2D2*	NR/CR District Contributor	No Adverse Impact
207	ca. 1930 (remod. 1942)	2D2*	NR/CR District Contributor	No Adverse Impact
208	ca. 1930 (remod. 1942)	3CD**	CR District Contributor	No Adverse Impact
211	1942	3CD**	CR District Contributor	No Adverse Impact
224	1944	3CD**	CR District Contributor	No Adverse Impact
231	1942–45	3CD**	CR District Contributor	No Adverse Impact
253	1947	3CD**	CR District Contributor	No Adverse Impact
Dry Dock 2	1903	2D2*	NR/CR District Contributor	No Adverse Impact
Dry Dock 3	1918	2D2*	NR/CR District Contributor	No Adverse Impact
Dry Dock 4	1943	2S2***	NR/CR Individual Property	Potential Impact that is Less than Significant

* Contributor to district determined eligible for NR by consensus through Section 106 process. Listed in the CR.
** Appears eligible for CR as a contributor to a CR eligible district through survey evaluation.
*** Individual property determined eligible for NR by a consensus through Section 106 process. Listed in the CR.

Dry Dock 4

Dry Dock 4 is a graving dock that has been determined eligible for listing in the National Register of Historic Places by consensus through the Section 106 process and is listed in the California Register of Historical Resources under for its association with the events and patterns identified in the defense of the United States during World War II and as a significant marine engineering entity. It is significant under Criterion A of the National Register and Criterion 1 of the California Register for its association with events related to the defense of the United States during World War II, and under Criterion C of the National Register and Criterion 3 of the California Register as a significant marine engineering entity. The period of significance is October 1942 when construction began, through August 15, 1945, the end of World War II. In the context of marine architecture, Dry Dock 4 is the largest graving dry dock on the Pacific Coast and is one of the largest in the world. Within the context of stateside Naval facilities of World War II, Dry Dock 4 was one of the more important structures constructed and one of the largest topographical alterations undertaken during the 1940s to expand a naval facility. Despite recent removal of adjacent mobile cranes and trackage, Dry Dock 4 retains a high degree of integrity of materials, design, workmanship, setting, feeling, location and association (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008). The structure has been documented for the Historic American Engineering Record (HAER) by Steven R. Black in 1994, and the records are held by the Library of Congress.

Dry Dock 4 Character-Defining Features

This description of character-defining features is based upon the Dry Dock 4 National Register nomination form, HAER Report, and a site visit conducted by ESA's qualified architectural historian, Dr. Margarita Jerabek, on Thursday, November 2, 2017.

- Dry Dock 4 is a reinforced-concrete graving dock measuring 1,096 feet long, 171 feet wide, and 53 feet deep. Completed in June 1943, it includes a floating caisson and underground pump and control rooms.
- The land or deck immediately adjacent to the dry dock is dominated by wide expanses of concrete or asphalt with embedded crane tracks (covered with asphalt), steel bollards, and capstans along the perimeter of the dry dock.
- Coping protrudes over the top portion of the dry-dock wall; service galleries with trapezoidal faces, and stairwells are built into the coping.
- Cleats are placed at even intervals along the curb.
- Chain handrails run along the curb and down the concrete stairwells.
- Crane tracks surround the dry dock (covered with asphalt).
- A series of mooring bollards border the perimeter and some of the original 13 electrically powered capstans are also present around the perimeter, outside the location of the nonvisible crane tracks.
- Two entrances to the pump room are sited on the south side of the east end of the dry dock, each with a descending staircase and sliding grates covering the opening.

Nonvisible contributing character-defining features of Dry Dock 4 include:

- The cross section profile of Dry Dock 4 reveals a relatively simple reinforced concrete design. Rather than having multiple altars (steps in the wall of a dry dock) like nearby Dry Docks 2 and 3, it has one altar a few feet beneath the service galleries. Walls descend at an angle from the altar to the thin reinforced concrete slab dry-dock floor.
- Drainage tunnels beneath the floor extend along both sides of the dry dock. A utility tunnel, beneath the coping and behind the service galleries, runs along the perimeter. Dry Dock 4 floods through two 8-foot valves installed in flooding culverts, located on either side of the dry dock near the entrance. Once the valves were opened, it took 1 hour to flood the dry dock through the culverts. Both valves were accessible through manholes and controlled from the pump room.
- The underground pump room for Dry Dock 4 is located south of the dry dock, near the entrance (east) end. The pump and control rooms are constructed of reinforced concrete formed integrally with the bedrock and dry-dock wall. The design allowed cranes to lift equipment in and out of the rooms through a flush-to-grade concrete roof made of removable sections. Three S. Morgan Smith axial flow pumps powered by General Electric synchronous motors could dewater Dry Dock 4 in 2.5 hours, if all three pumps operated at

full capacity. Byron Jackson, 150-horsepower, deep-well, turbine-type drain pumps, located in the lower level of the pump room, could be operated manually or automatically.

Noncontributing alterations include:

- Dry Dock 4 has received few major alterations over its 66-year history, the most notable include the filling of bilge block slots and drainage trenches in the dry-dock floor (date unknown), addition of three steel pipes in the south-side utility tunnel in 1957 when the crane track was extended on that side of the dry dock, addition of six small service galleries and the lengthening of four original service galleries in 1972, and construction of additional salt water and electrical services to accommodate larger ships in the 1980s.

Project Description (Related to Historic Resources)

The 2010 Project, as approved, proposes to retain the buildings and structures in the District and Dry Dock 4 that were determined eligible for listing in the National Register and are listed in the California Register. Dry Docks 2, 3, and 4 and Buildings 140, 204, 205, and 207 would be rehabilitated in conformance with the SOI Standards. Rehabilitation of the dry docks would include repair of concrete surfaces and addition of guardrails along their perimeter.

Buildings that were later identified as contributors to the District in the 2008 survey and are eligible for the California Register (i.e., not determined eligible for the National Register and not listed in the California Register), Buildings 211, 224, 231, and 253 were identified for preservation under Subalternative 4a, CP-HPS Phase II Development Plan with Historic Preservation. The 2010 FEIR found that the project, with the adoption of Subalternative 4a, would not result in a significant adverse impact to the District that would affect its eligibility for inclusion in the California Register. The decision-makers adopted the preservation alternative when they approved the 2010 CP-HPS2 Project. In addition, two mitigation measures were included in the 2010 FEIR, provided below, to minimize impacts to historic resources.

The 2018 Modified Project Variant would include project modifications that may impact Dry Dock 4, including the addition of two bridges over the dry dock, provision of water taxi service from Dry Dock 4, and creation of the Water Room surrounding the dry dock that would be programmed to serve as a central community gathering point and new seating.

The 2018 Modified Project Variant includes new construction related to Dry Dock 4 that was not included in the 2010 FEIR and, therefore, is the focus of the analysis related to historic resources. Previously, the only scope related to Dry Dock 4 in the 2010 FEIR was to repair the concrete and replace a fence. Under the 2018 Modified Project Variant, new construction would occur in the vicinity of Dry Dock 4 including regrading of the site, construction of the Water Room with seating around Dry Dock 4, construction of two new bridges over Dry Dock 4 including the Water Room Bridge and the Eastern Bridge, and installation of a water taxi ramp at Dry Dock 4. Although Dry Dock 4 would be retained intact under the 2018 Modified Project Variant, potential adverse impacts may occur to the character-defining features, materials, and contributing setting of Dry Dock 4 that

could result in a potentially significant impact if they do not avoid direct physical impacts to Dry Dock 4 including its visible, subsurface, and submerged features or indirect impacts to the associated setting. Current project plans are conceptual and are expected to evolve as the project progresses through design development and construction plans are finally prepared. Therefore, to project the historic integrity and significance of Dry Dock 4, Preservation Guidelines shall govern the project including the proposed landscape improvements, bridges, and taxi ramp to ensure they are designed and constructed in conformance with the SOI Standards as the project develops. The Preservation Guidelines have been prepared by a qualified preservation consultant and are supported by substantial available information on the history and condition of Dry Dock 4. The Preservation Guidelines include guiding principles outlined in Table 21 (Dry Dock 4 Preservation Guidelines) that would ensure conformance with the SOI Standards.

TABLE 21 DRY DOCK 4 PRESERVATION GUIDELINES

Secretary of the Interior's Standards for Preservation (Applicable Provisions)
1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
Dry Dock 4: Guiding Principles
● The proposed treatment of Dry Dock 4 shall follow the requirements outlined in the Memorandum of Agreement (MOA) between the United States Navy, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer regarding the interim leasing and disposal of historic properties on the former Hunters Point Naval Shipyard in San Francisco, California, under which the lease agreements require tenants to follow the recommended practices of the SOI Standards in maintaining or adapting these historic properties for use.
● Proposed treatment of Dry Dock 4 shall follow the treatment plan and methods developed for CP-HPS2 that has been previously found to conform to the SOI Standards (Lada Kocherovsky and Richard Sucre, Memorandum regarding Secretary of the Interior's Standards Evaluation of Proposed Treatments for Dry Docks 2, 3, and 4, October 5, 2009, prepared by Page & Turnbull for Therese A. Brekke, Lennar Urban) and are outlined by Moffatt & Nichol in a series of reports: ○ Moffatt & Nichol, *Candlestick Point/Hunter's Point Redevelopment Project, Proposed Shoreline Improvements* (September 2009); ○ Moffat & Nichol, *Hunter's Point Shoreline Structures Rapid Reconnaissance Investigation* (June 2009); and ○ Moffat & Nichol, *Hunters Point Shoreline Structures Assessment* (August 2009).
● Dry Dock 4 is identified in the National Register of Historic Places as a structural resource under the applicable criteria of "event: architecture engineering" and, more specifically, with an area of significance related to military engineering. The Standards for Preservation and Guidelines for Preserving Historic Buildings apply not only to historic buildings, but also to a variety of historic resource types eligible to be listed in the National Register of Historic Places, including buildings, sites, structures, objects, and districts. Accordingly, proposed modifications to Dry Dock 4 shall comply with the Standards for Preservation outlined in the

TABLE 21 DRY DOCK 4 PRESERVATION GUIDELINES

SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[72] which require conformance with the above Standards for Preservation.

Dry Dock 4: Preservation Guidelines

Preservation Guidelines for Dry Dock 4 have been developed to guide the preliminary design of the improvements associated with Dry Dock 4. These guidelines may be refined as part of the final design provided the following occurs:

- All character-defining features, materials, finishes, and construction techniques or examples of craftsmanship of Dry Dock 4 would be permanently retained;
- The bridge and abutment design and construction process would not permanently and irreversibly remove character-defining features or materials of the dry dock or its setting;
- The two bridge spans would not permanently and irreversibly alter character-defining features of the dry dock;
- The open visual character of Dry Dock 4 and the spaces and spatial relationships between the water-filled dry dock and adjacent deck around the dry dock whose outer limits are defined by the location of the bollards that surround the dry dock would be permanently retained;
- Grading required to protect the site from sea level rise may require that the bollards surrounding the dry dock would be temporarily removed, but they would be returned to a location that retains the horizontal, spatial relationship between the bollards and the dry dock;
- The installation of seating around the dry dock would occur on top of the land surface and would be provided in a manner that integrates the seating with a gradual raise in the proposed grade of the surrounding dry dock to accommodate sea level rise and would not permanently and irreversibly remove any character-defining materials or features;
- The seating would preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting;
- While the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting would be preserved, the design would still allow for active and passive recreational uses;
- The design would be modern in character and differentiated from the historic structure, and no changes would be made that would create a false sense of historical development or add conjectural features;
- The design would be differentiated from the old and would be contemporary and industrial in aesthetic and utilitarian in the use of materials;
- The design would be compatible with the historic materials, features, size, scale and proportion, and massing protect the integrity of the dry dock and setting;
- The design would not obscure the character-defining features, spaces, spatial relationships, or views of the dry dock; and
- The design would be reversible to allow the new construction to be removed in the future, which would ensure that the integrity and significance of Dry Dock 4 would not be materially impaired.

With inclusion of the Preservation Guidelines as part of the 2018 Modified Project Variant, project conformance with the SOI Standards would be ensured, the historic significance of Dry Dock 4 would be protected, and the eligibility of the historical resource after project completion would remain unimpaired.

The 2018 Modified Project Variant was reviewed for conformance with the Standards for Rehabilitation (Department of Interior regulations, 36 CFR 67). Generally, a project that follows the SOI Standards shall be considered mitigated to a less-than-significant impact on the historical resource, pursuant to CEQA. With incorporation of the Preservation Guidelines as a Project Design Feature, the proposed modifications included in the 2018 Modified Project Variant were found to be in full conformance with the SOI Standards, as discussed in detail in Addendum 5 Appendix H. The impact would remain less than significant with implementation of mitigation measures MM CP-1b.1 and MM CP-1b.2 and conformance with the previously discussed SOI Standards.

[72] U.S. Department of the Interior, 2017.

Impact CP-2b: Construction at HPS Phase II would not result in a substantial adverse change in the significance of archaeological resources, including prehistoric Native American resources, Chinese fishing camps, and maritime related resources. ***[Criterion J.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, records indicate that three, and possibly four, prehistoric archaeological sites are located within HPS2, including CA-SFR-11, CA-SFR-12, CA-SFR-13, and CA-SFR-14. All of the sites are reported to be shellmounds or shell midden sites. In addition, previous archaeological investigations have shown that prehistoric archaeological sites in the HPS2 project area tend to be located along the original shoreline. Therefore, it was determined in the 2010 FEIR it was possible that project-related construction activities may encounter previously unknown prehistoric archaeological resources anywhere within the development footprint.

Research cited in the 2010 FEIR indicated that two possible locations for a Chinese fishing camp were identified at HP. By 1910, five of the nineteen remaining Chinese fishing camps were located at HP. At least eleven fishing camps were observed along HP shoreline in the 1930s. In addition to Chinese fishing camps, HP had numerous maritime-related industries, including dry docks and boarding houses. There were also several historically-documented large offshore "rocks" that presented navigational hazards before the land surrounding them was reclaimed. Therefore, it is possible that historic archaeological resources, including Chinese fishing camps, remains of maritime-related industries, and buried shipwrecks may occur within the HPS2 project area.

Mitigation measure MM CP-2a from the 2010 FEIR would reduce the potentially significant effects of construction-related activities to the archaeological resources in the HPS2 project area to a less-than-significant level by mitigating for the permanent loss of the adversely affected archaeological resources through implementation of the *Archaeological Research Design and Treatment Plan for the Bayview Waterfront Project, San Francisco, California*. This measure would reduce the impact to a less-than-significant level by ensuring that an archaeological testing program is performed and that any discovered resources are appropriately handled, and documented.

The 2018 Modified Project Variant includes a number of Project components described in detail in Section I (Project Description) that would result in ground disturbance that could potentially impact archaeological resources. These components include: adjusted locations for two high-rise towers; reconfiguration of the design and sizes of parks and open space areas; revisions to the number of housing units proposed by the Project Sponsor; revisions to the street network and roadway cross-section dimensions and alignments; the provision of water taxi infrastructure and two bridges; and revisions to the proposed utility network and systems. As with the 2010 FEIR Utilities Variant 4, the 2018 Modified Project Variant would include a solar system, a recycled water facility, and district heating and cooling plants; in addition, the 2018 Modified Project Variant would also include a geothermal heating and cooling system (as a component of the district heating and cooling plants)

and utility-scale and building-scale battery storage systems. Most of these Project changes are currently conceptual and their design is under development.

Analysis in the 2010 FEIR determined it was possible that any Project-related construction activities could encounter previously unknown archaeological resources anywhere within the development footprint. The 2010 FEIR mitigation measure MM CP-2a reduced the impact to archaeological resources to less than significant by requiring a comprehensive archaeological sensitivity analysis of the entire Project footprint and implementation of an archaeological testing program in archaeologically sensitive areas. Therefore, although 2018 Modified Project Variant components listed above would include extensive ground disturbance, there are no changes to the Project that would result in new significant impacts to archaeological resources because the 2010 FEIR already analyzed the entire Project footprint and determined that any Project-related construction activities could impact archaeological resources, and the 2010 FEIR included mitigation to reduce the potential impact to less than significant.

All of the proposed modifications in the 2018 Modified Project Variant were previously analyzed in the 2010 FEIR except for the ground source geothermal heating and cooling system. This system would include approximately 2,800 geothermal boreholes installed to a depth of approximately 600 feet, with diameters of up to 6 inches, and have the potential to impact archaeological resources. However, the 2,800 geothermal boreholes would be within the original CP-HPS2 Project footprint and are, therefore, within the area analyzed by the 2010 FEIR. Some of the geothermal borehole locations would be located within archaeologically sensitive areas, but mitigation measure MM CP-2a is sufficient to reduce the potential impact from the boreholes to archaeological resources to a less-than-significant level. Mitigation measure MM CP-2a requires a comprehensive archaeological testing program guided by an approved archaeological testing plan that identifies the property types of the expected archaeological resource(s) that could potentially be adversely affected by the Project, the testing method to be used, and the locations recommended for testing. The archaeological testing program would determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA. If the testing program identifies an archaeological resource that constitutes a historical resource under CEQA, mitigation measure MM CP-2a would ensure that such resource would be appropriately documented through data recovery and reporting. Mitigation measure MM CP-2 is a comprehensive requirement to mitigate impacts to significant archaeological resources, and as a result, there would be no changes to the Project that would result in new significant impacts to archaeological resources.

Fulfilling the requirements of mitigation measure MM CP-2a is already underway for the 2018 Modified Project Variant. An archaeological sensitivity assessment and testing plan has been prepared to address mitigation measure MM CP-2a from the 2010 FEIR and was approved by the San Francisco Planning Department Environmental Planning Division (EP) in June 2017. The document provides a detailed analysis of archaeological sensitivity in HPS2, including all areas incorporated within the 2018

Modified Project Variant, and it requires archaeological testing to identify both prehistoric and historic archaeological resources to be conducted in archaeologically sensitive areas. The archaeological testing plan includes a series of 142 archaeological cores to test areas determined sensitive for prehistoric archaeological resources, and up 32 test trenches to investigate areas of historic archaeological sensitivity. Fieldwork to implement the archaeological testing plan is scheduled to be conducted in 2018.

To assess the adequacy of the approved June 2017 archaeological testing plan to address potential impacts from the proposed geothermal boreholes proposed for the 2018 Modified Project Variant, the planned geothermal borehole locations were overlaid onto a map of archaeological sensitivity and planned archaeological core locations prepared for the 2018 Modified Project Variant. The results indicate that the planned geothermal borehole locations would straddle areas that range from highest to lowest archaeological sensitivity. The archaeological testing plan identifies a number of archaeological cores within the footprint of the geothermal boreholes that would overlap with areas of highest and high archaeological potential. There are several areas where the proposed geothermal boreholes would overlap with areas of highest and high archaeological potential where no archaeological cores are planned. However, additional archaeological cores may be necessary to augment the approved archaeological testing plan in the areas where geothermal boreholes may be installed to adequately test for the presence of buried archaeological resources. This assessment is reflected in revisions to 2010 FEIR mitigation measure MM CP-2a. The archaeological consultant shall prepare and submit to the ERO for review and approval an addendum to the approved HPS2 archaeological testing plan (ATP), which shall identify the archaeological resource(s) that potentially could be adversely affected by ground-disturbing components of the 2018 Modified Project Variant. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM CP-2a: Mitigation to Minimize Impacts to Archaeological Resources at Candlestick Point.** Based on a reasonable presumption that archaeological resources may be present within the Project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Project on buried or submerged historical resources.
>
> Overview: The Project Applicant shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical ~~archeology~~ archaeology. The archaeological consultant shall ~~undertake an~~ augment the approved archaeological testing program as specified herein. In addition, the archaeological consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure. The archaeological consultant's work shall be conducted in accordance with this measure and with the requirements of the Project Archaeological Research Design and Treatment Plan (Archeo-Tec~~.~~, *Archaeological Research Design and Treatment Plan for the Bayview Waterfront Project, San Francisco, California*, 2009) at the direction of the City's Environmental Review Officer (ERO). In instances of inconsistency between the

requirement of the Project Archaeological Research Design and Treatment Plan and of this archaeological mitigation measure, the requirement of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5(a)(c) to a less-than-significant level.

Archaeological Testing Program: The archaeological consultant shall prepare and submit to the ERO for review and approval an addendum to the approved HPS2 archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP addendum. The ATP addendum shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by ground-disturbing components of the 2018 Modified Project Variant, including ground source geothermal heating and cooling system geothermal boreholes~~,~~; the testing method to be used; and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA.

At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings for submittal to the ERO. If, based on the archaeological testing program, the archaeological consultant finds that significant archaeological resources may be present, the ERO (in consultation with the archaeological consultant) shall determine if additional measures are warranted. Additional measures that may be undertaken include, but are not necessarily limited to, additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the Project, the Project Applicant shall either:

a. Re-design the Project so as to avoid any adverse effect on the significant archaeological resource; or

b. Implement a data recovery program, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

Archaeological Monitoring Program: If the ERO, in consultation with the archaeological consultant, determines that an Archaeological Monitoring Program (AMP) shall be implemented, the AMP shall include the following provisions, at a minimum:

- The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the AMP prior to the commencement of any Project-related soils-disturbing activities. The ERO, in consultation with the archaeological consultant,

shall determine what Project activities shall be archaeologically monitored. In most cases, any soils--disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), and site remediation, shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context.

- The archaeological consultant shall train all Project construction personnel who could reasonably be expected to encounter archaeological resources of the expected resource(s), how to identify the evidence of the expected resource(s), and the appropriate protocol in the event of apparent discovery of an archaeological resource.
- The archaeological monitor(s) shall be present on the Project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that Project construction activities could have no effects on significant archaeological deposits.
- The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis.
- If an intact archaeological deposit is encountered, all soils-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be authorized to temporarily halt demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If, in the case of pile driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile driving activity may affect an archaeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of any encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit and present the findings of this assessment to the ERO as expeditiously as possible.
- Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO.

Archaeological Data Recovery Program: The archaeological data recovery program shall be conducted in accord with an Archaeological Data Recovery Plan (ADRP). The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely

affected by the Project. Destructive data recovery methods shall not be pursued if nondestructive methods are practical.

The scope of the ADRP shall include the following elements:

- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.
- Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies.
- Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program.
- Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and other potentially damaging activities.
- Final Report. Description of proposed report format and distribution of results.
- Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Human Remains and Associated or Unassociated Funerary Objects: The treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity shall comply with applicable state and federal laws~~. This shall include~~ including immediate notification of the ~~Coroner~~ Office of the Chief Medical Examiner of the City and County of San Francisco and in the event of the ~~Coroner's~~ Medical Examiner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC), which shall appoint a Most Likely Descendant (MLD) (PRC Sec. 5097.98). The ERO shall also be immediately notified upon discovery of human remains. The archaeological consultant, Project ~~Applicant~~ Sponsor, ERO, and MLD shall have up to but not beyond six days after the discovery to make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Sec. 15064.5(d)). The agreement ~~shall~~ should take into consideration the appropriate excavation, removal, recordation, analysis, ~~custodianship,~~ curation, possession, and final disposition of the human remains and associated or unassociated funerary objects. Nothing in existing state regulations or in this mitigation measure compels the Project Sponsor and the ERO to accept recommendations of an MLD. The archeological consultant shall retain possession of any Native American human remains and associated or unassociated burial objects until completion of any scientific analyses of the human remains or objects as specified in the treatment agreement if such an agreement has been made or, otherwise, as determined by the archeological consultant and the ERO. If no agreement is reached, state regulations shall be followed including the reinternment of the human remains and

associated burial objects with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC Sec. 5097.98).

Final Archaeological Resources Report: The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s). Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report.

Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than presented above.

Impact CP-3b: Construction at HPS Phase II would not result in a substantial adverse change in the significance of a paleontological resource. ***[Criterion J.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, sedimentary rocks of the Franciscan Complex have a low sensitivity to impacts from project-related construction because in the project vicinity they have been reported as nonfossiliferous. Sedimentary rocks of the Franciscan Complex have produced significant fossils important for understanding the age, depositional environments, and tectonic history of the San Francisco area and additional fossil remains discovered in rocks of the Franciscan Complex during Project construction could be scientifically important and significant. Although no fossils have been reported from the Project area, the presence of Franciscan sedimentary rocks (sandstone, shale, chert, and greenstone) on the flanks of HP in the Project area indicates the possibility of fossils being discovered during construction-related excavation.

Using SVP criteria, the colluvium (slope debris, minor landslides), serpentinite, and artificial fill located within the project area is not expected to have sensitivity to impacts from project construction because it is not likely that artificial fill would contain paleontological resources; however, the Bay mud underlying portions of the fill at depth is expected to have a high sensitivity because it is possible, and even likely, that those materials would contain paleontological resources. Fossil fragments from the Bay mud have been recovered near Islais Creek northwest of the Project area. The presence of the Bay mud under the fill around HP in the Project area indicates the possibility of fossils being discovered during construction-related excavation.

Mitigation measure MM CP-3a from the 2010 FEIR would reduce the effects of construction-related activities to paleontological resources at HPS2 to a less-than-significant level by mitigating for the permanent loss of the adversely affected resources through implementation of a Paleontological Resources Monitoring and Mitigation Program. The SVP considered scientific recovery, preparation, identification, determination of significance, and curation to mitigate impacts to paleontological resources adequately in most circumstances. Consequently, the implementation of this measure would reduce the potentially significant adverse environmental impact of Project-related ground disturbance on paleontological resources to a less-than-significant level.

The proposed modifications in the 2010 Modified Project Variant, including the ground source geothermal heating and cooling system, have the potential to impact paleontological resources. However, all proposed modifications, including the 2,800 geothermal boreholes, would be located within the original CP-HPS2 Project footprint and are, therefore, within the area analyzed by the 2010 FEIR. Mitigation measure MM CP-3a would be sufficient to reduce potential impacts from the proposed modifications, including the boreholes, to paleontological resources to a less-than-significant level. As such, the impact to paleontological resources would remain less than significant with implementation of the identified mitigation measure.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to cultural resources and paleontological resources impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to cultural resources and paleontological resources, either on a project-related or cumulative basis.

II.B.10 Hazards and Hazardous Materials

	Criterion	*Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)*	*Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?*	*Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?*	*Any New Information of Substantial Importance?*	*Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant*
8.	**Hazards and Hazardous Materials.** Would the project:					
K.a	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	2010 FEIR p. III.K-108 (Impact HZ-20), p. III.K-111 (Impact HZ-22), p. III.K-113 (Impact HZ-23); Addendum 1 p. 40 Addendum 4 p. 44	No	No	No	None
K.b	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?	2010 FEIR p. III.K-55 (Impact HZ-1b), p. III.K-59 (Impact HZ-2b), p. III.K-62 (Impact HZ-3b), p. III.K-64 (Impact HZ-4b), p. III.K-66 (Impact HZ-5b), p. III.K-68 (Impact HZ-6b), p. III.K-71 (Impact HZ-7b), p. III.K-72 (Impact HZ-8), p. III.K-81 (Impact HZ-10b), p. III.K-85 (Impact HZ-11), p. III.K-86 (Impact HZ-12), p. III.K-88 (Impact HZ-13), p. III.K-92 (Impact HZ-14b), p. III.K-96 (Impact HZ-15), p. III.K-102 (Impact HZ-16b), p. III.K-103 (Impact HZ-17b), p. III.K-107 (Impact HZ-19), p. III.K-110 (Impact HZ-21b); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-5a, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1
K.c	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	2010 FEIR p. III.K-105 (Impact HZ-18b), p. III.K-115 (Impact HZ-24); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	MM AQ-6.1, MM AQ-6.2, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-15

	Criterion	*Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)*	*Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?*	*Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?*	*Any New Information of Substantial Importance?*	*Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant*
K.d	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to *Government Code* Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	2010 FEIR p. III.K-55 (Impact HZ-1b), p. III.K-59 (Impact HZ-2b), p. III.K-62 (Impact HZ-3b), p. III.K-64 (Impact HZ-4b), p. III.K-66 (Impact HZ-5b), p. III.K-68 (Impact HZ-6b), p. III.K-71 (Impact HZ-7b), p. III.K-72 (Impact HZ-8), p. III.K-81 (Impact HZ-10b), p. III.K-85 (Impact HZ-11), p. III.K-86 (Impact HZ-12), p. III.K-92 (Impact HZ-14b), p. III.K-103 (Impact HZ-17b), p. III.K-107 (Impact HZ-19), p. III.K-110 (Impact HZ-21b); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-5a, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1
K.e	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area?	2010 FEIR p. III.K-116 (Impact HZ-25); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None
K.f	For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	2010 FEIR p. III.K-116 (Impact HZ-26); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None
K.g	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	2010 FEIR p. III.K-116 (Impact HZ-27); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None
K.h	Expose people or structures to a significant risk of loss, injury, or death involving fires?	2010 FEIR p. III.K-116 (Impact HZ-27); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None

Changes to Project Related to Hazards and Hazardous Materials

The 2018 Modified Project Variant includes the following activities related to hazards and hazardous materials:

- For HPS2, the use of a proposed ground source geothermal heating and cooling system that would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. As described in Section I (Project Description), boreholes are anticipated to be drilled as deep as 600 feet and would typically be 4 to 6 inches in diameter and spaced at least 15 to 20 feet apart. The boreholes would be located in the Warehouse District (see Figure 2 [CP-HPS2 Land Use Districts], p. 8) in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited. Specifically, clusters of boreholes will be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. Generally, the environmental restrictions in these areas require regulators to approve workplans prior to disturbing existing fill soil and require maintenance of soil cover once work is completed. The borehole cluster locations would avoid other areas, as feasible, that have unsuitable administrative and/or sub-surface restrictions, such as beneath public roads, State Trust lands, radiological restricted areas, and other areas of additional soil or groundwater restrictions such as areas with groundwater monitoring wells or soil vapor mitigation beneath building foundations.
- Import of soil up to 2,546,300 cy of imported fill for raising grade due to sea-level rise (SLR) and for surcharge compaction to improve geotechnical conditions of the soil in the developed areas and open space areas. Approximately 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Import backfill sand would be screened for contaminants in accordance with the Soil Import criteria specified in the Risk Management Plan.
- The 2018 Modified Project Variant proposes modifications to the land use program and associated additional construction activity, including use of different geotechnical stabilization methods, specifically Deep Dynamic Compaction.
- As with the Project analyzed in the 2010 FEIR, HPS2 construction activities under the 2018 Modified Project Variant would be subject to land use and activity restrictions that are put in place by the United States Department of the Navy (Navy) and regulatory agencies as components of the remedy. The 2018 Modified Project Variant would be subject to the updated regulatory framework that has been developed through the recent conveyance of Parcels UC-1 and UC-2.

Updated Regulatory Framework

The Navy has conducted environmental investigations, feasibility studies, removal actions, and remedial actions at HPS2. These activities have been conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), the Clean Water Act (CWA), a 1992 Federal Facilities Agreement (FFA) (Navy 1992) between the Navy and federal and

state regulatory agencies, and state-specific environmental programs. The Navy work is being implemented in consultation with the United States Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB), as specified in the FFA for HPS2. These federal and state regulatory agencies, along with the Navy are referred to as the FFA Signatories.

In accordance with the final Records of Decision (RODs) for HPS2, the Navy is responsible for implementing remedial actions to provide for protection of human health and the environment prior to transfer of the property to OCII. All necessary remedial actions required by CERCLA, the FFA, or other applicable law must be completed to the satisfaction of the relevant regulatory agencies, and those agencies must determine that the site is suitable for its intended use, whether those remedial activities take place before or after the Navy transfers ownership of the property. The remedy specified in the RODs includes land use controls and activity restrictions (collectively referred to as "environmental restrictions") to provide for long-term protectiveness of the site. The Navy has prepared Land Use Control Remedial Design documents (LUCRDs) and Operation and Maintenance (O&M) Plans, which specify requirements for all future landowners that are appropriate for complying with the land use controls and activity restrictions (collectively referred to as environmental restrictions). The environmental restrictions will be documented in a Covenant Restricting the Use of Property (CRUP), which is a legal instrument that is approved by the FFA Signatories and is recorded on the property deed.

The LUCRDs require preparation of a Risk Management Plan (RMP) and states, "An RMP will set forth certain requirements or protocols that, if followed, will allow certain activities that are otherwise restricted to be performed without additional approval by FFA signatories." The OCII, in conjunction with CP Development Company L.P. (CP DevCo), and in consultation with the FFA Signatories, will have prepared a RMP, for those areas where the LUCRDs require such.

Where required by the LUCRDs, the RMP will be submitted for approval by the FFA Signatories, prior to any development occurring on the site. The approved RMP authorizes the Owner to perform certain restricted activities on the site without further FFA Signatory approval, referred to as Restricted Activities Authorized with Conditions, provided that the Owner follows the environmental procedures and protocols set forth in the RMP. The RMP will provide criteria, protocols, and procedures that must be followed to preserve the integrity of the Navy's remedy. In general, the RMP addresses FFA Signatory notification requirements, worker health and safety, soil management protocol, groundwater management protocol, soil vapor mitigation, dust control protocol, asbestos dust management protocol, stormwater controls, specifications for destroying and installing groundwater monitoring wells, criteria for screening the quality of imported soil, protocol for responding to unexpected conditions that may be encountered in the field, and annual monitoring and reporting requirements.

A CRUP has been recorded and an RMP[73] has been prepared and approved by the FFA Signatories for already transferred Parcels UC-1 and UC-2. As more parcels transfer, the same RMP may be amended from time to time and will apply to the newly transferred parcels, as required. The RMP would be amended to incorporate environmental restrictions along with any additional provisions that might be needed to address unique environmental restrictions in those specific parcels. For parcels with radiological restrictions, before any development activities occur, the developer will prepare a separate activity-specific work plan for approval by the FFA Signatories.

Comparative Impact Discussions

Impact HZ-1b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, HPS2 construction activities under the 2018 Modified Project Variant would involve site preparation that would include ground improvements to support building foundations, raising the grade to accommodate SLR, deep excavations for large structures such as residential towers, installation of foundation piles, trenching for utility lines, and other earth-disturbing activities.

The 2018 Modified Project Variant proposes to implement DDC and static soil surcharging as the preferred ground improvement techniques beneath proposed building foundations. DDC is accomplished by repeatedly dropping a heavy weight onto the existing ground surface to pound the ground into a consolidated state. Surcharging is accomplished by importing soil and placing it on the footprint of a proposed building location in a tall pile (surcharge pile) and leaving the surcharge pile in place for an extended time period. The soil beneath the surcharge pile compresses under the weight of the pile and results in a stronger load-bearing soil profile. During DDC and surcharge activities, "wick drains" are typically installed that allow groundwater to redistribute within the soil beneath the surcharge piles or DDC impacts to allow adequate compaction. Soil vapor in the compaction zone may also redistribute within the soil or vent to the atmosphere through the ground surface.

To accommodate SLR and account for required cover over pipes as defined by the SFPUC and the CP-HP subdivision regulations, the 2018 Modified Project Variant would raise the site by an average of about 4.25 feet across the graded areas, compared to an average of approximately 3 feet as analyzed by the Project in the 2010 FEIR. The grade would be raised by importing fill soil, placing it on the existing ground surface, and grading to a final design elevation that is required to meet city requirements for SLR elevation. In areas where static soil surcharging is being implemented, the soil

[73] Geosyntec, *Risk Management Plan, Hunters Point Naval Shipyard, Parcels UC-1 and UC-2, San Francisco, California*, March 2015

pile will be removed and graded to the final design elevation. The removed soil will be relocated to another surcharge pile or used elsewhere for raising the grade.

To the extent that the soil, soil vapor, and groundwater in the areas that will be improved with DDC and surcharging contains hazardous materials at the time of development, potentially significant impacts could result from exposure to such hazardous materials by workers, occupants, and visitors if controls are not in place to manage the risks from such exposure. All ground improvement work conducted on HPS2 will be conducted in accordance with the RMP or site-specific work plan, where applicable. In addition to the protocol in the RMP, worker exposure as well as environmental impacts would be controlled through MM HZ-1b and MM HZ-2a (HASP requirement). Exposure to impacts from redistributed groundwater would also be controlled through MM HZ-1a.3 (GW dewatering plans). To the extent that groundwater may migrate to the ground surface, it will be captured, treated, if necessary, and discharged as allowed by local or state discharge permits. To the extent that soil vapors migrate to the ground surface and vent into the atmosphere, it will be monitored and controlled as allowed by Bay Area Air Quality Management District regulations for volatile organic compound emissions. Dust generated during ground improvement activities will be controlled as required in MM HZ-1b and San Francisco Health Code Article 22b.

The 2018 Modified Project Variant would require the import of up to 2,546,300 cy of imported fill for raising grade for SLR, surcharge compaction for geotechnical purposes, and trench backfill in utility trenches (up to 10,600 cy or 590 dump truck loads of sand) in the developed areas and open space areas. Import fill soil and backfill sand would be screened for contaminants in accordance with soil import criteria identified in the RMP that would be developed for the project to comply with the regulatory requirements that will be applicable to the site through the CERCLA process, RMP where applicable, and other federal, state, and local regulations.

In addition, development of a proposed HPS2 geothermal system could also result in impacts from construction worker exposure to contaminants in the soil. The geothermal system would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. The boreholes would be located in the Warehouse District in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited (see I.C.1 [HPS2 Proposed Modifications]). Installation of the 2,800 geothermal boreholes would require excavation of 12,250 cy of soil, which would be reused on site (for raising grade, surcharge compaction, or trench backfill), in accordance with the CERCLA land use controls, activity restrictions, and RMP requirements where applicable, that apply to the specific location where the soil is generated. Any soil that is not allowed to be reused on site would be disposed off site in a manner consistent with federal, state, and local soil disposal and handling requirements.

As described in the 2010 FEIR, the Navy is engaging in a remediation process at HPS2, which is independent of the 2010 and 2018 Projects (referred to as the "Project" for purposes of this hazardous materials discussion), and property could be permanently transferred after completion of remediation activities or temporarily leased or temporarily accessed for limited activities, such as

installation of infrastructure, before completion of remediation activities. As with the Project analyzed in the 2010 FEIR, to the extent that the property under development under the 2018 Modified Project Variant contains hazardous materials at the time of development, potentially significant impacts could result from exposure to such hazardous materials by workers, occupants, and visitors if controls are not in place to manage the risks from such exposure.

As discussed in the 2010 FEIR, the FFA Signatories would, independent of the Project, require that before any Project development activity occurs at HPS, appropriate and legally enforceable restrictions on uses and activities at the Project site be in place and applicable to that activity, whether in the form of a recorded covenant, deed provision, easement, lease term, or RMP, such as currently exists for Parcels UC-1 and UC-2, noted above. Although the restrictions and enforcement mechanisms would be established independent of the Project, as with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-1b, would provide redundant protection by requiring that all Project development activities and uses conducted after the completion of development be in compliance with the CRUP and the protocols specified in the approved RMP, where applicable.

Consequently, implementation of mitigation measure MM HZ-1b would reduce impacts related to exposure to known contaminants from construction activities, including the geothermal boreholes required for development of the geothermal heating and cooling system on the HPS2 site and the compaction surcharging for geotechnical purposes. The impact would remain less than significant with implementation of the identified mitigation measure and adherence to the CERCLA requirements, including the RMP, which includes soil import criteria where applicable, and other federal, state, and local regulations.

Impact HZ-2b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that the potential exists for unidentified, old, or abandoned subsurface structures (e.g., USTs, utility lines) to be present at sites to be developed in HPS2. As with the Project analyzed in the 2010 FEIR, if an unidentified UST were discovered during construction activities, including excavation of the approximately 2,800 geothermal boreholes required for development of the geothermal heating and cooling system on the HPS2 site, it would have to be closed in place or removed in accordance with federal, state, and local regulations. The RMP for Parcels UC-1 and UC-2 includes an Unexpected Conditions Response Plan, which specifies protocol in the event that such conditions are encountered during construction activities. The updated RMP for future transferred land will contain such a plan, where applicable, that will provide for the safe response to unexpected conditions that may be encountered. The installation of the geothermal boreholes would

be in areas subject to environmental restrictions and RMP protocol, including the Unexpected Condition Response Plan, where applicable.

Encountering unexpected conditions could pose both health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Similarly, the discovery of buried debris that could be hazardous could also present an increased risk of adverse health or environmental effects. The likelihood that significant adverse effects from the discovery of previously unidentified subsurface features would occur is minimal because there are multiple existing requirements in place to address such effects, such as the RMP for Parcels UC-1 and UC-2, and the SFDPH Article 31 requirements, implementation of contingency monitoring procedures and RWQCB notification (as necessary).

As with the Project analyzed in the 2010 FEIR, implementation of mitigation measure MM HZ-2a.1 would require the development of an Unknown Contaminant Contingency Plan to describe procedures to follow in the event unexpected contamination is encountered during construction activities, including procedures for ensuring compliance with the above laws and regulations, in conjunction with implementation of mitigation measure MM HZ-2a.2, which would require the preparation of a site-specific HASP prepared in accordance with federal and state OSHA and other applicable regulations. Implementation of those mitigation measures would ensure that potential adverse impact on human health and the environment from unidentified subsurface hazards would remain less than significant.

Impact HZ-3b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that construction activities in HPS2 could involve extensive construction to accommodate new development. Site preparation could include deep excavations for large structures such as residential towers; cut material may be used elsewhere as fill, subject to any restrictions on reuse of soil imposed by the FFA signatories; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities.

In addition, development of a proposed HPS2 geothermal system, which was not a component the Project analyzed in the 2010 FEIR, would require approximately 2,800 geothermal boreholes to meet heating and cooling demands.

As with the Project analyzed in the 2010 FEIR, for those locations within HPS2 where construction under the 2018 Modified Project Variant would require off-site transport of contaminated soil, the grading and earthwork contractor would be required, as necessary and where required, to follow state and federal regulations for manifesting (including transportation and disposal) the wastes, using

licensed hazardous waste haulers, and disposing the materials at a permitted disposal or recycling facility. The approved RMP would set forth the process for approval or specific approved methods for disposal of excavated soils during grading or removal of groundwater during dewatering.

Likewise, the approved RMP would establish a process for regulatory agency approval that would describe the procedure that must be followed to ensure that extraction of groundwater that may be necessary to accommodate trenching for utilities would not alter the physical or chemical characteristics of contaminant plumes. If dewatering were required, the groundwater could be discharged to the City's combined storm and sanitary sewer system provided the discharged water complied with the Industrial Waste Ordinance, *Public Works Code*, Article 4.1, and Order No. 158170 of the DPW (refer to Section III.M for a discussion of Article 4.1 and Order No. 158170 and with SFPUC discharge guidelines). The discharged water may be required to be sampled both prior to and during dewatering to demonstrate that discharge limitations in the ordinance are met. If the pumped groundwater would not meet discharge requirements, on-site pretreatment would be required before discharge to the sewer system. If standards could not be met with on-site treatment, the SFPUC may allow the discharger to pay a premium to discharge the wastewater to the system, or the discharger may need to transport the wastewater off site using a certified waste hauler. In addition, as with the Project analyzed in the 2010 FEIR mitigation, measure MM HY-1a.3 would require the Project Applicant to prepare and implement a dewatering plan and comply with applicable standards to protect receiving water quality and anticipated RWQCB permit compliance provisions. Thus, compliance with the protocols specified in the approved RMP, where applicable, the Industrial Waste Ordinance, and implementation of MM HZ-1b and would ensure that potential adverse impact on human health and the environment from disposal of dewatered groundwater would remain less than significant.

Impact HZ-4b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels hazardous materials as a result of improvements to existing and installation of new underground utilities. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, utility trenches in HPS2 under the 2018 Modified Project Variant have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along the permeable soils that would be placed as trench backfill. As with the Project analyzed in the 2010 FEIR, the areas of the site that require vapor or groundwater utility cutoffs and the performance standard for these systems would be identified in the remedial design documents that must be prepared under the CERCLA process before these activities can be carried out. In addition, compliance with protocols specified in the approved RMP, where applicable, and implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, and MM HZ-2a.2 would avoid or minimize the potential for horizontal migration of

contaminants in HPS2, which would reduce effects to less-than-significant levels. Those measures would ensure the safe handling of potentially contaminated materials encountered during improvement or installation of underground utilities. The impact would remain less than significant with implementation of the identified mitigation measures and adherence to the identified compliance measures.

Impact HZ-5b: Construction activities associated with the Project would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that piles installed in locations at HPS2 where contaminants have been identified could, under certain soil conditions, create a vertical conduit for chemicals occurring in shallow groundwater to move along the pile to deeper groundwater zones, causing degradation of the deeper groundwater. As with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-5a would be implemented under the 2018 Modified Project Variant to require pre-drilling pilot boreholes before pile driving in non-engineered fill material to avoid potential contaminant transport. In addition, as with the Project analyzed in the 2010 FEIR, restrictions that would apply upon transfer would dictate where pile driving would be permitted under the 2018 Modified Project Variant and under what circumstances. If permitted, all excess fill or native soil materials generated during pile driving would be managed consistent with the protocols specified in the approved RMP, where applicable, as described above. Compliance with those restrictions through mitigation measures MM HZ-1b and MM HZ-5a would reduce potential groundwater quality impacts. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-6b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of handling, stockpiling, and transport of soil that may contain contaminants. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that movement of soil (including grading, trenching, and excavating) that contains hazardous materials could result in impacts from human exposure to chemicals in the soil from dust and impacts to water quality and the environment if hazardous constituents were to migrate to the Bay. In addition, the 2010 FEIR determined that movement of nonhazardous soils also could result in impacts to air quality and water quality from the release of particulate matter to the air or sediment in storm water.

Development of a proposed HPS2 geothermal system, which was not a component the Project analyzed in the 2010 FEIR, could also result in impacts from human exposure to contaminants in the soil during construction.

As with the Project analyzed in the 2010 FEIR, restrictions on handling, stockpiling and transport of soil earthmoving activities at HPS2 under the 2018 Modified Project Variant would be a component of the legally-enforceable restrictions on uses and activities at the Project site, which the FFA Signatories would, independent of the Project, require to be in place before any Project development activity occurs at HPS2. Although these restrictions would be imposed independent of this EIR through independent environmental regulatory processes, to ensure compliance with these restrictions prior to development activities, mitigation measure MM HZ-1b would require SFDPH to verify, before any development activity at HPS2 occurs, that it would be done in compliance with all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, or License Agreement, including restrictions imposed in deeds, covenants, leases, and LIFOCs, and requirements set forth in LUCRD documents, RMP, and health and safety plans applicable to the area of the work. Those legally enforceable environmental restrictions incorporate dust control measures to reduce the potential for spreading material from one area to another or requiring that soil be sufficiently moist to prevent dust generation during transport. Further, whenever workers could be exposed to hazardous levels of chemicals, a site-specific HASP would be prepared by the contractor prior to construction and would contain a section regarding decontamination of both personnel and equipment. The restrictions would also address the potential for trespassers or visitors to gain access to construction sites and come into direct contact with contaminated soils by specifying measures to prevent unauthorized entry into the construction site and provide appropriate monitoring/enforcement procedures to ensure the effectiveness of site security.

Soil handling, stockpiling, and transport activities have the potential to create erosion and potential migration of soils into the Bay during rainstorms, absent implementation of management measures. Soils could contain contaminants such as metals and organic compounds, which could degrade water quality in the Bay. Implementation of measures to control stormwater runoff during construction would also control discharge of potential chemicals adhered to soil in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP would be required to identify the specific measures and BMPs that are applicable to HPS2 construction activities in the event of a spill of construction materials or exposure of hazardous materials. The SWPPP would identify the specific measures that are applicable to HPS2 construction.

As a result of these controls and mitigation measures, including mitigation measures MM HZ-1b, MM HY-1a.1, and MM HY-1a.2, impacts related to handling, stockpiling, and transport of contaminated soil would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-7b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that, with the implementation of mitigation measures, construction activities at HPS2, such as the compaction and installation of fill, grading, and other geotechnical work, would result in a less-than-significant impact.

Development of a proposed HPS2 geothermal system would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. The locations of boreholes would typically be located in the Warehouse District in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited (see I.C.1 [HPS2 Proposed Modifications]). With implementation of the 2010 Project mitigation measures, excavation of the approximately 2,800 geothermal boreholes would not result in erosion or movement of soils from the Project site and into surface waters during rain storms.

Static soil surcharge activities planned under the 2018 Modified Project Variant will result in large soil piles exposed to potential surface water erosion for extended periods of time, if not properly managed. Although not contaminated, erosion of soil from the surcharge piles could degrade surface water quality by increasing the suspended sediment load in the runoff water. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to managing erosion of soil from surcharge piles. Implementation of mitigation measures MM HY-1a.1, MM HY-1a.2 would ensure that potential adverse effects on surface water quality would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

As with the Project analyzed in the 2010 FEIR, implementation of measures to control stormwater runoff during construction at HPS2 under the 2018 Modified Project Variant would also control discharge of potential chemicals if present in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to HPS2 construction activities in the event of a spill of construction materials or exposure of hazardous materials. The SWPPP would identify the specific measures that are applicable to HPS2 construction. Implementation of mitigation measures MM HY-1a.1, MM HY-1a.2, MM HZ-1b, and MM HZ-2a.1 would ensure that potential adverse effects on human health and the environment would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-8: Project occupants or visitors in or near portions of HPS Phase II where remediation has not been fully completed would not be exposed to unacceptable levels of hazardous materials. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, comprehensive basewide and parcel-specific investigations have shown that chemicals and radioactive materials are present in soil and groundwater in various locations throughout HPS2 at levels that require remediation. The Navy has completed substantial investigation and remediation of the site and the FFA Signatories overseeing the remediation program have required interim measures to be put in place in areas that still require remediation.

As with the Project analyzed in the 2010 FEIR, to the extent this impact could still be potentially significant despite the Navy's implementation of protective measures, it would be reduced to less than significant through implementation of Mitigation Measure MM HZ-1b, which requires compliance with restrictions in cleanup and transfer documents. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-10b: Construction in the shoreline areas at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that is radiologically affected or that may contain chemical contaminants. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, with implementation of the identified 2010 FEIR mitigation measures, construction of the shoreline improvements, including pile driving, construction of rock buttresses, dredging, riprap installation, marina construction and installation of natural-looking shoreline protection using fill and articulated concrete block (ACB) mats, would not disturb sediment or soil containing chemical contaminants at levels that could expose construction workers, the public, or the environment to hazardous materials.

The HPS2 proposed modifications include establishment of a water taxi service to and from HPS2 at Dry Dock 4. The establishment of the infrastructure associated with the water taxi would involve construction activities both in the water and on the landside of Dry Dock 4 related to the floating dock platform and castings, the access ramp and landing platform, guide piles, and safety rails.

Under the 2018 Modified Project Variant, construction of the shoreline improvements, including infrastructure associated with the water taxi, would be required to the 2010 FEIR mitigation measures and, thus, would not disturb sediment or soil containing chemical contaminants at levels that could expose construction workers, the public, or the environment to hazardous materials.

As with the Project analyzed in the 2010 FEIR, implementation of mitigation measures MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1, MM HY-1a.1, MM HY-1a.2, and MM HZ-10b, along with applicable regulations and permits, potential impacts related to exposure to hazardous materials releases from contaminated sediments that could be disturbed during proposed shoreline improvements in HPS2 would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-11: Construction activities associated with the Project on Navy-owned property, including improvements to existing utilities and installation of new underground utilities, would not expose occupants, construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, or groundwater that may contain contaminants from historic uses, including radiological contaminants. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, it is expected that development of properties the Navy has transferred would require underground utilities to be installed and geotechnical ground improvements initiated across land the Navy still owns that may still be undergoing remediation. Utility trenches have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along the permeable soils that would be placed as trench backfill. Ground improvement techniques such as DDC and static soil surcharging have the potential to alter subsurface conditions that could interfere with soil vapor and groundwater remediation being implemented by the Navy. The easement or other legal instrument providing a right to access the Navy property would require underground utility excavation and ground improvement activities to be conducted in accordance with a Navy-approved workplan that would require implementation of measures to prevent such impacts.

As with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-1b would apply to the 2018 Modified Project Variant development activities that take place before remediation is complete (e.g., if the property is subject to an early transfer or LIFOC) or accessed through a license or easement. MM HZ-1b requires the Project Applicant submit documentation to the SFDPH that the work would be undertaken in compliance with all restrictions imposed pursuant to the transfer documents, RMP, and any approved site-specific work plans, where applicable.

The general requirement of mitigation measure MM HZ-9 would also apply to underground utility construction and ground improvement activities by requiring that such activities be conducted only after approval of a workplan by the Navy, and if required, by the other FFA Signatories. This mitigation measure would also require such underground utility construction and ground improvement activities be conducted in accordance with applicable health and safety plans, DCPs, SWPPPs, or any other documents or plans required under applicable law or laws. As a result of these Project controls and mitigation measures, the potential for exposure to hazardous materials

during underground utility construction and ground improvement activities at HPS2 would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-12: Remediation activities conducted on behalf of the City or Project Applicant at the HPS Phase II parcels transferred prior to completion of remediation in an "early transfer" would not expose remediation and construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, although the ongoing remediation activities conducted by the Navy under the FFA are not part of the Project, if any of the parcels are transferred prior to completion of remediation in an "early transfer" as described in the Regulatory Framework, the Agency or the Project Applicant may instead implement the remaining remediation activities in conjunction with development activities with appropriate regulatory oversight. Such remediation activities conducted by or on behalf of the Agency or Project Applicant are considered part of the Project.

As with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-12 would require the Agency or the Project Applicant and their contractors to incorporate all applicable requirements into remedial design documents, work plans, health and safety plans, DCPs and any other document or plan required under the AOC or other applicable law, as a condition of development within HPS2. With the implementation of these mitigation measures, potential impacts from remediation activities conducted in conjunction with development activities at HPS2 early transfer parcels would be reduced. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-13: Construction of off-site roadway improvements would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil or groundwater that may contain contaminants. ***[Criterion K.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, the Project would improve existing roadways to serve CP and HPS2 and surrounding Bayview and Hunters Point neighborhoods. The majority of the off-site roadway improvements are bayward of the mean high tide line and thus subject to the requirements of *San Francisco Health Code* Article 22A, including, if required, the preparation and implementation of a site mitigation plan. As with the Project analyzed in the 2010 FEIR, compliance with Article 22A would ensure that impacts from exposure to hazardous materials associated with off-site roadway

improvements for the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact HZ-14b: Construction at HPS Phase II would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain with contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, stockpiling and on-site soil movement during general site construction at HPS2 create potential pathways through which fish and wildlife species could be exposed contaminants in HPS2 site soils. As with the Project analyzed in the 2010 FEIR, with implementation of mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, and MM BI-12b.1, potential construction ecosystem impacts related to handling, stockpiling, and transport of contaminated soil (including shoreline sediments) and groundwater would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-15: Construction and grading activities associated with the Project would not disturb soil or rock that could be a source of naturally occurring asbestos in a manner that would present a human health hazard. ***[Criterion K.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, asbestos is a naturally occurring mineral found in serpentinite rocks. Naturally occurring asbestos is a potential health hazard. If large amounts are inhaled or swallowed over many years, it increases the risk that a person may develop cancer or other health problems. During grading in areas potentially containing naturally occurring asbestos, airborne asbestos could be released to the environment via air emissions that could present an inhalation or ingestion hazard to exposed populations.

As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would include implementation of mitigation measure MM HZ-15, which would require the preparation of an ADMP approved by BAAQMD and a DCP approved by SFDPH before commencing grading activities and any other activity that could disturb potential sources of naturally-occurring asbestos (including Bay Fill areas with the potential to contain previously-disturbed serpentinite fragments). The mitigation measure would also require implementation of all the mitigation measures, and compliance with all the requirements, set forth in the ADMP and DCP. Implementation of this mitigation measure would reduce the impact related to naturally occurring asbestos exposure

during construction activities. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-16b: Construction at HPS Phase II would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury. ***[Criterion K.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, existing buildings in HPS2 would be demolished to accommodate new development. Hazardous building materials are likely to be present in older structures. Building materials could include asbestos-containing materials, lead-based paint, PCBs, and fluorescent lights containing mercury vapors. Demolition or renovation of existing structures could result in potential exposure of workers or the community to hazardous building materials during construction, without proper abatement procedures, and future building occupants could be exposed if hazardous building materials are left in place and not properly contained. Soil around a structure could also become contaminated by hazardous building materials if these materials were inadvertently released to the environment.

As with the Project analyzed in the 2010 FEIR, implementation of applicable regulations and standards would ensure that potential health and environmental hazards associated with asbestos, lead, or PCBs in buildings and structures to be demolished under the 2018 Modified Project Variant would be minimized to the extent required by law. Therefore, the impact would remain less than significant, and no mitigation would be required.

Impact HZ-17b: Construction at HPS Phase II would not expose construction workers to unacceptable levels of hazardous materials in soil, sediment, or groundwater in a manner which would present a human health risk. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, potential worker health and safety impacts from exposure to hazardous materials could occur during excavation, dewatering, construction of improvements, site investigations, site remediation, and underground storage tank removal at HPS2. The potential for these impacts to occur would be minimized by implementing legally required health and safety precautions. For workers at sites where they would encounter hazardous waste, federal and Cal/OSHA regulations mandate an initial training course and subsequent annual training. Site-specific training may also be required for some workers.

Although existing worker safety regulations would require preparation and implementation of a HASP independent of the EIR and work would be conducted in accordance with site-specific work plans, and if applicable, any RMP requirements, to ensure compliance with these requirements, as with the Project analyzed in the 2010 FEIR mitigation measure MM HZ-2a.2 would be implemented under the 2018 Modified Project Variant and would require a permit applicant to prepare, submit to SFDPH, and implement a site-specific HASP for any affected location in compliance with applicable federal and state OSHA requirements and other applicable laws to minimize impacts to public health and the environment. The plan would include identification of chemicals of concern, potential hazards, personal protective equipment and devices, and emergency response procedures. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-18b: Construction at HPS Phase II would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school. ***[Criterion K.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, Muhammad University of Islam, a year-round elementary school, is located adjacent to the Hillside portion of HPS1 development.

The 2010 FEIR determined that, with the implementation of the 2010 FEIR mitigation measures, construction activities would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within 0.25 mile of an existing school. As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would be required to implement an enhanced dust control program in accordance with the City's Dust Ordinance in accordance with mitigation measure MM HZ-15. In addition, implementation of mitigation measures MM HZ-2a.1 and MM HZ-2a.2 for development in HPS2 would also control dust emissions at the HPS2 boundary, which would also ensure airborne asbestos emissions do not present a health risk to the off-site school.

Further, if any of the on-site schools are occupied at the time construction activities occur within 0.25 mile of those schools, the mitigation measures described above (MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, and MM HZ-15) would also be implemented. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-19: Simultaneous construction activities at the Project site would not pose a human health risk from the release of contaminants from historic uses or fill. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, construction impacts associated with the potential to encounter hazardous materials or hazardous conditions during construction under the 2018 Modified Project Variant anywhere in the Project site, whether at CP or HPS2 would for the most part be site specific and not additive because development activities at one site would be localized and would not combine with activities at another site to create a greater, combined effect. In addition, development would be sequenced, so only portions of each area would be expected to be under development at the same time.

As described in the 2010 FEIR, one activity that could affect areas outside of the immediate work area is movement of soil from one location to another. As with the Project analyzed in the 2010 FEIR, mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-9, and MM HZ-15 would ensure that before development occurs within the Project site and vicinity that appropriate soil management plans and DCPs have been developed to address both soil movement and reuse within the Project site and off-site reuse and disposal. In addition, it is expected that for soil in the HPS2 area, FFA-approved site specific work plans, and, if applicable, requirements in an RMP will further dictate how any excavated soil may be moved and reused on site. As with the Project analyzed in the 2010 FEIR, under the mitigation measures, compliance with the requirements of these plans is a condition of development. With the implementation of these mitigation measures, the impact from soil movements within and outside of the entire Project site under the 2018 Modified Project Variant would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-20: Construction activities associated with the Project would not result in adverse impacts to construction workers, visitors, or the environment from the routine use, storage, transportation, and disposal of hazardous materials. ***[Criterion K.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, construction activities related to the proposed Project would require the use and transportation of hazardous materials (e.g., fuels, cement products, lubricants, paints, adhesives, and solvents). In addition, construction vehicles would be used on-site that could accidentally release hazardous materials such as oils, grease or fuels. These hazardous materials and vehicles would remain on the Project site during the period of construction activities. Accidental releases of hazardous materials during demolition and construction activities could impact soil and/or groundwater quality, which could result in adverse health effects to construction workers, the public, and the environment. As with the Project analyzed in the 2010 FEIR, the contractor's

compliance with requirements related to DPH's Hazardous Materials Unified Program Agency (HMUPA) certificate of storage for hazardous materials during construction under the 2018 Modified Project Variant would reduce these potential impacts related to inadvertent release of hazardous materials to less-than-significant levels. In addition, the Project contractors would be required to comply with the requirements of San Francisco Public Works Code Article 4.1, which requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) (described in the Hydrology and Water Quality section), which would further reduce potential impacts related to inadvertent release of hazardous materials during construction.

Compliance with the SWPPP and HMUPA requirements would ensure that the impact from potential releases from the transport and use or disposal of hazardous materials during project construction activities would be reduced. The impact would remain less than significant, and no mitigation would be required.

Impact HZ-21b: Implementation of the Project at HPS Phase II would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, during occupancy, it is likely that the City or others would from time to time need to excavate site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. Prior to occupancy, sites for which soil remediation would be necessary would either be remediated by excavation, in-situ treatment, capped with an impervious engineered system (as in the case of landfills), or covering with a durable cover, such as hardscape or layer of clean soil that is at least 2 feet thick. Based on transfers to date, it is anticipated that all subsurface activities after transfer would be regulated either under an FFA-approved RMP, or site-specific work plans, where applicable. Therefore, contact with unremediated soil by construction workers, or inhalation of soils by workers or the public, is not expected to pose a substantial human health risk. The requirement to do work in conformance with an approved RMP or site-specific work plans would be enforced through deed restrictions and restrictive covenants. These processes would ensure risks to human populations are minimized.

The proposed 300-slip marina along the east shoreline of HPS2, north of the Gun Mole Pier would require creation of a 34-acre basin. The current water depths of the proposed basin are adequate for recreation craft. The basins would not require initial dredging, but maintenance dredging would be required in the future. The proposed marina is in Parcel F, adjacent to Parcel C; however, this area is not identified as an investigation/remediation subarea in which sediments are known to be contaminated.

As with the 2010 Project, implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-9, and MM HZ-12 would require compliance with restrictions set forth in transfer documents that require the preparation and implementation of an Unknown Contaminant Contingency Plan and HASPs, as well as compliance with RMPs or site-specific work plans, where applicable, to ensure that impacts during occupancy from routine maintenance activities under the 2018 Modified Project Variant would be reduced to a less-than-significant level. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-22: Implementation of the Project would not result in a significant impact involving the routine use, storage, transportation, and disposal of hazardous materials. ***[Criterion K.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, nearly all Project uses would involve the presence of hazardous materials (or products containing hazardous materials) at varying levels, and this would represent an increase in hazardous materials use compared to existing conditions. It would also increase the number of people who could be exposed to potential health and safety risks associated with routine use. The following summarizes the general types of hazardous materials that would be expected in the Project, based on the proposed land use designations.

As indicated in the 2010 FEIR, there is an established, comprehensive framework independent of the CEQA process, which is intended to reduce the risks associated with hazardous materials use (and generation of hazardous waste). The San Francisco Department of Public Health (DPH), HMUPA has been granted authority by the State to enforce most regulations pertaining to hazardous materials in the City, including permitting for hazardous materials storage, underground storage tanks, and hazardous waste generation under the DPH Certificate of Registration Program.

Facilities where hazardous materials would be used during Project operation would be constructed in accordance with current laws and regulations, which require storage that minimizes exposure to people or the environment, and the potential for inadvertent releases. In addition, these materials would be labeled to inform users of potential risks and to instruct them in appropriate storage, handling, and disposal procedures. Employers are required by law (Cal/OSHA) to ensure employee safety by properly identifying hazardous materials and adequately training workers. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP.

As with the Project analyzed in the 2010 FEIR, under the 2018 Modified Project Variant, SFDPH 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 uses and waste

generation for project operations would not pose a substantial public health or safety hazard to the surrounding area. The impact from the routine transport, use or disposal of hazardous materials (including radiological, hazardous and medical wastes) from operation of the proposed project would remain less than significant, and no mitigation would be required.

Impact HZ-23: Implementation of the Project would not pose a human health risk and/or result in an adverse effect on the environment from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. ***[Criterion K.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, with increased routine use of hazardous materials compared to existing conditions, exposure of future occupants, visitors, and employees to hazardous materials could occur by improper handling or use of hazardous materials or hazardous wastes during operation of the Project, particularly by untrained personnel, environmentally unsound disposal methods, or fire, explosion, or other emergencies, all of which could result in adverse health effects. Accidents involving the transportation of hazardous materials to, from, or within the Project could also occur.

As with the Project analyzed in the 2010 FEIR, 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 under the 2018 Modified Project Variant. Major hazardous materials accidents associated with retail-commercial uses, including restaurants, theaters, and stores are extremely infrequent. The San Francisco Fire Department (SFFD) responds to hazardous materials incidents within the city, and additional emergency response capabilities are not anticipated to be necessary to respond to the potential incremental increase in the number of incidents that could result from operation of the Project.

As with the Project analyzed in the 2010 FEIR, potential impacts from upset and accident conditions involving the release of hazardous materials and wastes would also be less than significant, because the project would be required to comply with DPH requirements for hazardous materials and waste management.

As with the Project analyzed in the 2010 FEIR, the transportation of hazardous materials under the 2018 Modified Project Variant is required to comply with federal and state laws and regulations. These regulations identify proper labeling and packaging, transfer, and documentation requirements. State law prescribes requirements for through-transport of hazardous materials on roadways under state control.

As described in the 2010 FEIR, there is a comprehensive and ongoing hazardous materials emergency response program in the city. San Francisco has an Emergency Response Plan (ERP) that was developed to ensure allocation of and coordination of resources in the event of an emergency in the City and County of San Francisco. The ERP describes at a high level what the City's actions

would be during an emergency response. A separate Hazard Mitigation Plan (HMP) assesses risks posed by natural and human-caused hazards and set forth a mitigation strategy for reducing the City's risks. 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 ERP. San Francisco Fire Department (SFFD) is the first responder in responding to hazardous materials emergencies for the city and county. This impact would remain less than significant, and no mitigation would be required.

Impact HZ-24: Areas designated for research and development uses within HPS Phase II would not pose a human health risk as a result of hazardous air emissions within one-quarter mile of a school. ***[Criterion K.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR evaluated the health risk assessment for R&D uses using the excess lifetime cancer risk and chronic noncancer hazard index resulting from the combined TAC emissions from the R&D areas at any surrounding receptor location within HPS2. The estimated excess lifetime cancer risks and hazard indices within areas designated for residential use were found not to exceed the BAAQMD's current significance thresholds for carcinogenic and noncarcinogenic health risks with the Project with implementation of 2010 FEIR mitigation measures MM AQ-6.1 and MM AQ-6.2. These mitigation measures identify steps that would be taken to ensure numerical thresholds are not exceeded, and impacts were determined to be less than significant. Figure 3-1b of 2010 FEIR Appendix H1 Attachment III shows the areas analyzed to have TAC emissions from R&D uses associated with the 2010 FEIR. As shown in Figure 4-1a of 2010 FEIR Appendix H1 Attachment III, cancer risk from TAC emissions from R&D uses is below the threshold of 10 in a million at all proposed residential locations, except the northeastern portion of HP-05. Mitigation measure MM AQ-6.2 of the Development Agreement restricts land uses with TAC emissions within 300 feet of any residence. This mitigation measure reduced risk to below thresholds in this area.

As described in Impact AQ-6 of Addendum 5, the 2018 Modified Project Variant contains less R&D square footage as compared to R&D Variant 1, does not introduce new locations for R&D as compared to the R&D Variant 1 land use plan and does not place residences in any new areas that were not previously analyzed. Thus, the analysis in the 2010 FEIR would be inclusive of the 2018 Modified Project Variant. The evaluation and conclusion in the 2010 FEIR would still apply, and the 2018 Modified Project Variant would not pose a human health risk as a result of hazardous air emissions within 0.25 mile of a school. The impact would remain less than significant with implementation of the identified mitigation measures (MM AQ-6.1 and MM AQ-6.2).

Impact HZ-25: The Project site is not within the San Francisco Airport Land Use Policy Plan and the Project would not result in a safety hazard for people residing or working in the Project site. ***[Criterion K.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, the Project site is approximately six miles north of the San Francisco International Airport. The Project site is not located within any of the "restricted zones." There would be no impact related to safety hazards for people residing or working in the Project site.

Impact HZ-26: Implementation of the Project would not occur within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the Project site. ***[Criterion K.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, no private airstrips exist in the Project site or vicinity. There would be no impact related to safety hazards for people residing or working in the Project site.

Impact HZ-27: Implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires or conflict with emergency response or evacuation plans. ***[Criteria K.g and K.h]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, development of the Project would increase numbers of residents and employees in the Project site who, in turn, 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*. Existing buildings are required to meet standards contained in these codes. In addition, the building plans for any new residential project greater than two units are reviewed by the SFFD and DBI in order 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 procedure manual and an exit drill plan.

In addition, hazardous materials are required to be stored in designated areas designed to prevent accidental release to the environment. And *Hazardous Materials Management Act* requires that businesses handling or storing certain amounts of hazardous materials prepare a Hazardous Materials Business Plan (HMBP), which includes an inventory of hazardous materials stored on site (above specified quantities), an emergency response plan, and an employee-training program. The

information required under the HMBP is available to fire and hazardous materials incident responders. Facilities where hazardous materials would be used during Project operation would be constructed in accordance with current laws and regulations, which require storage that minimizes exposure to people or the environment, and the potential for inadvertent releases that would require emergency response. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP.

As with the Project analyzed in the 2010 FEIR, the existing street grid provides ample access for emergency responders and egress for residents and workers, and the Project would neither directly nor indirectly alter that situation to any substantial degree. All new development at would be built to *San Francisco Fire Code* standards, which would help to minimize demand for future fire protection services. All development, including high-rise residential buildings up to forty stories, would meet standards for emergency access, sprinkler and other water systems, and other requirements specified in the *San Francisco Fire Code*. Standards pertaining to equipment access would also be met. Plan review for structures at CP for compliance with *San Francisco Fire Code* requirements, to be completed by DBI and the SFFD, would minimize fire-related emergency dispatches, reducing the demand for fire protection services at the Project site. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Finally, for the reasons just set forth, the Project would not directly or indirectly result in any additional exposure of residents or workers to fire risk, as the Project site is in a fully urbanized area that lacks the "urban-wildland interface" that tends to place new development at risk in undeveloped areas of California. The Project would also include expansion of the Auxiliary Water Supply System (AWSS), to provide water for firefighting services. Expansion of the AWSS would make the Project site more defensible against fire and reduce the need for fire protection services. Therefore, the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires.

Compliance with the *San Francisco Building Code* and *San Francisco Fire Code* through the City's ongoing permit review process would ensure that potential fire hazards related to redevelopment activities (including those associated with hillside development, hydrant water pressure, and emergency access) would be minimized during the permit review process and that future projects would not interfere with an existing emergency response or emergency evacuation plan. Therefore, this impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to hazards and hazardous materials impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as

compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to hazards and hazardous materials, either on a project-related or cumulative basis.

II.B.11 Geology and Soils

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
6. Geology and Soils. Would the project:					
L.a Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to California Geological Survey Special Publication 42) ii. Strong seismic groundshaking? iii. Seismic-related ground failure, including liquefaction? iv. Landslides?	2010 FEIR p. III.L-39 (Impact GE-4b), p. III.L-44 (Impact GE-5b), p. III.L-48 (Impact GE-6b), p. III.L-61 (Impact GE-12); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM GE-4a.1, MM GE-5a
L.b Result in substantial soil erosion or the loss of topsoil?	2010 FEIR p. III.L-32 (Impact GE-1b); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM HY-1a.1
L.c Be located on a geologic or soil unit that is unstable, or that would become unstable as a result of the Project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	2010 FEIR p. III.L-34 (Impact GE-2b), p. III.L-49 (Impact GE-7b), p. III.L-51 (Impact GE-8b), p. III.L-54 (Impact GE-9b), p. III.L-61 (Impact GE-11b); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM GE-2a, MM GE-5a, MM GE-6a, MM GE-11a, MM HY-12a.1, MM HY-12a.2
L.d Be located on expansive soil, as defined in Section 1802.3.2 of the 2007 SFBC, creating substantial risks to life or property?	2010 FEIR p. III.L-58 (Impact GE-10b); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM GE-10a

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
L.e	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	2010 FEIR p. III.L-62 (Impact GE-13); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	None
L.f	Change substantially the topography or any unique geologic or physical features of the site?	2010 FEIR p. III.L-62 (Impact GE-14); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	None

Changes to Project Related to Geology and Soils

The 2018 Modified Project Variant includes the following activities related to geology and soils:

- In areas of the site containing loose artificial fill with a greater risk of liquefaction and settlement, a range of ground improvement techniques could be used to densify the fill and reduce seismically induced settlement risk, including, but not limited to, deep dynamic compaction (DDC),[74] vibro-compaction, and stone columns, as described in 2010 FEIR mitigation measure MM GE-5a, as well as drilled displacement columns, vibro-densification, deep soil mixing (DSM), and grout columns.
- The use of locally excavated and imported fill to add 5 to 10 feet of additional fill over existing ground surface, raising the site grade such that finished floor elevations would be 5.5 feet above the Base Flood Elevation (BFE) (as compared to 3.5 feet as analyzed by the Project in the 2010 FEIR), to complete surcharging and ground improvement, to elevate the site in compliance with new requirements for SLR planning, and to provide the SFPUC with required freeboard and cover for utility systems.
- For HPS2, the use of a proposed ground source geothermal heating and cooling system that would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. The boreholes would be located below parks and open space areas in the Warehouse neighborhood and would avoid other areas, as feasible, such as beneath public roads, State Trust lands, RAD restricted areas, and other areas of soil and groundwater contamination.
- For the 2018 Modified Project Variant, total excavation needed at the HPS2 site is estimated to be approximately 100,000 cubic yards (as compared to 82,500 cubic yards (cy) assumed for 2010 Project), with the increase primarily due to additional utility trenching, installation of the boreholes, and more-refined information regarding construction activities. Excavation

[74] DDC utilizes impact energy from a large weight free falling from a significant height to densify the ground. The weight is repeatedly dropped in a specific grid pattern at a defined drop height. At impact with the ground, energy is transmitted at depth to densify loose material.

associated with the boreholes would result in approximately 12,250 cy of soil, which would be reused on site in a manner consistent with the Soil Import Plan and Risk Management Plan.

- As with the 2010 Project, the 2018 Modified Project Variant would require up to 2,546,300 cy of imported fill for the developed areas and open space areas. Of this, up to 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Imported backfill sand would be screened for contaminants in accordance with the soil import criteria specified in the Risk Management Plan.

Various site-specific design-level geotechnical studies[75] of the Project site have been completed by ENGEO to address the 2018 Modified Project Variant. These studies include previous site-specific geotechnical investigations, subsurface exploration, geological mapping, review of aerial photographs, observation of existing soil conditions behind existing shoreline structures, and review of published geologic reports and maps. Descriptions of geologic conditions and evaluations of geotechnical risks pertinent to the planned development at the Project site are also discussed in these reports.

New Regulations

The following new regulations would apply to the analysis of geology and soils impacts.

California Building Code and the San Francisco Building Code. The 2016 *California Building Code* CBC, effective January 1, 2017, is based on the (2015) International Building Code (IBC).[76] San Francisco adopted the 2016 CBC as the basis for its Building Code through Ordinance No. 53-17, on March 17, 2017. The full 2016 San Francisco Building Code (SFBC) consists of the 2015 IBC, as amended by the 2016 CBC, and as further modified by San Francisco amendments designed to be used in conjunction with the 2016 CBC. The SFBC amendments were adopted by the Board of Supervisors on December 22, 2016, through Ordinances 225-16 and 226-16, effective January 1, 2017.

Comparative Impact Discussions

Impact GE-1b: Construction at HPS Phase II would not result in the loss of topsoil caused by soil erosion. ***[Criterion L.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR described the potential for the loss of topsoil caused by soil erosion at the HPS2 site, which would be controlled during and after Project construction through the requirements of mitigation measure MM HY-1a.1. Adverse effects on the soil, such as soil loss from wind erosion and stormwater runoff, would be avoided or reduced to less-than-significant levels.

[75] ENGEO, Inc., *Preliminary Geotechnical Report, Hunters Point Shipyard Phase II Infrastructure Improvements, San Francisco, California*, April 2017.
ENGEO, Inc., *Geotechnical Exploration and Shoreline Conditions Report, Hunters Point Shipyard Redevelopment – Phase II, San Francisco*, May 2017.
[76] California Building Standards Commission, *2016 California Building Code*, California Code of Regulations, Title 24, Part 2, Volumes 1 and 2, effective January 1, 2017.

Nothing has changed with the 2018 Modified Project Variant that would change this conclusion. With implementation of mitigation measure MM HY-1a.1, construction of the 2018 Modified Project Variant would not result in the loss of topsoil caused by soil erosion. The impact would remain less than significant (or would be avoided) with implementation of the identified mitigation measure.

Impact GE-2b: Construction at HPS Phase II would not result in damage to structures caused by settlement from lowering of groundwater levels. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR described how Project construction activities, including potential dewatering procedures during excavation, construction, and operation of foundations and buried utilities, have the potential to affect groundwater levels, and could cause settlement of adjacent soil that could damage the overlying foundations of existing buildings. San Francisco Building Code (SFBC) Section 1803.1, which requires that excavations for any purpose not remove support from adjacent or nearby structures without first protecting them against settlement or lateral movement, would be applicable. Implementation of mitigation measure MM GE-2a would ensure protection during dewatering where adjacent or nearby structures exist, and settlement hazards related to dewatering would be less than significant.

For the 2018 Modified Project Variant, construction activities would be similar, and the requirements of SFBC Section 1803.1 would continue to apply to dewatering activities. Operation of the geothermal system would not affect groundwater levels because it is a closed system that uses its own fluid and does not use or have a hydrological connection with groundwater. With implementation mitigation measure MM GE-2a, settlement hazards related to dewatering would remain less than significant.

Impact GE-4b: Implementation of the Project at HPS Phase II would not expose people and structures to substantial adverse effects caused by seismically induced groundshaking. ***[Criterion L.a(ii)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR acknowledged the potential for exposure to adverse effects caused by seismically induced groundshaking to the development at the HPS2 site, due to active faults near the Project site. To address groundshaking, required design-level geotechnical investigations include site-specific seismic analyses to evaluate the peak ground accelerations for design of Project components, as required by Chapter 16 (Structural Design) and Chapter 18 (Soils and Foundations) of the SFBC. Accordingly, mitigation measure MM GE-4a.1 would be implemented for development of HPS2. Based on the seismic analyses, structure designs would be modified or strengthened and

constructed to the highest feasible seismic safety standards, consistent with the requirements of the SFBC, as deemed appropriate by the Project engineer and verified by the San Francisco Department of Building Inspection (DBI), if the anticipated seismic forces (calculated peak vertical and horizontal ground accelerations caused by groundshaking) were found to be greater than anticipated. Implementation of this mitigation measure would ensure that potential impacts from groundshaking would be less than significant.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, the overall extent of construction or operational activities, or the nature of the Project land uses. For the 2018 Modified Project Variant, nothing has changed with respect to the potential exposure to seismically induced groundshaking, and with adherence to SFBC design requirements and implementation of mitigation measure MM GE-4a.1, the potential impacts from groundshaking would remain less than significant.

Impact GE-5b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement. ***[Criterion L.a(iii)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR acknowledged the potential for exposure of HPS2 structures to seismically induced ground failure, including liquefaction hazards, due to the existing geology of the site. Design and construction of the structures and facilities in the HPS2 site would incorporate appropriate engineering practices to ensure seismic stability, as required by Chapter 16 (Structural Design) and Chapter 18 (Soils and Foundations) of the SFBC.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, the overall extent of construction or operational activities, or the general mixed-use urban nature of the Project land uses. With the 2018 Modified Project Variant, HPS2 structures would be exposed to potential seismically induced ground failure, including liquefaction hazards. As with the Project analyzed by the 2010 FEIR, mitigation measures MM GE-4a.1 and MM GE-5a would ensure that the design and construction of the structures and facilities in the 2018 Modified Project Variant incorporates appropriate engineering practices to ensure seismic stability.

Mitigation measure MM GE-4a.1 would reduce impacts from liquefaction, lateral spreading, and settlement. If liquefaction estimates were such that MM GE-4a.1 would not address liquefaction and settlement-related impacts adequately, further mitigation would include one or more of the additional structural and/or ground-improvement procedures identified in mitigation measure MM GE-5a. Selection of the appropriate procedures would be dependent on the land use, development type, soil profile, and estimated settlement. Together, mitigation measures MM GE-4a.1 and MM GE-5a would reduce or avoid impacts related to seismically induced ground

failure such as liquefaction, lateral spreading, and/or settlement, reducing the impact to a less-than-significant level.

The 2018 Modified Project Variant may utilize DDC as a ground improvement technique for densifying the artificial fill at the site to reduce liquefaction risks, and in particular to provide sufficient treatment of the fill to allow mid-rise construction to be founded on a shallow foundation system as an alternative to deep foundation systems deriving support on deeper competent material. A full-scale test program[77] has been performed at the adjacent CP site that demonstrates DDC is an appropriate method for densifying the upper 20 to 30 feet of artificial fill across portions of the site to minimize liquefaction risks; a subsequent technical memo[78] indicates that findings from the CP study could be used as reference, but similar site-specific studies should be performed to determine the efficacy of DDC in reducing liquefaction risks at HPS2. The primary environmental impact associated with the use of DDC would be vibration-related impacts, which are addressed in Section II.B.8 (Noise and Vibration). The primary impacts related to the use of other ground improvement techniques, such as stone columns, grout columns, or drilled displacement columns, are similar to the impacts related to the installation of geothermal boreholes, which are addressed in Addendum 5 Section II.B.9 (Cultural Resources), Section II.B.10 (Hazards and Hazardous Materials), and Section II.B.11 (Geology and Soils).

The Site-Specific Geotechnical Investigation required by mitigation measure MM GE-5a would ensure that the selected ground improvement technique is appropriate for the site and would effectively minimize the impact of liquefaction, lateral spreading and seismic settlement hazards at CP and HPS2. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

> **MM GE-5a: Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement.** Prior to issuance of building permits for the Project site:
>
> - The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices, and analyses of structural design

[77] ENGEO, Inc., *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017.
[78] ENGEO, Inc., *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential liquefaction hazards.

- DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods.
- All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations.
- The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce liquefaction hazards. The engineering design techniques to reduce liquefaction hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval, including, but not necessarily limited to:

Structural Measures

- Construction of deep foundations, which transfer loads to competent strata beneath the zone susceptible to liquefaction, for shallow foundations
- Structural mat foundations to distribute concentrated load to prevent damage to structures

Ground Improvement Measures

- Additional over-excavation and replacement of unstable soil with engineering-compacted fill
- Dynamic compaction, such as Deep Dynamic Compaction (DDC) or Rapid Impact Compaction (RIC), to densify loose soils below the groundwater table
- Vibro-compaction, sometimes referred to as vibro-floatation, to densify loose soils below the groundwater table
- Stone columns to provide pore pressure dissipation pathways for soil, compact loose soil between columns, and provide additional bearing support beneath foundations
- Soil-cement columns to densify loose soils and provide additional bearing support beneath foundations
- Deep displacement grout columns to densify loose soil and provide additional bearing support beneath foundations
- The Project CEG or GE shall be responsible for ensuring compliance with these requirements.

Impact GE-6b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by seismically induced landslides. ***[Criterion L.a(iv)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR concluded that there are no potential landslide hazards within the HPS2 site boundaries. Therefore, there would be no impact caused by seismically induced landslides.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, nor to the site boundaries. There would be no impact to the Project from seismically induced landslides.

Impact GE-7b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by shoreline instability. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR outlines the various repairs, improvements, and modifications at HPS2 that would be required to stabilize the shoreline and protect structures and facilities at HPS2 from the adverse effects caused by shoreline instability. To reduce the potential for a future rise in sea level that could adversely affect the Project site, the Project includes modification of the land surface through grading and the importation of fill. These modifications would raise the surface elevation by 36 inches above the 100-year base flood elevation and building finish floor elevations would be 6 inches above that (total of 42 inches above Base Flood Elevation) per mitigation measure MM HY-12a.1 to account for future SLR and include an adaptive management strategy that would provide further protection for future SLR up to 55 inches if this should become necessary.

Revised SLR estimates published in 2012 by the National Research Council (NRC)[79] have become what is currently considered by the regulatory community as the "best available science" for California. The NRC projections include forecasts (most likely estimates) and high estimates (assumed worst case) for 2030, 2050, and 2050. As such, NRC projections have been incorporated into specific guidance relating to accommodating SLR on waterfront project by the agencies having jurisdiction over the Project. As discussed under Impact HY-12b in the Hydrology and Water Quality section, the City of San Francisco in 2014 adopted new guidance[80] for incorporating SLR into the design and construction of new development, and the Bay Conservation and Development Commission (BCDC), which has jurisdiction over the coastal zone along the San Francisco Bay,

[79] National Research Council (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. The National Academies Press, Washington, D.C., 2012.
[80] San Francisco Sea Level Rise Committee. 2014. *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco – Assessing Vulnerability and Risk to Support Adaptation*. September 2014.

updated its San Francisco Bay Plan in 2011[81] with specific recommendations regarding hazard mapping, adaptive management and other SLR adaptation strategies.

The 2018 Modified Project Variant would continue to require improvements and modifications at HPS2 to stabilize the shoreline and protect structures and facilities at HPS2 from the adverse effects caused by shoreline instability, including modification of the land surface through grading and ground improvement to reduce the potential for shoreline instability to adversely affect the Project site. The Site-Specific Geotechnical Investigation required by mitigation measure MM GE-5a would ensure that Project plans and shoreline engineering practices are consistent with SFBC standards to ensure seismic shoreline stability. Selected ground improvement technique is appropriate for the site and would effectively mitigate the shoreline instability at HPS2 to a less-than-significant level.

In addition to the structural improvements to shoreline features, the 2018 Modified Project Variant includes elevating the site using locally excavated and imported of fill to reduce the potential for a future rise in sea level to adversely affect the Project site. These modifications would raise the finished floor elevation by 5.5 feet above BFE per mitigation measure MM HY-12a.1 to account for future SLR. Mitigation measure MM HY-12a.2 includes an adaptive management strategy for the shoreline areas, which have higher adaptive capacity and resilience compared to development areas, requiring setbacks to accommodate future SLR-related improvements, and assurances that that the shoreline protection system, storm drain system, public facilities, and public access improvements would be protected should SLR exceed 2 feet. Therefore, the 2018 Modified Project Variant would not result in exposure of structures and facilities at HPS2 to substantial adverse effects caused by shoreline instability. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

> **MM GE-5a, Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement**, is provided in full on p. 253 under Impact GE-5b.

Impact GE-8b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by landslides. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR identified the potential for exposure to adverse effects caused by landslides in the HPS2 site, in the upland areas of the shoreline where serpentinite is abundant in the shear zone. Implementation of mitigation measure MM GE-6a would ensure that risks to structures in HPS2 from landslides would be avoided or reduced a less-than-significant level.

[81] San Francisco Bay Conservation and Development Commission, *Living with a Rising Bay. Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, October 2011.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, nor to the site boundaries. Thus, the potential for exposure to adverse effects caused by landslides in the HPS2 site remains in the upland areas of the shoreline where serpentinite is abundant in the shear zone. With implementation of mitigation measure MM GE-6a, the risks to structures in HPS2 from landslides would be avoided or reduced. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact GE-9b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by damage from settlement. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As identified in the 2010 FEIR, the potential for exposure to adverse effects caused by settlement in the HPS2 site exists. Poorly consolidated artificial fill deposits are abundant in the HPS2 site. Slight to severe damage to structures could occur caused by the settlement of poorly compacted fill or consolidation of very soft natural deposits. The 2010 FEIR found that implementation of mitigation measure MM GE 5a would ensure Project compliance with the requirements of the SFBC and would ensure that potential impacts from unstable subsurface soils would be less than significant.

With the 2018 Modified Project Variant, in areas of the site containing loose artificial fill with a greater risk of settlement, a range of ground improvement techniques may be used to densify the fill and reduce seismically induced settlement risk, including but not limited to Deep Dynamic Compaction (DDC), Drilled Displacement Columns, Vibro-Compaction, Vibro-Densification, Deep Soil Mixing (DSM), Stone Columns, and Grout Columns. A full-scale test program (ENGEO 2017)[82] has been performed that demonstrates DDC is an appropriate method for densifying the upper 20 to 30 feet of artificial fill across some portions of the adjacent CP site to minimize liquefaction risks, and in particular to provide sufficient treatment of the fill to allow mid-rise construction to be founded on a shallow foundation system as an alternative to deep foundation systems deriving support on deeper competent material. A subsequent technical memo[83] recommends that findings from the CP study could be used as reference, but that site-specific studies should be performed to determine the efficacy of DDC for mitigating liquefaction risks at CP or HPS2.

The Site-Specific Geotechnical Investigation required by Mitigation Measure MM GE-5a would ensure that the selected ground improvement technique is appropriate for the site and would effectively mitigate the settlement hazards at CP and HPS2. The impact would remain less than significant with implementation of the identified mitigation measure.

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[82] ENGEO, Inc., *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017.
[83] ENGEO, Inc., *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

Mitigation Measure with Proposed 2018 Modifications

MM GE-5a, Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement, is provided in full on p. 253 under Impact GE-5b.

Impact GE-10b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by expansive soils. ***[Criterion L.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

According to the 2010 FEIR, the HPS2 site has the potential to expose Project improvements to adverse effects caused by expansive soil, which could include damage to structures, foundations, and buried utilities and could increase required maintenance.

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, impacts related to expansive soil would be avoided or reduced a less-than-significant level for structures and facilities in the HPS2 site through the implementation of standard engineering and geotechnical practices for the identification and remediation of expansive soil, as required by Chapter 18 (Soils and Foundations) of the SFBC. Implementation of mitigation measure MM GE-10a would avoid or reduce the impact to structures and facilities at HPS2 from expansive soil. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact GE-11b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by corrosive soils. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

According to the 2010 FEIR, structures at HPS2 could be exposed to corrosive soil hazards.

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, impacts related to corrosive soil would be less than significant for structures and facilities in the HPS2 site through the implementation of standard engineering and geotechnical practices for the identification and protection against corrosive soil, as required by Chapter 18 (Soils and Foundations) of the SFBC. Implementation of mitigation measure MM GE-11a would ensure compliance with the requirements of the SFBC and would avoid or reduce the impact on structures and facilities in HPS2. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact GE-12: Implementation of the Project would not expose people or structures to substantial adverse effects caused by surface fault rupture. ***[Criterion L.a(i)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, fault rupture hazards in the Project site are unlikely. No known active faults cross the Project site, making hazards from fault rupture unlikely. Therefore, there would be no impact caused by surface fault rupture.

Impact GE-13: Implementation of the Project would not result in the use of soils incapable of adequately supporting septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. ***[Criterion L.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, the Project would be connected to the City's existing wastewater treatment and disposal system. Development of the Project would not involve the use of septic tanks or alternative wastewater disposal systems. No impact would occur.

Impact GE-14: Implementation of the Project would not result in a substantial change of topography or destruction of unique geologic features. ***[Criterion L.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR acknowledged that the Project would alter the surface topography of the site including adding 3 feet of fill in some areas and would alter the shoreline with new seawalls or other shoreline protection. The 2010 FEIR concluded that these changes would not substantially change the site topography or affect unique geological features. To accommodate SLR and account for required cover over pipes as defined by the SFPUC and the CP-HP subdivision regulations, the 2018 Modified Project Variant would add from 5 to 15 feet of fill in some areas to raise the site from current levels by an average of about 4.25 feet across the graded areas, but would generally remain relatively flat.[84] Similar to the 2010 Project, the 2018 Modified Project Variant would not substantially change site topography or affect unique geologic features, and would have no impact on such features.

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[84] As described in Impact GE-7b, the site must be raised to account for future sea level rise. MM HY-12a.1 (as modified per new guidance and regulation) requires that finished floor elevations be 5.5 feet above BFE.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to geology and soils impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to geology and soils, either on a project-related or cumulative basis.

II.B.12 Hydrology and Water Quality

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
9.	**Hydrology and Water Quality.** Would the Project:					
M.a	Violate any water quality standards or waste discharge requirements?	2010 FEIR p. III.M-66 (Impact HY-1b), p. III.M-84 (Impact HY-6b); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-5a, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM HY-6a.1, MM HY-6a.2, MM HY-6b.1, MM HY-6b.2, MM HY-6b.3, MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1, MM BI-12b.2, MM BI-18b.1, MM BI-18b.2, MM BI-19b.1, MM BI-19b.2,
M.b	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	2010 FEIR p. III.M-74 (Impact HY-2), p. III.M-93 (Impact HY-8); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	None

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
M.c	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on site or off site?	2010 FEIR p. III.M-75 (Impact HY-3), p. III.M-93 (Impact HY-9); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-6a.1
M.d	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 site or off site?	2010 FEIR p. III.M-75 (Impact HY-4), p. III.M-94 (Impact HY-10); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM HY-6a.1
M.e	Create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff?	2010 FEIR p. III.M-76 (Impact HY-5), p. III.M-96 (Impact HY-11); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-1a.2, MM HY-6a.1
M.f	Otherwise substantially degrade water quality?	2010 FEIR p. III.M-91 (Impact HY-7); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-6a.1, MM HY-6a.2, MM HY-6b.1
M.g	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	2010 FEIR p. III.M-101 (Impact HY-12b); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-12a.1, MM HY-12a.2
M.h	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	2010 FEIR p. III.M-102 (Impact HY-13b); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-12a.2

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
M.i	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?	2010 FEIR p. III.M-103 (Impact HY-14); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-14
M.j	Expose people or structures to inundation by seiche, tsunami, or mudflow?	2010 FEIR p. III.M-104 (Impact HY-15); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	None

Changes to Project Related to Hydrology and Water Quality

The 2018 Modified Project Variant includes the following activities related to hydrology and water quality:

- The use of a ground source geothermal heating and cooling system at HPS2 that would require approximately 2,800 geothermal boreholes to meet heating and cooling demands.
- Raising the HPS2 site to a higher base elevation than what was proposed for the Project analyzed in the 2010 FEIR, to reflect the most recent science and thinking for SLR planning and to provide the SFPUC with increased freeboard and cover for utility systems based on that science. For the 2018 Modified Project Variant, finished floor elevations would be 5.5 feet above the Base Flood Elevation (BFE), as compared to 3.5 feet as analyzed by the Project in the 2010 FEIR, using locally excavated and imported fill.

New Regulations

The following new regulations would apply to the analysis of hydrology and water quality impacts.

New Sea Level Rise Policies and Guidance. In 2012, the National Research Council's (NRC) published *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (the NRC Report), which provides a scientific review of SLR for the West Coast and provides the most recent regional SLR predictions for 2030, 2050, and 2100, relative to the year 2000 sea level.[85] In March 2013, the California Ocean Protection Council updated its 2010 Statewide SLR guidance to adopt the NRC Report as the current, best available science on SLR for California. The California Coastal Commission supports the use of the NRC Report as the best science currently available in its *Sea Level*

[85] National Research Council, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. Washington, DC: The National Academies Press, 2012. Available at https://www.nap.edu/catalog/13389/sea-level-rise-for-the-coasts-of-california-oregon-and-washington, accessed November 30, 2017.

Rise Policy Guidance, which it adopted in 2015.[86] The California Coastal Commission guidance emphasizes the importance of regularly updating SLR projections as the science continues to advance.[87] The San Francisco Bay Conservation and Development Commission (BCDC), which has jurisdiction over the coastal zone along the San Francisco Bay, also considers the NRC Report to be the best available science-based prediction of SLR for San Francisco Bay. Accordingly, the City of San Francisco Planning Department considers the NRC Report to be the best science currently available on SLR affecting San Francisco for both CEQA and planning purposes. In 2011, the BCDC updated its San Francisco Bay Plan[88] with specific recommendations regarding hazard mapping, adaptive management and other seal level rise (SLR) adaptation strategies. In 2014, the City of San Francisco adopted new guidance[89] for incorporating SLR into the design and construction of new development.

Stormwater Management Ordinance. In 2010, the San Francisco Board of Supervisors passed San Francisco's first SMO, which requires the installation and maintenance of stormwater management controls for development and redevelopment projects meeting specific area and project type criteria. The SMO requires stormwater management controls for new and redevelopment projects in both the City's separate and combined sewer areas. The SMO was updated in 2016 to comply with the 2013 MS4 Permit and to reflect improvements made in the City's stormwater management review processes since enactment of the SMO in 2010. The SMO provides the SFPUC and Port with the legal authority to implement the post-construction program outlined in the City's Stormwater Management Requirements and Design Guidelines.

San Francisco Public Works Code, Article 4.2 – Stormwater Management Requirements and Design Guidelines. This update to the 2010 San Francisco Stormwater Design Guidelines became effective on May 27, 2016. Development projects discharging stormwater to either the combined sewer system or a separate stormwater system must comply with San Francisco Public Works Code Article 4.2, Section 147. The SFPUC and the Port have developed the San Francisco Stormwater Management Requirements and Design Guidelines provide regulatory requirements for post-construction stormwater management controls for new and redevelopment projects and help design teams implement these stormwater controls in accordance with the requirements of the Small MS4 General Stormwater Permit and Article 4.2, Section 147.[90]

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[86] Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), *State of California Sea-Level Rise Guidance Document.* Developed by CO-CAT, with science support provided by the Ocean Protection Council's Science Advisory Team and the California Ocean Science Trust, March 2013 Update (hereinafter "*State of California Sea-Level Rise Guidance Document*"). Available at http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf, accessed November 30, 2017.

[87] California Coastal Commission, *Sea Level Rise Policy Guidance, Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*, Unanimously Adopted August 12, 2015. Available at http://documents.coastal.ca.gov/assets/slr/guidance/August2015/0_Full_Adopted_Sea_Level_Rise_Policy_Guidance.pdf, accessed November 30, 2017.

[88] San Francisco Bay Conservation and Development Commission, *Living with a Rising Bay. Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, October 2011.

[89] San Francisco Sea Level Rise Committee, *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco – Assessing Vulnerability and Risk to Support Adaptation*, September 2014.

[90] SFPUC and Port of San Francisco, *San Francisco Stormwater Management Requirements and Design Guidelines*, April 2016.

Green Building Ordinance (City and County of San Francisco Building Code Chapter 13C). In November 2008, the City passed the San Francisco Green Building Ordinance (SFGBO), which is included as *San Francisco Building Code* Chapter 13C. In 2013, the SFGBO was amended to incorporate all mandatory elements of the 2013 CALGreen and Title 24 energy-efficiency standards and require green building practices and Leadership in Energy and Environmental Design (LEED) certification for all new residential and commercial construction in the city, unless otherwise indicated in the SFGBO, as well as alterations to existing buildings. The *Green Building Code* was last amended in April 2016, removing all references to LEED regarding stormwater management while incorporating new requirements established by the San Francisco Stormwater Management Requirements and Design Guidelines.

Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard. These regulations were adopted by the San Francisco Department of Public Works in June 2014 pursuant to the Subdivision Code Section 1611, together with Public Works Code Sections 147.2(b)(2) and 1204(b)(2) to serve as general guidelines for the planning, development, design and improvement of the Candlestick Point/Hunters Point Shipyard development. Specific requirements for SLR planning are included as Attachment 4.

Comparative Impact Discussions

Impact HY-1b: Construction at HPS Phase II would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements. ***[Criterion M.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that construction activities at HPS2 would not exceed water quality standards or contribute to or cause a violation of waste discharge requirements, with the implementation of mitigation measures MM HY-1a.1 (SWPPP—Combined Sewer System), MM HY-1a.2 (SWPPP—Separate Storm Sewer System), MM HZ-1a (Article 22 Site Mitigation Plan), MM HZ-2a.1 (Unknown Contaminant Contingency Plan), MM HY-1a.3 (Groundwater Dewatering Plan), MM HZ-5a (Foundation Support Piles Installation Plan), MM HZ-10b (Regulatory Agency Approved Workplans and Permits for Shoreline Improvements), MM HZ-12 (Compliance with Administrative Order of Consent at Early Transferred Parcels), MM HZ-15 (Asbestos Dust Mitigation and Control Plans), MM BI-4a.1 (Wetlands and Jurisdictional/Regulated Waters Mitigation for Temporary and/or Permanent Impacts), MM BI-4a.2 (Wetlands and Jurisdictional/Regulated Waters Impact Minimization for Construction-Related Impacts); MM BI-5b.4 (Eelgrass Water Quality BMPs); MM BI-12b.1 (Essential Fish Habitat Avoidance and Minimization Measures) and MM BI-12b.2 (Deconstruction/Construction Debris Recovery). All of the mitigation measures referenced in the hydrology section of the 2010 FEIR would ensure that water quality standards would not be exceeded nor would construction at HPS2 cause or contribute to a violation of the applicable waste discharge requirements (WDRs). A less-than-significant impact would result.

The 2018 Modified Project Variant would not result in any significant changes to the location of the Project and the extent of construction activities. Development would continue to occur on the same areas of the site analyzed for development in the 2010 FEIR. The installation of the geothermal wells using the mud rotary method would not require dewatering and would present little opportunity for impacting water quality. Once each borehole is completed, the drilling fluid would be removed and disposed of off site at a landfill. The drilling process would fall under the SWPPP measures but no groundwater dewatering plan would be required.

There are no changed circumstances or new information regarding the 2018 Modified Project Variant that would result in any different conclusions than those reached in the 2010 FEIR regarding the violation of water quality standards or waste discharge requirements. The 2010 FEIR mitigation measures and compliance with the regulatory requirements for water quality, runoff control, and stormwater management would continue to ensure that Project impacts are mitigated in accordance with the 2010 FEIR analysis and conclusions. Therefore, the 2018 Modified Project Variant would not result in new significant impacts or a substantial increase in the severity of previously identified impacts with respect to water quality standards or waste discharge requirements. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HY-2: Construction activities associated with the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. ***[Criterion M.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR noted that groundwater would not be used for any construction activities such as dust control or irrigation of vegetated erosion control features; no groundwater wells would be developed as part of the Project and no on-site groundwater wells would be used for water supplies. Short-term construction groundwater dewatering would perhaps be necessary at certain locations (e.g., for installation of building foundations or underground utilities), but dewatering would have only a minor temporary effect on the groundwater table elevation in the immediate vicinity of the activity, and would not measurably affect groundwater supplies. Further, the shallow groundwater underlying the Project site at HPS2 is not used for water supply. Construction activities would generally occur within areas that are already developed, and much of the existing open space would remain undeveloped and continue to contribute to groundwater recharge. Construction of the Project would include installation and operation of groundwater remediation and monitoring wells, as required by Navy transfer documents and regulatory requirements (as discussed in 2010 FEIR Section III.K). The 2010 FEIR concluded that construction at the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, and this impact would be less than significant.

For the 2018 Modified Project Variant, the installation of the geothermal wells using the mud rotary method would not require dewatering and thus would not impact groundwater levels. The impact would remain less than significant, and no mitigation would be required.

Impact HY-3: Construction activities associated with the Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site. ***[Criterion M.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that construction at the Project site would not substantially alter the existing drainage pattern of the site or area such that on- or off-site erosion is substantially increased and this impact would be less than significant.

As with the Project analyzed in the 2010 FEIR, stormwater associated with the 2018 Modified Project Variant either drains to storm drains (which include both combined and separate systems), or drains directly to the Bay via surface runoff (generally only along the shoreline). The existing drainage patterns would be generally preserved, with locally modified drainage patterns within the affected area due to the raising of ground elevation to protect the area from a potential rise in sea level. As with the Project analyzed in the 2010 FEIR, most of the affected area is already drained by sewer systems (combined and separate), and would continue to drain to a newly constructed entirely separate storm sewer systems, this would not result in a substantial alteration of drainage patterns related to erosion potential. Construction at the Project site would not substantially alter the existing drainage pattern of the site or area such that on- or off-site erosion would substantially increase. The impact would remain less than significant, and no mitigation would be required.

Impact HY-4: Construction activities associated with the Project would not substantially alter the existing drainage pattern of the site, 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. ***[Criterion M.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR notes that no streams or rivers exist within the Project site, and thus, no streams or rivers would be altered by construction activity. The amount of impervious area would not increase; impervious areas would be removed and/or replaced and the Project site would generally be graded flat (0.1 to 0.5 percent grade), resulting in no increase in stormwater runoff during construction. As discussed in the 2010 FEIR under Impact HY-3, construction activities at the Project site would not substantially alter existing drainage patterns causing or contributing to increased stormwater runoff.

Construction would include clearance, grading, and excavation, and the subsequent construction of new buildings and infrastructure. With implementation of mitigation measures MM HY-1a.1 and MM HY-1a.2 (preparation of a SWPPP with BMPs to collect, retain as appropriate, and discharge stormwater runoff), and MM HY-1a.3 (Construction Dewatering Plan), construction of the Project would not substantially alter the existing drainage pattern of the site or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site, and this impact would remain less than significant.

With the 2018 Modified Project Variant nothing has changed with respect to construction that would alter the existing drainage pattern of the site or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site, and with implementation of mitigation measures MM HY-1a.1, MM HY-1a.2, and MM HY-1a.3, this impact would remain less than significant.

Impact HY-5: Construction activities associated with the Project would not create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff. ***[Criterion M.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, management of runoff within portions of the Project site affected by construction activity discharging directly to the Bay or to a separate storm drain system would be governed by the conditions of a Stormwater Pollution Prevention Plan (SWPPP) developed per Construction General Permit requirements, as required by mitigation measure MM HY-1a.2, which would include measures to collect, retain, and discharge runoff in ways that do not overwhelm the capacity of existing downstream drainage facilities. Management of runoff from areas draining to the combined sewer system would be governed by conditions of a SWPPP with an Erosion and Sediment Control Plan (ESCP), developed per SFPUC requirements.

As described in the 2010 FEIR for Impact HY-1, dewatering to the combined sewer system would require a Batch Wastewater Discharge Permit from the SFPUC. This remains true for the 2018 Modified Project Variant. Permit conditions are specified by the SFPUC to prevent violation of the SFPUC's Wastewater Discharge Permit, including conveyance capacity constraints and effluent limits. Dewatering discharges to the separate sewer system would be governed by conditions of the Construction General Permits, other general permits, or an individual NPDES Permit/WDR, as specified by the SFRWQCB. This remains true for the 2018 Modified Project Variant.

As discussed in the 2010 FEIR for Impacts HY-3 and HY-4, construction of the Project would not be expected to greatly alter Project site drainage such that stormwater runoff is increased. This remains true for the 2018 Modified Project Variant. During construction, existing stormwater drainage facilities would be replaced by new, entirely separate sewer systems that would collect and treat site

stormwater flows. This new storm drain system would be designed and sized in accordance with the Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard and would also be sized to accommodate 5-year storm event flows from upstream contributing areas (HPS1). In accordance with City design criteria, the newly piped storm drain system would be sized to convey the 5-year storm event when flowing full or surcharged (overloaded/flooded) and runoff from the 5-year storm event up to the 100-year storm event would be contained within the streets and drainage channels rights-of-way.

Impacts associated with additional sources of polluted runoff are addressed by the 2010 FEIR in Impact HY-1. As discussed under Impact HY-1, implementation of mitigation measures would reduce potential for construction activities to generate additional sources of polluted runoff to a less-than-significant level. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HY-6b: Implementation of the Project at HPS Phase II would not contribute to violations of water quality standards or waste discharge requirements. ***[Criterion M.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that development at HPS2 would not exceed water quality standards or contribute to or cause a violation of waste discharge requirements, with the implementation of mitigation measures MM HY-6a.1 (Regulatory Stormwater Requirements as modified to reflect new regulations), MM HY-6a.2 (Recycled Water Irrigation Requirements), MM HY-6b.1 Limitations on Stormwater Infiltration), MM HY-6b.3 (Clean Marinas California Program), MM HZ-1b (Compliance with Requirements Imposed by Cleanup Decision Documents and Property Transfer Documents), MM HZ-2a.1 (Unknown Contaminant Contingency Plan), MM HZ-5a (Foundation Support Piles Installation Plan), MM HZ-9 (Navy-approved workplans for construction and remediation activities on Navy-owned property), MM HZ-10b (Regulatory Agency Approved Workplans and Permits for Shoreline Improvements), MM HZ-12 (Compliance with Administrative Order of Consent at Early Transferred Parcels), MM HZ-15 (Asbestos Dust Mitigation and Control Plans), MM BI-18b.1 (Maintenance Dredging and Turbidity Minimization Measures for the Operation of the Marina), MM BI-18b.2 (Implement BMPs to Reduce Impacts of Dredging to Water Quality), MM BI-19b.1 (Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina), and MM BI-19b.2 (Implement BMPs to Reduce Impacts of Dredging to Water Quality). These mitigation measures would ensure that water quality standards would not be violated nor would development at HPS2 cause or contribute to a violation of the applicable waste discharge requirements (WDRs). A less-than-significant impact would result.

The Project analyzed by the 2010 FEIR would remove existing buildings and other improvements at HPS2 that contain approximately 327 acres of impervious surfaces and replace them with approximately 214 acres of impervious surfaces, thereby reducing the total area of impervious cover

at HPS2 by approximately 35 percent. The 2018 Modified Project Variant would include approximately 230 acres of impervious surfaces, reducing the total impervious area by approximately 30 percent. As with the original Project analyzed in the 2010 FEIR, the reduction of impervious surfaces with implementation of the 2018 Modified Project Variant would reduce the volume of stormwater runoff from the HPS2 area and the extent of impervious area that could contribute pollutants in runoff. In addition, as with the Project as analyzed by the 2010 FEIR in Table III.M-4 (Estimated Change in Annual Pollutant Loads from HPS Phase II without BMPs), the change in land use with the 2018 Modified Project Variant, combined with the reduction in impervious surface, would result in a net decrease in the total pollutants loads in stormwater runoff. The implementation of required stormwater treatment BMPs would further reduce pollutant loads in stormwater runoff.

Plans for the 2018 Modified Project Variant reflect the current regulations, including the San Francisco Stormwater Management Requirements and Design Guidelines (SMR) and the Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard that were issued since the 2010 FEIR was certified. MM HY-6a.1 has been modified by Addendum 5 to reflect the new regulations in the 2016 SMR. The rest of the 2010 FEIR mitigation measures would apply to the 2018 Modified Project Variant, to ensure that Project impacts are mitigated in accordance with the 2010 FEIR analysis and conclusions. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-6a.1: Regulatory Stormwater Requirements.** The Project Applicant shall comply with requirements of the Municipal Stormwater General Permit and associated City SWMP, appropriate performance standards established in the Green Building Ordinance, and performance standards established by the SFPUC in the San Francisco Stormwater Management Requirements and Design Guidelines (SMR).
>
> The ~~Draft San Francisco Stormwater Design Guidelines have been developed to satisfy the Municipal Stormwater General Permit requirements for new development and redevelopment projects in areas served by separate storm sewers, and are expected to be adopted by December 2009~~ SMR includes regulatory requirements for post-construction stormwater management controls for new and redevelopment projects and helps design teams implement these stormwater controls. The Project Applicant shall comply with requirements of the ~~Draft San Francisco Stormwater Design Guidelines~~ SMR. ~~Upon adoption of the Final Stormwater Design Guidelines, the Project shall comply with the Final San Francisco Stormwater Design Guidelines unless discretionary permits have been approved.~~
>
> Per the ~~Draft San Francisco Stormwater Design Guidelines~~ SMR, the Project Applicant shall submit a Stormwater Control Plan (SCP) to the SFPUC, as part of the development application submitted for approval. The SCP shall demonstrate how the following measures would be incorporated into the Project:

- Low impact development site design principles (e.g., preserving natural drainage channels, treating stormwater runoff at its source rather than in downstream centralized controls)
- Source control BMPs in the form of design standards and structural features for the following areas, as applicable:
  - Commercial areas
  - Restaurants
  - Retail gasoline outlets
  - Automotive repair shops
  - Parking lots
- Source control BMPs for landscaped areas shall be documented in the form of a Landscape Management Plan that relies on Integrated Pest Management[91] and also includes pesticide and fertilizer application guidelines.
- Treatment control measures (e.g., bioretention, porous pavement, vegetated swales) targeting the Project-specific COCs: sediment, pathogens, metals, nutrients (nitrogen and phosphorus compounds), oxygen-demanding substances, organic compounds (e.g., PCBs, pesticides), oil and grease, and trash and debris. The SCP shall demonstrate that the Project has the land area available to support the proposed BMP facilities sized per the required water quality design storm. Volume-based BMPs shall be sized to treat runoff resulting from 0.75 inch of rainfall ~~(LEED® SS6.2)~~, and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.2<u>4</u> inch per hour. Treatment trains shall be used where feasible.

Additional requirements:

- ~~LEED® SS6.2: BMPs used to treat runoff shall be designed to remove 80 percent of the average annual post-development total suspended solids loads. BMPs are considered to meet these criteria if they are designed in accordance with SFPUC requirements.~~
- The SCP shall include an Operations and Maintenance Plan that demonstrates how the treatment control BMPs would be maintained in the long term, what entities would be responsible for BMP maintenance within the public and private rights-of-way, funding mechanisms, and what mechanisms would be used to formalize maintenance and access agreements.
- The Project Applicant shall also prepare a Stormwater Drainage Master Plan (SDMP) for approval by the SFPUC. The SDMP shall include plans for the storm drain infrastructure and plans for stormwater management controls (e.g., vegetated swales, dry wells). The storm drain infrastructure shall illustrate conveyance of the 5-year

[91] IPM is a strategy that focuses on long-term prevention or suppression of pest problems (i.e., insects, diseases and weeds) through a combination of techniques including: using pest-resistant plants; biological controls; cultural practices; habitat modification; and the judicious use of pesticides according to treatment thresholds, when monitoring indicates pesticides are needed because pest populations exceed established thresholds.

storm event in a separate storm drain piped system, and conveyance of the 100-year storm event in the street and drainage channel rights-of-way.

Impact HY-7: Implementation of the Project would not otherwise degrade water quality. ***[Criterion M.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, implementation of mitigation measure MM HY-6a.1 (as modified to reflect new regulations including compliance with San Francisco Stormwater Management Requirements and Design Guidelines) would result in BMPs designed to treat stormwater runoff for nitrogen compounds. In addition, mitigation measure MM HY-6b.1 would prohibit infiltration BMPs at HPS2 and further reduce the potential for nitrate and TDS degradation of groundwater quality underlying HPS2. Implementation of mitigation measure MM HY-6a.2 would ensure compliance with the Recycled Water General Permit, resulting in application rates that do not exceed agronomic requirements. As such, the potential for recycled water, and associated nitrates and TDS, leaching to groundwater is minimized. Compliance with these mitigation measures would reduce the potential for nitrogen and salt migration to groundwater and Project degradation of groundwater quality. The impact would remain less than signification with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM HY-6a.1, Regulatory Stormwater Requirements, is provided in full on p. 270 under Impact HY-6b.

Impact HY-8: Implementation of the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. ***[Criterion M.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed by the 2010 FEIR, the 2018 Modified Project Variant would not use groundwater as a source of water supply, and would, therefore, not deplete groundwater supplies. As described under Impact HY-6b, the 2018 Modified Project Variant would reduce the total impervious area at HPS2 by approximately 30 percent which could increase infiltration (via natural percolation of rainfall, as stormwater infiltration BMPs would be prohibited by mitigation measure HY-6b.1). Development associated with the 2018 Modified Project Variant would not interfere with groundwater recharge or substantially deplete groundwater supplies; thus, no impact would occur.

Impact HY-9: Implementation of the Project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, and would not result in substantial erosion or siltation on site or off site. ***[Criterion M.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed above in constructions impacts (i.e., Impact HY-4), there are no streams or rivers within the Project site, and grading associated with the 2018 Modified Project Variant would not substantially alter the drainage pattern of the site. The Project site would discharge to a separated storm drain sewer system or the Lower Bay, rather than surface water bodies susceptible to erosion and siltation. In addition, implementation of mitigation measure MM HY-6a.1 (as modified to reflect new regulations) would require preparation of an SCP to control post-construction erosion that incorporates erosion and sediment transport control BMPs. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-6a.1, Regulatory Stormwater Requirements**, is provided in full on p. 270 under Impact HY-6b.

Impact HY-10: Implementation of the Project would not alter the existing drainage pattern of the site, through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff, and would not result in flooding on site or off site. ***[Criterion M.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described under Impact HY-6b, the 2018 Modified Project Variant would reduce the total impervious area at HPS2 by approximately 30 percent which could increase infiltration (via natural percolation of rainfall, as stormwater infiltration BMPs would be prohibited by mitigation measure MM HY-6b.1). Due to the increase in permeable surface area, infiltration would be expected to increase, resulting in a corresponding decrease in runoff volumes. As with the Project analyzed in the 2010 FEIR, grading would reduce slopes at HPS2, slowing runoff rates.

Table 22 (Estimated Stormwater Peak Flow Rates and Runoff Volumes without BMPs) lists the estimated Project site stormwater runoff flow rates for existing and 2018 Modified Project Variant conditions, calculated using the Rational Method and the same assumptions used in the 2010 FEIR.[92]

[92] City and County of San Francisco, Bureau of Engineering, Department of Public Works, Subdivision Regulations, for the Information and Guidance of all Subdividers, Engineers and Surveyors with reference to the Subdivision of Land within the City and County of San Francisco and to Supplement the Subdivision Code, January 6, 1982.

TABLE 22 ESTIMATED STORMWATER PEAK FLOW RATES AND RUNOFF VOLUMES WITHOUT BMPS

Storm Event	Existing (2010) (cfs)[b]	2010 Project (cfs)	2018 Modified Project Variant (cfs)[c]	Increase (Existing over 2018 Modified Project Variant)[a] (cfs)	(%)	Increase (Existing over 2010 Project) (cfs)	(%)
Hunters Point Shipyard[d]							
5-Year	644	448	360	-286	-44%	-196	-30%
10-Year	730	509	509	-221	-30%	-221	-30%
100-Year	1,052	733	676	-376	-36%	-319	-30%
2-year 24-hour (acre-feet)							
HPS2	64	39	39	-24	-38%	-24	-38%

SOURCE: PBS&J, 2009; BKF, 2017.

a. A negative number denotes a reduction in Project flow rates compared to existing conditions.

b. Existing flows are based on 72 percent impervious surfaces (505.3 acres).

c. Project flows are based on 54 percent impervious surfaces (379.1 acres).

d. Off-site flow from HPS1 is not included in these runoff calculations. Required HPS1 diversions into the HPS2 separate stormwater sewer system would be 108 cfs.

As demonstrated in Table 22, the runoff peak flow rates from the Project site would be reduced by 44 percent for a 5-year storm, 30 percent for a 10-year storm, and 36 percent for a 100-year storm. Although these calculations are based on estimated site characteristics, it is not likely that more detailed data would indicate a substantially lower peak flow rates. Table 22 also shows that runoff volumes from the 2-year 24-hour storm (i.e., frequently occurring storms) would be reduced by implementation of the Project, which would also reduce flooding impacts.

As discussed in Impact HY-6a, p. III.M-114, the Project Sponsor has developed an LID Study,[93] which identifies concepts for how the development could integrate stormwater volume reduction and treatment control measures. In addition, the SFPUC would require preparation of an SDMP and an SCP for the Project that would ensure that this impact would remain less than significant.

Mitigation Measure with Proposed 2018 Modifications

MM HY-6a.1, Regulatory Stormwater Requirements, is provided in full on p. 270 under Impact HY-6b.

Impact HY-11: Implementation of the Project would not create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff. ***[Criterion M.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed by the 2010 FEIR, a new separate storm drainage system would be constructed for the 2018 Modified Project Variant in accordance with the design standards and

[93] Arup North America, Ltd. and Lennar Urban, *Candlestick Point/Hunters Point Shipyard LID Stormwater Opportunities Study*, June 2009. Copies of these documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

criteria issued by the SFPUC and criteria in the 2014 CP-HP Subdivision Regulations.[94] As discussed in Impact HY-10, above, overall Project site development would result in a reduction in peak storm flows and would also reduce runoff volumes from frequently occurring storms. Implementation of mitigation measure MM HY-6a.1 and compliance with stormwater drainage capacity design criteria would ensure that impacts related to exceeding the capacity of the storm sewer system would remain less than significant.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-6a.1, Regulatory Stormwater Requirements**, is provided in full on p. 270 under Impact HY-6b.

Impact HY-12b: Implementation of the Project at HPS Phase II would not place housing in a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. ***[Criterion M.g]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR indicated that portions of the Project would fall within a Special Flood Hazard Area (SFHA)[95] and that housing could be located in an area subject to flooding if the rate of SLR were to exceed the 36 inches that served at the time as the basis for Project grading plans and fill elevations, and no improvements were to be made along the shoreline.

For the 2010 FEIR, a project-specific SLR study was undertaken[96] to develop planning and design guidance through the various phases of the project, based on the then most current and relevant information and guidance available regarding SLR, and knowledge of coastal processes of San Francisco Bay. For building structures, a 36-inch SLR allowance plus a freeboard of 6 inches was selected as the design criteria to use for design and construction, based on a conservative rate of SLR of 36 inches over the next 50 years (Rahmstorf 2007,[97] which includes ice-cap melt estimate) that was not expected to occur until about 2080,[98] which would be approximately 50 years beyond the last phase of construction for the project.

Mitigation measure MM HY-12a.1 required that all finished grade elevations in development areas would be 3.5 feet above the Base Flood Elevation (BFE), and streets and pads would be 3 feet above BFE to allow for future SLR, thereby elevating all housing and structures above the existing and potential future flood hazard area. MM HY-12a.1 also required the Project Applicant to request revision of the

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[94] City and County of San Francisco, Bureau of Engineering, Department of Public Works, January 6, 1982, op. cit.
[95] Term used by FEMA to refer to the portion of a floodplain or coastal area that is at risk from a 100-year flood
[96] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment*, October 2009.
[97] Rahmstorf, S., A. Cazenave, J.A. Church, J.E. Hansen, R.F. Keeling, D.E. Parker, and R.C.J. Somerville, 2007. Recent Climate Observations Compared to Projections. *Science* 316, p. 709.
[98] Moffatt & Nichol, *Candlestick Point/Hunters Point Development Project Initial Shoreline Assessment*, prepared for Lennar Urban, February 2009, op. cit.

San Francisco Interim Floodplain Maps (FIRMs), if adopted prior to Project implementation, to reflect new fill. Implementation of mitigation measure MM HY-12a.1 would ensure that impacts associated with construction of housing within a 100-year flood hazard area, as designated on a flood hazard delineation map, would be less than significant.

Mitigation measure MM HY-12a.2 required that shoreline and public access areas, which have higher adaptive capacity and resilience compared to development areas, be designed to incorporate setbacks to accommodate future SLR-related improvements. MM HY-12a.2 required that an interim SLR estimate for the year 2050 (16 inches, as put forth by BCDC and the State Coastal Conservancy[99]) be used as the design criteria for construction of shoreline areas, to ensure that adaptive management construction activities would not be triggered until the year 2050. The 2010 FEIR considered MM HY-12a.2 adequate in terms of ensuring that the storm drain system could function as a gravity-drained system up to at least the year 2050 and not require any management action until that point in time.

The 2010 FEIR found that with implementation of mitigation measure MM HY-12a.2, impacts pertaining to the placement of housing within a potential future mapped flood hazard area would be less than significant.

For the 2018 Modified Project Variant, portions of the Project would still fall within an SFHA, and housing could still be located in an area subject to flooding due to SLR based on the revised SLR estimates published in 2012 by the NRC that have become what is considered by the regulatory community as the "best available science" for California. As described above under "New Regulations," the NRC projections have been incorporated into specific requirements and guidance relating to accommodating SLR on waterfront projects by the agencies having jurisdiction over the Project.

The 2018 Modified Project Variant would still require improvements and modifications at HPS2 that protect against SLR, including raising the base elevation of the Project site. For development areas in the 2018 Modified Project Variant, mitigation measure MM HY-12a.1 has been modified by Addendum 5 to reflect the "worst-case" NRC SLR estimate for 2100 (66 inches) and the new requirements and guidance from the City of San Francisco and BCDC. For protecting the perimeter of the HPS2 site and adjacent open space (shoreline areas), which have higher adaptive capacity and resilience compared to development areas, mitigation measure MM HY-12a.2 has been modified by Addendum 5 to accommodate NRC's "worst-case" SLR forecast for 2050 (24 inches).

Mitigation measure MM HY-12a.1 requires Project finished grade elevations to be above the base flood elevation (BFE) accounting for future SLR. Mitigation measure MM HY-12a.2 requires that shoreline and public access improvements be designed to incorporate setbacks to accommodate SLR-related improvements. With implementation of these mitigation measures, impacts pertaining

[99] California State Coastal Conservancy. 2009. *Policy Statement on Climate Change.* Adopted at the June 4, 2009 Board Meeting. http://www.scc.ca.gov/index.php?p=75&more=1.

to the placement of housing within a potential future mapped flood hazard area would remain less than significant.

Mitigation Measures with Proposed 2018 Modifications

MM HY-12a.1: Finished Grade Elevations Above Base Flood Elevation. The Project site shall be graded such that finished floor elevations are a minimum of ~~3~~5.5 feet above the Base Flood Elevation (BFE)~~, and streets and pads are 3 feet above BFE~~ to ~~allow for~~ accommodate worst-case, future sea level rise projections for the end of the century, thereby elevating all housing and structures above the existing and potential future flood hazard area. If the FIRM for San Francisco is not finalized prior to implementation of the Project, the Project Applicant shall work with the City Surveyor or other applicable City department to revise the City's Interim Floodplain Map, as needed. If the FIRM for San Francisco is finalized prior to implementation of the Project, the Project Applicant shall request that the Office of the City Administrator (Floodplain Manager) request a Letter of Map Revision based on Fill (LOMR-F) from FEMA that places the Project outside a SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.

MM HY-12a.2: Shoreline Improvements for Future Sea-Level Rise. Shoreline and public access improvements shall be designed to allow for future ~~increases in elevation~~ sea level rise above the Base Flood Elevation (BFE) that includes wave run-up (often called Total Water Level [TWL]) along the shoreline. In addition, adequate horizontal setback shall be provided to allow future increases in elevation along the shoreline edge to keep up with higher sea level rise values, should they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases ~~of at least 3 feet from the existing elevation along the shoreline~~ in response to up to 5.5 feet of sea level rise above the TWL, which is projected as the worst-case estimate at the end of the century. Before the first Small Lot Final Map is approved, the Project Applicant must petition the appropriate governing body to form (or annex into if appropriate) and administer a special assessment district or other funding mechanism to finance and construct future improvements necessary to ensure that the shoreline protection system, storm drain system, public facilities, and public access improvements will be protected should sea level rise exceed ~~16 inches at the perimeter of the Project~~ 2 feet. Prior to the sale of the first residential unit within the Project, the legislative body shall have acted upon the petition to include the property within the district boundary. The newly formed district shall also administer a Monitoring and Adaptive Management Plan to monitor sea level and implement and maintain the protective improvements.

Impact HY-13b: Implementation of the Project at HPS Phase II would not place structures within a 100-year flood hazard area or impede or redirect flood flows. ***[Criterion M.h]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR indicated that development at HPS2 could place structures within a SFHA (Zone A) according to the Preliminary FIRM for the San Francisco, but that structures within Zone A that do

not fall within a designated floodway would not be expected to impede or redirect flood flows. The 2010 FEIR also indicated that development at HPS2 would place structures, including the marina and the shoreline improvements, within a Zone V SFHA, according to the preliminary FIRM for San Francisco. The 2010 FEIR identified shoreline improvements that would be initially designed and constructed to accommodate a 16-inch increase in SLR, with an adaptive management approach to accommodate greater SLR increases should they occur, as required by mitigation measure MM HY-12a.2. The shoreline design for SLR, as well as the development setback from the shoreline required by MM HY-12a.2, would protect the site against coastal flooding hazards including high-velocity wave forces that could impede flood flows or cause flood flows to be directed to any portions of the site including open space or developed areas. Implementation of MM HY-12a.2 would reduce the impacts of placing structures in a Zone V SFHA to a less-than-significant level.

For the 2018 Modified Project Variant, structures would still fall within a SFHA (Zone AE) according to the Preliminary FIRM for San Francisco. However, with the proposed shoreline improvements, existing structures to be retained would no longer be in a flood hazard area. With implementation of MM HY-12a.2, shoreline improvements with the 2018 Modified Project Variant would be initially designed and constructed to protect the perimeter of the HPS2 site and adjacent open space (shoreline areas) by accommodating NRC's "worst case" SLR forecast for 2050 (24 inches). Mitigation measure MM HY-12a.2 requires that shoreline and public access improvements be designed to incorporate setbacks to accommodate sea-level-rise-related improvements. With implementation of these mitigation measures, the impact pertaining to the placement of housing, and retaining some of the existing structures, within a potential future mapped flood hazard area would be reduced. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-12a.2, Shoreline Improvements for Future Sea-Level Rise**, is provided in full on p. 277 under Impact HY-12b.

Impact HY-14: Implementation of the Project would not 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. ***[Criterion M.i]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As concluded in the 2010 FEIR, the Project site is adjacent to, but not within, the dam failure inundation zones from failure of the University Mound South Basin and/or North Basin reservoirs, based on evidence provided by ABAG[100] (refer to 2010 FEIR Figure III.M-3).

[100] ABAG, Interactive ABAG (GIS) Maps Showing Dam Failure Inundation, Available at http://www.abag.ca.gov/bayarea/eqmaps/damfailure/damfail.html, accessed on September 8, 2008.

With the 2018 Modified Project Variant, it remains that the Project shoreline includes various features, such as concrete debris, unprotected embankments, pile-supported wharves, seawalls, and bulkheads that serve to protect the Project from flooding. Several of these features lack structural integrity and could fail suddenly, as the result of a large storm event or an earthquake, or gradually, through continued deterioration. Failure of these features could expose people or structures to flood hazards.

The 2018 Modified Project Variant would implement mitigation measure MM HY-14, which requires implementation of improvements recommended in Moffatt and Nichol's Shoreline Improvement Report[101] (for the 2018 Modified Project Variant, MM HY-14 has been modified by Addendum 5 to reference potential updates to the 2009 shoreline evaluation). In accordance with these recommendations, areas along the shoreline would be developed as open space, which would allow for implementation of additional flood control improvements, if necessary, in the case of a higher-than-planned SLR. The shoreline improvements would also reinforce the structural integrity of the existing shoreline, reducing the risk of sudden structural failure of deteriorated shoreline features. Such improvements would provide added protection against Project site flooding, and the risk of harm associated with dam failure would remain less than significant.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-14: Shoreline Improvements to Reduce Flood Risk.** To reduce the flood impacts of failure of existing shoreline structures, the Project Applicant shall implement shoreline improvements for flood control protection, as identified in the Candlestick Point/Hunters Point Development Project Proposed Shoreline Improvements report.[102] (or updated Shoreline Improvements Reports). Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.

Impact HY-15: Implementation of the Project would not expose people or structures to inundation by seiche, tsunami, or mudflow. ***[Criterion M.j]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that finished grade elevations, which account for SLR and 100-year flood elevations, would be over 1 foot above the potential tsunami wave run-up elevation, and protect the Project site from a seiche. Therefore, the impacts from tsunami and seiche inundation would be less than significant.

With the 2018 Modified Project Variant, the HPS2 site would be raised higher than was proposed for the 2010 Project to complete surcharging and corresponding ground stabilization, to elevate the site

[101] Moffatt & Nichols, 2009, *Candlestick Point/Hunters Point Redevelopment Project Proposed Shoreline Improvements*, prepared for Lennar Urban, September 2009.
[102] Moffatt & Nichols, 2009, *Candlestick Point/Hunters Point Redevelopment Project Proposed Shoreline Improvements*, prepared for Lennar Urban, September 2009.

in response to anticipated SLR, and to provide the SFPUC with required freeboard and cover for utility systems. Thus, the impacts from tsunami and seiche inundation would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to hydrology and water quality impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to hydrology and water quality, either on a project-related or cumulative basis.

II.B.13 Biological Resources

Criterion	*Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)*	*Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?*	*Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?*	*Any New Information of Substantial Importance?*	*Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant*
4. Biological Resources. Would the project:					
N.a. 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 the CDFW or USFWS?	2010 FEIR p. III.N-55 (Impact BI-3b), p. III.N-70 (Impact BI-6a), p. III.N-73 (Impact BI-6b), p. III.N-75 (Impact BI-7b), p. III.N-78 (Impact BI-8b), p. III.N-79 (Impact BI-9b), p. III.N-82 (Impact BI-10b), p. III.N-84 (Impact BI-11b), p. III.N-97 (Impact BI-15b), p. III.N-99 (Impact BI-16b), p. III.N-100 (Impact BI-17b), p. III.N-101 (Impact BI-18b), p. III.N-104 (Impact BI-19b), p. III.N-109 (Impact BI-22); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM HZ-10b, MM HY-1a.1, MM HY-1a.2, MM BI-4a.1, MM BI-4a.2, MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4, MM BI-6a.1, MM BI-6a.2, MM BI-6b, MM BI-7b, MM BI-9b, MM BI-14a, MM BI-18b.1, MM BI-18b.2, MM BI-19b.1, MM BI-19b.2
N.b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?	2010 FEIR p. III.N-55 (Impact BI-3b), p. III.N-68 (Impact BI-5b), p. III.N-88 (Impact BI-12b), p. III.N-97 (Impact BI-15b), p. III.N-101 (Impact BI-18b), p. III.N-104 (Impact BI-19b), p. III.N-111 (Impact BI-23); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM HZ-10b, MM HY-1a.1, MM HY-1a.2, MM BI-4a.1, MM BI-4a.2, MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4, MM BI-12a.1, MM BI-12a.2, MM BI-12b.1, MM BI-12b.2, MM BI-18b.1, MM BI-18b.2, MM BI-19b.1, MM BI-19b.2
N.c. 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?	2010 FEIR p. III.N-63 (Impact BI-4b), p. III.N-91 (Impact BI-13), p. III.N-112 (Impact BI-24); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM BI-4a.1, MM BI-4a.2,

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
N.d. 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?	2010 FEIR p. III.N-49 (Impact BI-2), p. III.N-55 (Impact BI-4), p. III.N-84 (Impact BI-11b), p. III.N-92 (Impact BI-13b), p. III.N-99 (Impact BI-16b), p. III.N-105 (Impact BI-20a), p. III.N-108 (Impact BI-20b), p. III.N-114 (Impact BI-25); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM BI-4a.1, MM BI-4a.2, MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4, MM BI-7b, MM BI-19b.1, MM BI-20a.1, MM BI-20a.2
N.e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	2010 FEIR p. III.N-96 (Impact BI-14b), p. III.N-109 (Impact BI-21b), p. III.N-115 (Impact BI-26); Addendum 1 p. 44; Addendum 4 p. 47	No	No	Yes	MM BI-7b, MM BI-14a, MM BI-14b, MM BI-19b.1
N.f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	2010 FEIR p. III.N-49 (Impact BI-1); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	None

Changes to Project Related to Biological Resources

The 2018 Modified Project Variant includes the following activities related to biological resources:

- Implementation of a water taxi service would result in increased impacts on jurisdictional waters of San Francisco Bay through construction of the water taxi landing infrastructure at Dry Dock 4 and, potentially, a minor increase in disturbance of marine mammals and rafting waterbirds.
- Construction of two bridges over Dry Dock 4 would result in shading of a small area of jurisdictional waters in San Francisco Bay and, potentially, a minor increase in disturbance of waterbirds in the immediate vicinity of the bridges.
- Increase in new parks by approximately 34 acres at HPS2 would benefit the populations of a variety of plant and animal species, including raptors, by providing more habitat area within the Project site than was proposed in the 2010 FEIR.

Changes in Circumstances

Several changes in the environmental setting have occurred within the CP-HPS2 area since the certification of the 2010 FEIR.

In 2013, the first phase of the Yosemite Slough Wetland Restoration Project was completed. This project is located immediately adjacent to the CP-HPS2 project area. The first phase of the restoration project involved the removal of fill to convert areas that were dominated by ruderal (i.e., disturbed) upland grassland in 2010 to restore marsh and mudflat habitat on the northeast side of the slough, northwest of the CP-HPS2 project boundary. Currently, the restored areas are dominated by sparse pickleweed (*Salicornia pacifica*) and mudflat, and they now provide foraging and roosting habitat for ducks, shorebirds, and other waterbirds. However, the wetland vegetation is not dense/tall enough, nor sufficiently extensive, to support special-status species such as the California Ridgway's rail (*Rallus obsoletus obsoletus*) that are associated with more extensive, well-developed tidal marshes in other parts of San Francisco Bay. The 2010 FEIR included an analysis of impacts of future construction of the Yosemite Slough bridge on jurisdictional wetlands and other waters that would be restored by the Yosemite Slough Wetland Restoration Project. The Yosemite Slough bridge would impact only very limited areas of restored wetlands at the northeast (HPS2) end of the bridge, in the areas that have already been restored. The bridge's primary impacts on wetlands that are to be restored as part of the Yosemite Slough Wetland Restoration Project would occur on the southwest (CP) side of the slough, but restoration activities have not yet begun on the southwest side of the slough, where conditions are still as they were in 2010.

On HPS2, changes in biological conditions have resulted from continued remediation of contamination by the U.S. Navy, creation of wetlands to compensate for impacts of the Navy's remediation on wetlands, and stockpiling of soil for future development. The Navy has continued investigations and removal of contaminated soil from HPS2. In developed portions of HPS2, such activities have had limited effects on biological conditions. However, on Parcels E and E2, along the southern shoreline of HPS2, these remediation actions have resulted in extensive soil disturbance; removal of the majority of nontidal salt marsh; and removal of the majority of tidal salt marsh along the edge of South Basin. A sheet-pile wall has been installed along much of the shoreline of South Basin, where tidal salt marsh was present in 2010. In addition, the Navy has graded the South Basin shoreline to a more gradual slope, which would facilitate natural restoration of tidal wetland vegetation, and it has created nontidal depressions on Parcel E2 for the purpose of establishing new wetlands. At present, those "new" wetlands are still under construction. The 2010 FEIR anticipated these changes in the distribution of wetlands resulting from Navy remediation and restoration activities, and the 2018 Modified Project Variant does not include any new activities that would impact jurisdictional wetlands or other waters on Parcels E or E2 that were not analyzed in the 2010 FEIR. Therefore, although the Navy's ongoing remediation and restoration activities represent a change in the environmental setting since 2010, they do not result in any changes (relative to those analyzed in the 2010 FEIR) in impacts that would result from development activities on HPS2 as part of the 2018 Modified Project Variant.

Since the 2010 FEIR, a small wetland swale straddling the HPS1/HPS2 boundary has been partially filled. Regulatory agency permits are being obtained, and compensatory mitigation for the fill is being provided. In addition, a new drainage that may be considered jurisdictional waters by the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) has been

created in the northwestern part of HPS2. This drainage is approximately 550 feet long by 3 to 4 feet wide, emanates from a culvert southwest of the intersection of Donahue Street and Lakewood Street, and flows primarily through an asphalt swale (with some small areas of wetlands where it flows over earthen substrate) before entering San Francisco Bay. This drainage was present in 2010, but there was no evidence that it contained water other than during or shortly after rain events, whereas it was flowing continuously during site visits in summer and early fall of 2017. It is possible that this drainage has been connected to a groundwater source since 2010, in which case it may now be considered jurisdictional (subject to USACE and RWQCB review).

Although no new special-status species have been recorded within the Project site since 2010, several locally scarce species have been documented recently. A pair of ospreys (*Pandion haliaetus*) has nested on structures in the northeastern portion of HPS2 each of the past several years.[103] This species has been increasing as a breeder in the San Francisco Bay area in recent decades, though the number of nesting pairs is still low. Also, monitoring of black oystercatchers (*Haematopus bachmani*) inside San Francisco Bay has documented nesting by a pair of oystercatchers on Double Rock, located in South Basin east of the proposed Yosemite Slough bridge.[104] This species breeds on rocky coastlines, and relatively few nest inside San Francisco Bay.

No new special-status species that may occur in the Project area have been listed since 2010, and no special-status species that were not known or expected to occur in the Project area in the 2010 FEIR have been newly recorded in the Project area since then.

Comparative Impact Discussions

Impact BI-1: Implementation of the Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. ***[Criterion N.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As was discussed in the 2010 FEIR, there are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that cover the Project area. Therefore, the Project would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Consequently, no conflict with such plans would result from the 2018 Modified Project Variant activities.

[103] Noreen Weeden, Golden Gate Audubon Society; pers. comm. to S. Rottenborn.
[104] Hart, J. T., San Francisco Bay Area Black Oystercatcher Project, 2017; Hart, J. T., Monitoring Territorial Pairs and Reproductive Success, 2017.

Impact BI-2: Implementation of the Project would not have a substantial adverse effect, either directly or through habitat modifications, on any common species or habitats through substantial interference 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. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As discussed in the 2010 FEIR, the Project would impact a number of common plant and animal species through the demolition and construction of buildings, removal of trees, construction of shoreline improvements, installation of trails, roads, and other facilities, construction of the Yosemite Slough bridge, increased foot and vehicular traffic, installation of towers, and operation of all these facilities. Some common habitats would be reduced in extent, and some common species would decline in abundance as a result of the Project. However, the species that would be affected, as well as their habitats, are abundant throughout the San Francisco Bay region, and the Project site supports an extremely small proportion of the regional abundance of these resources. Further, the abundance of many of these species on the Project site itself is relatively low due to the extent of developed/urban land uses on the site, the long history of disturbance of the site, the intensive nature of such disturbance in some areas (e.g., where remediation activities on HPS2 are occurring or have recently occurred), and the site's isolation from more extensive areas of natural habitat by the Bay and by urban development in surrounding areas. Those species that are present on the site in higher numbers consist primarily of species that are well adapted to urban or heavily disturbed areas. Consequently, any impacts of the Project on common species and habitats would have a negligible effect on regional populations and would thus be less than significant.

The Project would result in improvements to habitat conditions in many areas owing to the creation of extensive parkland, planting of numerous trees, and improvement of habitat along the shoreline. With implementation of the Draft Parks, Open Space, and Habitat Concept Plan, many wildlife species would benefit from the removal of invasive species, enhancement, restoration, and management of habitats such as grasslands and wetlands, and the planting of numerous trees and shrubs in areas that are currently highly degraded or disturbed. In particular, invertebrates and birds would benefit from the habitat enhancements that would be implemented on the Project site.

The 2018 Modified Project Variant activities would have little effect on the overall impact analysis of the Project on common plants and animals because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of plants and animals. Operation of a water taxi service and construction of two footbridges over Dry Dock 4 could potentially impact common waterbirds on San Francisco Bay, but as discussed under Impact BI-16b, below, these activities would not result in substantial impacts, nor in impacts substantially greater than were analyzed for the marina in the 2010 FEIR. Increases in

building heights could potentially result in somewhat greater impacts to migratory birds, although as discussed in Impacts BI-14b and BI-20b, such increases in impacts are expected to be minor. The 2018 Modified Project Variant would result in a net increase in the extent of new parks by approximately 34 acres at HPS2 relative to the 2010 FEIR (from 140.0 acres to 173.9 acres reflected in Addendum 5; refer to Addendum 5 Appendix A, Table A-5); this would reduce impacts to a variety of plant and animal species, including raptors, and benefit populations of these species. The net effect of the 2018 Modified Project Variant activities on common species and habitats would continue to be less than significant and, for many species, would be beneficial (due to the increase in parks) compared to the 2010 Project. This impact would remain less than significant, and no mitigation would be required.

Impact BI-3b: Construction at HPS Phase II and construction of the Yosemite Slough bridge would not have a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No impact	No impact

As discussed in the 2010 FEIR, no special-status plants have been recorded at HPS2 during prior botanical and rare plant surveys,[105] and because of the long history of development and disturbance of the site, no suitable habitat for rare plants is present on the site. Therefore, no impact to rare plants would result from the Project.

Impact BI-4b: Construction at HPS Phase II would not 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, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. ***[Criterion N.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR analyzed impacts on jurisdictional wetlands and other waters (i.e., open water) that would result from proposed Project activities. The majority of such impacts were expected to result from shoreline enhancements for coastal flood protection and habitat improvement, and from Yosemite Slough bridge construction. The majority of wetlands in terrestrial areas where other development would occur were expected to be impacted by Navy remediation activities.

As discussed in the summary of changes to the environmental setting above, there have been several modifications of the extent and distribution of jurisdictional wetlands and other waters on the Project site. Navy remediation activities have removed the majority of tidal salt marsh from the

[105] Jones & Stokes, *Natural Environmental Study Report for the Bayview Transportation Improvements Project*, June 2009.

South Basin shoreline on HPS2 Parcels E and E2, and the majority of nontidal salt marsh from Parcel E2. The Navy is currently in the process of creating/restoring both tidal and nontidal wetland habitat on Parcel E2. A small wetland swale straddling the HPS1/HPS2 boundary has been partially filled. Regulatory agency permits to allow this wetland, which totals approximately 0.12 acre, to be filled are being obtained, and compensatory mitigation for the fill is being provided. In addition, a drainage approximately 550 feet long by 3 to 4 feet wide, emanating from a culvert southwest of the intersection of Donahue Street and Lakewood Street, represents approximately 0.05 acre of potentially jurisdictional wetlands and other waters, may be filled by future development activities (and would thus be subject to 2010 FEIR MM BI-4a.1 and MM BI-4a.2), although no specific 2018 Modified Project Variant activities propose to fill this feature.

Two new 2018 Modified Project Variant activities would result in impacts to jurisdictional habitats: the construction of two bridges over Dry Dock 4 and landings for the water taxi, both of which are described in detail in Project Description Section I.C.4 (Transportation Plan).

Neither of the bridges at Dry Dock 4 would involve placement of fill or structures within the water itself, and due to the height of the bridges above the water, little shading of the water would result from these bridges. However, there is some potential for shading to affect the biological functions and values of aquatic habitats under these bridges. The pedestrian and pedestrian/bicycles bridges over Dry Dock 4 would result in 0.22 acre of "shadow fill" of open bay waters. Shadow fill would not result in the complete loss of functions and values of the aquatic habitats below, however, and many fish and aquatic organisms would continue to use these areas following bridge construction.

All items of infrastructure for the water taxi landing within the water would be transportable. This infrastructure would not result in fill of waters, as it would all be floating or would be located above the water's surface (e.g., the access ramp). However, approximately 0.05 acre of Bay waters would be affected by the floating platform and shading from the access ramp. Fish and other aquatic organisms would still be able (and expected) to use the areas beneath these features after construction, though.

In total, the two bridges over Dry Dock 4 and the water taxi landing infrastructure would result in impacts to approximately 0.27 acre of Bay waters that were not analyzed in the 2010 FEIR. These impacts represent a very small addition to the approximately 28.48 acres of jurisdictional wetlands and other waters that were predicted to be impacted by the 2010 FEIR. Further, the 2010 FEIR analyzed impacts to the types of jurisdictional habitats (i.e., "other waters") that would be impacted by these 2018 Modified Project Variant activities, and from these same types of activities (e.g., from the Yosemite Slough bridge and from a marina at HPS2). Therefore, these 2018 Modified Project Variant activities do not represent a new significant impact or substantially more severe impact to jurisdictional wetlands and other waters.

Compensatory mitigation for these impacts on approximately 0.27 acre of Bay waters would be provided in accordance with 2010 FEIR MM BI-4a.1 and MM BI-4a.2. Implementation of these mitigation measures would reduce the impact to jurisdictional wetlands and other waters from the

2018 Modified Project Variant activities. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-5b: Construction at HPS Phase II and construction of the Yosemite Slough bridge would not have a substantial adverse effect on eelgrass beds, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS. ***[Criterion N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR analyzed potential impacts of construction on eelgrass beds. At that time, eelgrass had been recorded along the north shore of the South Basin and on the north shore of HPS2, east of the northern end of Earl Street (refer to 2010 FEIR Figure III.N-2). The 2010 FEIR determined that in-water activities, such as the construction of the shoreline revetment improvements, had some potential to impact eelgrass, and it prescribed MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, and MM BI-5b.4 to reduce impacts to eelgrass to less-than-significant levels.

No 2018 Modified Project Variant activities have the potential to impact eelgrass. The 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in activities where eelgrass could occur. The only 2018 Modified Project Variant activities that would affect Bay waters, the bridges over Dry Dock 4 and the water taxi landing at Dry Dock 4, are in areas where the water is too deep to provide suitable habitat for eelgrass. Eelgrass is not typically found in waters deeper than 12 feet mean lower low water;[106] Dry Dock 4 was constructed to support large ships and is considerably deeper. Water taxi operation is expected to occur in deeper waters, and water taxis associated with the 2018 Modified Project Variant are, therefore, not expected to traverse patches of eelgrass. The impact would remain less than significant with implementation of the identified mitigation measures.

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[106] NOAA Fisheries, *California Eelgrass Mitigation Policy and Implementing Guidelines*, October 2014.

Impact BI-6a: Construction at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. ***[Criterion N.a]***

Impact BI-6b: Construction at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As analyzed in the 2010 FEIR, development at CP and HPS2 has some potential to result in impacts to special-status birds. Peregrine falcons (*Falco anatum*) nesting on the Re-gunning crane on Parcel D of HPS2 could potentially be disturbed by nearby construction activities, and MM BI-6b was prescribed to avoid such impacts. No 2018 Modified Project Variant activities would occur close enough to the Re-gunning crane to disturb the nesting peregrine falcons, and the 2018 Modified Project Variant activities would, therefore, have no impact on these birds.

Project demolition and construction activities have the potential to impact nests of non-special-status birds that are protected by the Migratory Bird Treaty Act and California Fish and Game Code; however, MM BI-6a.1 was prescribed to avoid those impacts. Because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of nesting birds, the 2018 Modified Project Variant activities are not expected to result in increased disturbance of nesting birds, beyond what was analyzed in the 2010 FEIR. Nevertheless, Implementation of MM BI-6a and MM BI-6b would ensure that the potential impact from the 2018 Modified Project Variant activities on protected birds would remain less than significant. It is worth noting that implementation of these mitigation measures would also avoid disturbance of active nests of locally scarce, non-special-status birds that have been recorded nesting in the Project area only recently, such as the osprey and black oystercatcher (as noted in the discussion of changes in the environmental setting above).

Impact BI-7b: Implementation of the Project at HPS Phase II would not have a substantial adverse effect on the quantity and quality of suitable foraging habitat for raptors. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, landscaping associated with the creation of a Grasslands Ecology Park on the southern portion of HPS2 would alter approximately 43 acres of nonnative grasslands within the HPS2 that currently serve as raptor foraging areas. Because historical raptor foraging

areas within the City have been reduced due to the conversion of open space to urbanized environments, permanent loss of suitable foraging habitat would be considered a substantial adverse effect. However, ongoing Navy remediation activities are disturbing much of this raptor foraging habitat, reducing its present value to raptors. In addition, the Project's proposed ecological enhancements, which would be refined in the Project's Draft Parks, Open Space, and Habitat Concept Plan, include measures to restore and manage areas that would be highly suitable as raptor foraging habitat; the 2010 FEIR included MM BI-7b to ensure that restoration and management of grasslands reduced Project impacts on raptors to less-than-significant levels.

The 2018 Modified Project Variant activities would not result in any additional impacts to raptors because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts to raptors or their habitats. Rather, the 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2, which would increase raptor foraging habitat even more than was envisioned by the 2010 FEIR. Therefore, the 2018 Modified Project Variant activities would actually benefit raptors. Thus, the impact would remain less than significant with implementation of the identified mitigation measure.

Impact BI-8b: Construction at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on the western red bat, a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR described that the western red bat (*Lasiurus blossevillii*) was the only special-status bat species with the potential to occur within the Project area. Potential roosting habitat for this species is present in more mature trees, where bats would roost in the foliage during migration and during the winter months (August–April). Construction activities that would remove these potential roosting sites could result in a small number of individuals being displaced, injured, or killed. However, due to the absence of mature trees from most areas, the lack of riparian habitat (its preferred habitat type), and the absence of this bat species as a breeder from the region, the number of bats that could potentially be impacted would be very small. Consequently, the loss or disturbance of western red bats and their habitats would not represent a substantial adverse effect as it would not substantially reduce the habitat of this species, cause its population to drop below self-sustaining levels, or reduce its range, and impacts would be less than significant. Rather, with implementation of MM BI-7b and MM BI-14a, the effect of Project activities on the western red bat would be expected to be beneficial.

No 2018 Modified Project Variant activities have the potential to result in greater impacts to western red bats than were analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities

result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts to western red bats or their habitats. Rather, the 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2. Planting of additional trees in this parkland could potentially increase western red bat roosting habitat beyond what was envisioned by the 2010 FEIR. Therefore, the 2018 Modified Project Variant activities could potentially benefit this species. Thus, the impact would remain less than significant, and no mitigation would be required.

Impact BI-9b: Pile driving associated with construction of the marina and the Yosemite Slough bridge would not have a substantial adverse effect at HPS Phase II, either directly or through habitat modifications, on marine mammals or fish identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As analyzed in the 2010 FEIR, in-water construction activities that involve pile driving could generate noise levels loud enough to disturb, injure, or kill fish and marine mammals, including special-status fish such as the green sturgeon (*Acipenser medirostris*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and longfin smelt (*Spirinchus thaleichthys*) and marine mammals such as the harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*). The 2010 FEIR analysis focused on the need for pile driving for construction of the HPS2 marina and the Yosemite Slough bridge and prescribed MM BI-9b to reduce those impacts to less-than-significant levels.

The 2018 Modified Project Variant does not include any activities that would necessitate the driving of piles in water. Construction of the bridges and water taxi landing at Dry Dock 4 do not include pile driving within aquatic habitats. Therefore, no impacts on aquatic species from pile driving would result from the 2018 Modified Project Variant activities. Thus, the impact would remain less than significant with implementation of the identified mitigation measure.

Impact BI-10b: Construction at HPS Phase II would require removal of hard substrates (docks, riprap, seawalls, pilings, etc.) used by native oysters, but would not have a substantial adverse effect, either directly or through habitat modifications, on this species. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As analyzed in the 2010 FEIR, shoreline revetment improvements at CP and HPS2 would involve the removal of hard substrate that could potentially support native Olympia oysters (*Ostrea conchaphila*). However, installation of shoreline revetment features would replace any hard substrate that was lost, and the construction of two sections of breakwaters for the HPS2 marina would install

more suitable oyster habitat. As a result, impacts to native oysters would only be temporary, and overall effects of the Project on this species would be less than significant.

The 2018 Modified Project Variant does not include any activities that would involve the removal of hard substrate that could be used by native oysters. The edges of Dry Dock 4, which would be affected by construction of the bridges and water taxi landing, are vertical concrete walls that provide poor oyster habitat, and no hard substrate would be removed for the construction of these 2018 Modified Project Variant features. Any temporary impacts to hard substrate that could be used by native oysters would be minimal and temporary (during construction). Therefore, the impact from the 2018 Modified Project Variant activities on native oysters would remain less than significant.

Impact BI-11b: Construction at HPS Phase II would not have a substantial adverse effect on designated critical habitat for green sturgeon and Central California Coast steelhead, and would not result in impacts to individuals of these species as well as Chinook salmon and longfin smelt through temporary and permanent disturbance of aquatic and mudflat habitat during construction of shoreline revetments. ***[Criteria N.a and N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR discussed the potential for in-water activities to result in impacts to habitat for special-status fish such as the green sturgeon, Central California Coast steelhead, Chinook salmon, and longfin smelt, and potentially disturbance of individuals of these species during construction. Construction of the proposed marina (including breakwaters) and shoreline revetments would result in the loss of habitat for these special-status fish species, including the loss of designated critical habitat for the green sturgeon and Central California Coast steelhead. Because of the regional rarity of all these special-status fish, impacts to individuals or to habitat used by these fish were considered significant. However, mitigation measures MM BI-4a.1 and MM BI-4a.2 would reduce these impacts to less-than-significant levels by compensating for the loss of jurisdictional waters, and overall, the removal of debris and other materials from Bay waters was expected to result in a net increase in fish habitat.

The 2018 Modified Project Variant does not involve any activities that would result in the permanent loss of fish habitat. The two bridges over Dry Dock 4 would completely span Bay waters, and although they would shade approximately 0.22 acre of waters below to some extent (as described in Impact BI-4b above), fish would continue to use waters below these bridges. The water taxi landing would affect approximately 0.05 acre of Bay waters due to the presence of the floating platform and shading from the access ramp. However, fish would still be able (and expected) to use the areas beneath these features after construction. Implementation of mitigation measures MM BI-4a.1 and MM BI-4a.2 for the Dry Dock 4 bridges and water taxi landing would ensure that the potential impact to special-status fish would remain less than significant.

Impact BI-12b: Construction at HPS Phase II would not have a substantial adverse effect on designated essential fish habitat through (EFH) through placement of riprap and other fill, or through temporary water-quality impacts during construction. EFH is a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS. ***[Criterion N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR described the impacts to EFH that could potentially result from the placement of fill and water-quality effects during construction of features in and near the Bay. Such impacts included loss of fish habitat due to placement of rock along the shoreline to buttress bulkheads, improve the shoreline revetments, and construct breakwaters for the HPS2 marina, as well as impairment of fish health if water quality were adversely affected by construction. The 2010 FEIR determined that mitigation to compensate for the loss of jurisdictional wetlands and other waters and avoid water-quality impacts (MM BI-4a.1, MM BI-4a.2), avoid and compensate for impacts to eelgrass (MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4), and avoid and minimize impacts to EFH during construction, demolition, and debris removal (MM BI-12a.2, MM BI-12b.1, MM BI-12b.2) would reduce impacts to EFH to less-than-significant levels.

The 2018 Modified Project Variant does not involve any activities that would result in the permanent loss of EFH, and as discussed in Impact BI-5b above, the 2018 Modified Project Variant activities would not result in impacts to eelgrass. The two bridges over Dry Dock 4 would completely span Bay waters, and although they would shade 0.22 acre of the waters below to some extent (as described for Impact BI-4b above), fish would continue to use waters below these bridges. The water taxi landing would affect approximately 0.05 acre of Bay waters due to the presence of the floating platform and shading from the access ramp. However, fish would still be able (and expected) to use the areas beneath these features after construction. Implementation of mitigation measures MM BI-4a.1 and MM BI-4a.2 for the Dry Dock 4 bridges and water taxi landing would compensate for impacts to fish habitat resulting from the 2018 Modified Project Variant activities. Implementation of mitigation measures MM BI-12a.2, MM BI-12b.1, and MM BI-12b.2 would reduce impacts on water quality and EFH from construction in and near Bay waters. In total, implementation of mitigation measures MM BI-4a.1, MM BI-4a.2, MM BI-12a.2, MM BI-12b.1, and MM BI-12b.2 for construction of the Dry Dock 4 bridges and water taxi landing would reduce impacts on EFH. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-13b: Construction at HPS Phase II and construction of the Yosemite Slough bridge would not interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, but it could impede the use of native wildlife nursery sites. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, no regional wildlife corridors or migratory pathways are present on the CP-HPS2 Project site. Construction at CP and HPS2 would affect primarily terrestrial species that are well adapted to human disturbance in the area and move locally within the Project site and between the adjacent habitat patches. Construction would not substantially interfere with this local movement as the terrestrial wildlife would be able to continue their pre-Project activities in the areas not under construction, and construction would not permanently bar their movement through those portions of the site as the construction activities would be temporary. The Yosemite Slough bridge would separate the upper part of Yosemite Slough, including the proposed restoration site, from South Basin and San Francisco Bay, but it would not substantially reduce the ability of fish or wildlife that currently move in and out of Yosemite Slough to continue doing so. Therefore, Project impacts on wildlife movement were considered less than significant.

The 2010 FEIR determined that eelgrass beds provide nurseries for fish and other aquatic organisms, and that Project activities had the potential to impact eelgrass. As a result, the 2010 FEIR prescribed MM BI-5b.1 through MM BI-5b.4 to reduce impacts to native wildlife nursery sites (i.e., eelgrass) to less-than-significant levels.

As discussed in Impact BI-5b above, the 2018 Modified Project Variant activities would not result in impacts to eelgrass. Furthermore, no 2018 Modified Project Variant activities would affect wildlife movement or native wildlife nursery sites beyond what was analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of plants and animals. Therefore, the potential impact to wildlife movement and native wildlife nursery sites would remain less than significant with implementation of the identified mitigation measures.

Impact BI-14b: Construction at HPS Phase II and Yosemite Slough bridge would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. ***[Criterion N.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR discussed the potential impacts of construction of the CP-HPS2 Project on trees that are protected by the City of San Francisco's Urban Forestry Ordinance. The Project has the potential

to remove a number of trees that meet the criteria for "street trees" or "significant trees", in addition to removing a number of trees that are not in or near the public right-of-way and that therefore do not meet the criteria for protected trees. The 2010 FEIR determined that MM BI-14a, requiring the preservation and replacement/planting of street trees and significant trees, would be implemented to reduce impacts to trees to less-than-significant levels. The 2010 FEIR also included MM BI-7b, which required the development of a Parks, Open Space, and Habitat Concept Plan that would result in a substantial increase in the number of trees on the Project site. With implementation of MM BI-7b, the number of trees would be substantially greater after Project implementation, resulting in a beneficial impact on trees.

The 2018 Modified Project Variant activities would not result in impacts on trees that are greater than were analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts to trees. Rather, the 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2, and this new parkland would provide even greater opportunity for tree planting than was envisioned by the 2010 FEIR. Therefore, the 2018 Modified Project Variant activities could increase the number of trees. Nevertheless, MM BI-14a would still be implemented for the 2018 Modified Project Variant activities to ensure compliance with the City's Urban Forestry Ordinance.

Impact BI-15b: Construction within the shoreline or Bay at HPS Phase II would not result in the disturbance of contaminated soil or the re-suspension of contaminated sediments. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, chemicals and radioactive materials are present in soil and groundwater in various locations on HPS2 at levels that require remediation. Disturbance of fill or shoreline sediments, and associated stockpiling and on-site soil movement, during construction could provide potential pathways through which fish and wildlife species could be exposed to contaminants in fill material or Bay/shoreline sediments. Exposure of fish and wildlife to such contaminants could potentially impair the health or productivity of exposed individuals, or could have food-chain effects on species that prey upon exposed individuals through bioconcentration of contaminants. Although the Navy is responsible for remediation of contaminated areas, safeguards to prevent mobilization of contaminated materials are still necessary to reduce impacts of contaminants to less-than-significant levels, and the 2010 FEIR prescribed MM HZ-10b, MM HY-1a.1, and MM HY-1a.2 to ensure that appropriate procedures are implemented.

The 2018 Modified Project Variant activities would not result in impacts from mobilization of contaminated materials that are greater than were analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather

than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in mobilization of contaminants. Nevertheless, MM HZ-10b, MM HY-1a.1, and MM HY-1a.2 would still be implemented for the 2018 Modified Project Variant activities to reduce impacts from mobilization of contaminants. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-16b: Implementation of the Project at HPS Phase II, including operation of the proposed marina, would not have a substantial adverse effect, either directly or through habitat modifications, on aquatic species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS or 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. ***[Criteria N.a and N.d.]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As discussed in the 2010 FEIR, operation of the marina and marina-related watercraft at HPS2 would have the potential to disturb marine mammals and birds. The marine mammals most likely to be disturbed are locally foraging harbor seals, as there are no pupping sites or major haulout locations in the Project vicinity where animals would be subject to increased disturbance from vessel traffic from the Project. San Francisco Bay provides resting and foraging habitat for a variety of waterfowl migrating along the Pacific flyway. These birds often congregate into relatively large rafts of birds. Those rafts are subject to disturbance from noise, size, speed, and wakes generated by vessel traffic. The common response to disturbance is for the birds to fly off the water surface and fly some distance away and land. Therefore, the marina and marina-related (personal watercraft operations) activities would increase the disturbance of birds resting and foraging on Bay waters. The 2010 FEIR determined that such impacts on marine mammals and waterbirds would be less than significant because the few boats that at any one time are moving from the proposed marina into the Bay are not expected to generate substantial additional disturbance over current conditions, considering the size of the Bay, the number of boats currently on the bay at any one time, and the amount of disturbance currently generated by the existing boats on the Bay.

The 2018 Modified Project Variant includes several activities whose operation could result in increased disturbance of waterbirds on San Francisco Bay. Small numbers of waterbirds currently forage or roost on the waters within Dry Dock 4. Although they would be able to continue doing so after construction of the bridges and the water taxi landing, those waterbirds' aversion to human activity would reduce their use of areas very close to the bridges and water taxi landing. The net result would be the loss of use of a relatively limited area of open water. This effect would impact relatively few birds, compared to the Project impacts analyzed in the 2010 FEIR; however, as human

activity along the shoreline and boat activity associated with the marina would already have impacted waterbird use of the Dry Dock 4 area.

Operation of the water taxi would have impacts similar to those analyzed in the 2010 FEIR for the marina. Taxi boats could disturb marine mammals and rafting waterbirds using waters around HPS2 and along their taxi routes. However, the increase in boat use associated with the water taxi service, beyond that analyzed in the 2010 FEIR, would be very limited. The 2010 FEIR assumed the construction and operation of a 300-slip marina. The water taxi service would involve many fewer boats. Initially, water taxi service would occur during weekday morning and evening peak hours to accommodate commuter traffic. As the population at HPS2 increases, additional trips could occur throughout the day, as supported by demand. Destinations for outbound trips and origins of inbound trips would depend on passenger demand, but are expected to include any of the docking locations in the San Francisco Bay, including San Francisco, Marin County, the East Bay, and the South Bay.

As discussed in the 2010 FEIR, the boat traffic associated with HPS2, including the water taxi service, would represent a very small percentage of vessel traffic operating in San Francisco Bay, and thus water taxi operation would not contribute any substantial, new disturbance of marine mammals or rafting waterbirds. Also, the water taxi service would be operating along "routes" that are currently traversed by numerous vessels, and that would be traversed by vessels associated with the HPS2 marina analyzed in the 2010 FEIR. Therefore, the water taxi service is not expected to result in impacts to portions of the Bay that would be undisturbed by existing or previously analyzed boat traffic. For these reasons, the 2018 Modified Project Variant activities' impacts on marine mammals and rafting waterbirds are less than significant.

Otherwise, operation of the 2018 Modified Project Variant activities would have little effect on the overall impact analysis of the Project on plants and animals because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of plants and animals. Rather, 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2. Application of MM BI-7b to this new parkland would result in an increase in habitat for a number of plants and animals, relative to the Project analyzed in the 2010 FEIR. This impact would remain less than significant, and no mitigation would be required.

Impact BI-17b: Implementation of the Project at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on nesting American peregrine falcons, identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As discussed in the 2010 FEIR, a pair of peregrine falcons' nests on the Re-gunning crane. However, operation of the Project would not result in substantial adverse effects to the falcons' nesting activities, as this nesting pair has persisted, and nested successfully, at this site for a number of years even while remediation activities have been ongoing in the vicinity of the nest site. The 2018 Modified Project Variant does not include any activities that would increase the potential for disturbance of the nesting falcons as compared to the activities that were analyzed in the 2010 FEIR; thus, the 2018 Modified Project Variant would not result in impacts on nesting peregrine falcons.

Impact BI-18b: Implementation of the marina in HPS Phase II would require routine maintenance dredging of the marina, which could remove habitat or generate substantial increases in turbidity within the marina, but would not have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the NMFS. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR discussed that routine dredging might be needed to maintain the operational depth of the HPS2 marina. Dredging could result in the loss of benthic organisms living in the sediment that is being removed. The mobilization of sediment during dredging could alter habitat for other benthic organisms as it settles out onto substrate (e.g., for native oysters or spawning Pacific herring [*Clupea pallasii*]) and could reduce water quality for fish and other estuarine organisms. The 2010 FEIR prescribed MM BI-18b.1 and MM BI-18b.2 to reduce such impacts to less-than-significant levels.

No dredging is anticipated to be necessary for the 2018 Modified Project Variant activities. The only 2018 Modified Project Variant activity that involves watercraft is the addition of a water taxi service and construction of infrastructure to support that service. However, water taxis are not large and do not induce substantial draft, and the water taxi landing infrastructure is mobile, so that it could be moved to new locations if sedimentation impairs the operation of the taxi service. As a result, no dredging to maintain conditions for the water taxi service is proposed. Therefore, the 2018 Modified Project Variant would have no impact resulting from maintenance dredging. The Project would continue to implement mitigation measures MM BI-18b.1 and MM BI-18b.2 to ensure that the impact from dredging of the marina would remain less than significant.

Impact BI-19b: Implementation of the marina in HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on sensitive aquatic species, identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS, or have a substantial effect on predators that prey on contaminated species or feed on contaminated substrates as a result of routine maintenance dredging or could generate routine increases in turbidity within the marina that would result in the re-suspension of contaminated sediments. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, much of the seafloor within the Project area is contaminated from decades of industrial use, and maintenance dredging of the HPS2 marina has the potential to mobilize contaminants in sediments. Contaminants in these sediments may be taken up by aquatic organisms, either within the marina or in other areas to which contaminated sediments are carried by tides or currents. The uptake of contaminated food sources or exposure to elevated levels of toxins could reduce reproductive success, alter blood chemistry, suppress a fish's immune systems, and result in an increased risk of disease and mortality. These effects may occur in aquatic organisms that take up contaminated substances directly, wildlife species (such as shorebirds) that forage in contaminated substrates, or predators that feed on prey that have taken up contaminants. Such impacts are potentially significant, and the 2010 FEIR prescribed MM BI-19b.1 and MM BI-19b.2 to reduce such impacts to less-than-significant levels.

However, as described in Impact BI-18b above, no dredging is anticipated to be necessary for the 2018 Modified Project Variant activities. Therefore, the 2018 Modified Project Variant would have no impact resulting from the mobilization of contaminants during maintenance dredging. The Project would continue to implement mitigation measures MM BI-19b.1 and MM BI-19b.2 to ensure that the impact from dredging of the marina would remain less than significant. MM BI-19b.1 has been modified, as indicated below, to reflect the correct spawning season for Pacific herring and the appropriate work window.

Mitigation Measure with Proposed 2018 Modifications

MM BI-19b.1: Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina. According to the Long-Term Management Strategy (LTMS), dredging Projects that occur during the designated work windows do not need to consult with NMFS under the federal *Endangered Species Act* (FESA).[107] The window in which

[107] U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. *Long-Term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan*, 2001.

dredging is allowed for the protection of steelhead in the central Bay is June 1 to November 30. The spawning season for the Pacific herring is ~~March 1 to November 30~~ December 1 to February 28.[108] Therefore, the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is ~~March~~ June 1 to November 30.

Impact BI-20a: Implementation of the Project at Candlestick Point would not interfere substantially with the movement of resident or migratory bird species by increasing collision hazards and the amount of artificial lighting. ***[Criterion N.d]***

Impact BI-20b: Implementation of the Project at HPS Phase II would not interfere substantially with the movement of resident or migratory bird species by increasing collision hazards and the amount of artificial lighting. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant

The 2010 FEIR analyzed impacts of the construction of new buildings on resident and migratory birds by increasing collision hazards and the amount of artificial lighting. Within CP, towers ranging from 200 to 420 feet in height were proposed, and at HPS2, towers ranging from 240 to 350 feet in height were proposed. The 2010 FEIR discussed how migrating birds such as songbirds could be affected by such human-built structures because of the birds' propensity to migrate at night, their low flight altitudes, and their tendency to be disoriented by artificial light, making them vulnerable to collision with obstructions. Both tall structures and residential windows provide collision hazards to migrating birds. A majority of bird strikes occur when birds do not recognize windows on buildings. Thus, operation of the towers would pose collision hazards to migratory birds as effects associated with the lighting of the towers could alter the flight patterns of migratory birds and substantially increase bird strike collisions with the structures. Large-scale avian injury or mortality due to bird strikes has not been documented at buildings on the West Coast as it has in eastern and Midwestern North America. Due to the potential for bird strikes at tall buildings on CP and HPS2, this impact was considered significant. The 2010 FEIR prescribed MM BI-20a.1 and MM BI-20a.2 to reduce the effects of operational activities related to buildings and increased lighting on migrating birds to less-than-significant levels.

Under the 2010 Project, MM BI-20a.1 and MM BI-20a.2 applied to buildings that were more than 100 feet tall, under the assumption that impacts to migratory birds would result primarily from collisions by high-flying migrants, whereas the current thinking is that most bird collisions occur within 60 feet of the ground, where birds engage in most of their activities. Various summaries have placed this primary collision zone between 0 feet and 40 to 60 feet above the ground.[109,110] Current

[108] U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. *Long-Term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan*, 2001; Appendix F.
[109] Sheppard, C. 2011. *Bird-Friendly Building Design*. American Bird Conservancy, The Plains, VA, 60 pages.
[110] San Francisco Planning Department. 2011. Standards for Bird-Safe Buildings.

practice is to concentrate bird-safe building design at lower elevations rather than higher elevations. Therefore, to be consistent with current practices, MM BI-20a.1 and MM BI-20a.2 have been revised to provide design recommendations for buildings that are lower in height. Compliance with these modified mitigation measures, which are included under Impact BI-20b, at both CP and HPS would reduce bird-collision impacts to less-than-significant levels.

Addendum 5 would allow increases in building heights by approximately 20 to 35 feet in many areas on HPS2 and would change the locations of some of the tallest towers. Increasing the heights of buildings could potentially result in an increase in collision risk for higher-flying birds. However, as discussed in the preceding paragraph, current practice in bird-safe design emphasizes the importance of reducing bird collision risk in the primary collision zone, closer to the ground, where birds engage in most of their activities. As a result, increasing the heights of buildings as part of Addendum 5 is not expected to result in a substantial increase in bird collision risk compared to the 2010 Project. Addendum 5 activities do not specifically include any new wind generators or lighting that would increase impacts to birds.

Mitigation Measures with Proposed 2018 Modifications

MM BI-20a.1 Lighting Measures to Reduce Impacts to Birds. During building design ~~of any building greater than 100 feet tall~~, the Project Applicant and architect shall consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify lighting-related measures to minimize the effects of the building's lighting on birds. Such measures, which may include the following and/or other measures, will be incorporated into the building's design and operation.

- Where lighting is necessary on rooftops, u~~U~~se strobe or flashing lights in place of continuously burning lights for obstruction lighting. Use flashing white lights rather than continuous light, red light, or rotating beams.
- Install shields onto light sources not necessary for air traffic to direct light towards the ground and away from areas that provide high-quality bird habitat.
- Extinguish all exterior lighting (i.e., rooftop floods, perimeter spots) not required for public safety.
- No uplighting will be installed.
- When interior or exterior lights must be left on at night, the developer and/or operator of the buildings shall examine and adopt alternatives to bright, all-night, floor-wide lighting, which may include:
    - Installing motion-sensitive lighting.
    - Using desk lamps and task lighting.
    - Reprogramming timers.
    - Use of lower-intensity lighting.

- Windows or window treatments that reduce transmission of light out of the building will be implemented to the extent feasible.
- Educational materials will be provided to building occupants encouraging them to minimize light transmission from windows, especially during peak spring and fall migratory periods, by turning off unnecessary lighting and/or closing drapes and blinds at night.
- A report of the lighting alternatives considered and adopted shall be provided to the City/Agency for review and approval prior to construction. The City/Agency shall ensure that lighting-related measures to reduce the risk of bird collisions have been incorporated into the design of such buildings to the extent practicable.

MM BI 20a.2 Building Design Measures to Minimize Bird Strike Risk. During design of any building ~~greater than 100 feet tall~~ within 300 feet of a potential "urban bird refuge" (an open space 2 acres and larger dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, or wetlands, or open water) or any structure containing free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size, the Project Applicant and architect will consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify measures related to the external appearance of the building/structure to minimize the risk of bird strikes. Such measures, which may include the following and/or other measures, will be incorporated into the building's design.

- Minimize the use of glass, particularly within the portion of the building between ground level and 60 feet above the ground.
- Use non-reflective tinted glass.
- Use window films to make windows visible to birds from the outside.
- Use external surfaces/designs that "break up" reflective surfaces. These patterns should include vertical elements at least 0.25 inch wide at a maximum spacing of 4 inches or horizontal elements at least 0.125 inch wide at a maximum spacing of 2 inches.
- Place bird attractants, such as bird feeders and baths, at least 3 feet and preferably 30 feet or more from windows in order to reduce collision mortality.
- A report of the design measures considered and adopted shall be provided to the City/Agency for review and approval prior to construction. If, in the opinion of a qualified biologist, modification or waiver of these bird-safe design measures would not result in substantial increases in bird collision risk, the report should include the justification for such an opinion, for consideration by the City/Agency. The City/Agency shall ensure that building design-related measures to reduce the risk of bird collisions have been incorporated to the extent practicable.

Impact BI-21b: Implementation of the Project at HPS Phase II would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. ***[Criterion N.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant

Impacts from proposed Project construction activities on trees that are protected by the City of San Francisco's Urban Forestry Ordinance are discussed in Impact BI-14b. No additional impacts to trees would result from Project implementation. Impacts to resident and migratory birds by increasing collision hazards and the amount of artificial lighting, resulting from proposed Project construction activities, are discussed in Impact BI-20b. The CP-HPS2 Project would reduce bird-collision impacts to less-than-significant levels by complying with MM BI-20a.1 and MM BI-20a.2. No additional impacts to birds associated with collision hazards and artificial lighting would result from Project implementation.

Impact BI-22: Implementation of the Project would not have a substantial 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, by the CDFW, USFWS, or NMFS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, the CP-HPS2 Project would involve removal and/or modification of areas that have the potential to contain special-status species, including seven potentially breeding avian species, one bat species, and four fish species (green sturgeon, Chinook, steelhead, and longfin smelt). The Project also has the potential to affect designated critical habitat of the green sturgeon and thus, directly impact threatened and/or endangered species through habitat conversion or unauthorized take. In addition, Project activities would occur within habitats of locally rare or sensitive species such as Pacific herring and Olympia oysters, as well as avian species protected by the MBTA and California Fish and Game Code.

No new special-status species that may occur in the Project area have been listed since 2010, and no special-status species that were not known or expected to occur in the Project area in the 2010 FEIR have been newly recorded in the Project area since then. The 2018 Modified Project Variant activities simply result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts on special-status species. As a result, the 2018 Modified Project Variant activities would not result in new impacts to special-status species or substantially greater impacts to such species compared to the analysis in the 2010 FEIR, and no additional analysis of impacts from the 2018 Modified Project Variant activities on special-status species is necessary. The Project would continue to implement the

mitigation measures described in 2010 FEIR (Impact BI-22) to ensure that the impact to special-status species would remain less than significant.

Impact BI-23: Implementation of the Project would not have a substantial adverse effect on sensitive natural communities identified in local or regional plans, policies, or regulations by the CDFW, USFWS, or NMFS. ***[Criterion N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, no riparian habitat occurs in the Project area, and the only sensitive habitats other than wetlands and aquatic habitats (discussed in Impact BI-24 below) are eelgrass and areas designated as EFH. The 2010 FEIR prescribed mitigation measures to reduce impacts to eelgrass and EFH to less-than-significant levels.

Impacts from proposed Project construction activities on eelgrass are discussed in Impact BI-5b, and impacts from proposed Project construction activities on EFH are discussed in Impact BI-12b. No additional impacts to eelgrass or EFH would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-24: Implementation of the Project would not have a substantial adverse effect on federally protected wetlands and other waters as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. ***[Criterion N.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Impacts to jurisdictional wetlands and other waters (i.e., open water) that would result from proposed Project construction activities are discussed in Impact BI-4b. No additional impacts to these jurisdictional habitats would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-25: Implementation of the Project would not interfere substantially 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 site. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Impacts to established native resident or migratory wildlife corridors and native wildlife nursery sites that would result from proposed Project construction activities are discussed in Impact BI-13b. Impacts from proposed Project construction activities on eelgrass, provide nurseries for fish and

other aquatic organisms, are discussed in Impact BI-5b. No additional impacts to these resources would result from Project implementation.

Impacts to resident and migratory birds by increasing collision hazards and the amount of artificial lighting, resulting from proposed Project construction activities, are discussed in Impact BI-14b. The CP-HPS2 Project would reduce bird-collision impacts to less-than-significant levels by complying with Planning Code Section 139 in lieu of MM BI-20a.1 and MM BI-20a.2. No additional impacts to birds associated with collision hazards and artificial lighting would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-26: Implementation of the Project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. ***[Criterion N.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Impacts to jurisdictional wetlands and other waters (i.e., open water) that would result from proposed Project construction activities are discussed in Impact BI-4b. No additional impacts to these jurisdictional habitats would result from Project implementation.

Impacts from proposed Project construction activities on trees that are protected by the City of San Francisco's Urban Forestry Ordinance are discussed in Impact BI-14b. No additional impacts to trees would result from Project implementation. The 2018 Modified Project Variant activities would not result in impacts on trees that are greater than were analyzed in the 2010 FEIR.

Impacts to resident and migratory birds by increasing collision hazards and the amount of artificial lighting, resulting from proposed Project construction activities, are discussed in Impact BI-14b. The CP-HPS2 Project would reduce bird-collision impacts to less-than-significant levels by complying with Planning Code Section 139 in lieu of MM BI-20a.1 and MM BI-20a.2. No additional impacts to birds associated with collision hazards and artificial lighting would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to biological resources impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to biological resources, either on a project-related or cumulative basis.

II.B.14 Public Services

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
14. Public Services. Would the project:					
O.a Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [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 police protection?	2010 FEIR p. III.O-7 (Impact PS-1), p. III.O-8 (Impact PS-2); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	MM TR-1, MM PS-1, Varies[111]
O.b Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [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?	2010 FEIR p. III.O-17 (Impact PS-3), p. III.O-18 (Impact PS-4); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	MM TR-1, Varies[111]
O.c Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [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 or other performance objectives of the school district?	2010 FEIR p. III.O-28 (Impact PS-5), p. III.O-28 (Impact PS-6); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	None

[111] Refer to Sections II.B.3, II.B.7, II.B.8, II.B.9, II.B.10, and II.B.12 for the specific mitigation measures for construction-related effects.

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
O.d	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [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 or other performance objectives for library services?	2010 FEIR p. III.O-35 (Impact PS-7), p. III.O-35 (Impact PS-8); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	None

Changes to Project Related to Public Services

The elements of the land use program evaluated in Addendum 5 that relate to public services, including police protection, fire protection, schools, and libraries, are changes in population, employment, and development levels associated with the 2018 Modified Project Variant that would require new or expanded facilities to maintain acceptable service levels that were not identified and addressed in the 2010 FEIR. Refer to Section I (Project Description) and Section II.B (Population, Housing, and Employment) for information regarding the land use program (including schools) and projected population, housing, and employment at the site.

Comparative Impact Discussions

Impact PS-1: Construction activities associated with the Project would not result in a need for new or physically altered facilities in order to maintain acceptable service ratios, response times, or other performance objectives for police protection. ***[Criterion O.a]***

	2010 CP-HPS2 FEIR	2010 CP-HPS2 FEIR Addendum 5
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that construction activities could result in increased demand for police services if construction activities cause traffic conflicts requiring SFPD response. The 2010 FEIR determined that access to the Project site during construction would be maintained by implementation of a construction traffic management program (CTMP), as required by mitigation measure MM TR-1. The CTMP would provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The 2010 FEIR determined that the program would supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies.

The 2010 FEIR determined that construction activities also could increase demand for SFPD services if the site is not adequately secured, providing increased opportunity for criminal activity. To ensure adequate site security, the 2010 FEIR determined that mitigation measure MM PS-1 would require the Project Applicant to provide security during project construction. The 2010 FEIR concluded that impacts to the SFPD would be considered less than significant with implementation of the security measures required by mitigation measure MM PS-1.

While the number of construction jobs created as a result of the Project has changed, as shown in Table 8 (Construction Employment) in Addendum 5 Section II.B.2 (Population, Housing, and Employment), the number of years of construction has been extended to 21 years, although the beginning date of construction is delayed by approximately 4 years. Construction began in 2014 and would extend to 2034, as compared to the 2010 FEIR, which showed construction beginning in 2010 and continuing to 2028.

As with the Project analyzed in the 2010 FEIR, access to the Project site during construction would be maintained by implementation of a CTMP, as required by mitigation measure MM TR-1, and mitigation measure MM PS-1 would require the Project Applicant to provide security during project construction. As with the Project analyzed in the 2010 FEIR, impacts to the SFPD would remain less than significant with implementation of the security measures required by mitigation measure MM PS-1.

Impact PS-2: Implementation of the Project would not result in a need for new or physically altered facilities beyond those included as part of this Project in order to maintain acceptable service ratios, response times, or other performance objectives for police protection. ***[Criterion O.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Varies	Varies (same as 2010 FEIR)

As identified in the 2010 FEIR, the Project site lies within the SFPD's Bayview District. Police services are provided from the Bayview Police Station, located at 201 Williams Avenue near Third Street. Police operating from this station provide service to the southeastern part of the city, extending along the eastern edge of McLaren Park to the Bay and south from Channel Street to the San Mateo County line.

The 2010 FEIR determined that impacts on police protection services are considered significant if an increase in population or development levels would result in inadequate staffing levels (as measured by the ability of the SFPD to respond to call loads) and/or increased demand for services that would require the construction or expansion of new or altered facilities that might have an adverse physical effect on the environment. To estimate personnel requirements for new projects, the SFPD considers the size of the incoming residential population and the expected or actual experience with calls for service from other potential uses of the site. Any potential increase in staffing at the SFPD Bayview Station would be expected to take place over time throughout the Project development period with the incremental addition of new housing and new nonresidential building space and their occupancy.

As discussed in the 2010 FEIR, while the City has no adopted staffing ratio, the existing "level of service" at the SFPD can be determined by comparing citywide police force staffing to total City population (including both residents and workers).

The 2010 FEIR identified a citywide ratio of 1 officer per 665 people. This ratio, when applied to the total projected resident and employee population of the Project site at build-out under the 2018 Modified Project Variant of 41,484 (consisting of 16,618 employees and 24,866 residents) results in the need for 63 police personnel to provide a comparable level of service in the Bayview District. Consequently, the 2018 Modified Project Variant would result in the demand for an additional 10 police personnel above the 53 police personnel identified in the 2010 FEIR. The increase in 10 police personnel under the 2018 Modified Project Variant is attributed to the 172 residential units that were transferred from HPS1 to HPS2 and an increase in R&D and retail land uses in HPS2.

As discussed in the 2010 FEIR, while staffing increases, in and of themselves, would not create a significant environmental impact, the construction of new facilities to serve additional police officers could create significant environmental impacts. Additional SFPD personnel needed to serve the Project would require a station from which to operate. Using an estimate of 110 sf per person, which was used in the 2010 FEIR, the additional 63 police officers would require approximately 6,930 sf of interior building space, an increase in 930 sf over the 6,000 sf[112] identified in the 2010 FEIR.

As with the project analyzed in the 2010 FEIR, up to 100,000 gross square feet (gsf) divided equally between CP and HPS2 would be designated for community-serving uses, such as fire, police, healthcare, day-care, places of worship, senior centers, library, recreation center, community center, and/or performance center uses. These uses have been anticipated as part of the Project, and the impacts of their construction were evaluated in the 2010 FEIR. Accordingly, the potential construction of a new police facility (counter, storefront, or other configuration) on the Project to accommodate development associated with the 2018 Modified Project Variant was addressed in the 2010 FEIR. With the construction of a new facility or a suitable retrofitting or expansion of the Bayview Station, the SFPD would have ample space to accommodate the additional police officers needed to maintain the SFPD's existing level of service.

As with the project analyzed in the 2010 FEIR, construction activities associated with the proposed public facilities, which could include a potential 6,820 sf building space for new police officers, are considered part of the overall Project. A discussion of project-related construction impacts, including those associated with the construction of public facilities, is provided in the applicable sections of the 2010 FEIR, including Section III.D (Transportation and Circulation), Section III.H (Air Quality), Section III.I (Noise and Vibration), Section III.J (Cultural Resources and Paleontological Resources), Section III.K (Hazards and Hazardous Materials), and Section III.M (Hydrology and Water Quality). Construction impacts would be temporary. While it is likely that construction of the various public

[112] The actual square footage identified in the 2010 FEIR is 53 officers multiplied by 110 sf per officer, which is 5,830 sf; but, it was rounded up to 6,000 sf.

facilities would not result in significant impacts (either individually or combined), construction of the entire development program, of which the public facilities are a part, would result in significant and unavoidable impacts related to construction noise and demolition of an historic resource; all other construction-related impacts would be less than significant (in some cases, with implementation of identified mitigation). Refer to 2010 FEIR Section III.D (Transportation and Circulation), Section III.H (Air Quality), Section III.I (Noise and Vibration), Section III.J (Cultural Resources and Paleontological Resources), Section III.K (Hazards and Hazardous Materials), and Section III.M (Hydrology and Water Quality) for the specific significance conclusions for construction-related effects.

Impact PS-3: Construction activities associated with the Project would not result in a need for new or physically altered facilities in order to maintain acceptable response times for fire protection and emergency medical services. ***[Criterion O.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that during construction of the Project, emergency access to the Project site would be maintained through compliance with the CTMP prepared for the Project, as required by mitigation measure MM TR-1. Compliance with the CTMP would ensure that access to the Project site is not obstructed during construction activities. The CTMP would provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The program would supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW, or other City departments and agencies.

As with the Project analyzed in the 2010 FEIR, access to the Project site during construction would be maintained by implementation of a CTMP, as required by mitigation measure MM TR-1. As with the Project analyzed in the 2010 FEIR, impacts to the SFPD would be remain less than significant with implementation of the security measures required by mitigation measure MM PS-1.

Impact PS-4: Implementation of the Project would not result in a need for new or physically altered facilities beyond those included as part of this Project in order to maintain acceptable response times for fire protection and emergency medical services. ***[Criterion O.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Varies	Varies (same as 2010 FEIR)

The 2010 FEIR determined that the addition of 10,500 residential units (and a resulting residential population of 24,465) and an employment population of 10,730 (for a total population of 35,195) combined with an increase in the intensity of physical development on the Project site, would result in new demand for fire protection and emergency medical services. The 2010 FEIR concluded that

construction of 100,000 gsf of community uses, which could include a new SFFD facility, would allow the SFFD to maintain acceptable response times for fire protection and emergency medical services. The current proposal is that the fire station would be accommodated outside of the 100,000 gsf of community services, but would be accommodated within HPS2. Irrespective of the how the SFFD facility is accommodated in terms of the land use program, the provision of the facility would still allow the SFFD to maintain acceptable response times for fire protection and emergency medical services.

The 2010 FEIR concluded that, while the development of the Project may require new or physically altered SFFD facilities in order to maintain acceptable fire protection and emergency medical services, the potential impacts associated with the construction of a new facility had been addressed in the 2010 FEIR and would not require further environmental review.

In addition, the 2010 FEIR noted that all new buildings must meet standards for emergency access, sprinkler, and other water systems, as well as all other requirements specified in the *San Francisco Fire Code*, which would help to minimize demand for future fire protection services. In addition, the 2010 FEIR noted that all development, including high-rise residential buildings would be reviewed by DBI and the SFFD to ensure that structures are designed in compliance with the *San Francisco Fire Code*. *San Francisco Fire Code* Sections 511.1 and 511.2 outline specific requirements for high-rise buildings (i.e., buildings above 200 feet) and would apply to the Project's proposed high-rise structures.

As discussed above, the 2018 Modified Project Variant would not result in a net increase in population in the combined CP and HPS Project sites. While the 2018 Modified Project Variant would generate more jobs than the CP-HPS2 Project (by approximately 5,880 jobs), it would generate fewer jobs than the R&D Variant (Variant 1) (by approximately 17 jobs). Consequently, as with the Project analyzed in the 2010 FEIR, construction of a new SFFD facility would allow the SFFD to maintain acceptable response times for fire protection and emergency medical services. Therefore, while the development of the Project may require new or physically altered SFFD facilities in order to maintain acceptable fire protection and emergency medical services, the potential impacts associated with the construction of a new facility were addressed in the 2010 FEIR and would not require further environmental review.

Impact PS-5: Construction activities associated with the Project would not affect the provision of school services by decreasing access to school services. ***[Criterion O.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, construction of the Project would not result in impacts to the SFUSD system, as construction of the Project would not itself create new residents or students. Also, no SFUSD facilities are located on the Project site. All school services would be

available to the community throughout the duration of project construction. As such, no impact to school services during construction of the project would occur.

Impact PS-6: New students associated with implementation of the Project would not require new or expanded school facilities, the construction of which could result in substantial adverse impacts. ***[Criterion O.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

For planning purposes, and using the SFUSD student generation rate of 0.203 student (including elementary, middle, and high school students) per new housing unit, the 2010 FEIR determined that approximately 2,131 school-age children would live within the Project site following full build-out of the Project, including approximately 1,593 school-age children living at CP and approximately 538 total students at the HPS2 site, as shown in 2010 FEIR Table III.O-8 (Project Buildout Public School Enrollment Compared to SFUSD Capacity) in Section III.O (Public Services).

As discussed above, the 2010 FEIR proposed 10,500 residential units over the entire Project site, including both CP and HPS. The current proposal includes 10,672 residential units. Accordingly, using the same generation rate of 0.203 student per new housing unit that was used in the 2010 FEIR, approximately 2,166 school-age children would live within the Project site following full build-out of the Project, including approximately 1,465 school-age children living at CP and approximately 700 students at the HPS2 site.

As discussed above, the 2010 FEIR did not analyze school uses at HPS2. The HPS2 proposed modifications would provide for one or more public or private elementary, secondary, or post-secondary schools. The public schools are expected to accommodate up to 700 students. The private school would accommodate approximately 1,000 students. Consequently, it is anticipated that sufficient school capacity would be provided between the schools provided at HPS2 and/or other public and private schools in the City to accommodate on-site student population. Construction-related impacts of these schools are addressed throughout Addendum 5.

Finally, as with the Project analyzed in the 2010 FEIR, school impact fees paid pursuant to SB 50 would go toward maintaining or improving school facilities to accommodate growth in school attendance. SB 50 would ensure that future facilities are provided. As such, this impact would remain less than significant, and no mitigation would be required.

Impact PS-7: Construction activities associated with the Project would not affect provision of school services by decreasing access to library services. ***[Criterion O.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, construction of the Project would not result in impacts to the San Francisco Public Library system, as the construction itself would not result in an increase in population requiring library services. Also, no library branches are located on the Project site. All library services would be available to the community throughout the duration of project construction. As such, no impact to library services during construction of the Project would occur.

Impact PS-8: Implementation of the Project would not result in an increase in demand for library services that is not met by existing library facilities in the vicinity that have been expanded or updated. ***[Criterion O.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the Project analyzed in the 2010 FEIR, residential and nonresidential development associated with the Project would increase demand for local library services in the Bayview neighborhood.

As discussed above, the 2018 Modified Project Variant would not result in a net increase in population in the combined CP and HPS Project sites. While the 2018 Modified Project Variant would generate more jobs than the CP-HPS2 Project (by approximately 5,880 jobs), it would generate fewer jobs than the R&D Variant (Variant 1) (by approximately 17 jobs).

Similar to the 2010 Project, the 2018 Modified Project Variant would result in a direct and indirect population increase within the Bayview neighborhood. Library branches serving the Project site, including the Portola branch (opened in 2009), the Visitacion Valley branch (opened in 2010), and expanded Bayview branch (opened in 2013), would continue to meet the demands of the community. The aforementioned SFPL branches would accommodate increased demand from the Project, and no additional library facilities would be required to accommodate development proposed in the Project. Impacts to libraries resulting from the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

However, as with the Project analyzed in the 2010 FEIR, space within the Project site would also be dedicated to the provision of library services to supplement the expanded Bayview branch library. As part of the Project, a 1,500 gsf reading room and space for automated book-lending machines would be integrated into the community retail and public facilities uses that are proposed.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to public services impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to public services, either on a project-related or cumulative basis.

II.B.15 Recreation

Criterion		Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
15.	**Recreation.** Would the project:					
P.a	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration or degradation of the facilities would occur or be accelerated?	2010 FEIR p. III.P-15 (Impact RE-2); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	MM RE-2
P.b	Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered park or recreational facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives?	2010 FEIR p. III.P-15 (Impact RE-2); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	MM RE-2
P.c	Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	2010 FEIR p. III.P-12 (Impact RE-1); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	Varies[113]
P.d	Adversely affect existing recreational opportunities?	2010 FEIR p. III.P-32 (Impact RE-3); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	None

Changes to Project Related to Recreation

The 2018 Modified Project Variant at HPS2 includes a total of 232.0 acres of parks and recreation areas at HPS2, consisting of 173.9 acres of new parks and 58.1 acres of recreation areas, including sports fields and active urban recreation. In addition, the 17.3 acres of other parks and open space areas would be provided, but OCII would not consider these areas as creditable parkland. Appendix A Table A-5 (Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant [Variant 1], and Housing/R&D Variant [Variant 2A] [Parks and Open Space]) provides a detailed identification of new parks, new sports fields and active urban recreation areas, state park land, and other parks at both CP and HPS2 under the 2018 Modified Project Variant, as well as the same information for the 2010 Project, the R&D Variant (Variant 1), and the R&D/Housing Variant (Variant 2A). Overall, as compared to the 2010 Project, the parks and open space acreage would increase by 1.3 acres.

[113] Refer to Sections II.B.3, II.B.7, II.B.8, II.B.9, II.B.10, and II.B.12 for the specific mitigation measures for construction-related effects.

Comparative Impact Discussions

Impact RE-1: Construction of the parks, recreational uses, and open space proposed by the Project would not result in substantial adverse physical environmental impacts beyond those analyzed and disclosed in this EIR. (Refer to Sections III.D [Transportation and Circulation], III.H [Air Quality], III.I [Noise], III.J [Cultural Resources and Paleontological Resources], III.K [Hazards and Hazardous Materials], and III.M [Hydrology and Water Quality]) *[Criterion P.c]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Varies	Varies (same as 2010 FEIR)

The 2010 FEIR found that impacts associated with construction of the proposed parks and recreational facilities would be considered part of the overall Project impacts. The construction impacts identified in 2010 FEIR Section III.D (Transportation and Circulation), Section III.H (Air Quality), Section III.I (Noise and Vibration), Section III.J (Cultural Resources and Paleontological Resources), Section III.K (Hazards and Hazardous Materials), Section III.M (Hydrology and Water Quality), and Section III.N (Biological Resources), and other relevant topics include impacts and mitigation measures associated with the construction of park and recreational facilities. The parks and recreation facilities would not be expected to have construction impacts separate from the overall Project. Additionally, because the Project would provide adequate parks and recreation facilities and open space to accommodate the increased demand from the Project, no additional park or recreation facility construction would be required.

Similarly, the 2018 Modified Project Variant construction related impact discussions, conclusions, and mitigation measures considered in the 2010 FEIR and Addendum 5 include construction of the parks and recreational facilities. The parks and recreation facilities would not be expected to have additional or separate impacts beyond those discussed for the overall Project. Consequently, no separate analysis of park and recreation facility construction impacts is required.

Impact RE-2: Implementation of the Project would not increase the use of existing parks and recreational facilities that would cause the substantial physical deterioration of the facilities to occur or to be accelerated, nor would it result in the need for, new or physically altered park or recreational facilities. *[Criterion P.a]*[114]

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR found the Project would provide a total of 336.4 acres of new and or improved park land and recreational facilities with 104.8 acres at CP and 231.6 acres at HPS2. Based on the total number of new residents (24,465), the 2010 Project would provide 13.7 acres of parkland per 1,000 residents within the Project site, which exceeds the City General Plan ratio of 5.5 acres per 1,000 residents. The total number of new residents and new jobs (35,195) would result in a parks-to-

[114] The 2010 FEIR combined the discussion of Criterion P.a and Criterion P.b (2010 FEIR p. III.P-10, footnote 983).

population ratio of 9.5 acres per 1,000 employees/residents. Thus, the 2010 FEIR concluded that the Project would not have a significant impact.

The 2010 FEIR determined that the timing of Project development could result in a temporary increase in the use of parks and recreational facilities in a manner that would cause or accelerate the physical deterioration or degradation of those facilities if development of resident/employee generating uses occur in advance of the development of park and recreational facilities. To address this potential impact, the 2010 FEIR included mitigation measure MM RE-2, which would ensure that the potential impact would be reduced to a less-than-significant level.

The 2018 Modified Project Variant would modify the park and recreational facilities plan at HPS2 as described in Addendum 5 Section I (Project Description). The 2018 Modified Project Variant would provide a total (excluding "other" parks) of 232.0 acres of parks, sports fields, and active urban recreational areas at HPS2, which is approximately 0.4 acre more than for HPS2 in the 2010 Project. At CP, the 2018 Modified Project Variant would provide a total of 9.0 acres of new parks (there are no sports fields or active urban recreational areas proposed at CP), which is 0.9 acre more than provided at CP under the 2010 Project. The CP-HPS2 total parks and recreation acreage for the 2018 Modified Project Variant would be 337.7 acres, which is approximately 1.3 acres more than the CP-HPS2 total for the 2010 Project. Thus, the 2018 Modified Project Variant park and recreational acreage would be more than the park and recreation acreage considered in the 2010 FEIR impact analysis. Refer to Addendum 5 Appendix A, Table A-5, for a detailed identification of parks acreage for the 2018 Modified Project Variant, as well as the 2010 Project, the R&D Variant (Variant 1), and the Housing/R&D Variant (Variant 2A). The 2018 Modified Project Variant would also provide more parks, sports fields, and active urban recreational areas as compared to the R&D Variant (Variant 1) and the Housing/R&D Variant (Variant 2A). Further, because it is likely that residents or employees of HPS2 and CP would use parks or recreational facilities at either HPS2 or CP, this analysis considers both portions of the Project Site.

Under the 2018 Modified Project Variant, the total of 24,866 new residents would result in a parks-to-population ratio of 13.5 acres per 1,000 residents, which exceeds the City General Plan identified ratio of 5.5 acres per 1,000 residents. Further, including the 16,618 new jobs provided under the 2018 Modified Project Variant, a total of 8.1 acres per 1,000 employees/residents would be provided. As with the 2010 Project, the 2018 Modified Project Variant would also not have a significant impact related to the parks-per-resident ratio since the General Plan ratio of 5.5 acres per population would not be exceeded.

The 2018 Modified Project Variant construction phasing schedule would continue to meet or exceed the standard of 5.5 acres of parkland per 1,000 residents. Mitigation measure MM RE-2, which was adopted by the City, requires that parks and population are phased in a substantially concurrent manner, such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The 2018 Modified Project Variant must comply with

this mitigation measure. This impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

MM RE-2: Phasing of parkland with respect to residential and/or employment-generating uses. Development of the Project and associated parkland shall ~~proceed in four phases, as illustrated by Figure II-16 (Proposed Site Preparation Schedule) of Chapter II (Project Description) of this EIR. To~~ ensure that within each phase or sub-phase, parks and population increase substantially concurrently~~,~~ and development shall be scheduled such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The following standards shall be met:

- No project development shall be granted a temporary certificate of occupancy if the City determines that the new population associated with that development would result in a parkland-to-population ratio within the Project site lower than 5.5 acres per 1,000 residents/population, as calculated by the Agency.
- For the purposes of this mitigation measure, in order for a park to be considered in the parkland-to-population ratio, the Agency must determine that within 12 months of the issuance of the temporary certificate of occupancy, it will be fully constructed and operational, and, if applicable, operation and maintenance funding will be provided to the Agency.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to recreation impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to recreation, either on a project-related or cumulative basis.

II.B.16 Utilities

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
18. Utilities. Would the project:					
Q.a Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	2010 FEIR p. III.Q-17 (Impact UT-2); Addendum 1 p. 47 Addendum 4 p. 52	No	No	No	MM UT-2 (as modified by Addendum 5)
Q.b Require new or expanded water entitlements and resources, if there are not sufficient water supplies available to serve the project from existing entitlements and resources?[115]	2010 FEIR p. III.Q-15 (Impact UT-1); Addendum 1 p. 47 Addendum 4 p. 52	No	No	No	None
Q.c Require or result in the construction of new wastewater treatment or collection facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	2010 FEIR p. III.Q-31 (Impact UT-3b); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	None
Q.d Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	2010 FEIR p. III.Q-31 (Impact UT-3b); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	MM UT-3a
Q.e Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?[116]	2010 FEIR p. III.Q-34 (Impact UT-4); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	None
Q.f Be served by a landfill with insufficient permitted capacity to accommodate Project-related solid waste disposal needs?	2010 FEIR p. III.Q-45 (Impact UT-5b), p. III.Q-47 (Impact UT-6b), p. III.Q-51 (Impact UT-7b), p. III.Q-53 (Impact UT-8b); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	MM UT-5a, MM UT-7a

[115] This standard has been slightly modified from the text found in CEQA Guidelines Appendix G for ease of comprehension.
[116] This standard has been slightly modified from the text found in CEQA Guidelines Appendix G for ease of comprehension.

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
Q.g	Fail to comply with federal, state, and local statutes and regulations related to solid waste?	2010 FEIR p. III.Q-55 (Impact UT-9); Addendum 1 p. 47 Addendum 4 p. 52	No	No	No	MM UT-5a, MM UT-7a
Q.h	Require or result in the construction of new or expansion of existing utility infrastructure, the construction of which could cause significant environmental effects?	2010 FEIR p. III.D-31 (Section III.D), p. III.H-18 (Section III.H), p. III.I-20 (Section III.I), p. III.J-31 (Section III.J), p. III.K-46 (Section III.K), p. III.L-22 (Section III.L), p. III.M-49 (Section III.M), p. III.O-7 (Section III.O), p. III.S-33 (Section III.S); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	Varies[117]
Q.i	Result in a determination by the utility service provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	2010 FEIR p. III.Q-59 (Impact UT-10); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	None

Changes to Project Related to Utilities

The elements of the land use program evaluated in Addendum 5 that relate to utilities are the change in the number of residential units and hotel rooms, and the change in square footage of buildings (used for commercial, industrial, and community purposes), office space, schools, and parks.

Water

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, total water demand as a result of the project has also changed. Table 23 (Water Demand) shows a total water demand of 1.90 mgd, which is higher than the 1.67 mgd estimated for the 2010 Project but less than the 1.99 mgd estimated for the approved R&D Variant (Variant 1) (refer to 2010 FEIR Table III.Q-4 [Project Water Demands Adjusted for Plumbing Codes and SF Green Building Ordinance (mgd)] and Table IV-11 [R&D Variant Water Demands Adjusted for Plumbing Codes and SF Green Building Ordinance (mgd)], respectively). Compared to the R&D Variant (Variant 1), the 2018 Modified Project Variant represents an overall decrease in water demand of 0.09 mgd, with increased demand from residential, hotel, neighborhood retail, school, and community uses; and decreased demand from office, regional retail, and football stadium uses.

[117] Refer to Sections II.B.3, II.B.7, II.B.8, II.B.9, II.B.10, II.B.11, II.B.12, II.B.14, and II.B.18 for the specific mitigation measures for construction-related effects.

TABLE 23 WATER DEMAND

Land Use	Demand[a] (mgd) CP	Demand[a] (mgd) HPS2	2018 Modified Project Variant Total (mgd)	2010 Project Total (mgd)	R&D Variant (Variant 1) Total (mgd)
Residential	0.57	0.18	***0.75***	0.83	0.83
Regional Retail	0.09	0.01	***0.10***	0.08	0.08
Neighborhood Retail	0.02	0.05	***0.07***	0.04	0.03
Office	0.04	0.00	***0.04***	0.06	0.06
Research and Development	0.00	0.52	***0.52***	0.36	0.71
Hotel	0.02	0.04	***0.06***	0.05	0.05
Football Stadium	0.00	0.00	***0.00***	0.02	0.00
Arena	0.02	0.00	***0.02***	0.01	0.01
Schools	0.00	0.01	***0.01***	Not Applicable[b]	Not Applicable[b]
Water Taxi	0.00	0.00	***0.00***	Not Applicable[b]	Not Applicable[b]
Community Use (including artists' studios)	0.01	0.10	***0.11***	0.02	0.02
Public Parking	0.00	0.00	***0.00***	0.00[c]	0.00[c]
Parks and Open Space	0.07	0.15	***0.22***	0.21	0.19
Total Demand	***0.84***	***1.06***	***1.90***	***1.67***	***1.99***

SOURCE: ARUP, Candlestick Point – Hunters Point Shipyard Phase II Water Demand Memorandum, 2009; BKF, 2018.

a. Water demand was calculated using the land use program identified in Addendum 5 Table 2 (2018 Modified Project Variant Land Use Program) and applying the unit demand water values used by ARUP in 2010 and/or new unit demand water values for new land uses.

b. This value was not provided in the 2010 FEIR because the associated land uses were not a part of the 2010 Project or R&D Variant (Variant 1).

c. This value was not provided in the 2010 FEIR, although public parking was a part of the 2010 Project and R&D Variant (Variant 1). While the value was not provided in the 2010 FEIR, the water demand for public parking in 2010 would be consistent with the water demand for public parking under the 2018 Modified Project Variant (0.00 mgd).

The 2010 FEIR Utilities Variant 4 includes eleven decentralized wastewater treatment plants, each capable of treating 100,000 gallons per day (gpd), which would accommodate the estimated Project-generated wastewater flow of approximately 1.1 mgd. Under Utilities Variant 4, seven plants would be located within Candlestick Park and four within Hunters Point. The eleven decentralized plants would generate 1.05 mgd of reclaimed water. The 2018 Modified Project Variant would instead include a centralized recycled water system at HPS2, consisting of a dedicated 976,000 gpd central treatment that would serve both CP and HPS2 and require one full-time employee. Consistent with the Utilities Variant 4, the central treatment plant under the 2018 Modified Project Variant would divert wastewater to a sanitary sewer system for treatment using membrane bioreactor (MBR) technology to obtain a water quality appropriate for irrigation, toilet flushing and other nonpotable uses. If a connection would be provided to CP, recycled water would be transported from the HPS2 plant to CP via a pipe attached to the bottom of from the Yosemite Slough Bridge.

The 2010 FEIR analyzed the Auxiliary Water Supply System (AWSS) as being connected to the existing AWSS system at the intersection of Earl Street and Innes Avenue and at the Palou Avenue and Griffith Avenue intersection with looped service along Spear Avenue/Crisp Road. With the 2018 Modified Project Variant, the AWSS would be connected to the existing AWSS system at the Palou Avenue and Griffith Avenue intersection with a looped service along Spear Avenue/Crisp Road.

Off-site improvements to the University Mound AWSS storage tank and distribution system may also be implemented by the City of San Francisco to support HPS2. A second optional connection may be installed at a later date by the City of San Francisco at the intersection of Earl Street and Innes Avenue. If a connection would be provided to CP, recycled water would be transported from the HPS2 plant to Candlestick via a pipe attached to the bottom of the Yosemite Slough Bridge.

Wastewater

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, total wastewater generation as a result of the project has also changed. Table 24 (Wastewater Generation) shows total wastewater generation of 1.25 mgd, which is higher than the 1.18 mgd estimated for the 2010 Project but less than the 1.35 mgd estimated for the approved R&D Variant (Variant 1) (refer to 2010 FEIR Table III.Q-5 [Project Wastewater Generation] and Table IV-12 [R&D Variant Wastewater Generation], respectively). Compared to R&D Variant (Variant 1), the 2018 Modified Project Variant represents an overall decrease in wastewater generation of 0.10 mgd, with decreased demand from office, regional retail, and football stadium uses, and increased generation from residential, neighborhood retail, school, and community uses.

TABLE 24 WASTEWATER GENERATION

Land Use	*Estimated Wastewater Generation Expressed as % of Water Demand (or as otherwise specified)*	*CP (mgd)*	*HPS2 (mgd)*	*2018 Modified Project Variant Total (mgd)*	*2010 Project Total (mgd)*	*R&D Variant (Variant 1) Total (mgd)*
Residential	95%	0.54	0.17	***0.71***	0.79	0.79
Regional Retail	57%	0.05	0.01	***0.06***	0.05	0.05
Neighborhood Retail	57%	0.01	0.03	***0.04***	0.02	0.02
Office	57%	0.02	0.00	***0.02***	0.03	0.03
Community Uses (includes Artist space)	57%	0.01	0.06	***0.07***	0.02	0.02
Research and Development	57%	0.00	0.30	***0.30***	0.21	0.40
Hotel	57%	0.01	0.02	***0.03***	0.03	0.03
Football Stadium	95%	0.00	0.00	***0.00***	0.02	0.00
Arena	95%	0.02	0.00	***0.02***	0.01	0.01
Schools	57%	0.00	0.00	***0.00***	Not Applicable[a]	Not Applicable[a]
Total		***0.66***	***0.59***	***1.25***	***1.18***	***1.35***

SOURCE: ARUP, 2009; BKF, 2018.

a. This value was not provided in the 2010 FEIR because the associated land uses were not a part of the 2010 Project or R&D Variant (Variant 1).

As directed by the SFPUC, wastewater from the HPS2 site would now be conveyed to the existing combined sewer main on the Innes Avenue tributary to the Central Basin, rather than the Hunters Point tunnel sewer system, as originally analyzed in the 2010 FEIR. With the changes to the land use program represented by the 2018 Modified Project Variant, projected maximum peak flows from HPS2 into the

Central Basin system, based on 0.59 mgd and peaking factor of 3.0 would be approximately 1,229 gpm (0.59 mgd/24 hours/60 minutes x 1,000,000 times 3.0). A peaking factor of less than 3.0 may be achieved, pursuant to the Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard, which would reduce the maximum peak flows from HPS2 into the Central Basin system.

For the 2010 FEIR, Hydroconsult Engineers (HCE) determined that the existing wastewater flow for the Project site was 0.206 mgd and that the total net increase in wastewater from the Project site would equal 0.754 mgd for the 2010 Project and 0.974 mgd for the R&D Variant (Variant 1),[118] and that there would be a decrease in CSO volume, frequency, and duration of CSO in the Yosemite Basin and a decrease in overall CSO volume for the entire Bayside Drainage Area because stormwater from the Project site would no longer flow into the Combined Sewer System. For the 2018 Modified Project Variant, the total net increase in wastewater would equal 1.044 mgd (1.25 minus 0.206).

Solid Waste

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, total solid waste generation as a result of the project has also changed. Table 25 (Solid Waste Generation) shows total solid waste generation of 23,153 tons per year (tpy), which is higher than the 21,827 tpy estimated for the 2010 Project and the 22,225 tpy estimated for the approved R&D Variant (Variant 1) (refer to 2010 FEIR Table III.Q-8 [Project Solid Waste Generation] and Table IV-14 [R&D Variant Solid Waste Generation], respectively). Compared to R&D Variant 1, the 2018 Modified Project Variant represents an overall increase in solid waste generation of 928 tpy, with increased generation from residential, retail, hotel, and research and development, and decreased generation (zero) from office and football stadium uses. The proposed water taxi service is anticipated to result in the generation of nominal solid waste, if any; food and beverages are not assumed to be provided as part of the service. Furthermore, the implementation of proposed parking would not generate solid waste. There would be solid waste receptacles on site, but the solid waste would be generated as a result of the 2018 Modified Project Variant land uses, or as nominal waste generated off site that would be deposited at parking structures.

The Project Description estimates that the borings for the ground-source geothermal heating and cooling system would result in approximately 12,250 cubic yards of excavated soil that would be reused on site in a manner consistent with the Soil Import Plan and Risk Management Plan.

[118] 2010 FEIR Appendix Q3, Hydrologic Modeling to Determine Potential Water Quality Impacts, Hydroconsult Engineers, October 19, 2009.

TABLE 25 SOLID WASTE GENERATION

		Candlestick Point			*HPS2*			*2018 Modified Project Variant Total*			*2010 Project Total*		*R&D Variant (Variant 1) Total (mgd)*	
Use	*Generation Factor (per day or year)*	*Area or Units*	*Tons per Day or Event*	*Tons per Year[l]*	*Area or Units*	*Tons per Day or Event*	*Tons per Year[l]*	*Area or Units*	*Tons per Day or Event*	*Tons per Year or per Total Number of Events[a]*	*Tons per Day or Event*	*Tons per Year or per Total Number of Events*	*Tons per Day or Event*	*Tons per Year or per Total Number of Events*
Residential	5.653 lb/unit	7,218 units	20.4	7,446	3,454 units	9.8	3,577	***10,672 sf***	***30.2***	***11,023***	29.7	10,840.5	29.7	10,840.5
Neighborhood Retail/Maker Space/Regional Retail	0.02600411 lb/sf	760,000 sf	9.9	3,614	401,000 sf	5.2	1,898	***1,161,000 sf***	***15.1***	***5,512***	11.5	4,197.5	11.5	4,197.5
R&D/Office	0.006 lb/sf	150,000 sf	0.45	164.3	4,265,000 sf	12.8	4,672	***4,415,000 sf***	***13.3***	***4,836.3***	8.0	2,920	15.5	5,657.5
Hotel	0.0108 lb/sf	150,000 sf	0.81	296.0	120,000	0.65	237	***270,000 sf***	***1.5***	***533.0***	0.8	292.0	0.8	292.0
Arena	2.23 lb/seat	10,000 seats	5.6[b]	840[c]	0	0	0	***10,000 seats***	***5.6***	***840c***	5.6	836.3[c]	5.6	836.3[c]
Stadium	2.23 lb/seat	0	0	0	0	0	0	***0***	***0***	***0***	2,339.2	2,339.2[i]	0	0
Artist Studios/Art Center	0.006 lb/sf	0	0	0	255,000 sf	0.8	292	***255,000 sf***	***0.8***	***292.0***	0.8	292.0	0.8	292.0
Community Facilities	0.006 lb/sf	50,000 sf	0.15	54.8	50,000 sf	0.15	54.8	***100,000 sf***	***0.3***	***109.6***	0.3	109.6	0.3	109.6
Schools[d]	6.2 gallons/ acre/year	0	0	0	410,000 sf (9.4 acres)	0.0007	0.24[e]	***410,000***	***0.24***	***0.24***	Not Applicable[j]	Not Applicable[j]	Not Applicable[j]	Not Applicable[j]
Parks and Open Space[d]	5.0 gallons/ acre/year	105.7 acres	0.006	2.2[f]	232.0 acres	0.013	4.8[g]	***337.7 acres***	***0.020***	***7.0***	Not Available[k]	Not Available[k]	Not Available[k]	Not Available[k]
Total				***12,417***			***10,736[h]***			***23,153***		***21,827***		***22,225***

SOURCE: PBS&J 2009; Generation Factors from Arup, *Carbon Footprint Report*, March 24, 2009; FivePoint, 2018. City of Dublin, Long Term Trash Reduction Plan Table 1-1, February 1, 2014.

a. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

b. The Performance venue is projected to be 50 percent attendance.

c. Assumes 150 events per year at 50 percent attendance.

d. City of Dublin, *Long Term Trash Reduction Plan*, February 1, 2014, Table 1-1 (San Francisco Bay Area trash generation rates by land use [gallons/acre/year]).

e. 9.41 acres x 6.2 gallons = 58.34 gallons per year x 8.35 lb. of water weight = 487.2 pounds per year, or 0.24 ton.

f. 105.7 acres x 5.0 gallons = 528.5 gallons per year x 8.35 lb. of water weight = 4,413 pounds per year, or 2.2 tons.

g. 232.0 acres x 5.0 gallons = 1,160 gallons per year x 8.35 lb. of water weight = 9,686 pounds per year, or 4.8 tons.

h. The recycled water facility is not assumed to generate measurable solid waste as only one employee would be at the site on a given day.

i. Assumes 12 sold-out games and 20 other sold-out stadium events per year.

j. This value is not provided in the 2010 FEIR because the associated land uses were not a part of the 2010 Project or R&D Variant (Variant 1).

k. The value for this land use category was not provided in the 2010 FEIR.

l. Tons per year is calculated by taking the tons per day or event value, which may have been rounded, and multiplying by 365.

Alternative Utility Infrastructure

The 2010 FEIR Utilities Variant 4 analyzed implementation of a district heating and cooling system, an on-site wastewater treatment, and the use of photovoltaic cells to reduce energy usage. The 2018 Modified Project Variant includes the following alternative utility systems: a ground source geothermal heating and cooling system as the primary source of heating and cooling for the development; extensive use of solar power (10.5- to 16.5-megawatt [MW] generating capacity); and expanded recycled water system. Each of these alternative utility systems are described in detail in Project Description Section I.C.5 (Infrastructure Plan).

New Regulations

The following new regulations would apply to the analysis of utilities impacts.

Water Efficient Irrigation Ordinance (Ordinance No. 301-10, *San Francisco Administrative Code* Chapter 63). To ensure the efficient use of water within all San Francisco landscapes, projects with 500 sf or more of new or modified landscape area are required to comply with the Water Efficient Irrigation Ordinance (effective January 1, 2011). To reduce landscape water use, projects must design, install, and maintain efficient irrigation systems, utilize low-water-use plantings, and set a maximum applied water allowance, also known as an annual water budget. The requirements of the Water Efficient Irrigation Ordinance apply to owners of residential, commercial, municipal, and mixed-use properties with a new construction or modified landscape project greater than or equal to 500 sf. The San Francisco Green Landscaping Ordinance has additional guidelines and recommendations related to reducing stormwater runoff, stormwater treatment strategies, and improving local and regional water quality.

Recycled Water Ordinance (Ordinance Nos. 390-91 and 391-91, *San Francisco Code of Public Works* Article 22). The City and County of San Francisco's Recycled Water Ordinance requires property owners to install recycled water systems in new construction, modified construction, or remodeling projects totaling 40,000 sf or more as well as new or existing landscapes totaling 10,000 sf or more that were not constructed in conjunction with a development project. The goal of the ordinance is to maximize the use of recycled water. Buildings and facilities that are located within the designated recycled water use areas are required to use recycled water for all uses authorized by California.

Mandatory Use of Alternate Water Supplies in New Construction Ordinance (Ordinance No. 109-15, *San Francisco Health Code* Article 12C). This ordinance amends *San Francisco Health Code* Article 12C to require new buildings larger than 250,000 sf to be constructed, operated, and maintained using available alternate water sources for toilet and urinal flushing as well as irrigation. In addition, new buildings larger than 40,000 sf are required to prepare water budget calculations. Approvals from the SFPUC and permits from both the Department of Public Health and

Department of Building Inspection would be needed for the proposed project to verify compliance with the requirements and local health and safety codes.

Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard were adopted by the San Francisco Department of Public Works in June 2014 pursuant to the Subdivision Code Section 1611, together with Public Works Code Sections 147.2(b)(2) and 1204(b)(2) to serve as general guidelines for the planning, development, design and improvement of the Candlestick Point–Hunters Point Shipyard development. Specific requirements for SLR planning are included as Attachment 4.

Green Building Ordinance (*City and County of San Francisco Building Code*, Chapter 13C). In November 2008, the City passed the San Francisco Green Building Ordinance (SFGBO), which is included as *San Francisco Building Code* Chapter 13C. In 2013, the SFGBO was amended to incorporate all mandatory elements of the 2013 CALGreen and Title 24 energy-efficiency standards and require green building practices and Leadership in Energy and Environmental Design (LEED) certification for all new residential and commercial construction in the city, unless otherwise indicated in the SFGBO, as well as alterations to existing buildings. The *Green Building Code* was last amended in April 2016 to establish requirements for certain new building construction to include development of renewable energy facilities (*Green Building Code* Sections 4.201.2 and 5.201.1.2). The requirements include the installation of solar PV systems and/or solar thermal systems in the solar zone (i.e., an allocated space that is unshaded and free of obstructions, usually a roof). The renewable energy requirements are applicable to residential and nonresidential new construction projects of 10 occupied floors or less.

California Assembly Bill 341 (AB 341) (*Public Resources Code* Division 30, Part 3, Chapter 12.8). AB 341, which became law in 2011, establishes a new statewide goal of 75 percent recycling through source reduction, recycling, and composting by 2020, and changed the way that the state measures progress toward the 75 percent recycling goal, focusing on source reduction, recycling and composting. AB 341 also requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The purpose of the law is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and expand the opportunity for additional recycling services and recycling manufacturing facilities in California.[119]

California Assembly Bill 1826 (*Public Resources Code* Division 30, Part 3, Chapter 12.9, Commercial Organic Waste Recycling Law). AB 1826 became effective on January 1, 2016, and requires businesses and multi-family complexes (with 5 units or more) that generate specified amounts of organic waste (compost) to arrange for organics collection services. The law phases in the requirements on businesses with full implementation realized in 2019:

- **First Tier:** Commencing in April 2016, the first tier of affected businesses included those that generate eight or more cubic yards of organic materials per week.

[119] California Department of Resources Recycling and Recovery, *Mandatory Commercial Recycling*, 2015. Available at http://www.calrecycle.ca.gov/recycle/commercial/, accessed November 2, 2017.

- **Second Tier:** In January 2017, the affected businesses expanded to include those that generate four or more cubic yards of organic materials per week.
- **Third Tier:** In January 2019, the affected businesses are further expanded to include those that generate four or more cubic yards of commercial solid waste per week.

Comparative Impact Discussions

Impact UT-1: Implementation of the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements. ***[Criterion Q.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Amendment 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements, based on a total water demand estimate of 1.99 mgd for R&D Variant (Variant 1), and determined the impact to be less than significant.

The 2018 Modified Project Variant would be subject to 2016 Title 24 building standards and the SFGBO, as amended in 2016, which together represent more stringent requirements for water efficiency than what was required by the building standards in effect at the time the 2010 FEIR was certified. This would help reduce the Project's use of water.

As shown in Table 23, total estimated water demand for the 2018 Modified Project Variant is 1.90 mgd. Since this is less that the 1.99 mgd estimated for R&D Variant (Variant 1), the conclusion is the same as that reached in the 2010 FEIR: the impact would remain less than significant and no mitigation would be required.

The project site is within a designated recycled water use area and therefore must comply with the Recycled Water Ordinance No. 109-15, *San Francisco Health Code* Article 12C. With its inclusion of an expanded on-site recycled water treatment and distribution system, the 2018 Modified Project Variant would be in compliance with the ordinance.

Impact UT-2: Implementation of the Project would not require or result in the construction of new or expanded water treatment facilities. The Project would require the expansion of an auxiliary water conveyance system to provide adequate water supply for firefighting to the Project site. ***[Criterion Q.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Amendment 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that Project would not require or result in the construction of new or expanded water treatment facilities, and this impact would be less than significant.

The 2010 FEIR concluded that the Project would require mitigation measure MM UT-2 (construction of an AWSS) to provide adequate water supply for firefighting to the Project site. The AWSS would ensure the provision of adequate water for on-site firefighting purposes, and the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements for water to fight fires. The impact would be less than significant with implementation of this mitigation measure.

Because total water demand for the 2018 Modified Project Variant is 1.90 mgd and therefore is less than the water demand for R&D Variant (Variant 1), the conclusion remains the same as that reached in the 2010 FEIR: the impact would remain less than significant with implementation of mitigation measure MM UT-2.

Mitigation Measure with Proposed 2018 Modifications

> **MM UT-2: Auxiliary Water Supply System.** Prior to issuance of occupancy permits, as part of the Infrastructure Plan to be approved, the Project Applicant shall construct an Auxiliary Water Supply System (AWSS) within Candlestick Point to connect to the City's planned extension of the off-site system on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS on HPS Phase II to connect to the existing system ~~at Earl Street and Innes Avenue and~~ at Palou and Griffith Avenues, with service along Spear Avenue/Crisp Road.

Impact UT-3b: Implementation of the Project at HPS Phase II would not require expansion of existing off-site wastewater conveyance facilities. ***[Criterion Q.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Amendment 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

For dry weather conditions, the 2010 FEIR concluded that the existing conveyance infrastructure could accommodate the additional flows from the HPS2 development in addition to existing flows even during periods of peak flow conditions, and that no expansion of the off-site wastewater conveyance lines would be required as a result of HPS2. The impact would be less than significant, based on a total wastewater generation estimate of 1.35 mgd for R&D Variant (Variant 1).

Because total wastewater generation for the 2018 Modified Project Variant is 1.25 mgd and therefore less than the wastewater generation estimate for R&D Variant (Variant 1), the conclusion would be the same as that reached in the 2010 FEIR: the impact would remain less than significant. However, wastewater flows from HPS2 are no longer tributary to the Hunters Point tunnel sewer system, as originally analyzed in the 2010 FEIR. As described above, and consistent with the 2014 Storm Sewer Master Utility Plan, SFPUC has requested that wastewater from HPS now be conveyed to the existing combined sewer main on Innes Avenue, which is tributary to the Central Basin, rather than the Hunters Point tunnel sewer system, as originally analyzed in the 2010 FEIR. As indicated above in "Changes to Project Related to Utilities", the 2018 Modified Project Variant represents a projected

maximum peak flow of approximately 1,229 gpm from HPS2 to the Central Basin system. No expansion of the existing off-site conveyance infrastructure would be required to accommodate flows to the Central Basin system from the 2018 Modified Project Variant in addition to existing flows even during periods of peak flow conditions. The impact would remain less than significant with implementation of the identified mitigation measures.

The total net increase in wastewater from the 2018 Modified Project Variant would equal 1.044 mgd. As with the Project analyzed in the 2010 FEIR, this is an increase in dry weather flows compared to the existing condition of 0.206 mgd, but the proposed diversion of wet-weather flows away from the combined system during storm events would offset the increase in dry-weather flows. The 2009 HCE study found that for both the 2010 Project and R&D Variant (Variant 1), the separate wastewater and stormwater systems would result in a *decrease* in CSO volume, frequency, and duration of CSO in the Yosemite Basin (less than one event per year lasting approximately 1.2 hours, resulting in 3.1 million gallons per year CSO, compared to the baseline condition of one 2-hour event per year resulting in 5.3 million gallons per year CSO) and decrease in overall CSO volume for the entire Bayside Drainage Area from 890 million gallons per year to 877 million gallons per year because stormwater from the Project site would no longer flow into the Combined Sewer System. The slight net increase in total wastewater from 0.974 mgd (R&D Variant [Variant 1]) to 1.044 mgd for the 2018 Modified Project Variant would not change this conclusion.[120] Though it remains possible that a temporary increase in CSO volume could occur during wet weather if structures are occupied and contribute wastewater to the Combined Sewer System prior to completion of the separate stormwater and wastewater infrastructure, mitigation measure MM UT-3a would reduce this impact. This impact would remain less than significant by providing temporary detention or retention of wastewater on site during such conditions.

Impact UT-4: Implementation of the Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. ***[Criterion Q.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that the Project would not exceed wastewater treatment requirements of the RWQCB. The impact would be less than significant, based on a total wastewater generation estimate of 1.35 mgd for R&D Variant (Variant 1), and determined the impact to be less than significant.

Because total wastewater generation for the 2018 Modified Project Variant is 1.25 mgd and therefore less than the wastewater generation estimate for R&D Variant (Variant 1), the conclusion is the same

[120] The 2018 Modified Project Variant represents an increase of about 0.008 million gallons over a 2-hour period compared to the R&D Variant (Variant 1), which is negligible compared to the 3.1 million gallons per year CSO result for the Project in the 2009 HCE study, and would not affect the conclusion when comparing the Project to the 5.3 million gallons per year CSO for existing conditions.

as that reached in the 2010 FEIR: the impact would remain less than significant, and no mitigation would be required.

Impact UT-5b: Construction at HPS Phase II, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of landfills serving the City and County of San Francisco. ***[Criterion Q.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The estimates for construction and demolition debris from the 2018 Modified Project Variant remain unchanged from the estimates for the Project as analyzed in the 2010 FEIR. However, construction-related solid waste now goes to Recology's Hay Road Landfill, rather than the Altamont Landfill that was serving the City of San Francisco in 2010. As described above, the City's agreement with the Hay Road Landfill to accept up to 2,400 tpd of solid waste should extend for approximately 9 years from 2016, based on projected disposal volumes, with an option to renew the Agreement thereafter for an additional 6 years.

The 2010 FEIR estimated that 136,776 tons of construction debris (over the entire construction period) from HPS2 could not be recycled (based on a 75 percent diversion rate) and would be transported to the Altamont Landfill. It was estimated that the HPS2 construction waste represented approximately 0.3 percent of the remaining capacity of the Altamont Landfill as of August 2009 (45.7 million cubic yards).[121] The 2010 FEIR also noted that, at current disposal rates, the Altamont Landfill would be expected to reach capacity in January 2032, but could possibly close three years earlier, in January 2029. Most of the demolition activities, which generate construction debris, were expected to conclude in 2028 at HPS2, 4 years before the landfill was expected to close.

With respect to the Hay Road Landfill, which would now be used for solid waste generated by the 2018 Modified Project Variant, 136,776 tons of construction debris from HPS2 represents 0.45 percent of the remaining capacity of 30.4 million cubic yards. Although this is a slightly higher percentage of remaining capacity than if the Altamont Landfill were used (0.45 percent as compared to 0.3 percent), it similarly represents a nominal contribution to the remaining capacity of either landfill. Further, the projected closure date of the Hay Road Landfill extends to 2077, which is far beyond the projected 2032 (or 2029) closure date of the Altamont landfill. Thus, using Hay Road Landfill provides a long-term solution to accommodate the construction schedule represented by the 2018 Modified Project Variant, which proposes construction activities through 2034, which is when (or after) the Altamont Landfill is proposed to close. Accordingly, the fact that there is an identified landfill with adequate remaining capacity that is operational through 2077, combined with implementation of mitigation measure MM UT-5a, would ensure that construction at HPS2, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of

[121] Assumes an average density of 1 ton per cubic yard.

landfills serving the City and County of San Francisco. As such, this impact would remain less than significant with implementation of the identified mitigation measure.

Impact UT-6b: Construction at HPS Phase II would not require the disposal of hazardous wastes such as lead-based paint, asbestos, and contaminated soils that would exceed the capacity of transport, storage, and disposal facilities permitted to treat such waste. ***[Criterion Q.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that Treatment, Storage, and Disposal (TSD) facilities in California and adjoining states have sufficient capacity to treat hazardous wastes, construction of Candlestick Point would not generate hazardous wastes (construction debris or contaminated soil) that would exceed the capacity of TSDs authorized to treat such waste. The 2010 FEIR concluded that this would be a less-than-significant impact.

For the 2018 Modified Project Variant, there is no change with respect to the generation of hazardous wastes, except for the potential of encountering contaminated soil when installing the borings associated with the ground source geothermal heating and cooling system. If contaminated soil is encountered it is expected to generate a relatively small volume of contaminated drill cuttings and fluids, since the borings would be located in areas of the site where the Navy has already completed its cleanup activities in areas that avoid known contamination zones. Further, the volume would be small relative to the contaminated soil generated during deep excavations for large structures such as residential towers; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities at the site. If encountered, the contaminated drill cuttings and fluid would be managed in a controlled manner as hazardous waste, in accordance with mitigation measures for hazardous waste identified in the 2010 FEIR and the Soil Import Plan and Risk Management Plan. Accordingly, excavated soil may be relocated on site to raise the ground surface elevation to account for future SLR impacts, as a substantial amount of fill soil is required to raise grade.

As with the project analyzed in the 2010 FEIR, contaminated soils generated by the 2018 Modified Project Variant may require transportation off site and treatment at authorized registered TSDs. Because the TSDs in California and adjoining states have sufficient capacity to treat hazardous wastes, construction of the 2018 Modified Project Variant would not generate hazardous wastes (construction debris or contaminated soil) that would exceed the capacity of TSDs authorized to treat such waste. This impact would remain less than significant, and no mitigation would be required.

Impact UT-7b: Implementation of the Project at HPS Phase II would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco. *[Criterion Q.f]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that the impact of operational solid waste generated by the HPS2 on the capacity of the Altamont Landfill would be less than significant, with implementation of mitigation measure MM UT-7a.

The solid waste generated by the 2018 Modified Project Variant is estimated at 23,153tpy (equivalent to an average of 63.43 tpd), which is slightly higher than the 21,827 tpy estimated for the 2010 Project and the 22,225 tpy estimated for the approved R&D Variant (Variant 1). Compared to R&D Variant (Variant 1), the 2018 Modified Project Variant represents an overall increase in solid waste generation of 928 tpy, or an average of 2.54tpd.

San Francisco's municipal solid waste now goes to Recology's Hay Road Landfill rather than the Altamont Landfill that was serving the City of San Francisco in 2010. As described above, the City's agreement with the Hay Road Landfill to accept up to 2,400 tpd of solid waste should extend for approximately 9 years from 2016, based on projected disposal volumes, with an option to renew the Agreement thereafter for an additional 6 years (approximately 2031). The projected closure date of the Hay Road Landfill is 2077. By contrast, the 2010 FEIR estimated that the Altamont Landfill was due to reach capacity in January 2032 based on current disposal rates, and could possibly close three years earlier, in 2029.

The total solid waste generated by the 2018 Modified Project Variant (23,153 tons per year as shown in Table 25) represents approximately 0.08 percent of the remaining capacity of the Hay Road Landfill as of July 2010 (30.4 million cubic yards).[122] The 2018 Modified Project Variant's net increase in solid waste of 928 tpy compared to R&D Variant (Variant 1) analyzed by the 2010 FEIR would amount to approximately 928 tpy, or about 0.002 percent of the landfill's remaining capacity. The 2018 Modified Project Variant's estimated generation of 63.43 tpd represents approximately 2.6 percent of the maximum daily waste that could be accepted according to the agreement with Hay Road Landfill, only slightly higher than the 60.89 tpd estimated for R&D Variant (Variant 1) analyzed by the 2010 FEIR, which represents approximately 2.5 percent of the daily waste allowed by Hay Road Landfill.

Despite the small increase in municipal solid waste generation by the 2018 Modified Project Variant as compared to the Project analyzed by the 2010 FEIR and R&D Variant (Variant 1), Hay Road Landfill has a higher remaining capacity than Altamont Landfill, and a projected closure date well beyond that of the Altamont Landfill. Thus, using Hay Road Landfill provides a long-term solution to accommodate the operation of the 2018 Modified Project Variant. Accordingly, the fact that there

[122] Assumes an average density of 1 ton per cubic yard.

is an identified landfill with adequate remaining capacity that is operational through 2077, combined with implementation of mitigation measure MM UT-7a, which requires preparation of a Site Waste Management Plan, would ensure that implementation of the 2018 Modified Project Variant would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco. As such, this impact would remain less than significant with implementation of the identified mitigation measure.

Impact UT-8b: Implementation of the Project at HPS Phase II would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste. ***[Criterion Q.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the Project analyzed in the 2010 FEIR, the specific businesses or activities that could operate under the 2018 Modified Project Variant are not known at this time, but since no industrial uses are proposed under the 2018 Modified Project Variant, the amount of hazardous wastes that would be generated would be minimal, consisting primarily of household hazardous waste and small amounts of inorganic wastes such as waste oil from commercial uses. New residents and businesses would be expected to comply with all hazardous waste regulations, including the disposal of household hazardous waste. Because the minimal amount of hazardous waste that would be generated by the Project could be accommodated by existing facilities, this impact would remain less than significant, and no mitigation would be required.

Impact UT-9: Implementation of the Project would comply with federal, state, and local statutes and regulations related to solid waste. ***[Criterion Q.g]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Since approval of the 2010 FEIR, the California legislature passed AB 341, which all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. San Francisco's existing (2009) Mandatory Recycling and Composting Ordinance is arguably more stringent than AB 341, because it already has in place its Mandatory Recycling and Composting Ordinance, which requires San Francisco residents and businesses to properly separate recyclables and compostable material and keep them out of the landfill. Owners of businesses and multifamily buildings could be fined if they were to fail to provide tenants with adequate bin service and information on their proper use.

Since approval of the 2010 FEIR, the California legislature passed California AB 1826, which requires businesses and multi-family complexes (with 5 units or more) that generate specified amounts of organic waste (compost) to arrange for organics collection services. San Francisco's existing (2009)

Mandatory Recycling and Composting Ordinance is arguably more stringent than AB 1826, because it already has in place its Mandatory Recycling and Composting Ordinance, which requires businesses and multi-family property owners to provide color-coded, labeled bins in convenient locations for tenants, employees, contractors, and customers to ensure separation of discards. Building owners could be fined if they were to fail to provide tenants with adequate bin service and information on their proper use.

On October 5, 2012, San Francisco Mayor Ed Lee announced that the city of San Francisco had reached an 80 percent landfill waste diversion rate, higher than any city in North America at the time.[123] The City has a goal to achieve zero waste by 2020 through continued implementation of the City's Zero Waste strategies and recent improvements to the efficiency of sorting and transfer facilities. Development within the Project site would meet or exceed all of the City's solid waste diversion requirements for new development. Mitigation measure MM UT-7a.1 requires the Project Applicant to provide a Site Waste Management Plan demonstrating the manner in which the Project would comply with these requirements. The Project Sponsor proposes to provide recycling facilities for residents and tenants of commercial and retail space. Implementation of mitigation measures MM UT-7a.1, MM UT-7a.2, and MM UT-5a would ensure compliance with applicable regulations pertaining to solid waste. Development of the Project would not conflict with regulatory policies pertaining to solid waste. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact UT-10: Implementation of the Project would not require extension of dry utility infrastructure that would exceed the capacity of the services providing such utilities. ***[Criterion Q.i]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2018 Modified Project Variant includes infrastructure for solar power, recycled water, and a ground source geothermal heating and cooling system that would provide the primary source of heating and cooling for the development. A trench network located primarily beneath roadways would accommodate the utility systems including electrical, communications, gas, recycled water and sewerage.

Heating and cooling would be provided from centralized plants, instead of individual systems in each building or facility. Similar to the district heating and cooling systems proposed in the 2010 FEIR Utilities Variant 4, the 2018 Modified Project Variant utilizes a central heating and cooling

[123] San Francisco Office of the Mayor, Press Release: Recology & City Recycling & Compost Program Creates Jobs, Stimulates Growth of Green Economy & Supports City's 2020 Zero Waste Goal, October 5, 2012. Available at http://sfmayor.org/article/mayor-lee-announces-san-francisco-reaches-80-percent-landfill-waste-diversion-leads-all, accessed on November 9, 2017.

plant to serve HPS2, distributing hot water and chilled water from the district plant to individual buildings via the pipe distribution network located under the streets.

The 2018 Modified Project Variant would be subject to 2016 Title 24 building standards and the SFGBO, as amended in 2016, which together represent more stringent requirements for building energy efficiency than what was required by the building standards in effect at the time the 2010 FEIR was certified. This would reduce the Project's use of electricity and natural gas.

The 2018 Modified Project Variant includes a commitment to maximize the use of on-site solar PV panels along and provide an on-site battery storage system to store surplus energy generated from the solar PV systems, enabling better management of electricity loads during peak periods. This would reduce total electric power provided to HPS2 by SFPUC.

The 2018 Modified Project Variant would include an additional 576,000 gpd of recycled water capacity compared to the 2010 FEIR Utilities Variant 4, reducing the amount of retail potable water needed from SFPUC to satisfy HPS2 water demand.

As with the 2010 FEIR, the subdivision process would include submittal of detailed infrastructure plans to the Department of Public Works identifying how they would meet the infrastructure needs of the Project. Implementation of these plans would be a condition of subdivision approval. The subdivision process would ensure that adequate infrastructure is provided to accommodate the demands of the Project such that the capacity of the service providers to provide such utilities would not be exceeded. Moreover, the demands on locally serving utilities for natural gas, electricity and water should be less than the demands identified in the 2010 FEIR Utilities Variant 4. Therefore, the impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to utilities impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to utilities, either on a project-related or cumulative basis.

II.B.17 Energy

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
11.	**Energy.** Would the project:					
R.a	Encourage activities that result in the use of large amounts of fuel or energy, or use such resources in a wasteful manner?	2010 FEIR p. III.R-16 (Impact ME-1), p. III.R-16 (Impact ME-2), p. III.R-21 (Impact ME-3), p. III.R-23 (Impact ME-4); Addendum 1 p. 48, Addendum 4 p. 52	No	No	No	MM GC-2, MM GC-3, MM GC-4, MM TR-1, MM TR-2, MM TR-4

Changes to Project Related to Energy

The 2018 Modified Project Variant includes the following activities related to energy:

- Modifications to the land use program;
- Modifications designed to increase energy efficiency and reduce the Project's reliance on imported natural gas and grid-supplied electricity. These modifications include renewable energy systems comprised of a ground source geothermal heating and cooling system and on-site solar photovoltaic (Solar PV) systems; and, in terms of assumptions;
- Given that the 2010 R&D Variant (Variant 1) includes comparable R&D/office uses (5,150,000 sf under the R&D Variant [Variant 1] as compared to 4,265,000 sf under the 2018 Modified Project Variant) and does not include a stadium (similar to the 2018 Modified Project Variant), this Variant is more comparable to the 2018 Modified Project Variant than the 2010 Project (which includes a stadium and less R&D uses); nonetheless, a comparison to the 2010 Project is made in terms of plug-in appliances, building envelopes, and natural gas use to ensure comparison to the 2010 FEIR.

Plug-in Electricity Demand

The 2010 Project would require approximately 60,652 MWh of electricity annually to supply plug-in appliances, based on plug-in electricity usage rates for each building type taken from the 2006 California Commercial End-Use Survey (CEUS), as shown by Table 26 (Electricity Demand from Plug-In Appliances).[124]

Table 26 also shows plug-in electricity estimates using an updated methodology based on non-Title 24 electricity use factors in CalEEMod 2016, which take into account the notable increase in the use of electronic devices since 2010 (e.g., televisions, cell phones, copiers, printers, computers, laptops, iPads, wireless hubs, battery chargers, electrical cars, etc.). If either the 2010 Project or any of its variants were developed today, they would similarly be subject to the plug-in energy use

[124] Itron, Incorporated. 2006. California Commercial End-Use Survey Results. CEC-400-2006-005. Available at http://www.energy.ca.gov/ceus/.

factors that have been used to determine energy use associated with the 2018 Modified Project Variant. Therefore, Table 26 shows the plug-in electrical uses for both the 2010 Project and the R&D Variant (Variant 1) using the 2018 energy use factors for plug-in appliances. In addition, Table 26 also shows the 2010 Project using the 2010 energy use factors for plug-in appliances, only for purposes of comparison with the 2010 FEIR.

Table 26 shows that total plug-in electricity usage by the 2018 Modified Project Variant would be approximately 84,607 MWh per year (using the 2018 energy use factor), an increase of about 39 percent over the 2010 FEIR estimate (for the 2010 land use plan and using the 2010 FEIR energy use factor). As previously mentioned, this increase in energy use for plug-in appliances is attributable to an increase in use of electronic devices since 2010 and the fact that the 2010 land use plan includes less R&D uses and a stadium). However, as also shown in Table 26, the projection of electricity consumption for plug-in appliances associated with the 2018 Modified Project Variant and the R&D Variant (Variant 1), with both using the 2018 energy use factors, are comparable, reflecting comparable land use plans and a comparable use of plug-in electronic devices.

Building Energy Demand

The quantitative analysis of energy usage in the 2010 FEIR relied on data from the Climate Change Technical Report (Appendix S)[125] to estimate the total building envelope energy use, using figures that represented the 2008 Title 24 building energy standards. The Title 24 standards have advanced considerably since 2008, with the 2013 and 2016 iterations requiring ever higher building energy efficiencies. Accordingly, building energy use estimates for the 2018 Modified Project Variant are much lower than the estimates for the Project analyzed in the 2010 FEIR, reflecting the energy efficiency improvements in the 2016 Title 24 standards.

Table 27 (Electricity Demand from Building Envelopes) shows that the energy demand from the 2010 Project, using the 2008 Title 24 Standards reflected in the 2010 FEIR, as compared to the 2018 Modified Project Variant using the same standards, would be about 64 percent more. However, Table 27 (Electricity Demand from Building Envelopes) also shows that the 2018 Modified Project Variant using 2018 standards (2016 Title 24 Standards), would result in building envelope electricity use of only 14,745 MWh per year, a decrease of approximately 63 percent from the 2010 Project estimate using the 2008 Title 24 Standards. This decrease reflects the benefit of a stricter energy code. However, assuming development the R&D Variant (Variant 1), as compared to the 2018 Modified Project Variant, and using the 2018 standards (2016 Title 24 Standards) for both projects in term of building energy demand, each would be comparable in terms of building energy usage.

[125] Environ International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009 (2010 FEIR Appendix S), with data modified from the CEC's *Statewide Residential Appliance Saturation Survey, Volume 2, Study Results, Final Report*, June 2004.

TABLE 26 ELECTRICITY DEMAND FROM PLUG-IN APPLIANCES

		CP		HPS2		2018 Modified Project Variant Site Total					
Type of Use	*2018 Energy Use Factor (MWh/sf or unit)[a]*	*2018 Development Program[b]*	*MWh Consumed Annually[c]*	*2018 Development Program[b]*	*MWh Consumed Annually[c]*	*2018 Development Program*	*MWh Consumed Annually[d]*	*Percent of Total by Land Use[e]*	*2010 Project MWh Consumed Annually (using 2010 Energy Use Factors)*	*2010 Project MWh Consumed Annually (using 2018 Energy Use Factors)*	*R&D Variant (Variant 1) MWh Consumed Annually (using 2018 Energy Use Factors)*
Artist Studio	0.00838	—	—	255,000	2,137	***255,000***	***2,137***	***3%***	2,359	2,137	2,137
Community Use	0.00635	50,000	318	50,000	318	***100,000***	***636***	***1%***	926	635	635
Arena	0.00635	75,000	476	—	—	***75,000***	***476***	***1%***	548	476	476
Hotel	0.00598	150,000	897	120,000	718	***270,000***	***1,615***	***2%***	1,035[h]	897	897
R&D/Office	0.00635	150,000	953	4,265,000	27,083	***4,415,000***	***28,036***	***33%***	24,513	17,132	33,007
Regional Retail	0.00824	635,000	5,232	100,000	824	***735,000***	***6,056***	***7%***	6,077	5,232	5,232
Residential	3.79554	7,218	27,396	3,454	13,110	***10,672***	***40,506***	***48%***	18,722	39,853	39,853
Neighborhood Retail/ Maker Space	0.00824	125,000	1,030	301,000	2,480	***426,000***	***3,510***	***4%***	2,392	2,060	2,060
Stadium	N/A[i]	Not Applicable	—	Not Applicable	—	***Not Applicable***	***—***	***N/A***	4,080	4,080	0
School/Institution (High School)	0.00378	—	—	27,858	105	***27,858***	***105***	***0%***	Not Applicable[j]	Not Applicable	Not Applicable
School/Institution (Post-Secondary)	0.00608	—	—	37,142	226	***37,142***	***226***	***0%***	Not Applicable[j]	Not Applicable	Not Applicable
School/Institution (Elementary/Junior High School)	0.00378	—	—	345,000	1,304	***345,000***	***1,304***	***2%***	Not Applicable[j]	Not Applicable	Not Applicable
Total			***36,302***		***48,305***		***84,607***	***100%***	***60,652***	***72,502***	***84,298***
Percent of Total			***43%***		***57%***						

NOTES:

a. The electricity factors are based on non-Title 24 electricity and lighting factors from CalEEMod 2016. The factors were converted from kWh to MWh.

b. Based on build-out floor areas or number of units associated with the 2018 Modified Project Variant.

c. Calculated by multiplying energy use factor by number of units or square feet.

d. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

e. Due to rounding, the totals may not add up to 100% when added individually.

h. In the 2010 FEIR, there was a typographical error for the hotel energy use. Electricity consumption should have been 1,035 MWh per year, rather than 2 MWh reported in Table III.R-7. However, Table 3-17 of 2010 FEIR Appendix S reflected the correct number. This would not alter the 2010 FEIR analysis or conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using electricity in a wasteful manner.

i. The stadium is not part of the 2018 Modified Project Variant. In the 2010 FEIR, electricity use for the Candlestick Park stadium was estimated in City and County of San Francisco, *Climate Action Plan*, 2004, Table 2-4.

j. Energy consumption for this land use category was not provided in the 2010 FEIR because the associated land uses were not part of the 2010 Project.

TABLE 27 ELECTRICITY DEMAND FROM BUILDING ENVELOPES

Type of Use	Electricity Use Factor, 2016 Title 24 Standards (MWh/gsf or unit)[a]	CP		HPS2		2018 Modified Project Variant Site Total			2010 Project MWh Consumed Annually, 2008 Title 24 Standards	2010 Project MWh Consumed Annually, 2016 Title 24 Standards	R&D Variant (Variant 1) MWh Consumed Annually, 2008 Title 24 Standards	R&D Variant (Variant 1) MWh Consumed Annually, 2016 Title 24 Standards
		2018 Development Program[b]	MWh Consumed Annually, 2016 Title 24 Standards[c]	2018 Development Program[b]	MWh Consumed Annually, 2016 Title 24 Standards[c]	2018 Development Program	MWh Consumed Annually, 2016 Title 24 Standards[d]	Percent of Total Electricity by Land Use[e]				
Artist Studio	0.00410	—	—	255,000	1,046	***255,000***	***1,046***	***7%***	1,326	1,046	1,326	1,046
Community Use	0.00121	50,000	61	50,000	61	***100,000***	***122***	***1%***	520	122	520	122
Arena	0.00121	75,000	91	0	0	***75,000***	***91***	***1%***	113	91	113	91
Hotel	0.00219	150,000	329	120,000	263	***270,000***	***592***	***4%***	409[h]	329	409[f]	329
R&D/Office	0.00121	150,000	182	4,265,000	5,161	***4,415,000***	***5,343***	***36%***	13,780	3,207	26,780	6,232
Regional Retail	0.00224	635,000	1,422	100,000	224	***735,000***	***1,646***	***11%***	1,715	1,422	1,715	1,422
Residential	0.42645	7,218	3,078	3,454	1,473	***10,672***	***4,551***	***31%***	18,218	4,478	18,407	4,478
Neighborhood Retail/Maker Space	0.00224	125,000	280	301,000	674	***426,000***	***954***	***6%***	676	560	675	560
Stadium	N/A[i]	N/A	—	N/A	—	***N/A***	***—***	***N/A***	4,080	4,080	N/A	N/A
School/Institution (High School)	0.00066	—	—	27,858	18	***27,858***	***18***	***0%***	N/A[j]	N/A[j]	N/A[j]	N/A[j]
School/Institution (Post-Secondary)	0.00414	—	—	37,142	154	***37,142***	***154***	***1%***	N/A[j]	N/A[j]	N/A[j]	N/A[j]
School/Institution (Elementary/Junior High School)	0.00066	—	—	345,000	228	***345,000***	***228***	***2%***	N/A[j]	N/A[j]	N/A[j]	N/A[j]
Total			***5,443***		***9,302***		***14,745***	***100%***	***40,837***	***15,335***	***49,945***	***14,280***
Percent of Total			***37%***		***63%***							

NOTES:

a. The electricity factors are based on Title 24 electricity from CalEEMod 2016. The factors were converted from kWh to MWh.

b. Based on build-out floor areas or number of units associated with the 2018 Modified Project Variant.

c. Calculated by multiplying energy use factor by number of units or square feet.

d. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

e. Due to rounding, the totals may not add up to 100% when added individually.

f. In the 2010 FEIR, there was a typographical error for the hotel energy use. Electricity consumption should have been 409 MWh per year, rather than 1 MWh reported in Table III.R-8. However, Table 3-17 of 2010 FEIR Appendix S reflected the correct number. This would not alter the 2010 FEIR analysis or conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using electricity in a wasteful manner.

i. The stadium is not part of the 2018 Modified Project Variant. In the 2010 FEIR, electricity use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20% reduction in electricity use is anticipated with construction of the replacement stadium.

j. Energy consumption for this land use category was not provided in the 2010 FEIR because the associated land uses were not part of the 2010 Project.

Natural Gas Demand

Table 28 (Natural Gas Demand, Baseline) shows that the 2018 Modified Project Variant would result in building natural gas use of 234,314 MMBtu per year, using the 2016 Title 24 standards, a decrease of approximately 40 percent from the 2010 Project estimate, using the 2008 Title 24 Standards.[126] Table 28 also shows the energy demand for the R&D Variant (Variant 1). The 2018 Modified Project Variant would be comparable to the R&D Variant (Variant 1) using the 2018 standards (2106 Title 24 Standards) in terms of natural gas useage.

Summary

In summary, the use of energy associated with plug-in appliances and buildings, as well as natural gas, would be comparable between R&D Variant and the 2018 Modified Project Variant.

Vehicle Fuel Use

Table 29 (2010 FEIR Petroleum Demand) shows Project diesel and gasoline consumption associated with operation of the Project as analyzed in the 2010 FEIR. VMT would likely be lower for the 2018 Modified Project Variant over time due to vehicle trip lengths being reduced as Project (and other surrounding projects, such as Indian Basin and Pier 70) build out occurs. This overall reduction in VMT is in line with the City of San Francisco's projections for reduced VMT levels by 2040 (see Appendix D). Implementation of the 2018 Modified Project Variant would result in a better mix of land uses in the area, and as a result, the distances that people would have to drive would be reduced. Fuel use per VMT for the 2018 Modified Project Variant would be expected to be lower than for the 2010 Project because of higher average fleet fuel efficiencies in California (due to the Pavley vehicle efficiency standards and CARB's Mobile Source Strategy (2016).

[126] During preparation of Addendum 5, it was discovered that the natural gas usage estimate for residential units in the 2010 FEIR was underestimated by a factor of 1,000 due to an error in transcribing the "use factor" units from Environ's 2009 Climate Change Technical Report. If the correct units are applied, the revised natural gas usage estimate for residential units would be approximately 321,000 MBtu per year rather than the 321 MBtu reported in 2010 FEIR Table III.R-9. The revised annual total for all uses would be approximately 384,000 MBtu per year, rather than the 63,262 MBtu reported in 2010 FEIR Table III.R-9.

TABLE 28 NATURAL GAS DEMAND, BASELINE

Type of Use	Natural Gas Use Factor, 2016 Title 24 Standards (MMBtu/sf or unit)[a]	CP		HPS2		2018 Modified Project Variant Site Total			2010 Project MMBtu Consumed Annually, 2008 Title 24 Standards, with 15% Reduction	2010 Project MMBtu Consumed Annually, 2016 Title 24 Standards	R&D Variant (Variant 1) MMBtu Consumed Annually, 2008 Title 24 Standards, with 15% Reduction	R&D Variant (Variant 1) MMBtu Consumed Annually, 2016 Title 24 Standards
		2018 Development Program[b]	MMBtu Consumed Annually, 2016 Title 24 Standards[c]	2018 Development Program[b]	MMBtu Consumed Annually, 2016 Title 24 Standards[c]	2018 Development Program	MMBtu Consumed Annually, 2016 Title 24 Standards[c]	Percent of Total by Land Use[e]				
Artist Studio	0.01933	—	—	255,000	4,929	255,000	4,929	2%	3,825	4,929	4,335	4,929
Community Use	0.02475	50,000	1,238	50,000	1,238	100,000	2,476	1%	1,700	2,475	1,700	2,475
Arena	0.02475	75,000	1,856	—	—	75,000	1,856	1%	1,549	1,856	1,549	1,856
Hotel	0.03651	150,000	5,477	120,000	4,381	270,000	9,858	4%	5,168[f]	5,477	4,399	5,477
R&D/Office	0.02475	150,000	3,713	4,265,000	105,559	4,415,000	109,272	47%	45,050	65,588	87,550	127,463
Regional Retail	0.00460	635,000	2,921	100,000	460	735,000	3,381	1%	2,591	2,921	2,591	2,921
Residential[g]	8.73043	7,218	63,016	3,454	30,155	10,672	93,171	40%	321,300	91,670	321,300	91,670
Neighborhood Retail/Maker Space	0.00460	125,000	575	301,000	1,385	426,000	1,960	1%	1,020	1,150	1,020	1,150
Stadium	N/A[h]	Not Applicable	—	Not Applicable	—	Not Applicable	—	N/A	7,200	7,200	N/A	N/A
School/Institution (High School)	0.01647	—	—	27,858	459	27,858	459	0%	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]
School/Institution (Post-Secondary)	0.03420	—	—	37,142	1,270	37,142	1,270	1%	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]
School/Institution (Elementary/Junior High School)	0.01647	—	—	345,000	5,682	345,000	5,682	2%	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]
Total			***78,796***		***155,518***		***234,314***	***100%***	***389,403***	***183,266***	***424,444***	***237,941***
Percent of Total			***34%***		***66%***							

NOTES:

a. Project natural gas demand was estimated based on land use and basic compliance with 2016 Title 24 standards. The factors were converted from kBtu to MMBtu (1 MMBtu = 1,000 kBtu).

b. Based on build-out floor areas or number of units associated with the 2018 Modified Project Variant.

c. Calculated by multiplying energy use factor by number of units or square feet.

d. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

e. Due to rounding, the totals may not add up to 100% when added individually.

f. In the 2010 FEIR, there was a typographical error for the hotel energy use. Natural gas consumption should have been 5,168 MMBtu per year, rather than 8 MMBtu reported in Table III.R-9. However, Table 3-17 of 2010 FEIR Appendix S reflected the correct number. This would not alter the 2010 FEIR analysis or conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using electricity in a wasteful manner.

g. In the 2010 FEIR, there was a typographical error in terms of the natural gas usage estimate for residential units. The revised natural gas usage estimate for residential units under the 2010 Project should have been approximately 321,000 MBtu per year, rather than the 321 MBtu reported (Table III.R-9). The correct natural gas usage for residential units is shown in Table 3-8 of 2010 FEIR Appendix S. The revised natural gas use under the 2010 Project would represent approximately 1.3% of the city's total natural gas usage, whereas the 2010 FEIR reported it was less than 1%; however, this would not alter the 2010 FEIR conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using natural gas in a wasteful manner.

h. The stadium is not part of the 2018 Modified Project Variant. In the 2010 FEIR, natural gas use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20% reduction in natural gas use is anticipated with construction of the replacement stadium.

i. Energy consumption for this land use category was not provided in the 2010 FEIR because the associated land uses were not part of the 2010 Project.

TABLE 29 2010 FEIR PETROLEUM DEMAND

	Project Annual VMT (million miles travelled)[a]	*Average Countywide Vehicle Fuel Efficiency (2030)*[b]	*Project Total Fuel Consumption (million gallons)*	*Project Gasoline Consumption (million gallons)*[c]	*Project Diesel Consumption (million gallons)*[c]
Candlestick Point	223.67	21.15	10.58	9.92	0.66
Hunters Point Shipyard	92.36	21.15	4.37	4.09	0.27
Total	***316.03***		***14.95***	***14.01***	***0.93***

SOURCES:

a. Annual VMT was calculated by PBS&J based on trip generation information and average trip lengths reported in: CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.

b. Equals the projected Countywide 2030 VMT (3,495 million miles travelled) divided by the projected total transportation fuel consumed (171.27 million gallons) for San Francisco County, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009. This factor does not take into account recently adopted fuel efficiency standards.

c. On average 94 percent of the transportation fuels consumed in San Francisco were gasoline fuels, while 6 percent were diesel fuels, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009.

New Regulations

The following new regulations would apply to the analysis of energy impacts.

Federal fuel-efficiency standards for medium- and heavy-duty trucks have been jointly developed by the United States Environmental Protection Agency (USEPA) and the National Highway Traffic Safety Administration (NHTSA). The HPS1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018 and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type.[127] The USEPA and NHTSA also adopted the HPS2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type.[128]

The Clean Energy and Pollution Reduction Act of 2015, Senate Bill (SB) 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 will (1) increase the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provide for the evolution of the Independent System Operator (ISO) into a regional organization; and (4) require the

[127] U.S. Environmental Protection Agency, Fact Sheet: EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles, August 2011. Available at https://nepis.epa.gov/Exe/ZyPDF.cgi/P100BOT1.PDF?Dockey=P100BOT1.PDF, accessed December 22, 2017.

[128] U.S. Environmental Protection Agency, Federal Register/Vol. 81, No. 206/Tuesday, Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2, October 25, 2016. Available at https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf. Accessed December 22, 2017.

state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.[129]

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development in 2008. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code went into effect January 1, 2017.

The California Energy Code (Title 24, Section 6) was created as part of the California Building Standards Code (California Code of Regulations [CCR] Title 24) by the California Building Standards Commission in 1978 to establish statewide building energy efficiency standards to reduce California's energy consumption. Standards are updated on an approximately three-year cycle as technology and methods have evolved. The 2016 Standards, effective January 1, 2017, focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings, and include requirements that will enable both demand reductions during critical peak periods and future solar electric and thermal system installations.[130]

California Advanced Clean Cars/Zero Emission Vehicle Program. In January 2012, CARB approved the Advanced Clean Cars (ACC) program (13 CCR 19562.1 and 1962.2), which includes new GHG standards for model years 2017 through 2025 and requires greater numbers of zero emission vehicles (ZEVs) than previously anticipated by California Assembly Bill 1493 (Pavley). The ZEV Program is designed to achieve California's long-term GHG emission reduction goals by requiring manufacturers to offer for sale specific numbers of the cleanest cars available, including battery electric, fuel cell, and plug-in hybrid electric vehicles. The ACC/ZEV Program is expected to reduce considerably the statewide consumption of petroleum fuels used by vehicles.

San Francisco's *Strategies to Address Greenhouse Gas Emissions*[131] documents the City's actions to pursue cleaner energy, energy conservation, alternative transportation and solid waste policies. For instance, the City has implemented mandatory requirements and incentives that have measurably

[129] *SB-350 Clean Energy and Pollution Reduction Act of 2015*. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350, Accessed December 14, 2017.
[130] California Energy Commission, 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings, June 2015. Available at http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf, accessed December 15, 2017.
[131] San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco*, November 2010. Available at http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf.

reduced GHG emissions including, but not limited to, 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 30 specific regulations for new development that would reduce a project's GHG emissions, with eight geared toward energy efficiency and one toward renewable energy.

Green Building Ordinance (*City and County of San Francisco Building Code*, Chapter 13C). In November 2008, the City passed the San Francisco Green Building Ordinance (SFGBO), which is included as San Francisco Building Code Chapter 13C. In 2013, the SFGBO was amended to incorporate all mandatory elements of the 2013 CALGreen and Title 24 energy-efficiency standards and require green building practices and Leadership in Energy and Environmental Design (LEED) certification for all new residential and commercial construction in the city, unless otherwise indicated in the SFGBO, as well as alterations to existing buildings. The Green Building Code was last amended in April 2016.

Comparative Impact Discussions

Impact ME-1: Construction activities associated with the Project would not result in the use of large amounts of energy, or use energy in a wasteful manner. (Less than Significant) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The construction activities for the 2018 Modified Project Variant would not differ substantially from construction activities associated with the Project analyzed by the 2010 FEIR. Project construction equipment would be required to comply with the latest EPA and CARB engine emissions standards, which are more stringent than standards that were in place when the 2010 FEIR was certified. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption.

With the 2018 Modified Project Variant nothing has changed that would affect the 2010 FEIR's conclusions regarding construction energy use. The construction-related energy use associated with the 2018 Modified Project Variant would not wasteful. The impact would remain less than significant, and no mitigation would be required.

Impact ME-2: Buildings constructed by the Project would not use large amounts of electricity in a wasteful manner. (Less than Significant with Mitigation) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

In 2015, California had the third-lowest statewide energy consumption in the country on a per-capita basis, behind New York and Rhode Island.[132] Californians consumed approximately 197 million Btu of total energy per capita in 2015. In comparison, the average annual U.S. per capita energy consumption was approximately 303 million Btu.[133] However, as was the case in 2010 when the 2010 FEIR was completed, California's overall energy consumption remains second only to that of Texas.[134]

As shown in Table 30 (Electricity Consumption in San Francisco, by Land Use, 2016), annual electricity consumption in San Francisco County was approximately 5,759 million kWh in 2016, an increase of 11.7 percent from the 2007 total electricity consumption figure of 5,155 million kWh provided in the 2010 FEIR.[135]

TABLE 30 ELECTRICITY CONSUMPTION IN SAN FRANCISCO, BY LAND USE, 2016

Land Use	*Total Consumption (million kWh)*	*Percent of Total Consumption*
Nonresidential	4,294.41	75%
Residential	1,464.78	25%
Total	***5,759.19***	***100%***

SOURCE: California Energy Commission, *Electricity Consumption by County: San Francisco County*. http://ecdms.energy.ca.gov/elecbycounty.aspx (accessed December 21, 2017).

According to the City of San Francisco Climate Action Strategy, 73 percent of the electricity used in San Francisco comes from PG&E and 16 percent from the SFPUC. The remaining 11 percent comes from independently contracted energy service providers used by some large commercial and industrial customers such as the Bay Area Rapid Transit district. Forty-one percent of the combined electricity mix for San Francisco (PG&E, SFPUC, and energy service providers) came from renewable sources in 2010.[136]

PG&E's electricity generation profile has changed significantly over time, with an increasing percentage of renewables in its power mix. The 2010 FEIR reported that in 2007, PG&E generated 12 percent of its total electricity through renewable sources, including biomass, small hydroelectric, geothermal, and wind. The remainder of PG&E's generation portfolio in 2007 included natural gas

[132] U.S. Energy Information Administration, *Total Energy Consumed per Capita*, 2015. Available at https://www.eia.gov/state/rankings/?sid=US, accessed December 21, 2017.
[133] Ibid.
[134] California Energy Commission, *U.S. Per Capita Electricity Use by State in 2005*. Available at http://energyalmanac.ca.gov/electricity/us_per_capita_electricity_2005.html, accessed August 17, 2009.
[135] Note that the current figure for 2007 total electricity use in San Francisco County provided on the CEC web site is 5,625 million kWh; Using that figure, annual total electricity use in San Francisco County increased approximately 2.4 percent from 2007 to 2016.
[136] San Francisco Department of the Environment, *San Francisco Climate Action* Strategy, 2013 update. Available at https://sfenvironment.org/sites/default/files/engagement_files/sfe_cc_ClimateActionStrategyUpdate2013.pdf.

combustion (47 percent), nuclear fission (23 percent), large-scale hydroelectric (13 percent), coal combustion (4 percent), and other sources (1 percent).[137] In 2016, PG&E generated 33 percent of its total electricity through renewable sources, while the statewide average was 25 percent.[138] The remainder of PG&E's generation portfolio in 2016 included natural gas combustion (17 percent), nuclear fission (24 percent), large-scale hydroelectric (12 percent), coal combustion (0 percent), and unspecified sources of power (14 percent).

For the Project analyzed in the 2010 FEIR, the Project Sponsor made a preliminary commitment to making all new residential units 15 percent more energy efficient than required under the 2008 Title 24 standards as a project design feature by employing high performance lighting, materials, and other energy efficiency measures. The current 2016 Title 24 standards go well beyond this commitment in terms of building energy efficiency, so electricity use by the 2018 Modified Project Variant is expected to be lower than the Project analyzed in the 2010 FEIR. Table 27 (Electricity Demand from Building Envelopes) above shows that the buildings in the 2018 Modified Project Variant would use approximately 63 percent less electricity than the Project analyzed by the 2010 FEIR and 70 percent less than the R&D Variant (Variant 1).

Table 26 (Electricity Demand from Plug-In Appliances) above indicates that total plug-in electricity usage by the 2018 Modified Project Variant would increase by about 39 percent over the 2010 FEIR estimate. This increase reflects a state (and global) trend of increased use of plug-in devices at homes and businesses with the proliferation of televisions, cell phones, copiers, printers, computers and battery chargers. The CPUC recently reported that plug load energy use in the residential and commercial sectors in California is growing rapidly, and that some estimates show that plug loads will exceed 50 percent of residential electric consumption by 2030.[139] Plug-in electricity use depends on the devices and appliances installed by future Project residents and employees, and would be difficult for the Project Sponsor to influence. However, the Project Sponsor's preliminary commitment to installing ENERGY STAR appliances into residential units for all builder-supplied appliances (mitigation measure MM GC-3) would result in a small decrease in plug-in electricity use from the numbers shown for the 2018 Modified Project Variant.

As noted above, the 2018 Modified Project Variant includes modifications designed to reduce the Project's reliance on grid-supplied electricity, through the use of renewable energy systems comprised of a ground source geothermal heating and cooling system and on-site solar PV systems. In addition, individual buildings would be required to meet or exceed the energy conservation requirements in the San Francisco Green Building Ordinance, which itself includes energy conservation requirements that exceed those in the California Building Code (i.e., Title 25, Part 6). Electricity would not be used in a wasteful, inefficient, or unnecessary manner.

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[137] CEC, Sources of Electricity for Major Utilities in California. Available at http://www.pgecorp.com/corp_responsibility/reports/2007/environment/energy-future.html, accessed August 19, 2009.
[138] CEC, 2016 Power Content Label. Available at http://www.energy.ca.gov/pcl/, accessed December 21, 2017.
[139] California Public Utilities Commission (CPUC), *Research and Technology Action Plan 2012–2015*, for the California Energy Efficiency Strategic Plan.

With its modified energy systems and with implementation of mitigation measures MM GC-2, MM GC-3, and MM GC-4, the 2018 Modified Project Variant would not use large amounts of electricity in a wasteful manner. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM GC-2: ~~Exceed the 2008~~ Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses ~~would by at least 15 percent~~.

Impact ME-3: Buildings constructed by the Project would not use large amounts of natural gas in a wasteful manner. (Less than Significant with Mitigation) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As was the case when the 2010 FEIR was certified, natural gas in San Francisco is supplied by PG&E. As shown in Table 31 (Natural Gas Consumption in San Francisco, by Land Use, 2016), annual natural gas consumption in San Francisco County was approximately 22,679,763 million Btu in 2016, a decrease of approximately 21.6 percent from the 2007 total natural gas consumption figure of 28,918,000 million Btu provided in the 2010 FEIR.[140]

TABLE 31 NATURAL GAS CONSUMPTION IN SAN FRANCISCO, BY LAND USE, 2016

Land Use	*Total Consumption (million British thermal units [Btu])*	*Percent of Total Consumption*
Nonresidential	12,966,831	57%
Residential	9,712,932	43%
Total	***22,679,763***	***100%***

SOURCE: California Energy Commission, *Natural Gas Consumption by County: San Francisco County*. http://ecdms.energy.ca.gov/gasbycounty.aspx (accessed December 21, 2017).

Approximately 158 million gallons of gasoline and 11 million gallons of diesel were consumed in San Francisco for transportation in 2007.[141] By 2030, consumption of transportation-related fossil fuels is expected to increase by about 57 percent citywide.

For the Project analyzed in the 2010 FEIR, the Project Sponsor made a preliminary commitment to making all new residential units 15 percent more energy efficient than required under the 2008 Title 24 standards as a project design feature by employing high performance lighting, materials, and other energy efficiency measures. The current 2016 Title 24 standards go well beyond this

[140] Note that the current figure for 2007 total natural gas use in San Francisco County provided on the CEC web site is 25,831,904 million Btu; Using that figure, annual total natural gas use in San Francisco County decreased by approximately 12.2 percent from 2007 to 2016.

[141] California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*. Available at http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009.

commitment in terms of building energy efficiency, so energy use by the 2018 Modified Project Variant is expected to be lower than the Project analyzed in the 2010 FEIR, for both electricity and natural gas. Table 28 (Natural Gas Demand, Baseline) above shows that the buildings in the 2018 Modified Project Variant would use approximately 40 percent less natural gas than the Project analyzed by the 2010 FEIR and 45 percent less than the R&D Variant (Variant 1).

As noted above, the 2018 Modified Project Variant includes the use of a ground source geothermal heating and cooling system, would reduce the Project's reliance on imported natural gas. In addition, individual buildings would be required to meet or exceed the energy conservation requirements in the San Francisco Green Building Ordinance, which itself includes energy conservation requirements that exceed those in the California Building Code (i.e., Title 25, Part 6). Natural gas would not be used in a wasteful, inefficient, or unnecessary manner.

With its modified energy systems and with implementation of mitigation measures MM GC-2 and MM GC-3, the 2018 Modified Project Variant would not use large amounts of natural gas in a wasteful manner. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM GC-2, is provided in full on p. 347 under Impact ME-2.

Impact ME-4: Vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner. (Less than Significant with Mitigation) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would increase vehicle trips to and from the Project site, and result in a commensurate increase in the use of petroleum fuels, compared to existing conditions.

Table 29 (2010 FEIR Petroleum Demand) shows Project diesel and gasoline consumption associated with operation of the Project as analyzed in the 2010 FEIR. VMT would likely be lower for both the 2010 Project and the 2018 Modified Project Variant than what was analyzed in the 2010 FEIR due to vehicle trip lengths being reduced over time as the CP-HPS2 Project (and other surrounding projects, such as India Basin and Pier 70) build-out occurs. This overall reduction in VMT is in line with the City of San Francisco's projections for reduced VMT levels by 2040 (refer to Addendum 5 Appendix D). Under the 2018 Modified Project Variant, higher average fleet fuel efficiencies would be expected in California (due to the Pavley vehicle efficiency standards) as compared to the 2010 Project.

As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would implement mitigation measures MM TR-1, MM TR-2, and MM TR-4 to minimize VMT by managing traffic flows and promoting transportation demand management (TDM). In addition, implementation of

California's Advanced Clean Cars/Zero Emission Vehicle (ACC/ZEV) Program would reduce average petroleum use by vehicles below levels assumed in the 2010 FEIR. With implementation of the ACC/ZEV Program and implementation of these mitigation measures, vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner, and this impact would remain less than significant.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to energy impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to energy, either on a project-related or cumulative basis.

II.B.18 Greenhouse Gas Emissions

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
7.	**Greenhouse Gas Emissions.** Would the project:					
S.a	Conflict with the state goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32 (*California Global Warming Solutions Act of 2006*), such that the project's GHG emissions would result in a substantial contribution to global climate change?	2010 FEIR p. III.S-35 (Impact GC-1); Addendum 1 p. 49; Addendum 4 p. 53	No	No	No	MM GC-1, MM GC-2, MM GC-3, MM GC-4
S.b	Conflict with San Francisco's *Climate Action Plan* such that it would impede implementation of the local GHG reduction goals established by the 2008 Greenhouse Gas Reduction Ordinance?	2010 FEIR p. III.S-35 (Impact GC-1); Addendum 1 p. 49; Addendum 4 p. 53	No	No	No	MM GC-1, MM GC-2, MM GC-3, MM GC-4

Changes to Project Related to Greenhouse Gas Emissions

The 2018 Modified Project Variant includes the following activities related to greenhouse gas (GHG) emissions:

- Modifications to the land use program;
- The changes in traffic volumes;
- Inclusion of the central energy plants and recycled water facility; and
- The changes in construction activity.

New Regulations

San Francisco has developed a number of plans and programs to reduce the City's contribution to global climate change and to meet the goals of the City's Greenhouse Gas Reduction Ordinance. San Francisco's *Strategies to Address Greenhouse Gas Emissions*[142] documents the City's actions to pursue cleaner energy, energy conservation, alternative transportation, and solid waste policies. For instance, the City has implemented mandatory requirements and incentives that have measurably reduced GHG emissions including, but not limited to, increasing the energy efficiency of new and existing buildings, installing solar panels on building roofs, implementing a green building strategy,

[142] San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco*, November 2010. Available at http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf.

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 30 specific regulations for new development that would reduce a project's GHG emissions. These GHG reduction actions have resulted in a 23.3 percent reduction in GHG emissions in 2012 compared to 1990 levels,[143] exceeding the year 2020 reduction goals in the BAAQMD's Clean Air Plan and AB 32, and putting the City on a path to meet the goals in the Governor's Executive Orders S-3-05 and B-30-15. These requirements were not incorporated into the numerical analysis because they were not considered in the 2010 FEIR.

The 2010 FEIR considered regulations, such as Title 24, Part 6, for building energy efficiency, as well as standards for vehicle efficiency. These are standards that the project or vehicles associated with the project would be subject to when the Project is implemented, regardless of the status of CEQA clearance. Thus, this 2018 analysis took into account the updates to the following regulations for the operational analysis related to Greenhouse Gases:

- California Air Resources Board (CARB) Advanced Clean Cars (ACC) program
- 2016 Standards for Title 24 Part 6 energy efficiency standards

Comparative Impact Discussions

Impact GC-1: The Project would not result in a substantial contribution to global climate change by increasing GHG emissions in a manner that conflicts with the state goal of reducing GHG emissions in California to 1990 levels by 2020 (e.g., a substantial contribution to global climate change) or conflicts with San Francisco's Climate Action Plan by impeding implementation of the local GHG reduction goals established by the San Francisco 2008 Greenhouse Gas Reduction Ordinance. ***[Criteria S.a and S.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, the Project's construction and operational GHG emissions impacts would be less than significant after mitigation. Construction emissions were quantified from off-road equipment and on-road vehicles. These emissions averaged 6,600 MT CO_2e per year over the construction time period, which is 0.0014 percent of the total 2004 statewide GHG emissions inventory and less than 1 percent of the construction equipment emissions for the Bay Area 2007 GHG emissions projections. Construction of HPS alone would release 46,061 MT CO_2e total over the entire construction period. Since construction contractors would be subject to ARB regulations, emissions would be less than significant. The 2010 FEIR determined more vegetation would be added as a result of the Project than would be removed during construction. Thus, the 2010 Project

[143] ICF International, *Technical Review of the 2012 Community-wide Inventory for the City and County of San Francisco*, January 21, 2015. Available at http://sfenvironment.org/download/2012-community-greenhouse-gas-inventory-3rd-party-verification-memo-january-2015, accessed May 26, 2016.

was predicted to result in a net sequestration of carbon due to vegetation, so there is no impact from GHG emissions associated with vegetation changes. The 2010 Project's operational emissions were calculated as 154,639 MT CO_2e per year after mitigation, with 52,842 MT CO_2e per year from HPS and 101,798 MT CO_2e per year from CP. The Project emissions were 52 percent lower than the ARB Scoping Plan No Action Taken scenario, and the Project would comply with continued GHG reduction actions by the City and County of San Francisco to further reduce emissions.

Revised emissions were calculated for HPS for the 2018 Modified Project Variant. CP is not changing from what was analyzed in the 2010 FEIR. Construction emissions were calculated using the same methodology as was used in the 2010 FEIR. Construction emissions for HPS for the 2018 Modified Project Variant are 60,480 MT CO_2e, which is an increase of 31 percent of the HPS emissions in the 2010 FEIR. This increase is due to the change in equipment activity due to the change in land uses proposed at HPS. However, part of this increase is due to the construction of the geothermal plant, which would ultimately reduce CO_2e emissions from building energy use. HPS construction emissions were 0.0006 percent of the total statewide GHG emissions inventory in the 2010 FEIR and 0.0008 percent for the 2018 Modified Project Variant. HPS construction emissions from the 2018 Modified Project Variant also continue to make up less than 1 percent of the construction equipment portion of the Bay Area GHG emissions inventory. Construction equipment makes up 1.7 percent of the total Bay Area GHG emissions inventory as reported in the 2010 FEIR. The 2010 FEIR did not compare construction GHG emissions against a specific numeric threshold, as the BAAQMD has not adopted a numeric threshold for construction GHG emissions. However, given that the relative magnitude of Project emissions in the context of regional and statewide emissions did not change, conclusions from the 2010 FEIR also do not change.

As described further in Appendix I2.2 (Operational Emissions Data), calculations for operations followed the same general methodology as used in the 2010 FEIR, but with updated land use, traffic data, and the operational year associated with the 2018 Modified Project Variant. Current modeling techniques were used to incorporate updated information on building energy use and vehicular emissions to take in to account the effect of the delay in implementation of the Project. Thus, the 2016 Standards for Title 24 Part 6 energy efficiency standards were incorporated into this analysis, since the buildings must comply with that most recent standard.

The 2018 Modified Project Variant is expected to result in a total of 110,859 MT CO_2e per year, with 55,455 MT CO_2e per year from HPS and 55,405 MT CO_2e per year from CP. The GHG emissions for the 2018 Modified Project Variant are 28 percent lower than those disclosed in the 2010 FEIR. Thus, conclusions in the 2010 FEIR still apply and the Project would not conflict with the state's goals of reducing GHG emissions to 1990 levels by 2020. As discussed previously, the City and County of San Francisco has additional regulations and ordinances that would also help limit GHG emissions associated with Project-related operational emissions. As discussed in the 2010 FEIR, the Project design is a dense, infill mixed-use project, with a transit-oriented design. The 2010 FEIR also includes mitigation measures that align with the local GHG reduction ordinances. For example,

MM GC-1 aligns with San Francisco's *Strategies to Address Greenhouse Gas Emissions* Policy 3.9 that encourages and requires the planting of trees in conjunction with new development; and MM GC-3 aligns with Policy 13.4 that encourages the use of energy conserving appliances and lighting systems. Thus, the Project would not conflict with the City's GHG reduction goals established in the Greenhouse Gas Reduction Ordinance. The 2018 Modified Project Variant meets these same criteria, therefore, the impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure Modified by Addendum 5

> **MM GC-2:** ~~Exceed the 2008~~ Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses ~~would by at least 15 percent~~.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to greenhouse gas emissions impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to greenhouse gas emissions, either on a project-related or cumulative basis.

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III. CONCLUSION

Based on the foregoing, it is concluded that the analyses conducted and the conclusions reached in the 2010 FEIR certified on June 3, 2010, remain valid. The proposed revisions to the Project would not cause new significant impacts not identified in the 2010 FEIR, and no new mitigation measures would be necessary to reduce significant impacts. Other than as described in Addendum 5, no Project changes have occurred, and no changes have occurred with respect to circumstances surrounding the proposed Project that would cause significant environmental impacts to which the Project would contribute considerably, and no new information has become available that shows that the Project would cause significant environmental impacts. Therefore, no supplemental environmental review is required beyond Addendum 5.

Date of Determination:

I do hereby certify that the above determination has been made pursuant to State and local requirements.

Jose Campos
OCII Environmental Review Officer

cc: Bulletin Board/Master Decision File Distribution List

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