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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
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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

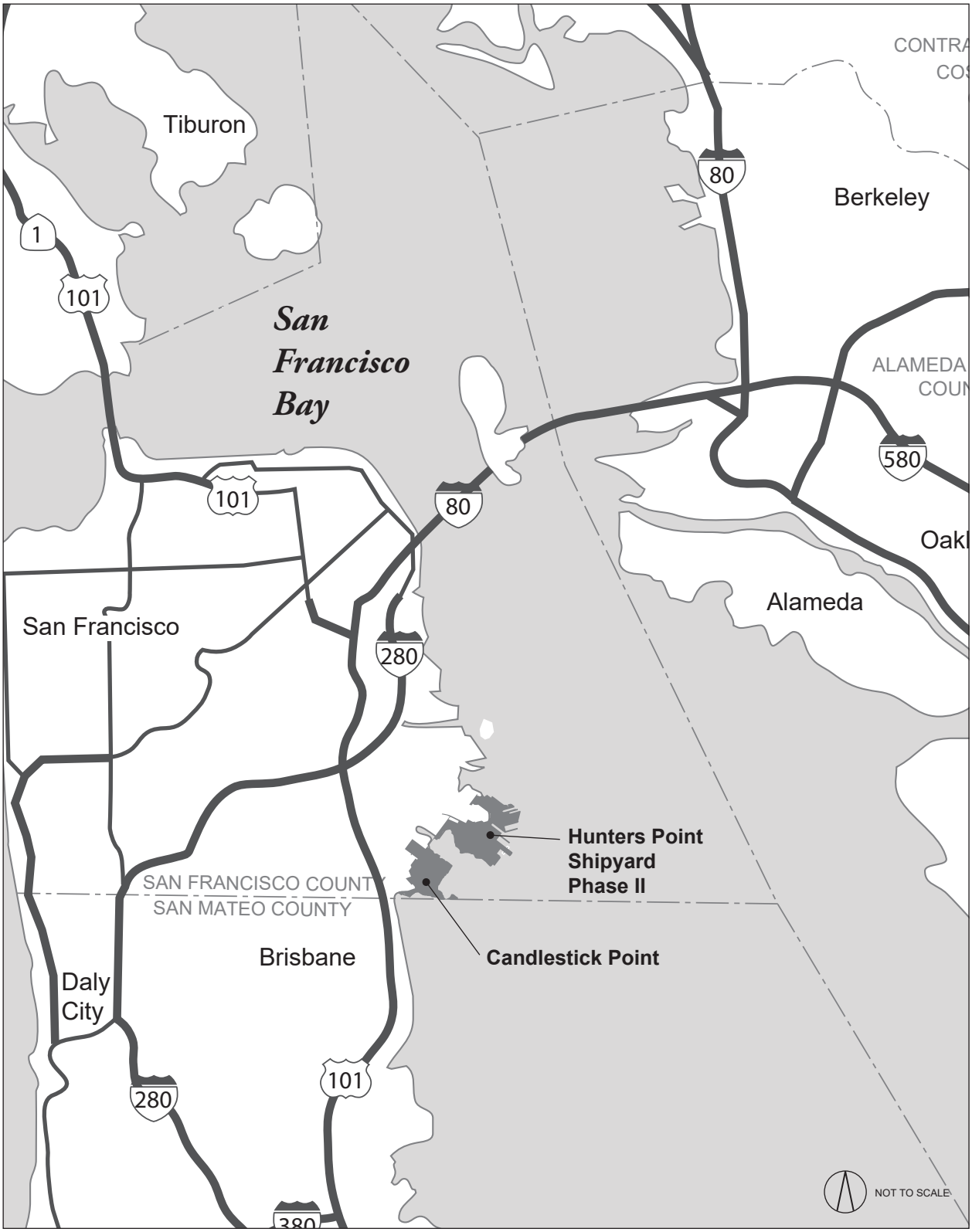
Development Area	*Acres*
Candlestick Point	281[a]
Hunters Point Shipyard Phase II	421
Total	***702***

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.

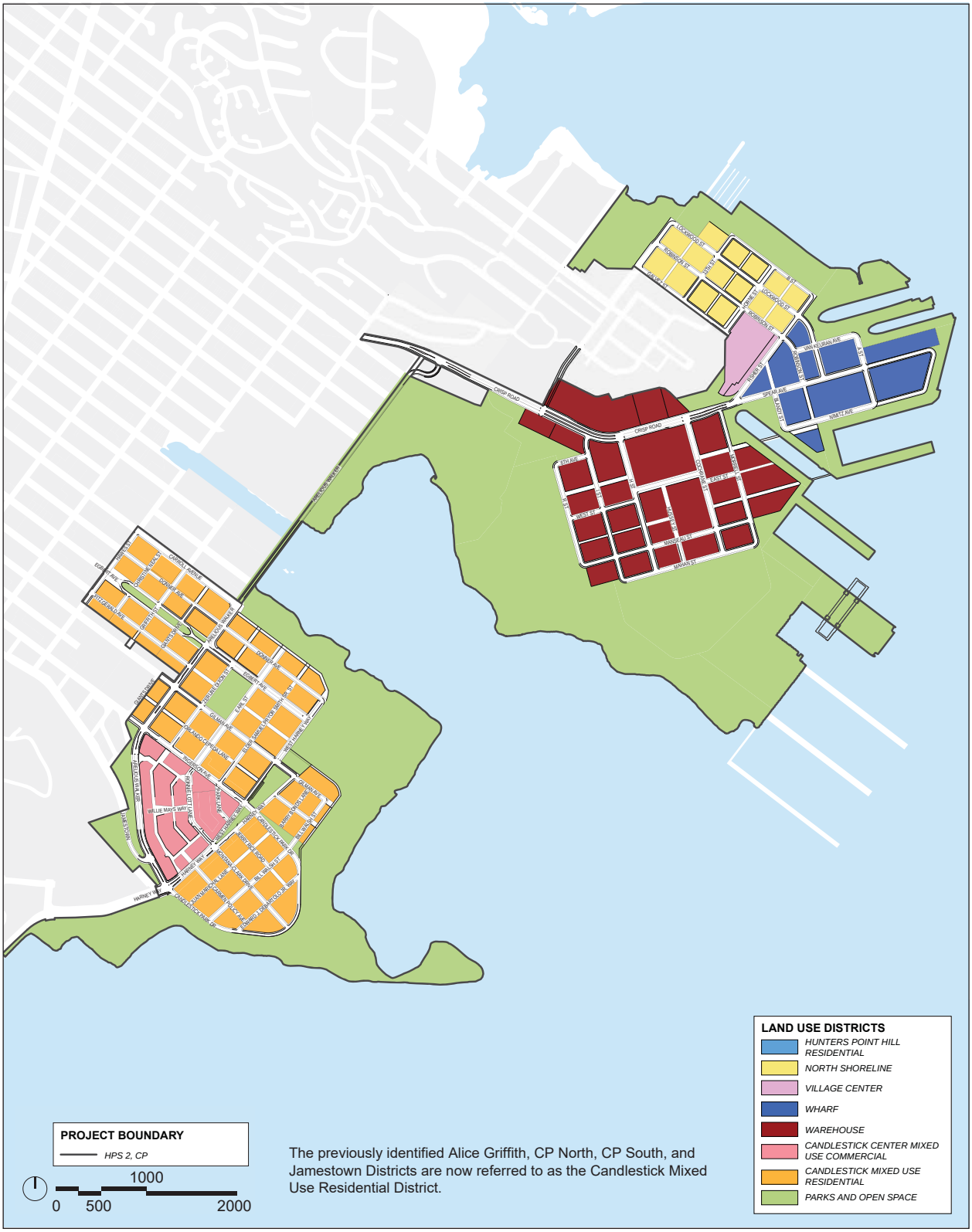
In Addendum 5, the 2018 Modified Project Variant is primarily described and assessed in relation to the Project described in 2010 FEIR Chapter II (Project Description). However, certain impacts are assessed in comparison to the 2010 FEIR R&D Variant (Variant 1) and Utilities Variant (Variant 4), where 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.

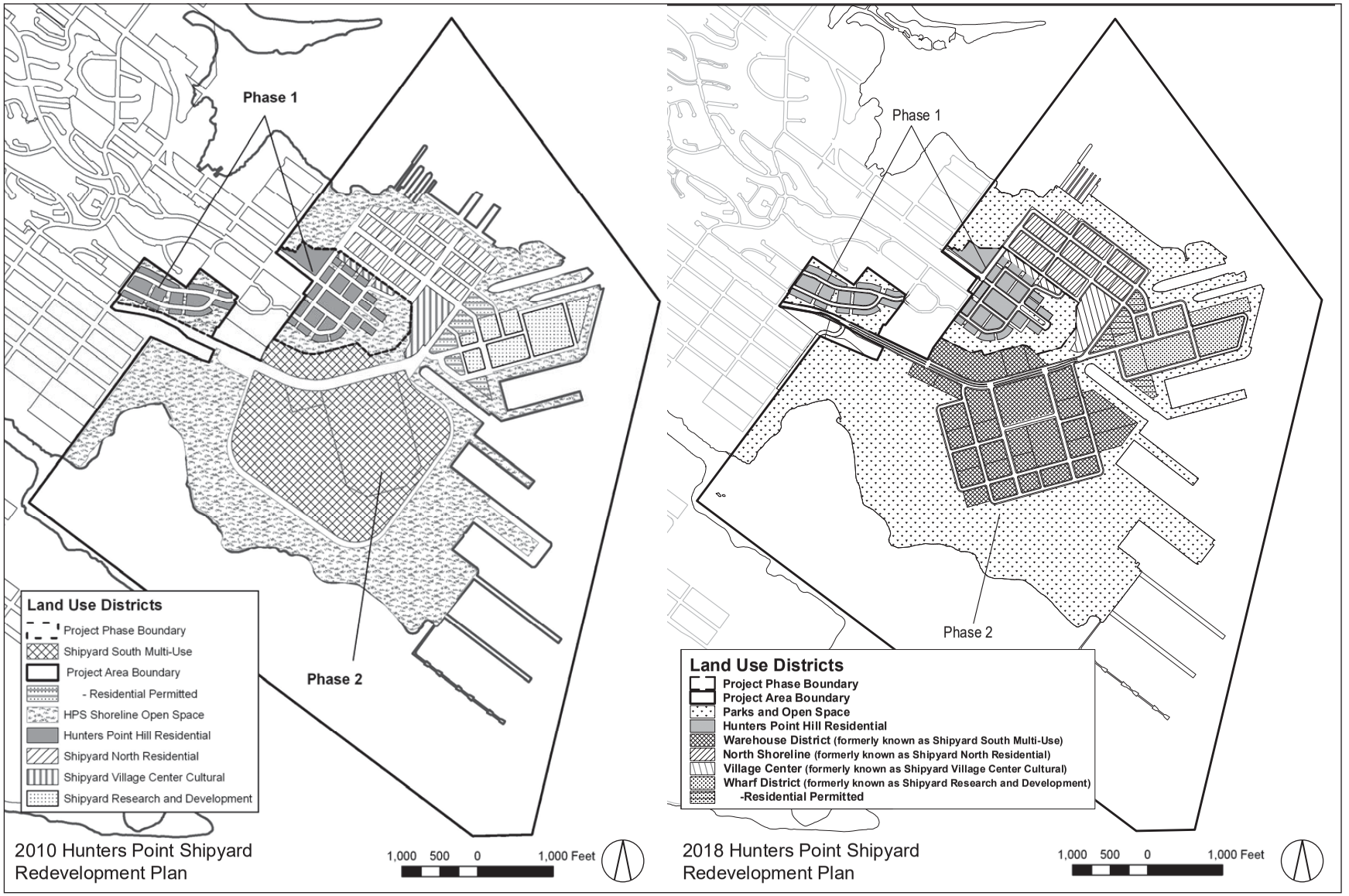
Proposed Modifications and Key Redevelopment Plan Provisions

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.

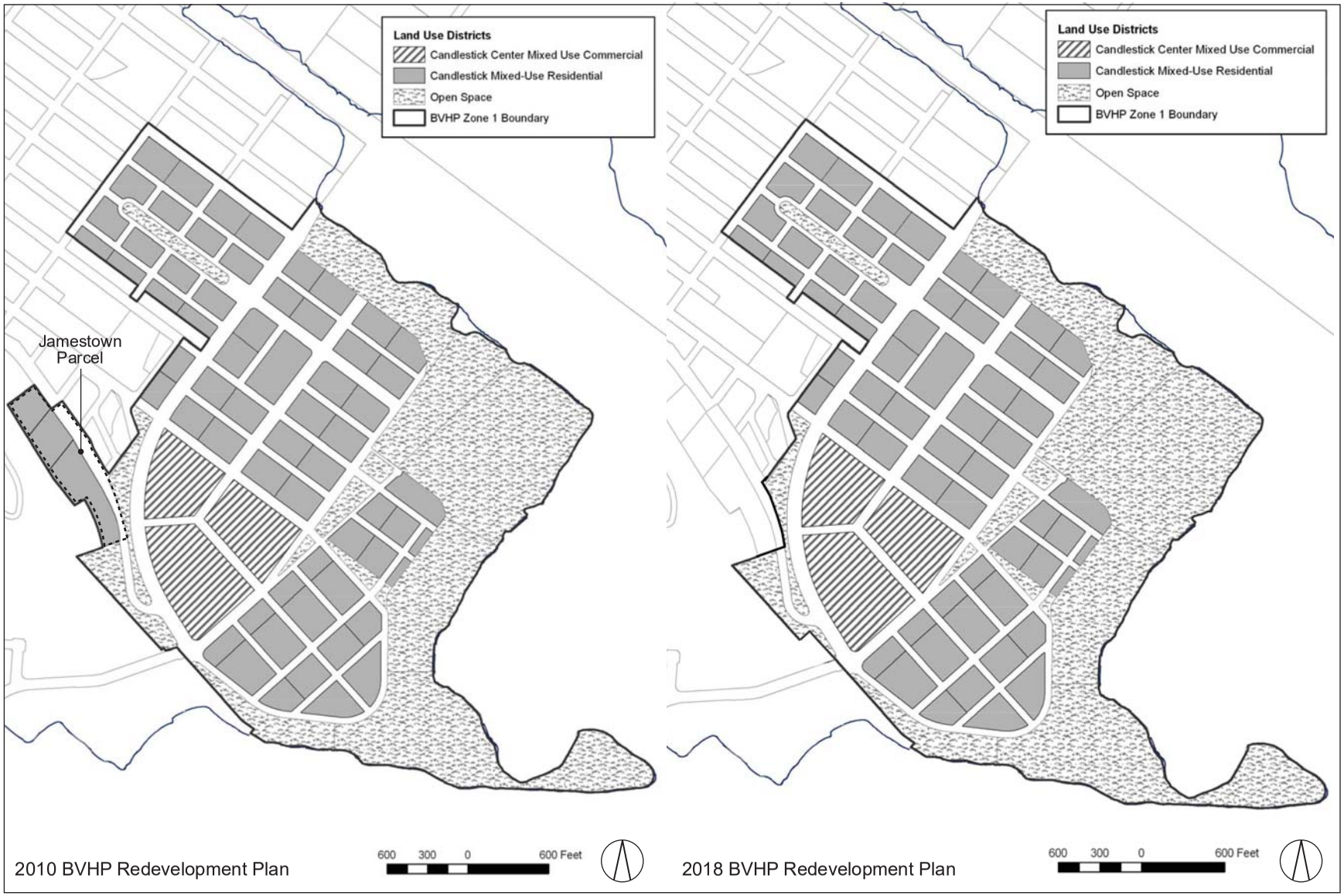
[9] Each land use has a parking ratio identified in the 2010 FEIR, which would be maintained for the 2018 Modified Project Variant. Therefore, while the land use program has been modified, which has increased the number of parking spaces required, the 2018 Modified Project Variant meets the same parking 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

Land Use Plan Components	*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*	
	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

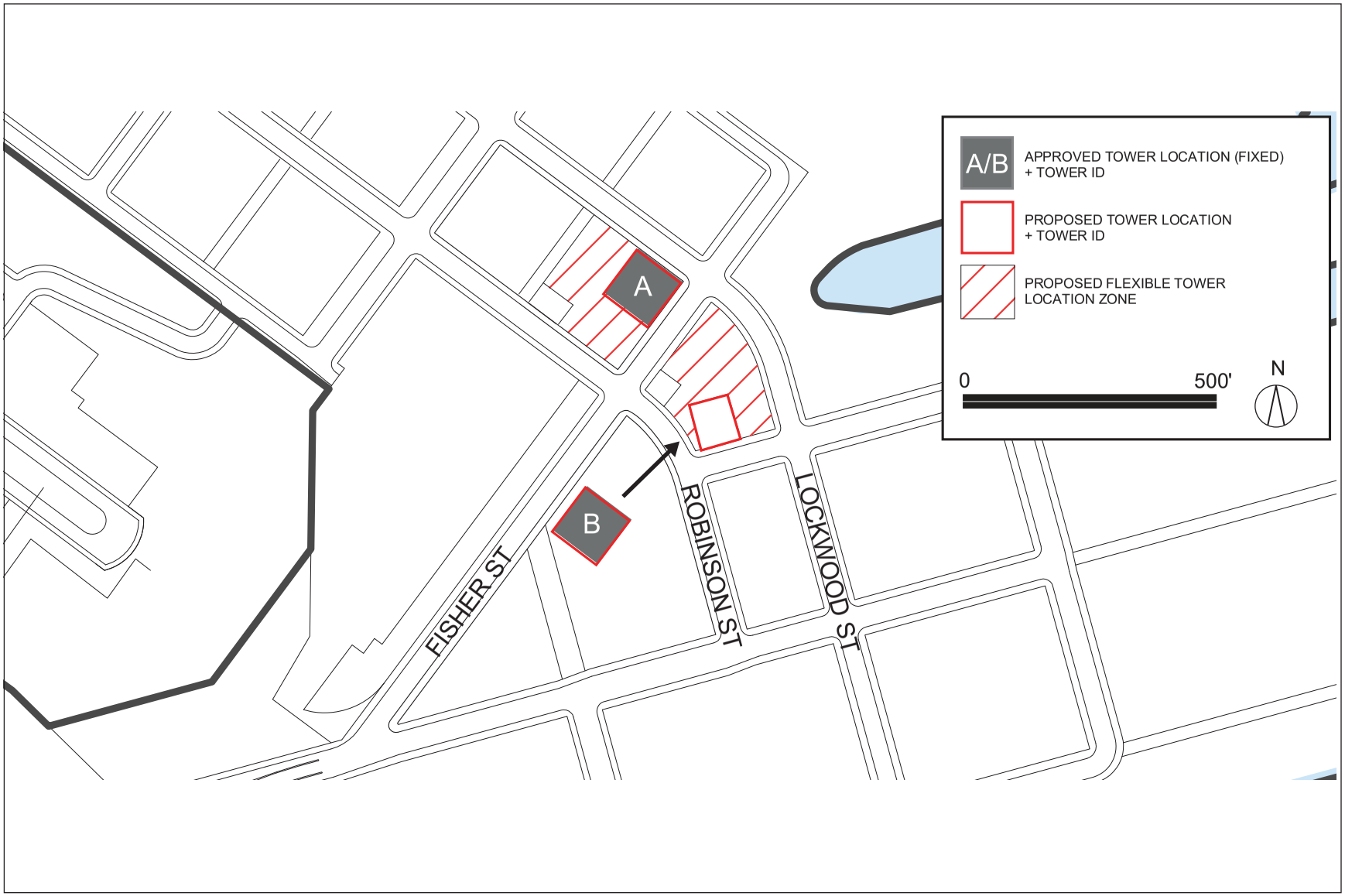
As shown in Table 2, community uses, artist uses, the arena, and the marina remain unchanged as compared to the 2010 Project. Parks and open space are discussed in "Parks and Open Space Plan," p. 22, and the water taxi and parking are discussed in "Transportation Plan," p. 27.

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.

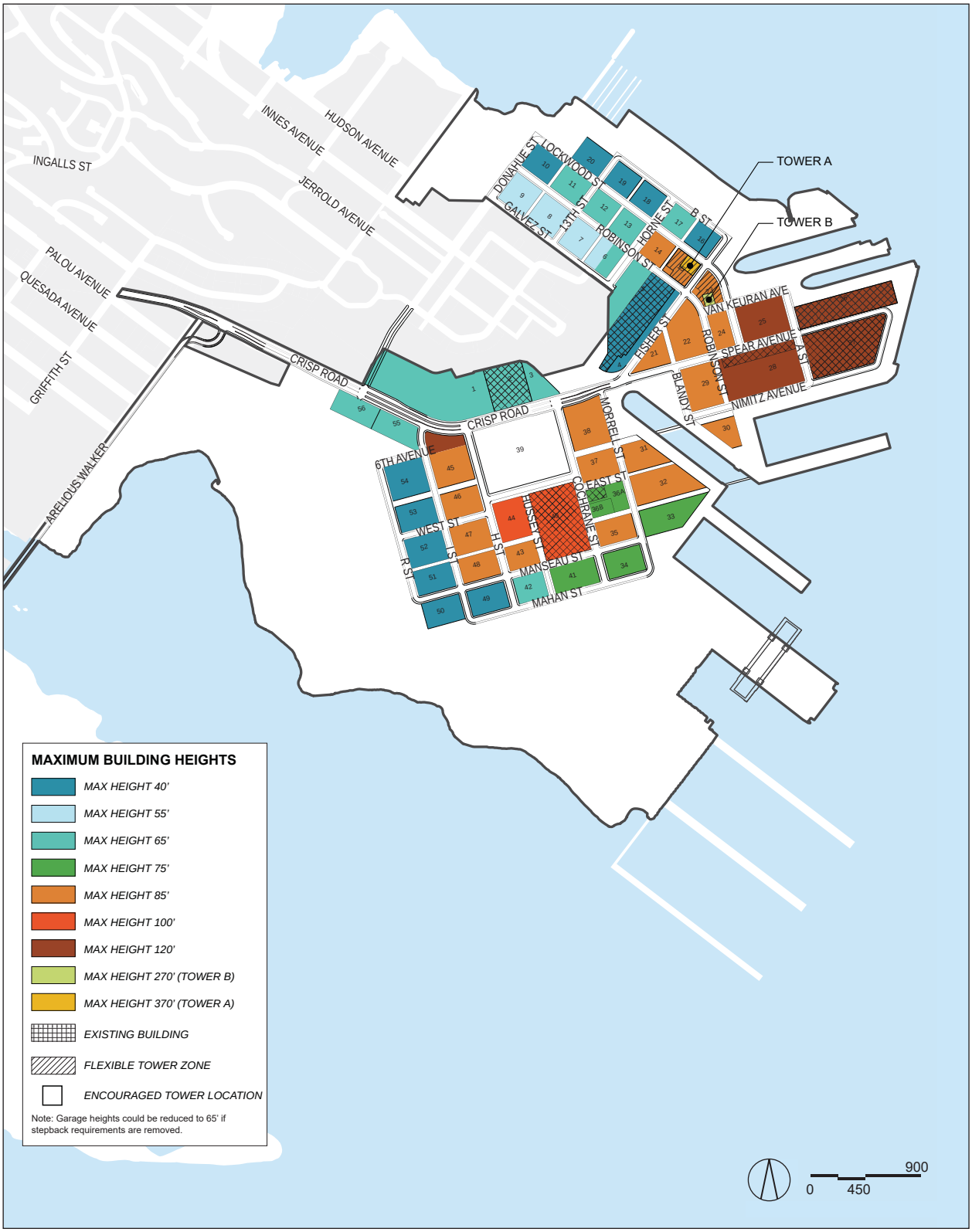
North Shoreline District

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***

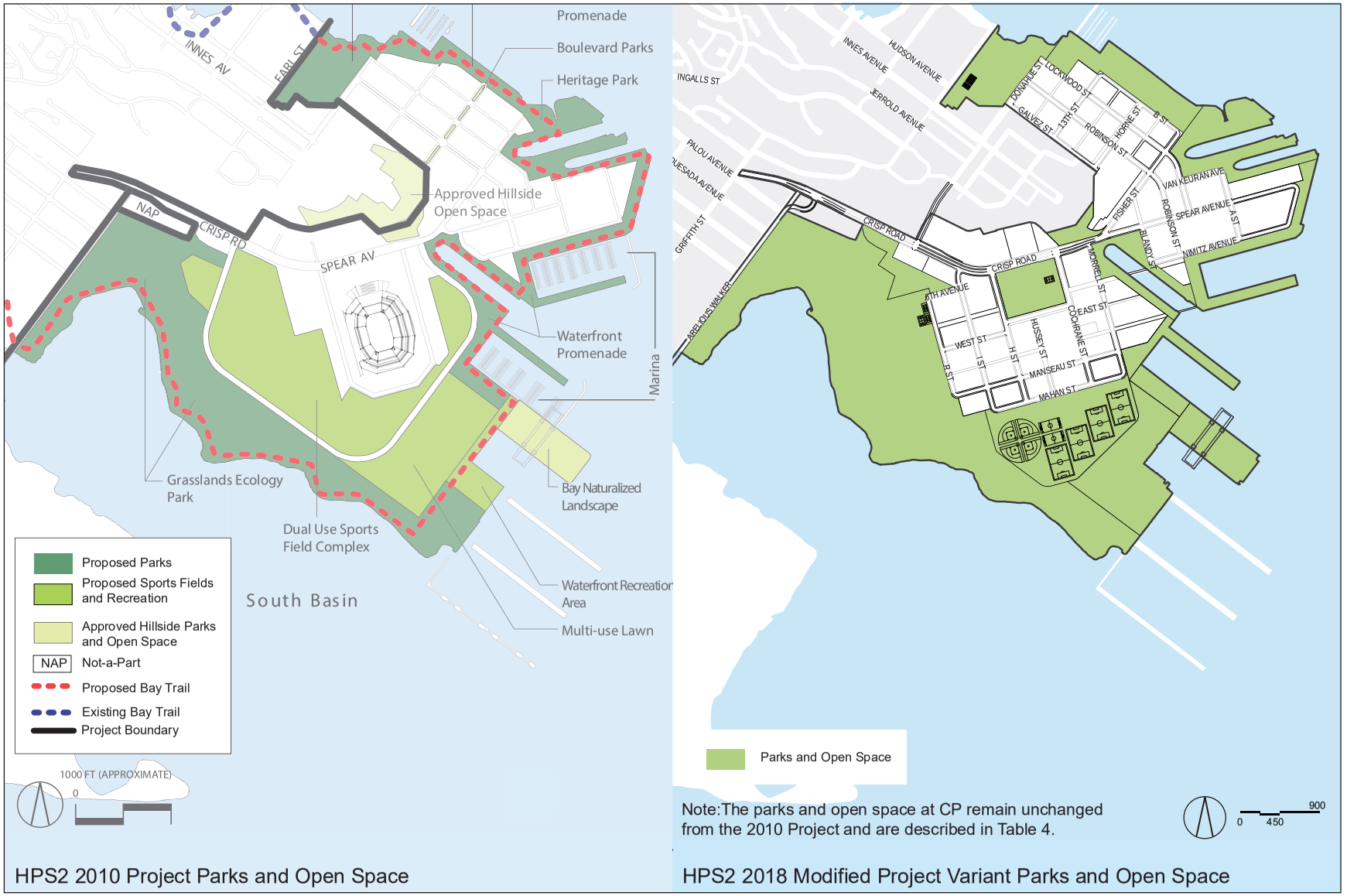
[12] The Shipyard Hillside Open Space, Horne Boulevard Park, and the Bay Naturalized Habitats below the Regunning Crane, were excluded from the total parks calculation in the 2010 FEIR because they were not considered to serve a functional active or passive recreation purpose due to topography and terrain. 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).

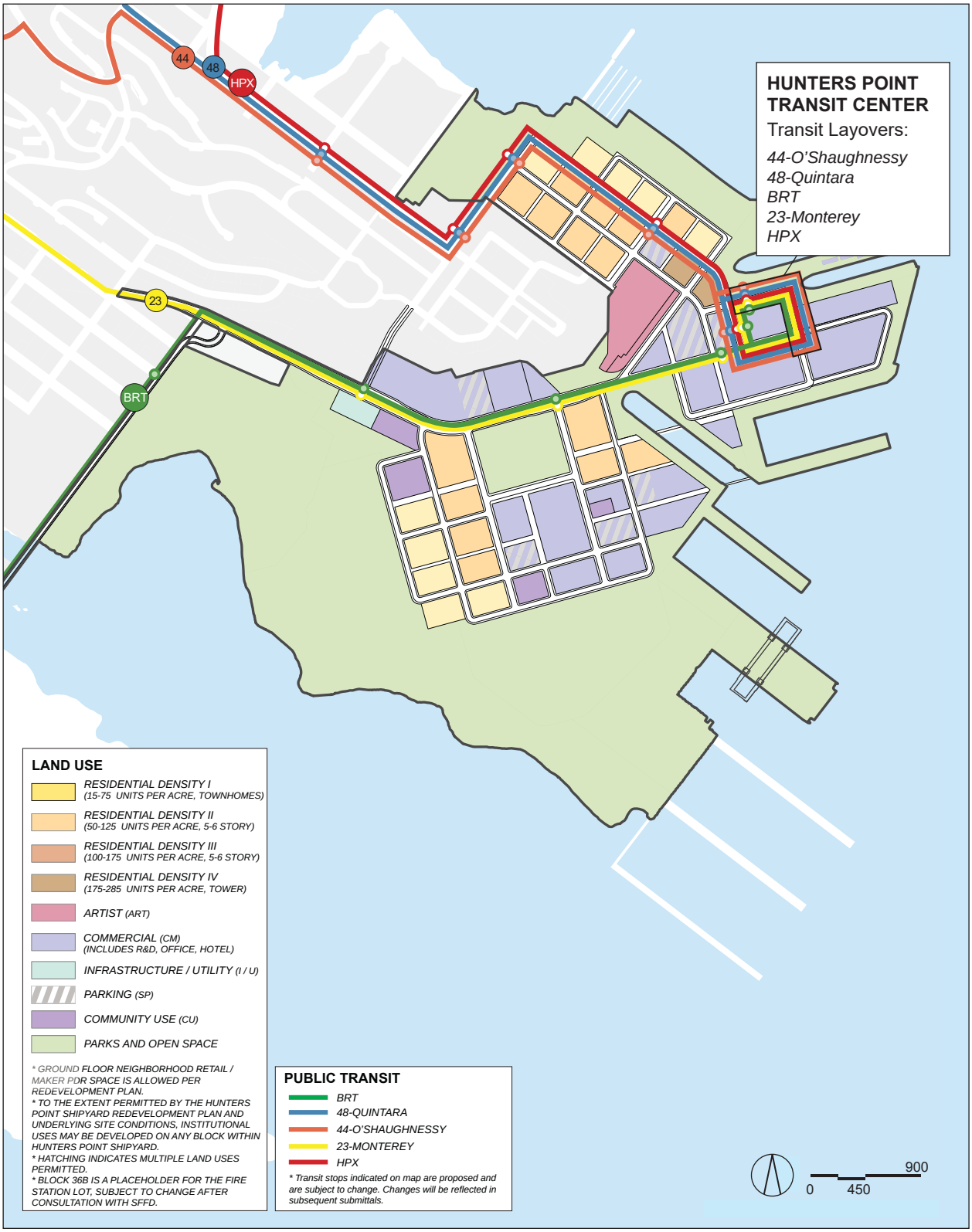
Transit Network Modifications

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

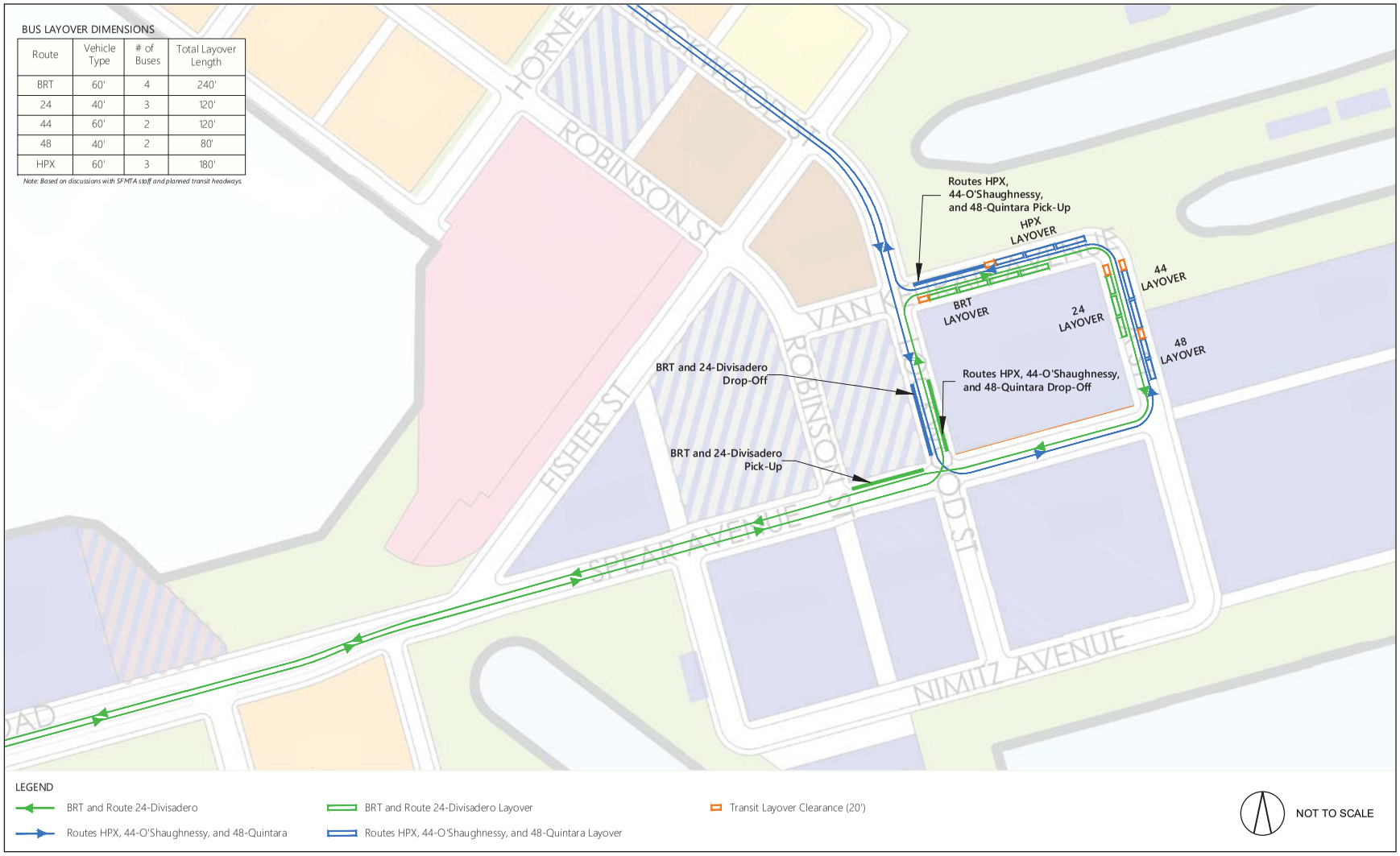
The primary change to the bicycle network in the 2018 Modified Project Variant as compared to the changes evaluated in Addendum 1 and approved in the 2014 modifications to the CP-HPS2 Transportation Plan (in Attachment 6-N to the 2014 Transportation Plan) would be the re-alignment of the cycletrack facility 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

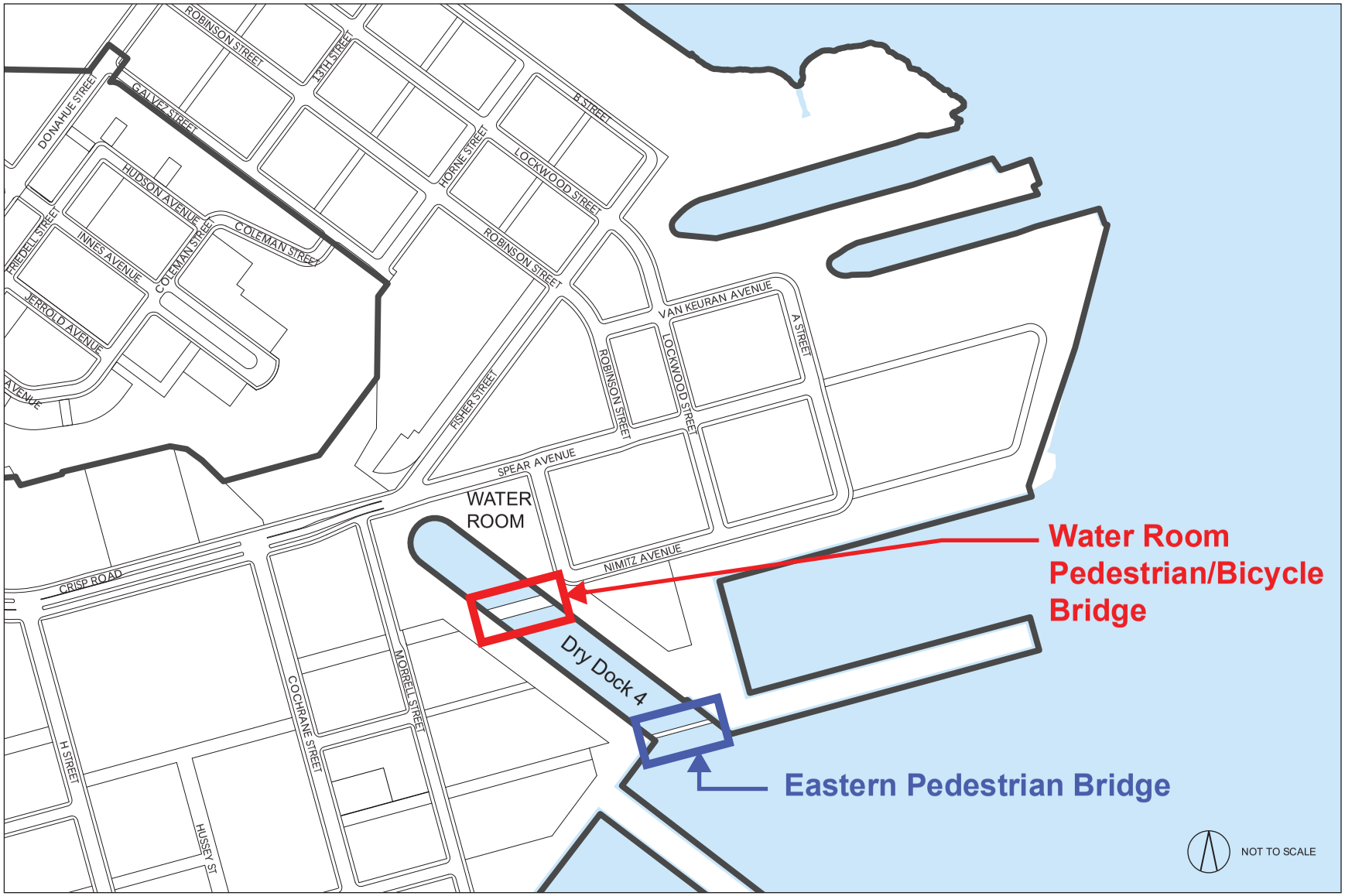
The total on- and off-street parking supply would be modified corresponding to changes in land use in the 2018 Modified Project Variant compared to the 2010 R&D Variant (Variant 1), which is most comparable to the 2018 Modified Project Variant because it does not include a stadium use. Specifically, 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).

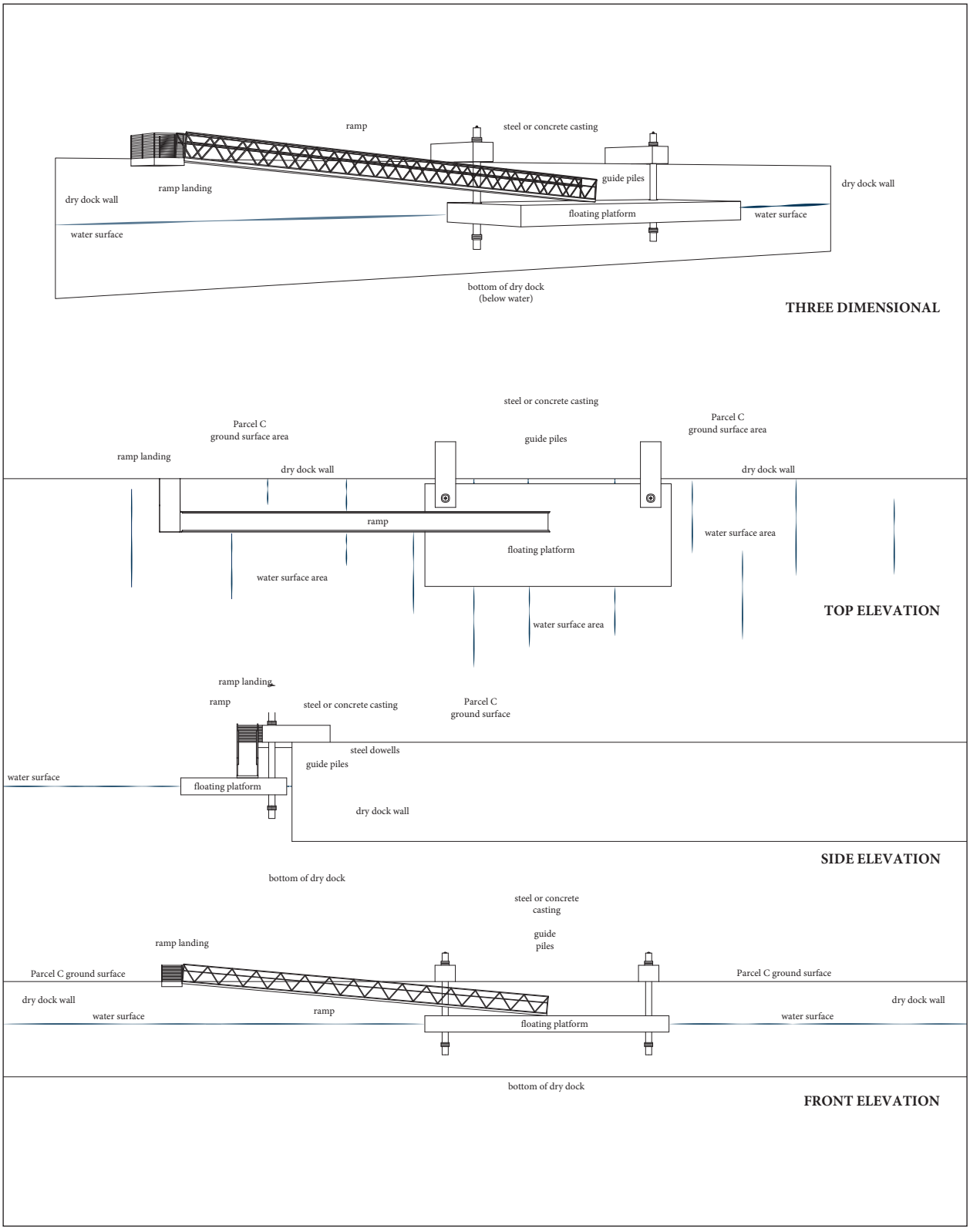
General and Commercial On-Street Parking

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.

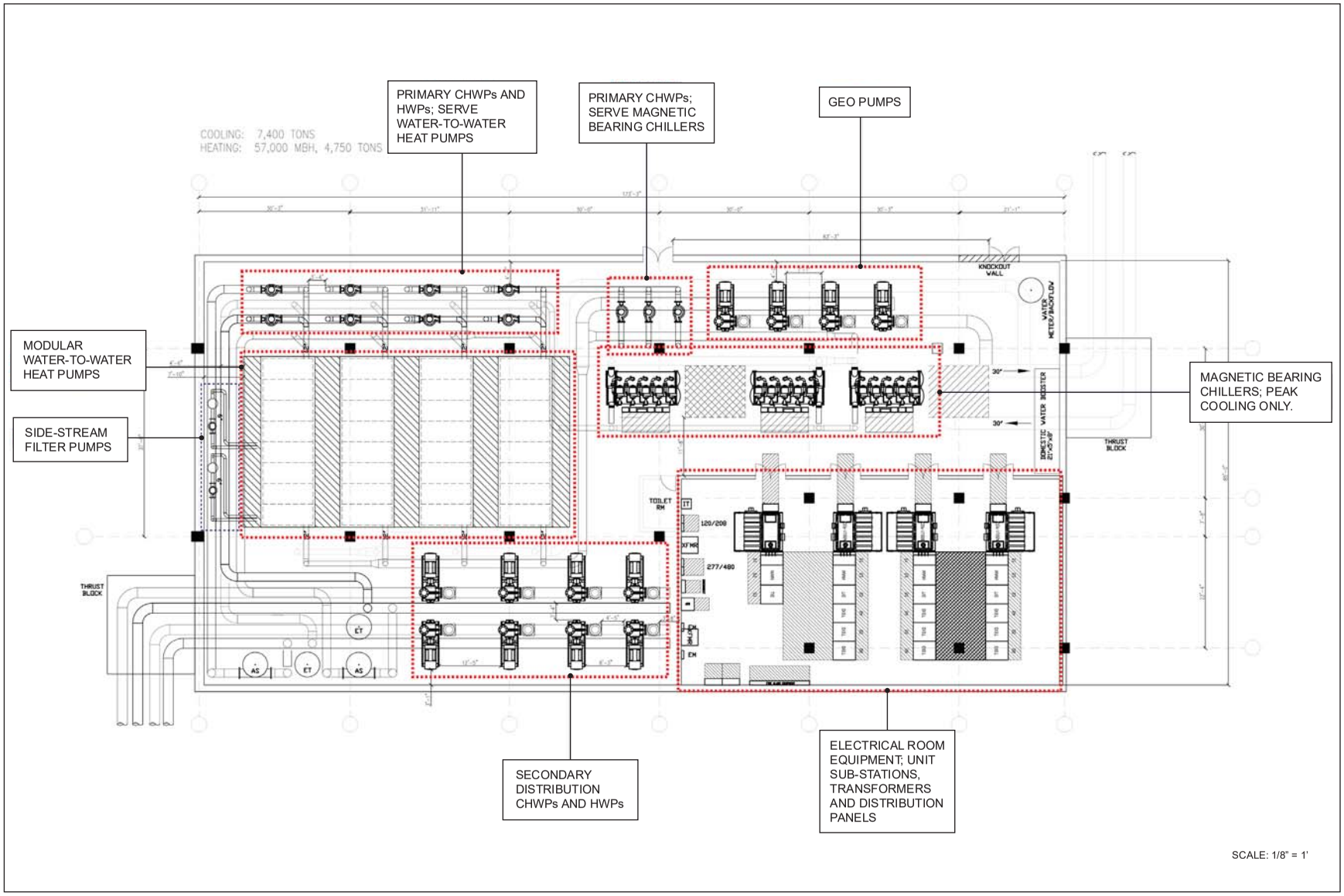
Figure 14 (Central Energy Plant Equipment Layout) shows how the pumps, chillers, heat exchangers, and electrical transformers and distribution panels may be configured within the CEP. The specific components of each element of the geothermal heating and cooling system are discussed below. Geothermal 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,

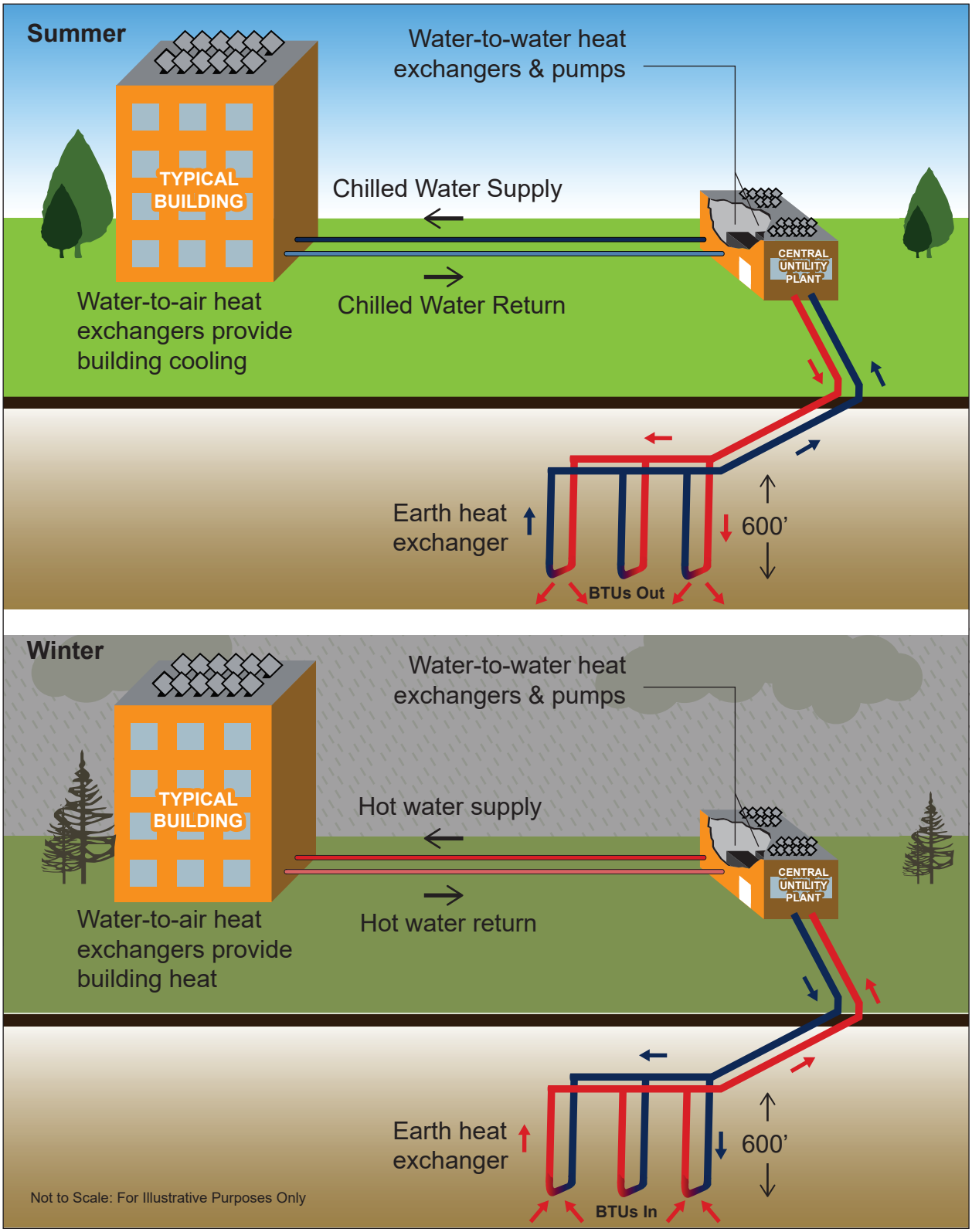
[15] California Energy Commission, *Assessment of California's Low Temperature Geothermal Resources: Geothermal Heat Pump Efficiencies by Region*, CEC-500-2014-060, April 2012, Table 3, p. 20.



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

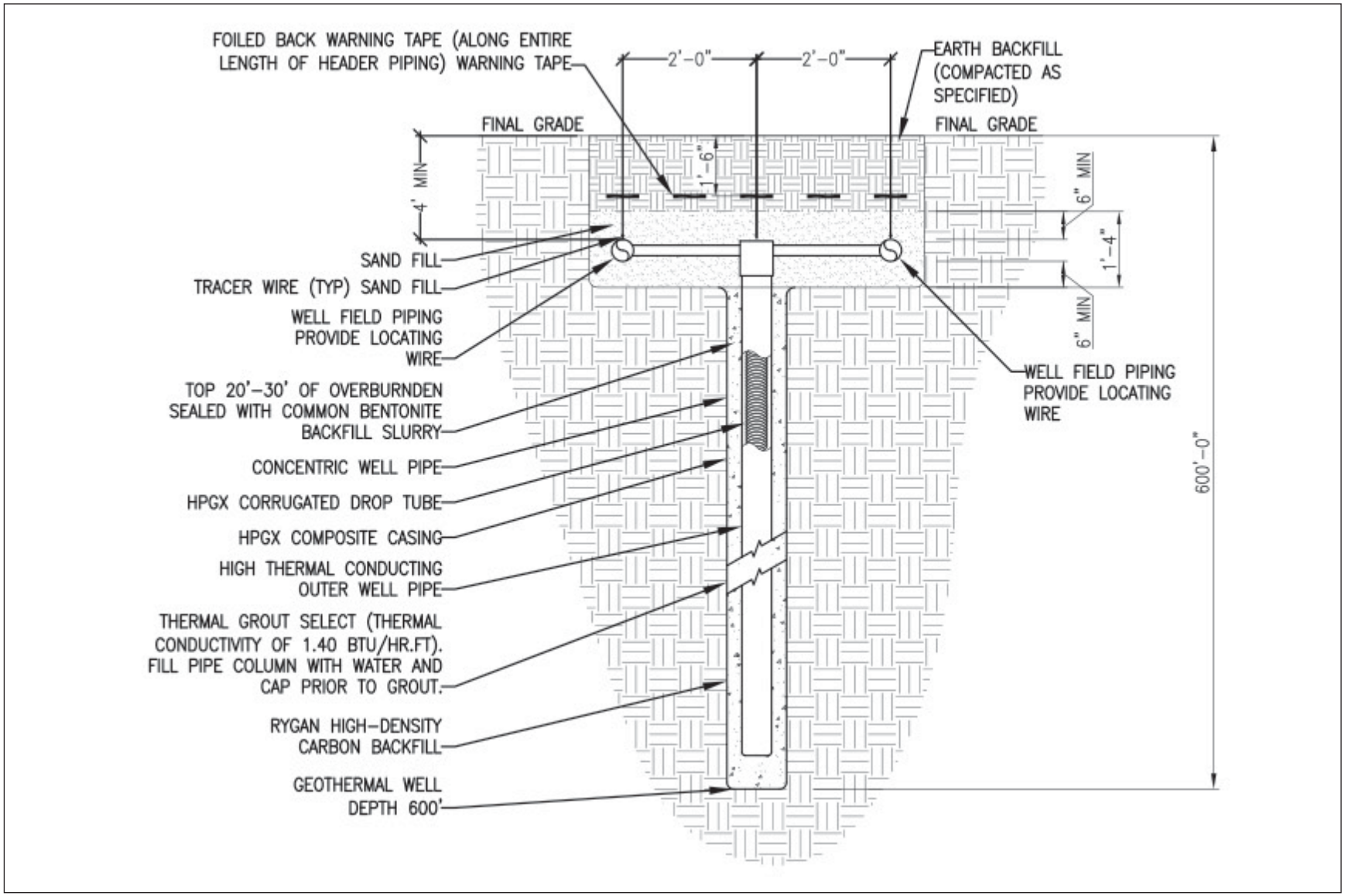
clusters of boreholes would be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. Generally, the environmental restrictions in these areas require regulators to approve workplans prior 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

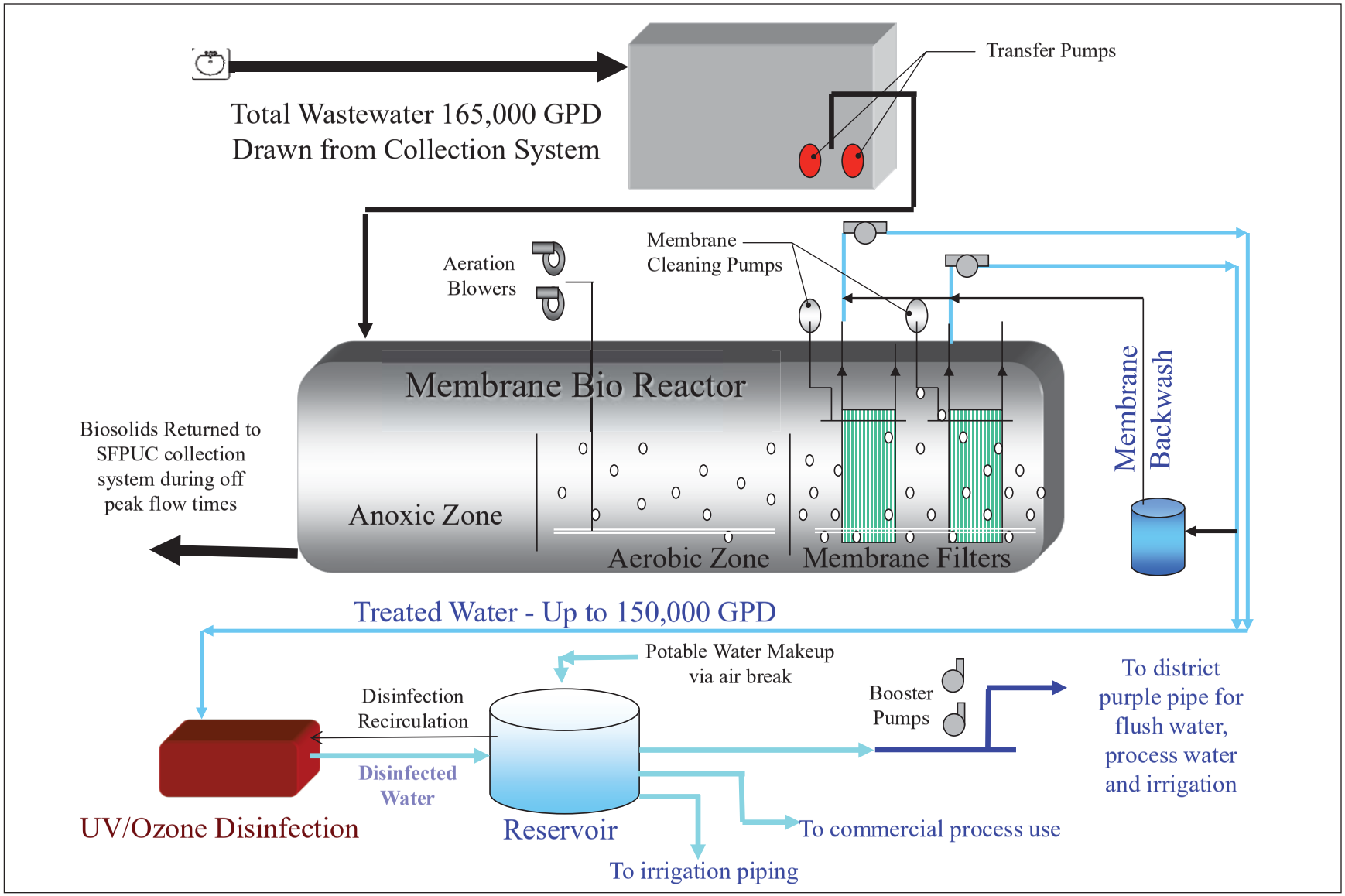
GEOTHERMAL BOREHOLE DETAILS

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.

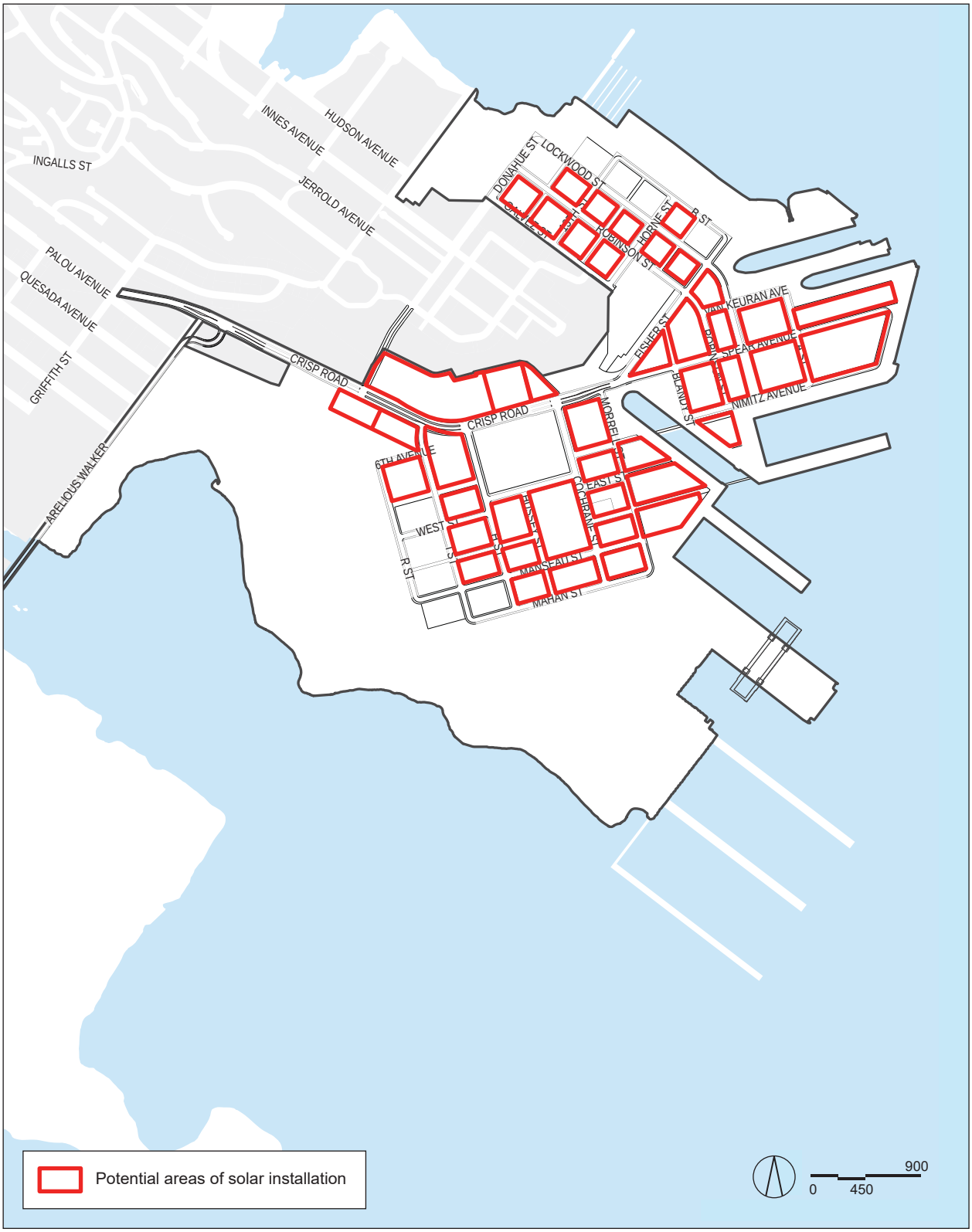
Solar panels would be installed in select areas where vertical PV elements could be integrated within building envelopes as a replacement for conventional building materials. These elements would be developed as buildings become available. The PV system would consist of mounted solar PV panels/tables, 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

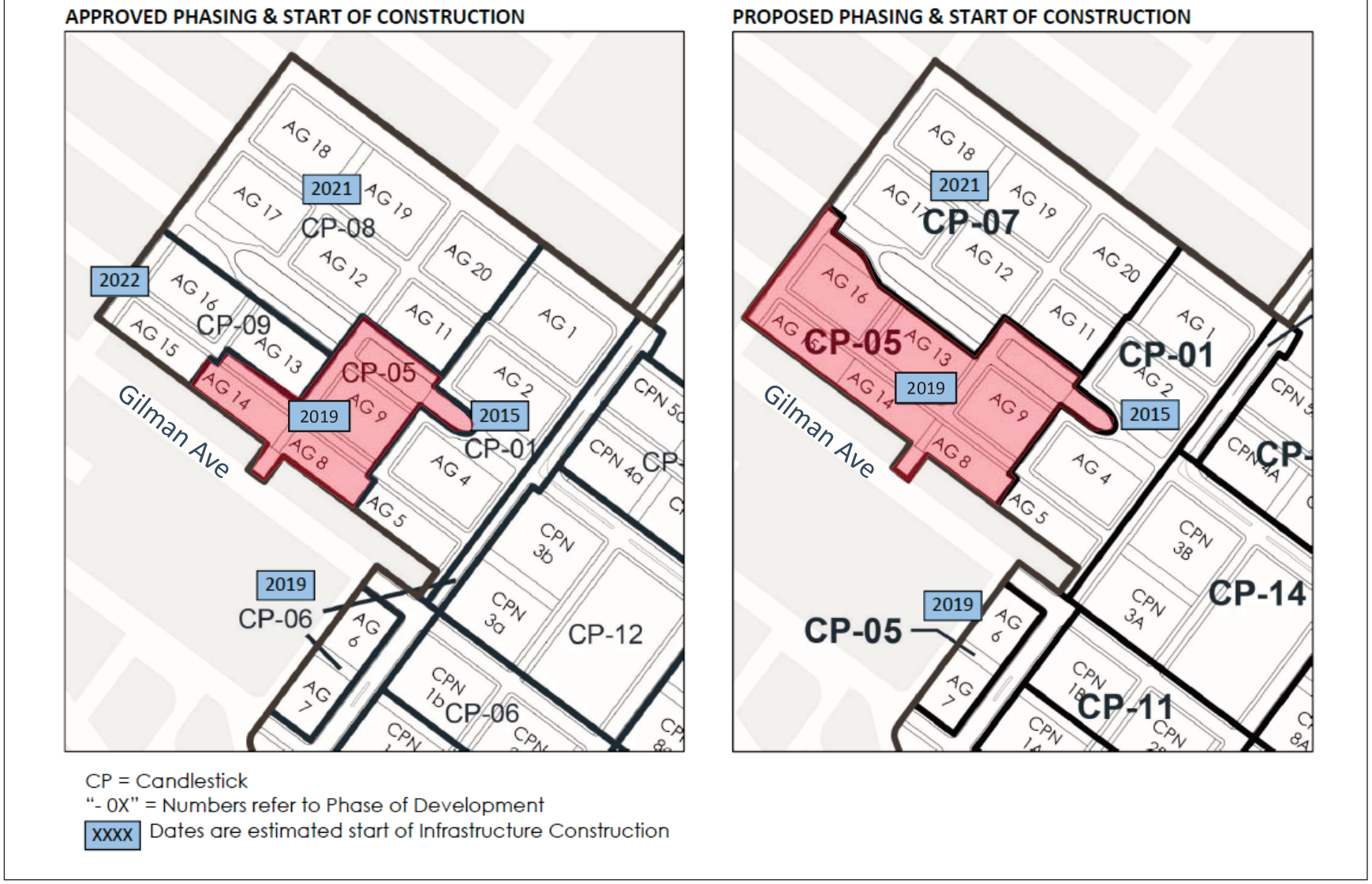
Land Use Plan

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

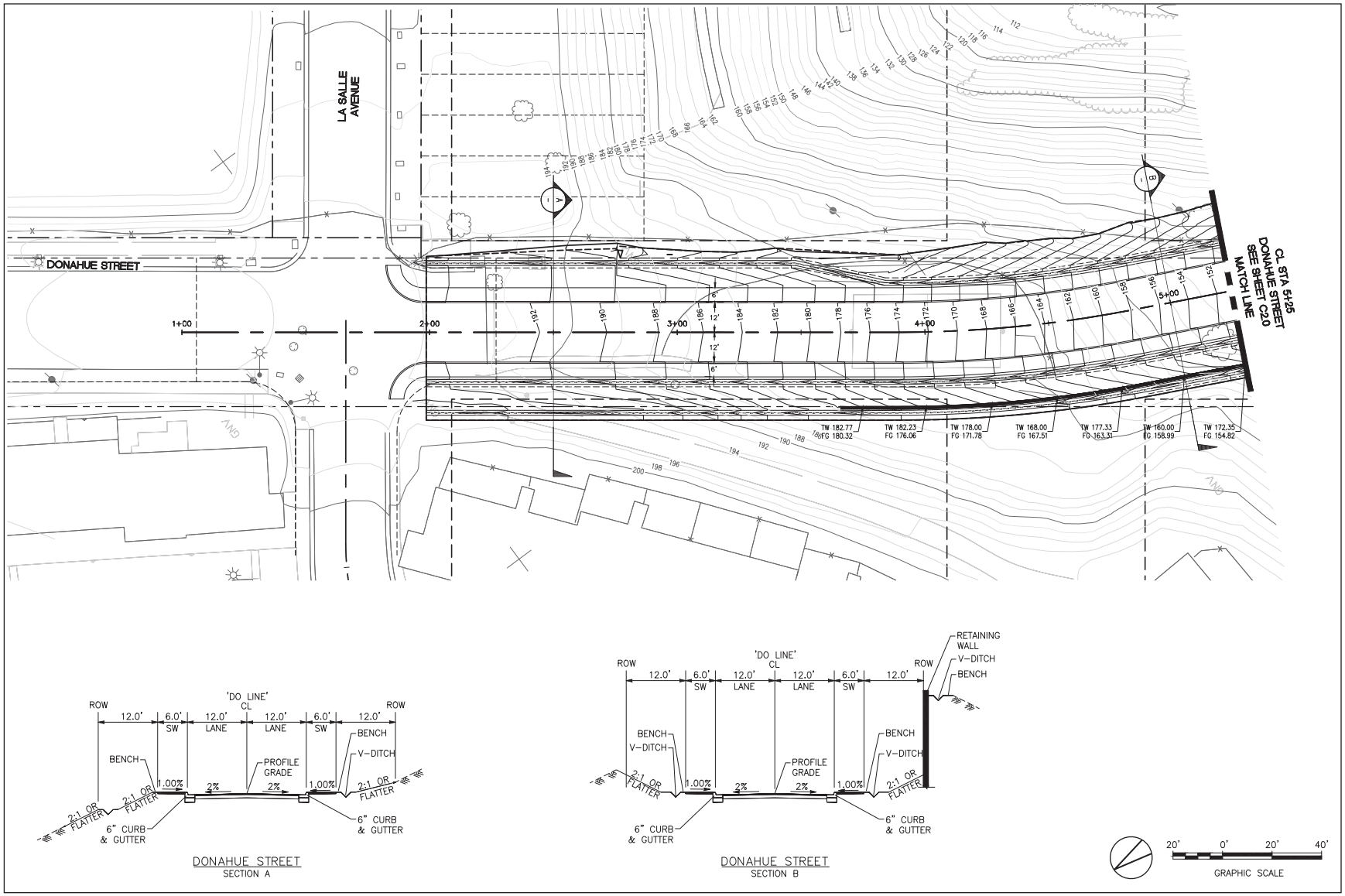
The 2018 Modified Project Variant would extend Donahue Street from La Salle Avenue/Kirkwood Avenue southwards to Crisp Road, pending dedication of land from Mariners Village to the City and determination that construction of the roadway extension is financially feasible. The length of the extension would 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;



DONAHUE STREET
SECTION A

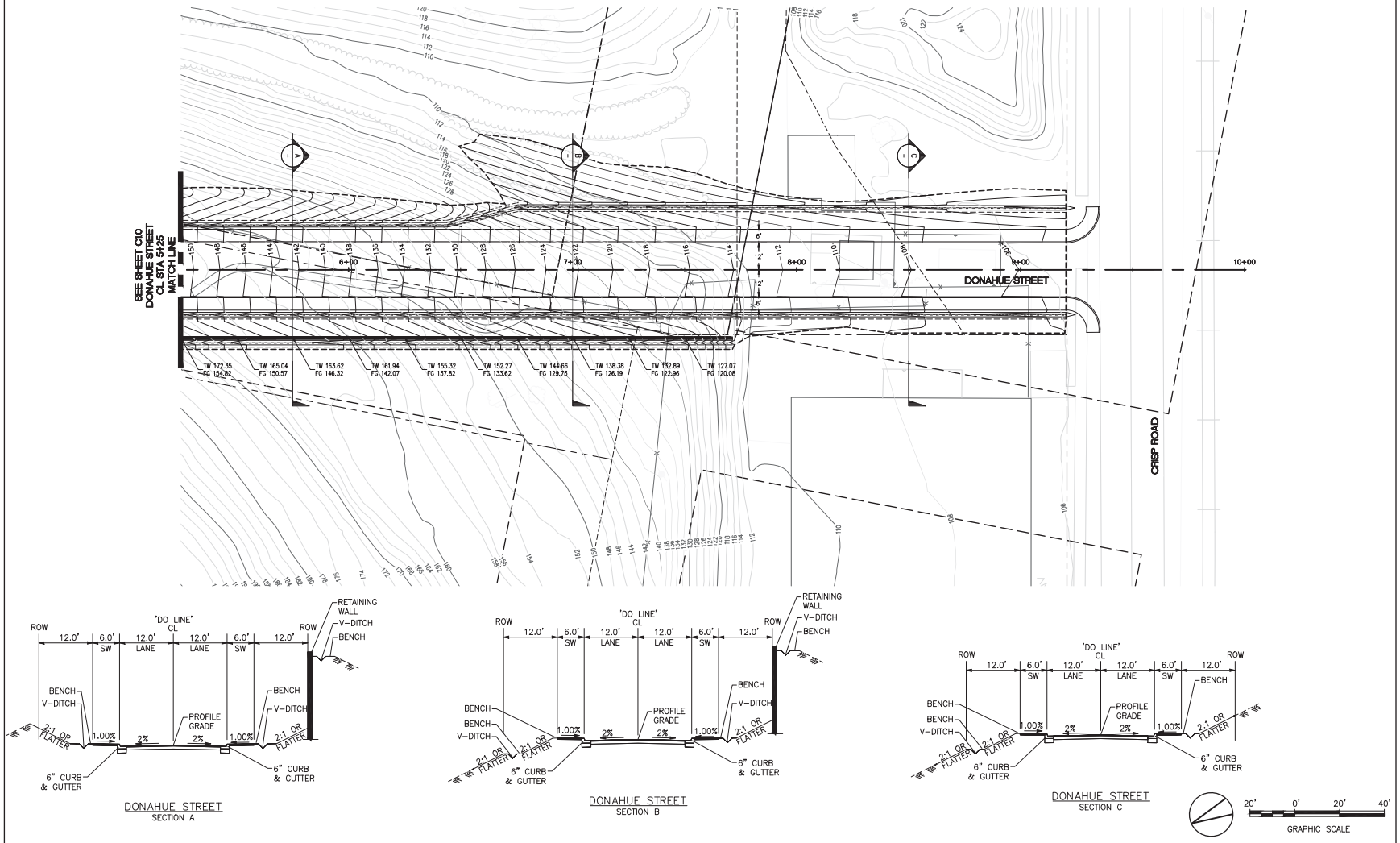
DONAHUE STREET
SECTION B

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

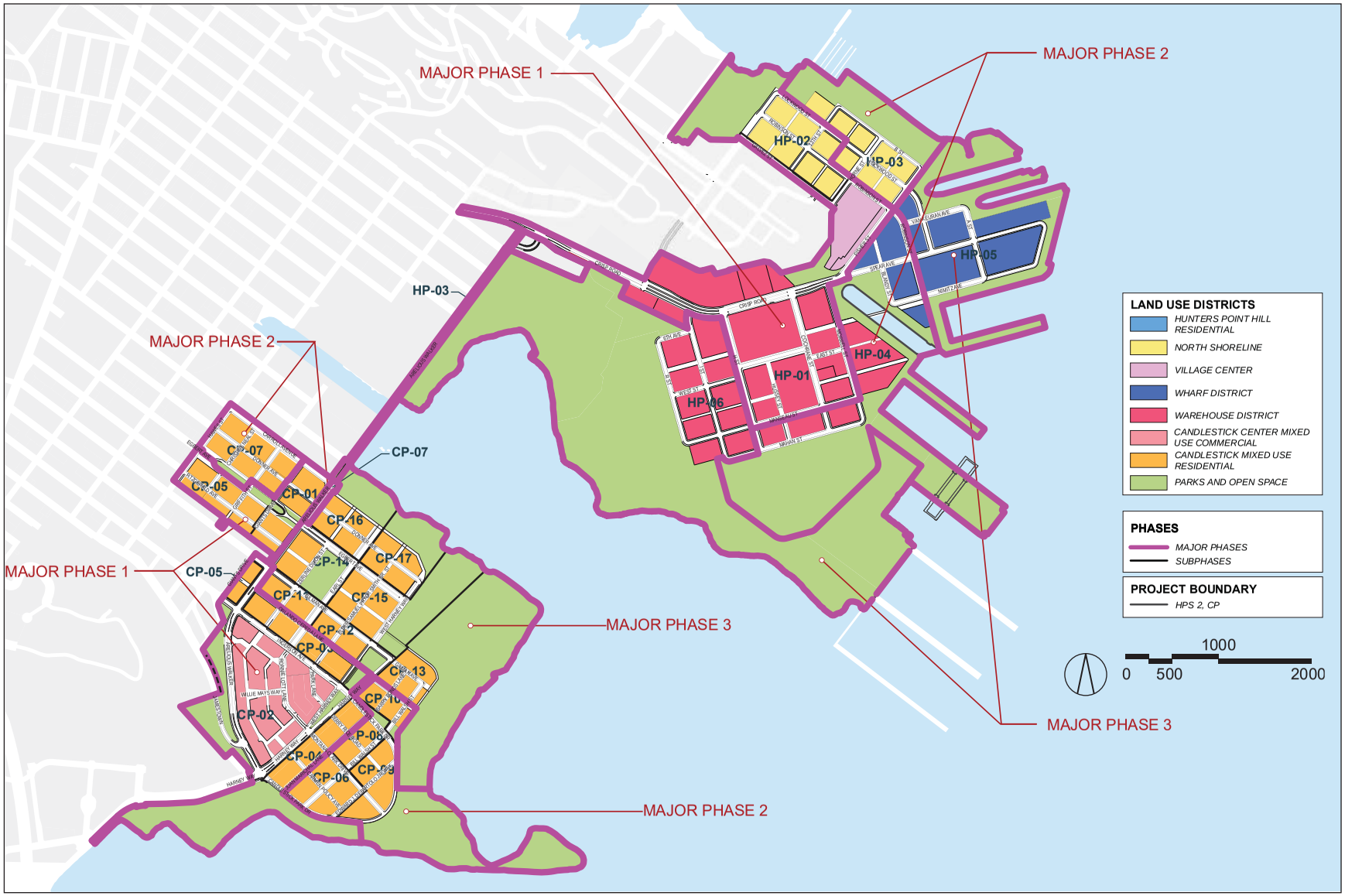
I.E.1 Amendments to Construction and Phasing Plan

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.

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[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:

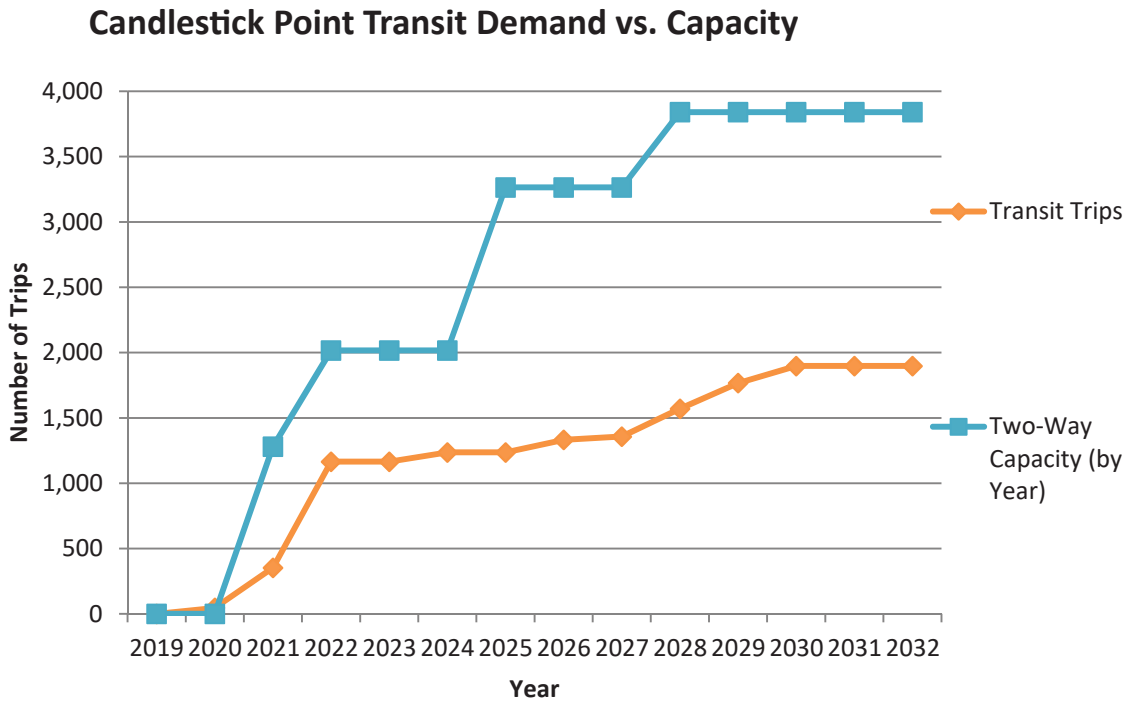
a. Approved Transit Operating Plan called for service increases to 12-minute headways. This has been revised to 10-minute headways as part of the 2018 Modified Project Variant.

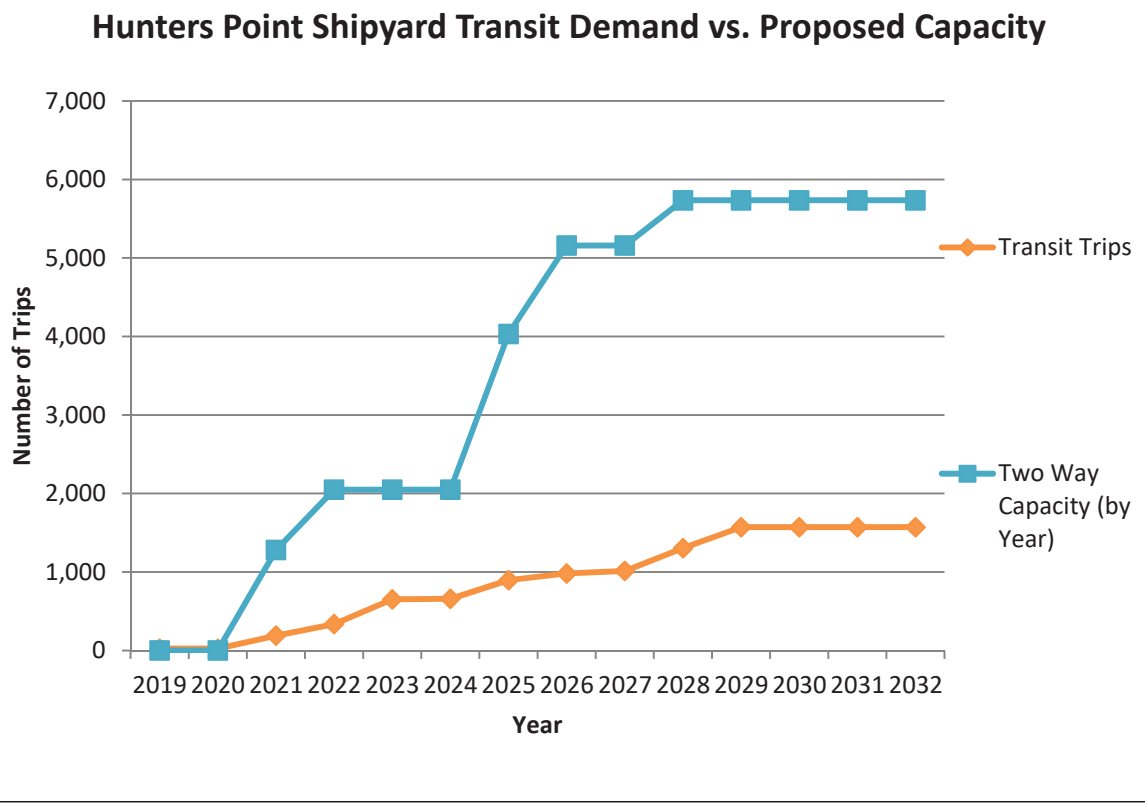
b. The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for an Overhead Contact System (OCS) wires extended into the HPS site, at which point the 24 Divisadero would be extended and the 23 Monterey would return to its original (existing) routing. Note that 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]***

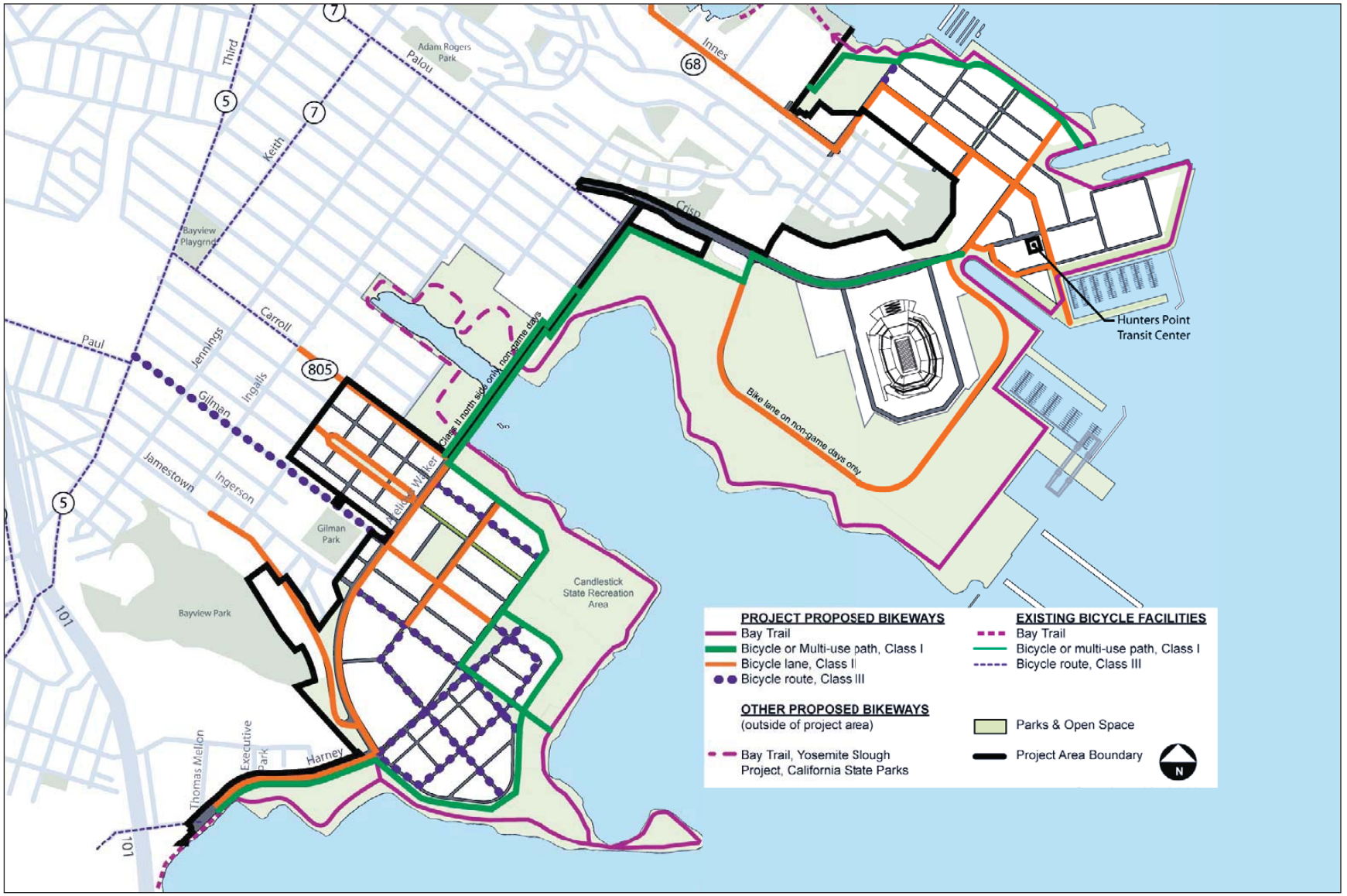
	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

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.

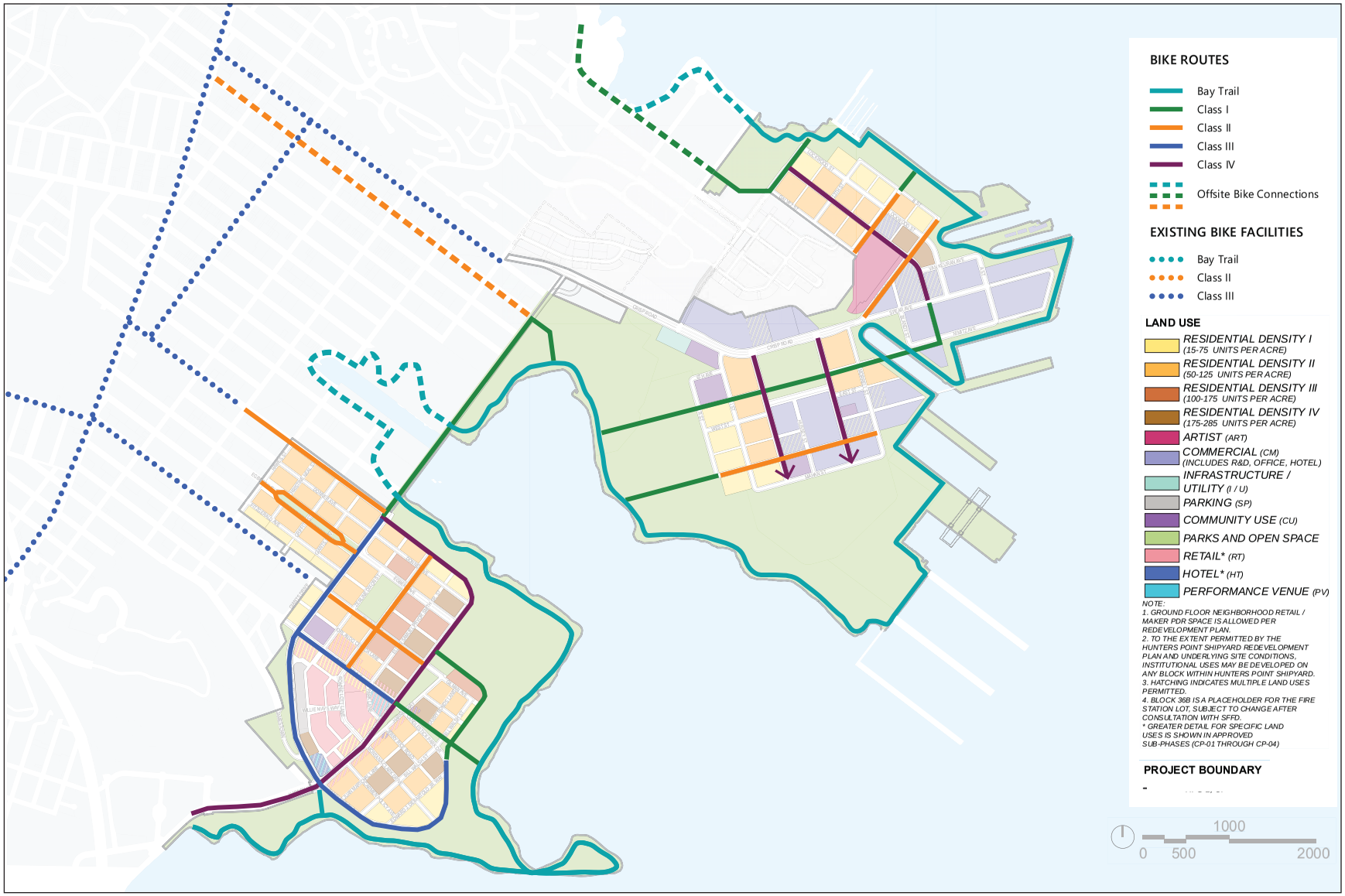
Overall, the project refinements would continue to improve the overall bicycle network in the study area and facilities would be adequate to meet bicycle needs, and Impacts TR-31 and TR-32 would remain unchanged. Mitigation measure MM TR-32 would also still apply, and as part of the requirements of MM 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

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.







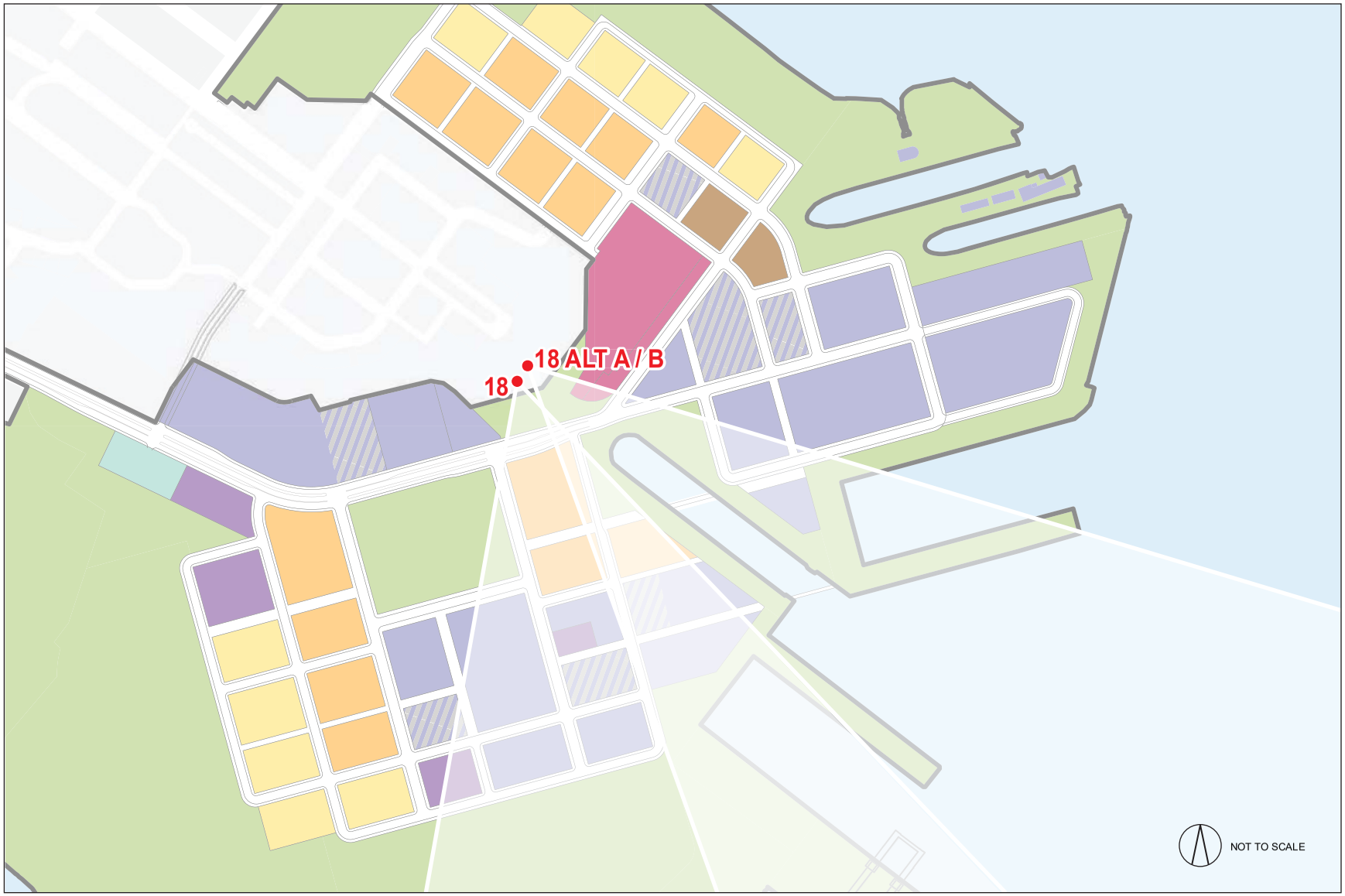
SOURCE: Lennar Urban, 2009; Square One Productions, 2018

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.

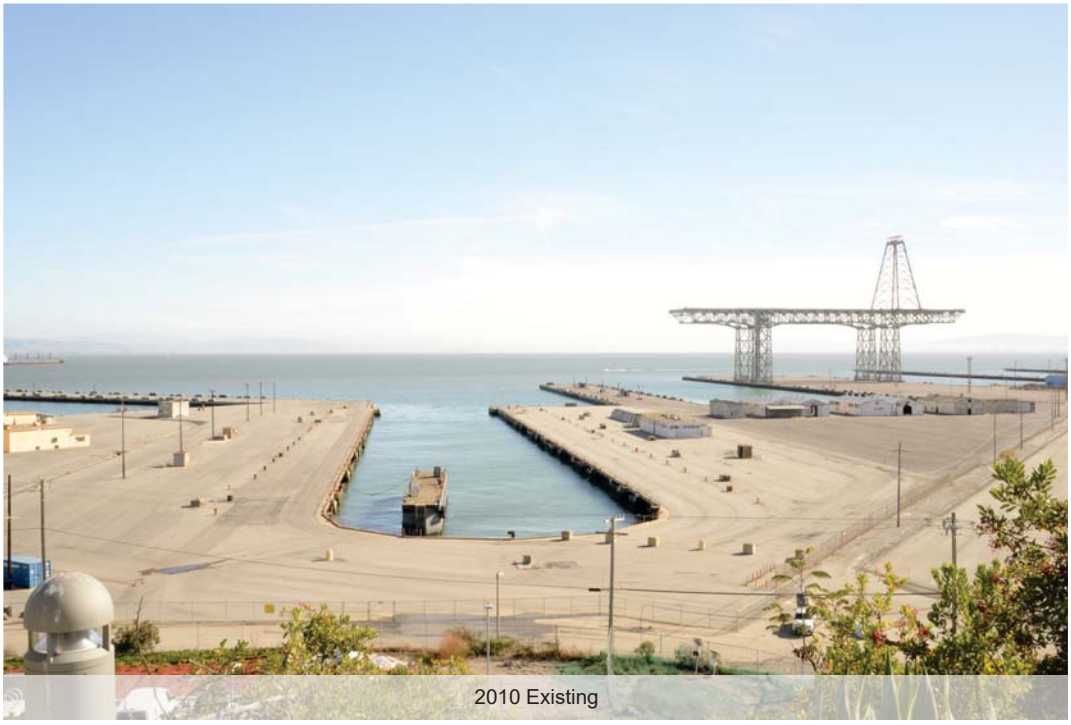
As shown in Figure 33, existing views show unmaintained remnants of the shipyard in the short- and mid-range viewshed. To the south, in the long-range viewshed, is the Re-gunning crane. Across the bay, the East Bay hills can be seen in the long-range viewshed.

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.





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

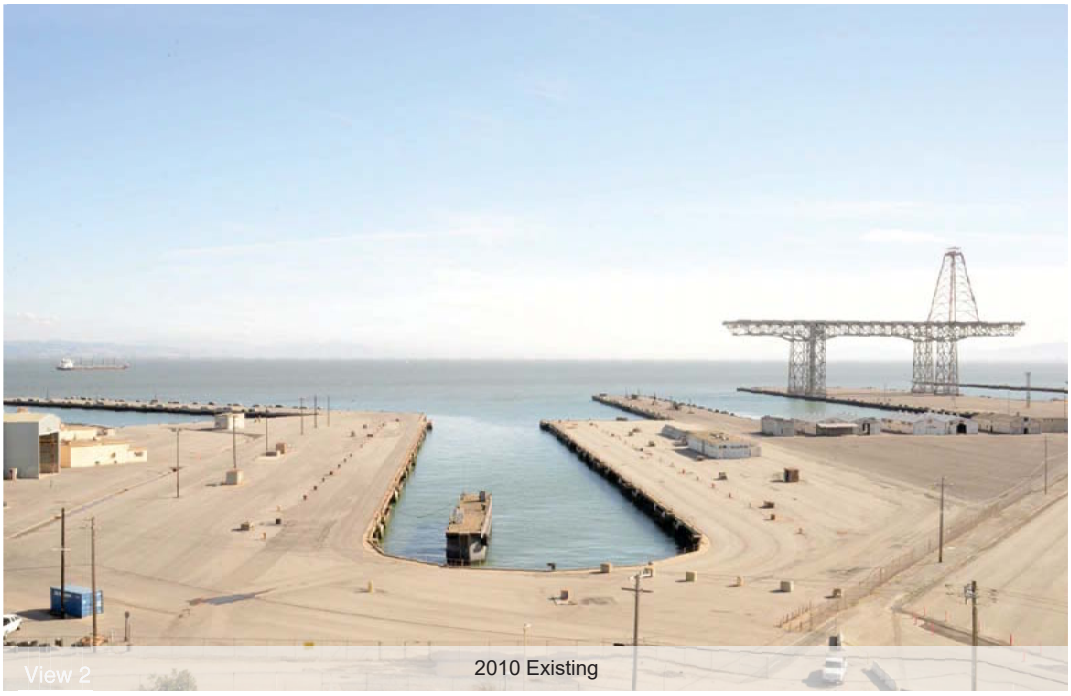
SOURCE: Square One Productions, 2018

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.



2010 Existing



2010 Proposed



2018 Proposed

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.

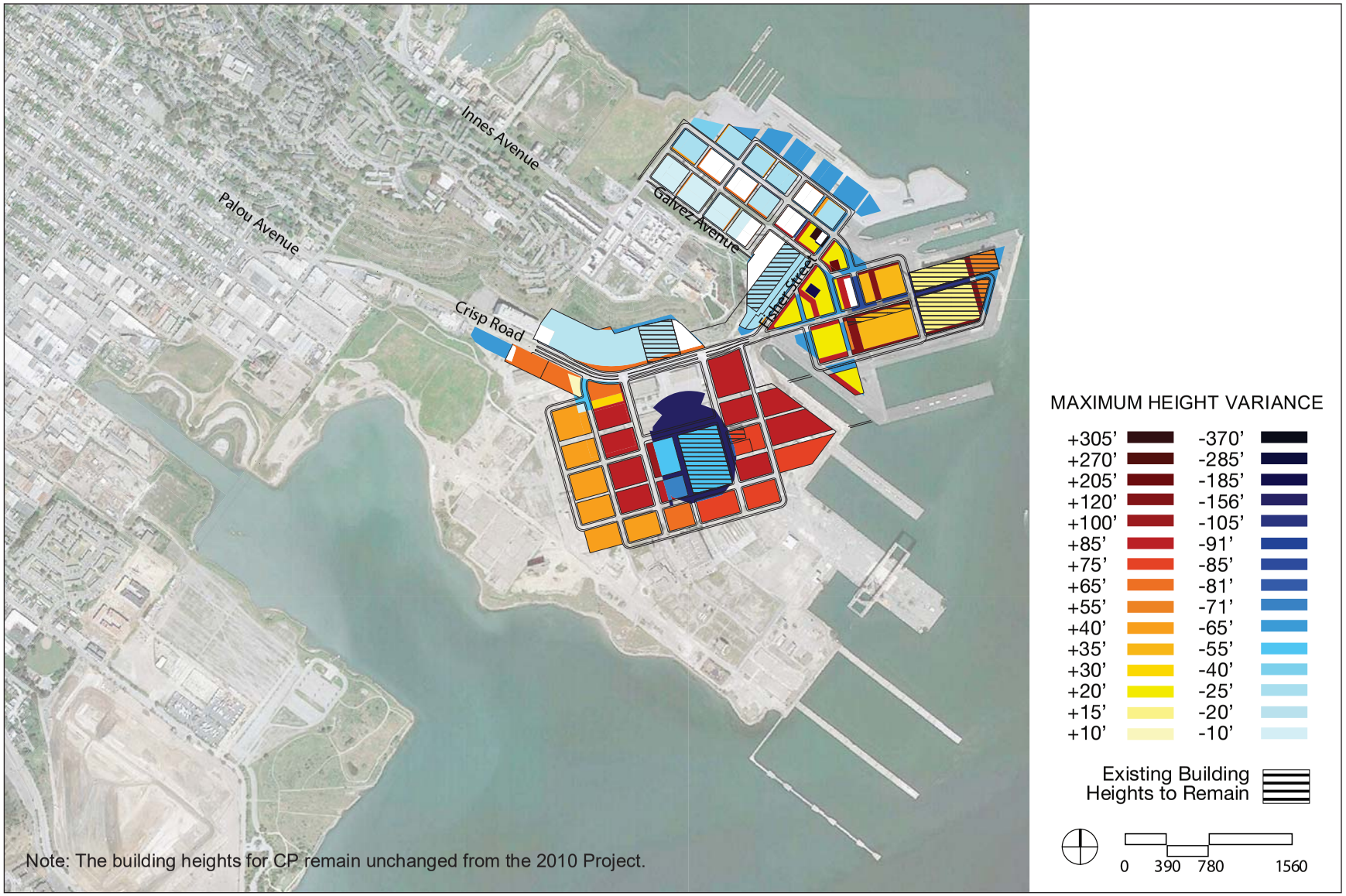
The 2010 FEIR also concluded that implementation of the Project at HPS2 would result in less-than-significant shadow impacts to SFRPD public open space in the Project vicinity, which include India Basin Shoreline Park and India Basin Flats. These parks, subject to Planning Code Section 295, are located 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

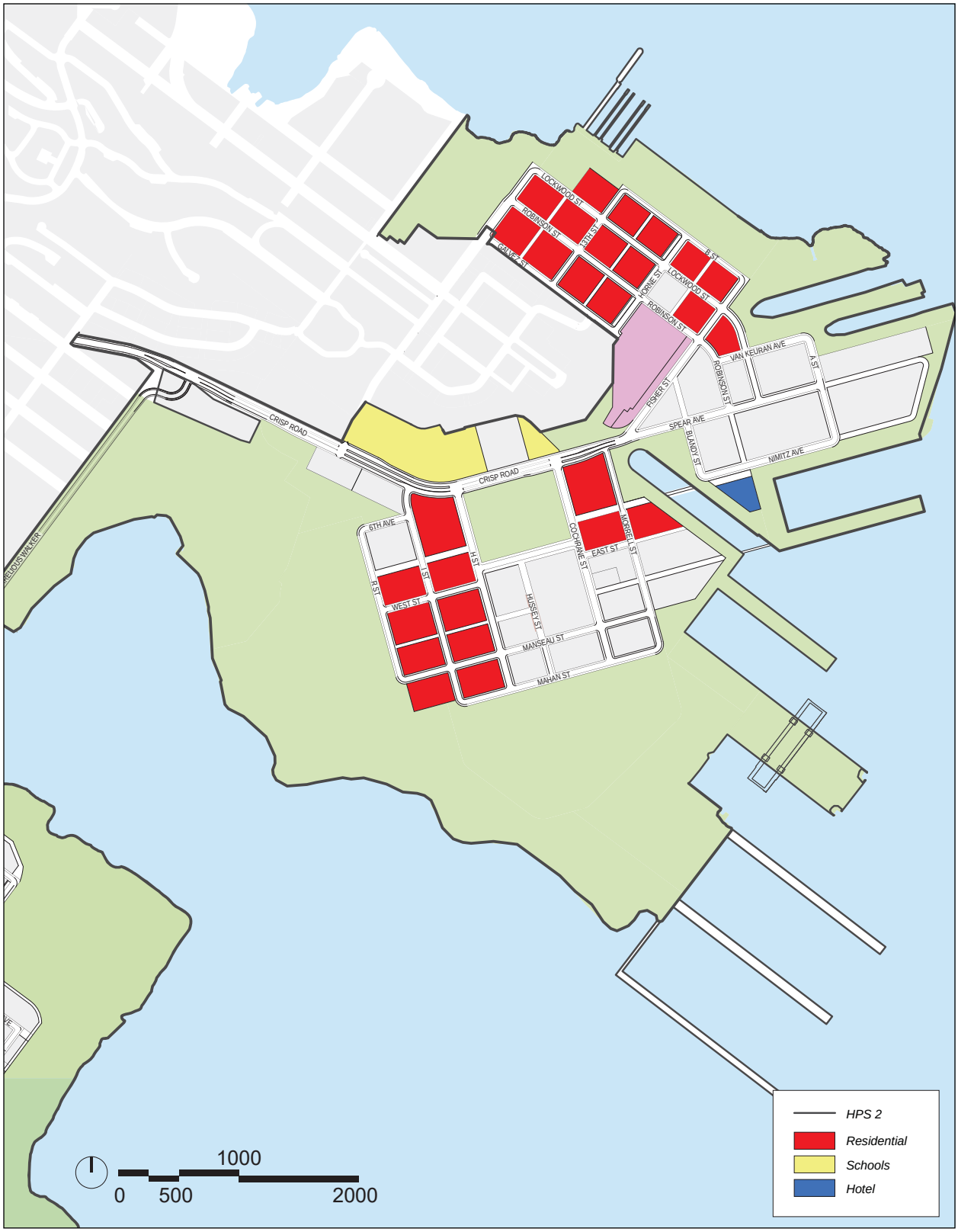
Equipment	*Typical Noise Level (dBA) 50 Feet from Source*	*Typical Noise Level (dBA) 100 Feet from Source*
Compactor	82	76
Concrete Mixer	85	79
Concrete Pump	82	76
Crane, Mobile	83	77
Dozer	85	79
Grader	85	79
Loader	85	79
Paver	89	83
Pile-driver (Impact)	101	95
Drill Rig Truck[a]	79	73
Roller	74	68
Scraper	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.

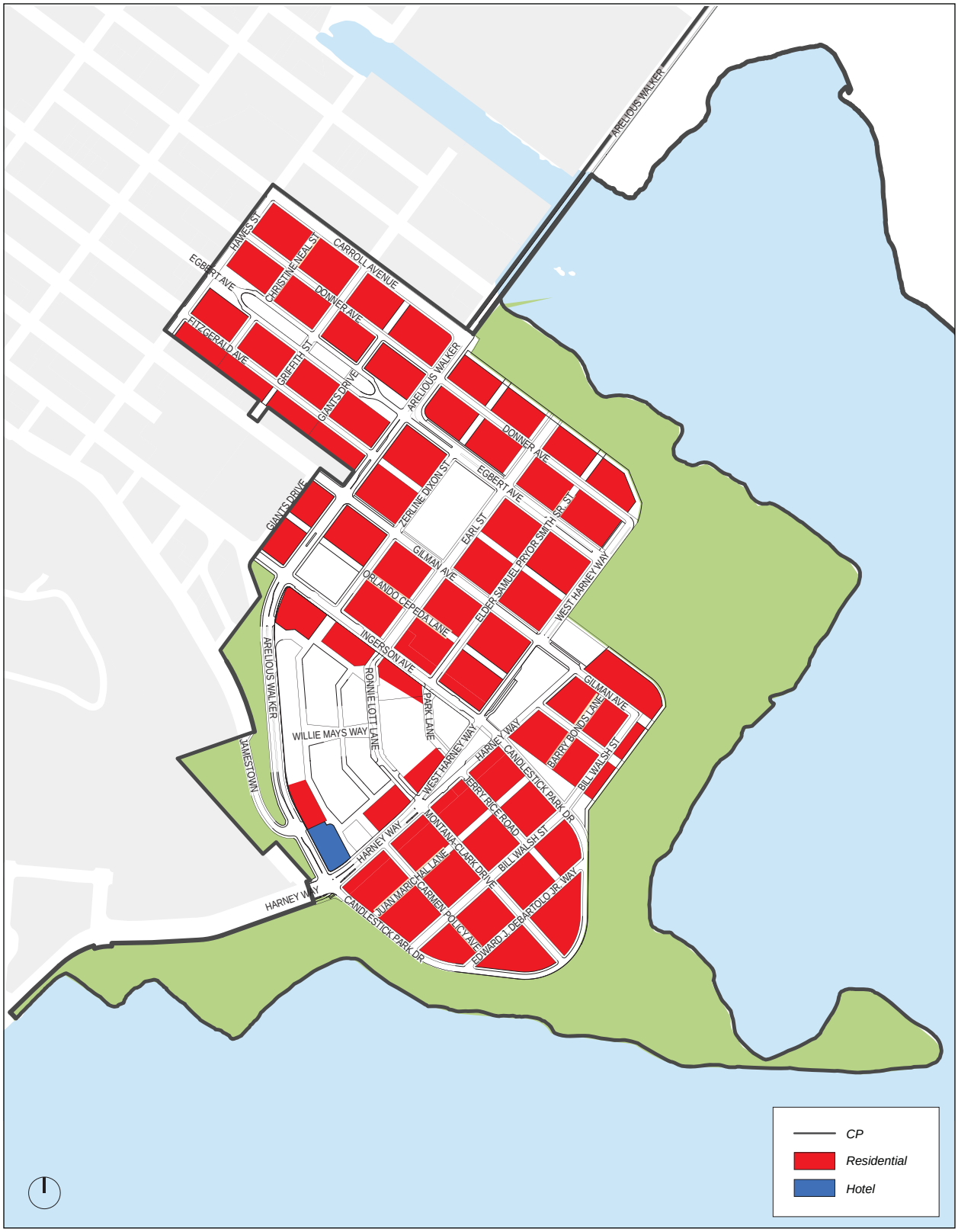
[67] U.S. Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006. Available at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf.



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 2018 Modified Project Variant)[a] (%)	Increase (Existing over 2010 Project) (cfs)	Increase (Existing over 2010 Project) (%)
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

Type of Use	2018 Energy Use Factor (MWh/sf or unit)[a]	CP		HPS2		2018 Modified Project Variant Site Total			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)
		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]			
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

		CP		HPS2		2018 Modified Project Variant Site Total						
Type of Use	*Natural Gas Use Factor, 2016 Title 24 Standards (MMBtu/sf or unit)[a]*	*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]*	*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*
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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Appendix A
Comparison Table

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TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
Revisions to Land Use Plan					
Land Use Plan	The 2010 Project consists of 10,500 residential units with an associated population of 24,465 residents; 885,000 gsf of retail; 150,000 gsf of office; 2.5 million gsf of Research & Development (R&D) uses; a 220-room, 150,000 gsf hotel; 255,000 gsf of artist studio space and an arts center; 100,000 gsf of community services; 240 acres of new parks, sports fields, and waterfront recreation areas, as well as 97 acres of new and improved State parkland; a 69,000-seat 49ers stadium; and a 10,000-seat performance arena. The permanent employee population associated with the Project is 10,730. In addition, a 300-slip marina is provided. Shoreline improvements are provided to stabilize the shoreline. The Project includes structured and on-street parking and various infrastructure improvements to support the development. Refer to Section II.E (Project Characteristics), pp. II-7 to II-49, and Table II-3 (Proposed Land Use), p. II-9. Refer also to Table A of the Findings, which is provided in this Addendum as Table 3 in the Project Description.	No changes implemented.	The Addendum 4 changes included tower relocation at CP, height increases at CP, conversion of office space to neighborhood retail space at CP, relocation of displaced on-street parking to the CP center garage, change in phasing of Harney Way off-site improvements, and revisions to the configuration of Gilman Avenue). Refer to Table 1, Candlestick Point Land Use—Approved vs. Proposed, p. 4. The text description of the Addendum 4 land use plan is provided on pp. 5 to 11.	The Addendum 5 changes[5] would primarily include land use changes at HPS. In addition, the phasing schedule for both CP and HPS would be changed. The HPS2 proposed land use modifications under this Variant generally include the following: 1. Provide for land use changes, including 3,454 residential units at HPS2 (including 172 units previously approved for HPS1), the addition of new uses, reallocation of the square footage of commercial uses to provide for a greater mix of uses at HPS2, and adjustment of the location and acreage of parks and open space, providing for more parks and open space; 2. Adjust two approved tower locations; 3. Allow building height and/or bulk changes, which will increase and decrease heights in various locations; 4. Accommodate transportation network changes associated with the street layout (including the extension of Donahue Street from LaSalle Avenue/Kirkwood Avenue to Crisp Road) and street geometrics, bicycles, and transit; 5. Addition of two pedestrian bridges over Dry Dock 4; 6. The number of parking spaces for residential and commercial garages and on-street parking would be based on approved parking ratios[6] 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; 7. Provision of water taxi service from Dry Dock 4; 8. Provide for previously identified alternative utility systems (as generally described under 2010 FEIR Alternative 4, including a solar system, a recycled water facility, 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 utility and building-scale battery storage systems); 9. Include an updated phasing plan; and 10. Include updated construction information.	• 2010 FEIR: CP and HPS Design for Development (D4D), June 2010, approved by the SFRA and SFPC • 2010 FEIR: HPS and BVHP Redevelopment Plans, June 2010, approved by the SFRA and SFPC • 2010 FEIR: Infrastructure Plan, Transportation Plan, Parks, Open Space, and Habitat Conservation Plan, and Sustainability Plan • Addendum 1: Major Phase Application, and conforming amendments to the Transportation Plan, Infrastructure Plan, Streetscape and Signage Plans, January 7, 2014, approved by OCII. • Addendum 4: CP D4D, March 2016, approved by OCII and SFPC)

[1] The page numbers refer to location in the document where each particular project component was described. The environmental analysis of that project component also occurs in the referenced document, but in a different location. The purpose of this table is to describe how the project has changed since 2010, rather than to provide a summary of the environmental impacts of those changes.
[2] Refer to Table A-2 (Comparison of 2018 Modified Project Variant to 2010 FEIR Project), Table A-3 (Comparison of 2018 Modified Project Variant to 2010 R&D Variant 1), and Table A-4 (Comparison of 2018 Modified Project Variant to 2010 Housing/R&D Variant 2A) for a quantitative comparison of the various project elements of the 2018 Modified Project Variant against the 2010 Project, R&D Variant 1, and Housing/R&D Variant 2A (e.g., residential land uses, nonresidential land uses, parking, marina, water taxi, and parks and open space).
[3] The project components described in this table represent primary land uses or project features.
[4] Attachment A (CEQA Findings) of the 2010 FEIR included the following as approved project components: the stadium project (the "main" project evaluated in the EIR), two land use variants (R&D Variant 1 and Housing/R&D Variant 2A), Tower Variant 3D, Utilities Variant 4, and Sub-alternative 4A, which includes the preservation of four historic structures at HPS.
[5] In this table, "Addendum 5" and the "2018 Modified Project Variant" refer to the project described in Addendum 5, which is the 2018 Modified Project Variant. The previous two addenda (Addendum 1 and Addendum 4) did not have specific project or variant names; therefore, the revised land use program and project elements described in those addenda are referred to as "Addendum 1" and "Addendum 4," rather than by a specific project or variant name. The project evaluated in the 2010 FEIR is referred to as the "2010 Project."
[6] Each land use has a parking ratio identified in the 2010 FEIR, which will be maintained for the 2018 Modified Project Variant. Therefore, while the land use program has been modified, which will change 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 will be provided according to the established parking ratios identified in the 2010 FEIR and this addendum, unless different ratios are agreed upon between the Applicant, EP, OCII, and any other involved parties.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
				The CP proposed modifications generally include the following: 1. Provide for 7,218 housing units at CP; and 2. Include an updated phasing plan, which will re-order CP Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02); and modify the boundary of CP-05. Refer specifically to Table 2 (2018 Modified Project Variant Land Use Program) p. 13, and Figure 5 (CP-HPS2 2010 Project Land Use Plan), p. 16 for a description and illustration of the land use program.	
Tower Locations	Under the 2010 Project, in CP, there are eleven residential towers ranging between 270 feet to 420 feet in height (pp. II-16 and II-17) in the Candlestick Point North and Candlestick Point South Districts. In addition, Variant 3 (Candlestick Point Tower Locations) provides an alternative arrangement of towers (pp. IV-173 to IV-180), ranging from a total of 10 to 12 towers. The Candlestick Point Tower Variants (A, B, C, and D) have different locations and heights and bulk of residential towers at Candlestick Point.; however, each has the same overall land use program as the Project.	No changes implemented.	Under the Addendum 4 changes, Tower G, located in CP Center (CP-02), was moved west from the middle of the block to a location on Arelious Walker Drive near Jamestown Avenue. Towers J and K were relocated in CP-04 immediately southeast of the approved locations; the heights would not change. Refer to pp. 5 to 6 and 30 to 31.	Under Addendum 5, in HPS2, Tower A would be located in the same location and on the same block as the encouraged tower location shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block, allowing flexibility as to the ultimate location of this tower. 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, allowing flexibility for its ultimate location. The heights of both towers would remain the same. Refer to Project Description section "Tower Locations and Building Heights," p. 18, and Figure 7 (Tower Locations: Towers A and B), p. 19.	• CP and HPS Design for Development (D4D), June 2010 (associated with the 2010 FEIR, approved by the SFRA and SFPC) • HPS and BVHP Redevelopment Plans, June 2010 (associated with the 2010 FEIR, approved by the SFRA and SFPC) • CP D4D, March 2016 (associated with Addendum 4, approved by OCII and SFPC)
Building Heights and Bulk	The maximum building heights at HPS range from 40 feet to 105 feet, and the maximum building heights at CP range from 40 feet to 420 feet (refer to Figure II-5 [Proposed Maximum Building Heights], p. II-12).	No changes proposed.	Some maximum building heights were increased in the area in and adjacent to CP Center (within CP) and, while certain areas would increase in maximum height, CP would still have maximum heights from 40 feet to 420 feet, which is what was analyzed in the 2010 FEIR. The primary changes in building heights include the following: • An increase in the maximum height at CP Center on the corner of West Harney Way and Ingerson Avenue from 85 feet to 120 feet to allow for a performance venue above a two-story anchor retail space (see Exhibit D, p. 1 Candlestick Center Mixed Use Height Visuals). • An increase in the maximum height along Harney Way and Ingerson Avenue within and adjacent to the CP Center from 65 feet to 80 feet, while mandating a minimum floor-to-floor height of 20 feet for the ground floor retail, and restrict residential and commercial uses above the ground floor retail to a maximum of five floors (see Exhibit D, pp. 2 to 3). • An increase in the maximum height of the building located at the corner of Arelious Walker Drive and Harney Way from 65 feet to 80 feet (See, Exhibit E, Candlestick Center Hotel Height Visuals). This building would accommodate the 220-room hotel, performance venue space, and office space and would ensure consistency in the built form along Harney Way and allow greater flexibility to design the building as an iconic entry statement to CP Center.	The proposed building heights would both increase and decrease in various locations in HPS2 on a block-by-block basis. In general, maximum heights would generally increase from 65 feet to 85 feet and from 105 feet to 120 feet, although a number of blocks would remain at a maximum of 85 feet. In addition, other blocks would decrease from a maximum of 65 feet to a maximum of 45 feet. Facade composition strategies include a greater range of examples of facade modulation, articulation, fenestration and transparency, and the use of materials and color to achieve urban form consistent with the shipyard vision. Buildings with large floor-plates would be required to apply additional strategies to reduce building massing. Refer to Project Description section "Tower Locations and Building Heights," p. 18, and Figure 8 (Building Heights), p. 21.	• CP and HPS Design for Development (D4D), June 2010 (associated with 2010 FEIR, approved by the SFRA and SFPC) • HPS and BVHP Redevelopment Plans, June 2010 (associated with the 2010 FEIR, approved by the SFRA and SFPC) • CP D4D, March 2016 (associated with Addendum 4, approved by OCII and SFPC)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
Stadium Lighting	Under the 2010 Project, the top of the stadium light towers at the new HPS2 stadium (relocated from CP) are at an approximate elevation of 192 feet. The stadium lighting meets criteria for lighting for players, spectators and television broadcasts, and provides 250 footcandles to 300 foot-candles at the field level. The 192-foot tall lighting units allows the light to be angled downward and uses fixtures that focus light on the field and reduce glare. In addition, because the stadium height reaches 156 feet above the playing field, the illuminated portion of the playing field is not be visible from adjacent areas.	No changes proposed.	No changes proposed.	No changes proposed.	
Revisions to Phasing					
Project Phasing Schedule	Project phasing (or construction activities) begins in 2011 and ends in 2031 (for a total of 20 years). Refer to 2010 FEIR Table III.C-8 (Project Construction Employment), p. III.C-13.	Under Addendum 1, the project phasing changed because the Candlestick Park stadium site is available for development sooner than previously anticipated due to the 49ers football team's move to a new stadium in Santa Clara in 2014. In response to these changes, the project sponsor changed the Project Phasing Schedule as follows: ● Demolition of Candlestick Park stadium and construction of the Candlestick Point Regional Retail Center in Major Phase 1 instead of Major Phase 3 as shown in the 2010 Project Phasing Schedule. ● Development of all of the research and development blocks on Parcel C in HPS Phase II in Major Phase 3 instead of splitting this development between Major Phases 2 and 3 as shown in the 2010 Project Phasing Schedule. ● Development of all improvements in the HPS Phase II South area in Major Phase 4 instead of splitting this development among Major Phases 2, 3, and 4 as shown in the 2010 Project Phasing Schedule. Under the modified Phasing Schedule, construction activities at Candlestick Point will occur from 2014 through 2035. Refer to pp. 3 to 4 and Tables 1 to 3, pp. 7 to 8.	No changes proposed.	The Project phasing (or construction activities) under the 2018 Modified Project Variant would total 21 years, which is the same construction time period assumed in the 2010 FEIR. However, the beginning date of construction would be delayed by approximately 3 years (from 2011 to 2014) and the construction would end three years later (in 2034 rather than 2031). Refer to Table 8 (Construction Employment), p. 86. 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 the three Major Phase applications would be submitted at the same time. 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 towards the northeast, rather than to the north. Boundary changes would also occur in CP, including reordering CP Major Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; removing a parcel from the CP boundary (the Jamestown Parcel, in CP-02); and modifying the boundary of CP-05.	● Phasing Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA)
Revisions to Utility Systems					
Auxiliary Water Supply System (AWSS)	The Project provided an AWSS loop within CP. At HPS2, the AWSS connects to the existing AWSS system at the intersection of Earl Street and Innes Avenue and at the Palou Avenue and Griffith Avenue intersection with a looped service along Spear Avenue/Crisp Road. Refer to p. II-46.	The modified Plan proposed a different piping layout than previously contemplated in the 2010 FEIR, as well as the addition of two Portable Water Supply Systems (PWSS), instead of loop systems; this also necessitated a revision to MM UT-2. Refer to pp. 4 to 5, 10, and 50 to 51.	No changes proposed.	No changes proposed.	● Infrastructure Plan (appendix to Disposition and Development Agreement), June 2010 (associated with the 2010 FEIR, approved by the SFRA) ● Infrastructure Plan, November 2014 (associated with Addendum 1, approved by the SFPUC)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
EcoDistrict	The Utilities Variant assumes the implementation of additional on-site utility infrastructure, including (1) district heating and cooling, (2) on-site wastewater treatment, and (3) an automated trash collection system. All land uses at CP and HPS2 were constructed at the same locations and at the same intensities proposed with the Project, although some minor shifts in building locations can occur to accommodate some elements of the proposed utility systems, which requires some additional built space. Additionally, the 2010 FEIR acknowledges the Project Sponsor's intentions to use renewable energy strategies at HPS2, including the use of photovoltaic cells to reduce energy usage. Refer to pp. IV-231 to IV-237.	No changes proposed.	No changes proposed.	The 2018 Modified Project Variant would include a ground source geothermal heating and cooling system (a form of a district heating and cooling system, as proposed in the 2010 FEIR), solar power (as proposed in the 2010 FEIR as photovoltaic cells), and recycled water (as proposed in the 2010 FEIR [on-site wastewater treatment]). The specific components of the geothermal heating and cooling system include three small-scale central utility plants (CUPs), a vertical bore geothermal heat exchange system, a four-pipe chilled and hot water return and supply distribution system, and water-to-air and water-to-water heat exchangers that transfer heating and cooling to building HVAC systems.	• Infrastructure Plan (appendix to Disposition and Development Agreement), June 2010 (associated with the 2010 FEIR, approved by the SFRA)
Revisions to Transportation and Transit System					
Transportation System (Vehicular and/or Pedestrian)	The street network extended the existing grid of the adjacent Bayview Hunters Point (BVHP) neighborhood into the Project site. The internal street network is composed of seven types of streets consistent with and classified by the San Francisco Better Streets Plan (Draft for Public Review, June 2008), including: Commercial Throughway; Residential Throughway, Neighborhood Commercial Street, Neighborhood Residential Street, Parkway, Park Edge Street and Alley. The street network, including proposed off-site improvements, is illustrated in Figure II-11 (Proposed Street Network), p. II-36.	This project refinement proposed changes to roadway cross-section dimensions and alignments from those shown in the previously approved August 3, 2010, Transportation Plan. Refinements to roadway cross sections were proposed to continue to 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 refinements included (1) cross-section dimensions for various street components, such as width of parking lanes, width of travel lanes, and width of bicycle lanes; (2) converting the proposed Bus Rapid Transit (BRT) lanes from a two-way, side-running alignment to a center-running alignment, where possible, to be consistent with other priority transit corridors in San Francisco; (3) reorientation of some streets in CP; (4) provision of a new cycle track facility that closes a gap in the bicycle network near the project's CP retail center, extending west of the project site, along Harney Way toward US-101 and replacing the originally-proposed Class II bicycle lanes on both sides of the street; (5) Class II bicycle lanes would be removed from Earl Street to narrow the street and to maximize the space available for public parks on the west side of the street; (6) widen the Yosemite Slough Bridge by 4 feet, which was wider than the previously-approved non-stadium alternative, but substantially narrower than the approved stadium alternative, and accommodated bicycle and pedestrian circulation and maintenance vehicles on both sides of the bridge; (7) streets in the Hunters Point South neighborhood were re-oriented to allow for the BRT route to penetrate the center of the neighborhood at the intersection of Crisp Avenue/Fischer Street; and (8) narrow the	No changes proposed.	The 2018 Modified Project Variant would incorporate refinements to certain elements of the approved transportation plan related to roadway cross-section dimensions and alignments and phasing at HPS2. Refinements 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.	• Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA) • Transportation Plan, August 2014 (associated with Addendum 1, approved by the SFMTA)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
		ultimate cross section of Arelious Walker Drive to include only two travel lanes in each direction separated by a median and to eliminate the previously proposed on-street parking and Class II bicycle lanes, which were replaced by a two-way cycle track running through the heart of the project along Harney Way and two-way BRT lanes would be provided between Egbert Street and Carroll Avenue. Refer to pp. 11 to 18 and revised MM TR-16, which relates to the widening of Harney Way. Also, all roadway improvements were implemented at the same triggers or sooner (relative to development levels) as described in the 2010 FEIR.			
Transit Improvements	Supported by Project revenues and infrastructure, the San Francisco Municipal Transportation Agency implemented the following transit services: ● Extending existing Muni bus routes to better serve the Project site ● Increasing frequencies on existing routes to provide more capacity ● Complementing existing routes with new transit facilities and routes that would serve the Project's proposed land use program and transit demand Connecting to regional transit with BRT Bicycle routes provides connections within the Project site, to the surrounding neighborhoods, and to other parts of the City. Bicycle routes would be located along major roadways, consistent with City guidelines and adopted bicycle plans. As noted above, the Bay Trail, which accommodates bicycle travel, extends along the entire Project waterfront. Secure bicycle parking was provided in each commercial parking facility and residential garages. The Project pedestrian network, together with its land use design, encourages walking as a primary mode of transportation within the Project site. Refer to 2010 FEIR pp. II-39 to II-41.	At build out, the modified project's transit network was nearly identical to what was described in the 2010 FEIR, although two minor changes were proposed—specifically, changes to the routes for the 29 Sunset in CP and to all routes in HPS2 associated with a one-block shift of the planned Hunters Point Shipyard Transit Center. Changes to the transit phasing were expected to delay the provision of transit service to the Hunters Point Shipyard site in response to the corresponding delay in development of this site. In response to the acceleration of planned development in Candlestick Point, transit service at Candlestick Point was accelerated. In addition, there were minor refinements to the proposed bicycle network, minor changes to sidewalk widths, and a slight reduction in parking spaces. Refer to pp. 19 to 28.	No changes proposed.	In the approved transit network (refer to Figure 11 [HPS2 Transit Layover Detail], p. 31), 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), p. 30. The transit center would continue to serve the Shipyard North Residential and Shipyard Village Center Cultural Districts, but would have 14 bus bays (an increase of four bus bays). As shown on Figure 10 and Figure 11, in the HPS2 proposed modifications, four existing MUNI-bus lines servicing the Shipyard (Route 44-O'Shaughnessy, Route 48-Quintara, Route 28R-19th, and Route 24-Divisidero) 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. There would also be minor modifications to the bicycle network, as shown in Figure 26 (2018 Modified Project Variant Bicycle Network Plan), p. 129, as well as the provision of two new bridges over Dry Dock 4.	● Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA) ● Transportation Plan, August 2014 (associated with Addendum 1, approved by the SFMTA)
Bicycle Improvements	Bicycle routes provide connections within the Project site, to the surrounding neighborhoods, and to other parts of the City. Bicycle routes would be located along major roadways, consistent with City guidelines and adopted bicycle plans. As noted above, the Bay Trail, which accommodates bicycle travel, extends along the entire Project waterfront. Secure bicycle parking is provided in each commercial parking facility and residential garages. Refer to p. II-41.	No changes proposed.	No changes proposed.	The Bay Trail would remain the same, while the configuration and location of Class I to IV bike facilities would change, as shown in Figure 26 (2018 Modified Project Variant Bicycle Network Plan), p. 129.	● Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA)
Parking	Described in 2010 FEIR.	The modified Project resulted in slightly fewer parking spaces on-street than the maximum envelope anticipated in the 2010 FEIR.	● The modified project changed the number of on-street and off-street parking spaces.	Adjust the number of parking spaces for residential and commercial garages and on-street parking based on approved parking ratios and revised street layouts, respectively.	● Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA) ● Transportation Plan, August 2014 (associated with Addendum 1, approved by the SFMTA)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
Pedestrian Bridges	None.	None.	None.	Addition of two pedestrian bridges over Dry Dock 4.	
Water Taxi Service	None.	None.	None.	Provision of water taxi service from Dry Dock 4.	
Revisions to Mitigation Measures					
MM TR-16	**MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to issuance of the grading permit for Development Phase 2 of the Project, the Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to the issuance of grading permits for Phases 2, 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.	*The project sponsor revised mitigation measure MM TR-16 to provide that Harney Way would be widened prior to the issuance of occupancy permits for the second sub-phase of Major Phase 1 (CP-02), since the first sub-phase in Major Phase 1 in Candlestick Point (CP-01) would not connect to Harney Way and improvements to Harney Way would not affect auto capacity associated with CP-01:* **MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to issuance of the ~~grading~~ occupancy permit for ~~Development Phase 1 of the Project,~~ Candlestick Point Sub-Phase CP-02, 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. Prior to the issuance of grading permits for Candlestick Point Major Phases 2, 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.	*Delays associated with two nearby major transportation projects—the extension of Geneva Avenue and the replacement of the US 101/Harney Way interchange—delayed the final design of the BRT alignment. Given these delays, it is unlikely that the BRT alignment would be finalized by 2019. Consequently, the improvements anticipated in the initial configuration of Harney Way, which includes several BRT-related improvements, would be changed by this delay, which are proposed by further changes to MM TR-16:* **MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. ~~Prior to the issuance of the occupancy permit for Candlestick Point Sub-Phase CP-02, t~~The 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. Prior to the issuance of grading permits for Candlestick Point Major Phases 2, 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 intersections on Harney Way at mid-LOS D (i.e., at an average delay per vehicle	**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 intersections 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.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
			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.		
MM TR-17	**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 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), the Project Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard.	No changes proposed.	No changes proposed.	**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	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	• 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.			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.	
MM TR-23.1	**MM TR-23.1** Maintain the proposed headways of the 29-Sunset. To address Project impacts to the 29-Sunset, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset. • For the five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, prohibit on-street parking on westbound Gilman Avenue during the AM and PM peak periods to provide for three westbound travel lanes. During the peak periods convert one of the three westbound travel lanes to transit-only. During off-peak periods, parking would be allowed, and buses would travel in one of the two mixed-flow lanes. The peak period transit lanes would impact 90 parking spaces. • For the same five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, restripe the eastbound direction to provide two travel lanes, one of which would accommodate on-street parking and one of which would be a mixed-flow travel lane. During the AM and PM peak periods, prohibit on-street parking in the eastbound direction, and operate one of the two eastbound lanes as transit-only lanes. The peak period transit lanes would impact 80 parking spaces. • As an alternative to the two bulleted measures above, convert one of the travel lanes in each direction on Gilman Avenue from Third Street to Griffith Street to transit-only. This would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Gilman Avenue. This would preserve on-street parking along the corridor and provide four-block transit-only lanes on Gilman Avenue between Griffith Street and Third Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Subsequent to publication of the Draft EIR, SFMTA and the Project Applicant conducted an	No changes proposed.	*Mitigation measure MM TR-23.1 would bring the transit travel times for the 29 Sunset to levels consistent with the mitigated EIR scenario (as necessitated due revisions of the configuration to Gilman Avenue):* **MM TR-23.1** Maintain the proposed headways of the 29-Sunset. To address project impacts to the 29-Sunset, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset. • ~~For the five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, prohibit on-street parking on westbound Gilman Avenue during the AM and PM peak periods to provide for three westbound travel lanes. During the peak periods convert one of the three westbound travel lanes to transit-only. During off-peak periods, parking would be allowed, and buses would travel in one of the two mixed-flow lanes. The peak period transit lanes would impact 90 parking spaces.~~ • ~~For the same five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, restripe the eastbound direction to provide two travel lanes, one of which would accommodate onstreet parking and one of which would be a mixed-flow travel lane. During the AM and PM peak periods, prohibit on-street parking in the eastbound direction, and operate one of the two eastbound lanes as transit-only lanes. The peak period transit lanes would impact 80 parking spaces.~~ • ~~As an alternative to the two bulleted measures above, narrow the existing sidewalks on Gilman~~	No changes proposed.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	evaluation of this alternative measure and determined that is a feasible and viable alternative to the two bulleted items above, ● Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.		~~Avenue from Third Street to Griffith Street (four blocks) from 5 feet to 12 feet in width. The resulting 12-foot-wide sidewalks would be consistent with the Better Streets Plan guidelines. The reduction in sidewalk width would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Gilman Avenue. This would preserve on-street parking along the corridor and provide four-block transit-only lanes on Gilman Avenue between Griffith Street and Third Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic.~~ ● Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno. ● Implement traffic signal priority (TSP), which modifies the timing at signalized intersections to prioritize the movement of transit vehicles, at the intersections of Arelious Walker/Gilman Avenue, San Bruno Avenue/Paul Avenue, and Bayshore Boulevard/Paul Avenue. ● Implement a far-side stop in the eastbound and westbound directions at the intersection of Third Street/Gilman Avenue and a far-side stop in the westbound direction at the intersection of San Bruno/Paul Avenue. ● Implement a peak period, transit-dedicated lane in the westbound direction along Paul Avenue between Third Street Bayshore Boulevard. The transit land would begin on Gilman Avenue and extend through the intersection to Paul Avenue. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.		

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
R&D Variant (Variant 1), /Housing/R&D Variant (Variant 2A)/2018 Modified Project Variant Mitigation Measure MM TR-VAR1	**R&D Variant Mitigation Measure:** (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/left-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues. Implementation of this mitigation would reduce impacts from these variants to a less-than-significant level. (b) Under the R&D 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.	No changes proposed.	No changes proposed.	**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. ——————— *The Board recognizes that these mitigation measures are partially within the jurisdiction of SFMTA and SFDPW. The Board urges SFMTA and SFDPW to assist in implementing these mitigation measures, and finds that SFMTA and SFDPW can and should participate in implementing these mitigation measures.*	
MM NO-2a	**MM NO-2a** Pre-construction Assessment to Minimize Pile Driving 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 impacts prior to receiving a building permit. 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	No changes proposed.	No changes proposed.	**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.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	and ground stabilization measures shall be reevaluated and approved by DBI.			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.[7] The trench should be long enough to effectively shield the structure from DDC vibrations.	
MM CP-2a	**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. The archaeological consultant shall undertake an 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	No changes proposed.	No changes proposed.	**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~~.~~,	

[7] ENGEO Incorporated, *Potential Constraints on Implementation of Deep Dynamic Compaction*, December 14, 2017, p. 1.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	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 archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP. The ATP shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by the Project, 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			*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.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	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 soil-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. <u>Archaeological Data Recovery Program:</u> 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			<u>Archaeological Monitoring Program:</u> 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 soil-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. <u>Archaeological Data Recovery Program:</u> The archaeological data recovery program shall be conducted in accord with an	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	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. <u>Human Remains and Associated or Unassociated Funerary Objects:</u> The treatment of human remains and associated or unassociated funerary objects discovered during any soil-disturbing activity shall comply with applicable state and federal laws. This shall include immediate notification of the Coroner of the City and County of San Francisco and in the event of the Coroner'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 archaeological consultant, Project Applicant, and MLD shall 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 take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. <u>Final Archaeological Resources Report:</u> 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			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. <u>Human Remains and Associated or Unassociated Funerary Objects:</u> The treatment of human remains and <u>of</u> associated or unassociated funerary objects discovered during any soil<u>s</u>-disturbing activity shall comply with applicable state and federal laws~~. This shall include~~ <u>including</u> immediate notification of the ~~Coroner~~ <u>Office of the Chief Medical Examiner</u> of the City and County of San Francisco and in the event of the ~~Coroner's~~ <u>Medical Examiner's</u> 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). <u>The ERO shall also be immediately notified upon discovery of human remains.</u> The archaeological consultant, Project ~~Applicant~~ <u>Sponsor, ERO,</u> and MLD shall <u>have up to but not beyond six days after the discovery to</u> make all reasonable efforts to develop an agreement for the treatment of human remains	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	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.			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.	
MM GE-5a	**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	No changes proposed.	No changes proposed.	**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	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	practices, and analyses of structural design 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 critical utilities and 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 ● The Project CEG or GE shall be responsible for ensuring compliance with these requirements.			Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices, and analyses of structural design 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: <u>Structural Measures</u> ● 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 <u>Ground Improvement Measures</u> ● 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 ● <u>Deep displacement grout columns to densify loose soil and provide additional bearing support beneath foundations</u> ● The Project CEG or GE shall be responsible for ensuring compliance with these requirements.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM HY-6a.1	**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 Design Guidelines. 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. The Project Applicant shall comply with requirements of the Draft San Francisco Stormwater Design Guidelines. 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, the Project Applicant shall submit a 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[8] 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 inches of rainfall (LEED® SS6.2), and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.2 inches per hour. Treatment trains shall be used where feasible.	No changes proposed.	No changes proposed.	**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[9] 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.,	

[8] 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.

[9] 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.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	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 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.			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~~5~~4 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 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.	
MM HY-12a.1	**MM HY-12a.1** Finished Grade Elevations Above Base Flood Elevation. The Project site shall be graded such that finished floor elevations are 3.5 feet above the Base Flood Elevation (BFE), and streets and pads are 3 feet above BFE to allow for future sea level rise, 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 to revise the City's Interim Floodplain Map. 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 SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.	No changes proposed.	No changes proposed.	**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.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM HY-12a.2	**MM HY-12a.2** Shoreline Improvements for Future Sea-Level Rise. Shoreline and public access improvements shall be designed 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. 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, public facilities, and public access improvements will be protected should sea level rise exceed 16 inches at the perimeter of the Project. 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.	No changes proposed.	No changes proposed.	**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.	
MM HY-14	**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.[10] Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.	No changes proposed.	No changes proposed.	**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.~~.~~[11] (or updated Shoreline Improvements Reports). Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.	

[10] Moffatt & Nichols, 2009, Candlestick Point / Hunters Point Redevelopment Project Proposed Shoreline Improvements, prepared for Lennar Urban, September, 2009.
[11] Moffatt & Nichols, 2009, Candlestick Point / Hunters Point Redevelopment Project Proposed Shoreline Improvements, prepared for Lennar Urban, September, 2009.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM BI-19b	**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).[12] The window in which 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.[13] Therefore, the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is March 1 to November 30.	No changes proposed.	No changes proposed.	**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).[14] The window in which 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.[15] 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.	
MM BI-20a.1	**MM BI-20a.1** Lighting Measures to Reduce Impacts to Birds. During 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. ● Use 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. ● Extinguish all exterior lighting (i.e., rooftop floods, perimeter spots) not required for public safety. ● 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.	No changes proposed.	No changes proposed.	**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	

[12] US Army Corps of Engineers, US 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.
[13] US Army Corps of Engineers, US 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.
[14] US Army Corps of Engineers, US 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.
[15] US Army Corps of Engineers, US 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.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	● 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.			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	**MM BI-20a.2** Building Design Measures to Minimize Bird Strike Risk. During design of any building greater than 100 feet tall, 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 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. ● 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. ● 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. The City/Agency shall ensure that building design-related measures to reduce the risk of bird collisions have been incorporated to the extent practicable.	No changes proposed.	No changes proposed.	**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.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM RE-2	**MM RE-2** Phasing of parkland with respect to residential and/or employment generating uses. Development of the Project and associated parkland shall generally 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 parks and population increase substantially concurrently, 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.	No changes proposed.	No changes proposed.	**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.	
MM UT-2	**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) loop within Candlestick Point to connect to the City's planned extension of the off-site system off-site on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS loop on HPS Phase II to connect to the existing system at Earl Street and Innes Avenue and at Palou and Griffith Avenues, with looped service along Spear Avenue/Crisp Road.	*Revision to MM UT-2 would reflect a different piping layout and the addition of two Portable Water Supply Systems, as follows:* **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) ~~loop~~ within Candlestick Point to connect to the City's planned extension of the offsite system off-site on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS ~~loop~~ on HPS Phase II to connect to the existing system at Earl Street and Innes Avenue and at Palou and Griffith Avenues, with ~~looped~~ service along Spear Avenue/Crisp Road.	No changes proposed.	**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.	
MM GC-2	**MM GC-2** Exceed the 2008 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses would by at least 15 percent.	No changes proposed.	No changes proposed.	**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~~.	

Table A-2: Comparison of 2018 Modified Project Variant to 2010 Project

	2010 FEIR PROJECT			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NONRESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	1,860,000 SF	**1,860,000** SF	0 SF	0 SF	**0** SF	0 SF	-1,860,000 SF	**-1,860,000** SF
	0 SEATS	69,000 SEATS	**69,000** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	-69,000 SEATS	**-69,000** SEATS
R&D/Office	150,000 SF	2,500,000 SF	**2,650,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,765,000 SF	**1,765,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**4,790,000** SF	**5,975,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**711,000** SF	**711,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,028 SPACES	**6,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	3,124 SPACES	**3,514** SPACES
Parking Total	**10,196** SPACES	**6,678** SPACES	**16,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**3,928** SPACES	**3,686** SPACES
± On-street Parking	1,360 SPACES	683 SPACES	**2,043** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	804 SPACES	**804** SPACES
Dedicated Stadium Parking	0 SPACES	12,665 SPACES	**12,665** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	-12,665 SPACES	**-12,665** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	140.0 AC	148.1 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	33.9 AC	34.8 AC
New Sports Fields & Active Urban Recreation	0.0 AC	91.6 AC	91.6 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-33.5 AC	-33.5 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**231.6** AC	**336.4** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**0.4** AC	**1.3** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table II-3 & Table II-6 of the FEIR.

[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] Includes 400 high school 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] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

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

[f] Includes 71,000 square feet 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 CPHPS2 from 10,500 to 10,672.

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

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-3: Comparison of 2018 Modified Project Variant to 2010 R&D Variant (Variant 1)

	2010 R&D VARIANT (VARIANT 1)			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NONRESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	5,000,000 SF	**5,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	-735,000 SF	**-735,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**5,430,000** SF	**6,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**71,000** SF	**71,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	7,028 SPACES	**9,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	124 SPACES	**514** SPACES
Parking Total	**10,196** SPACES	**9,678** SPACES	**19,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**928** SPACES	**686** SPACES
± On-street Parking	1,360 SPACES	1,678 SPACES	**3,038** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	-191 SPACES	**-191** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	152.4 AC	160.5 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	21.5 AC	22.4 AC
New Sports Fields & Active Urban Recreation	0.0 AC	69.8 AC	69.8 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-11.7 AC	-11.7 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**222.2** AC	**327.0** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**9.8** AC	**10.7** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-3 & Table II-5 of the FEIR.

[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] Includes 400 high school 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] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

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

[f] Includes 71,000 square feet 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 CPHPS2 from 10,500 to 10,672.

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

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-4: Comparison of 2018 Modified Project Variant to 2010 Housing/R&D Variant (Variant 2A)

	2010 HOUSING/R&D VARIANT 2A			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NONRESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	3,000,000 SF	**3,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,265,000 SF	**1,265,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF[e]	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000**	**3,430,000** SF	**4,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**2,071,000** SF	**2,071,000** SF
RESIDENTIAL	**6,225** UNITS	**4,275** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**993** UNITS	**-821** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	6,225 SPACES	4,275 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	993 SPACES	-821 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,428 SPACES	**6,774** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	2,724 SPACES	**3,114** SPACES
Parking Total	**8,571** SPACES	**8,703** SPACES	**17,274** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**1,383** SPACES	**1,903** SPACES	**3,286** SPACES
± On-street Parking	1,360 SPACES	1,428 SPACES	**2,788** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	59 SPACES	**59** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	150.9 AC	159.0 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	23.0 AC	23.9 AC
New Sports Fields & Active Urban Recreation	0.0 AC	70.9 AC	70.9 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-12.8 AC	-12.8 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**221.8** AC	**326.6** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**10.2** AC	**11.1** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-19a & Table IV-21a of the FEIR.

[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] Includes 400 high school 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] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

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

[f] Includes 71,000 square feet 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 CPHPS2 from 10,500 to 10,672.

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

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

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)

	2010 PROJECT	2010 R&D VARIANT (VARIANT 1)	2010 HOUSING/R&D VARIANT (VARIANT 2A)	2018 MODIFIED PROJECT VARIANT
Hunters Point Shipyard Phase II (HPS2)				
NEW PARKS				
Grassland Ecology Park	82.1	82.7	83.4	106.8
Heritage Park	15.6	15.6	15.6	15.5
Hunters Point Mini Park	0.0	0.0	0.7	0
Hunters Point Neighborhood Park	0.0	0.0	0.9	0
Hunters Point Park Blocks	0.0	4.5	0.0	0
Hunters Point South Park	0.0	0.0	2.0	0
Hunters Point Wedge Park	0.0	2.8	3.1	0
Northside Park	12.8	12.8	12.8	12.8
R&D Plaza	0.0	2.1	0.0	0
Shipyard Hillside Open Space	0.0	0.0	0.0	2.4
Water Room/Dry Dock 4	0.0	0.0	0.0	7.3
Waterfront Promenade	29.5	31.9	32.4	29.1
Subtotal	**140.0**	**152.4**	**150.9**	**173.9**
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION				
Maintenance Yard	0.0	0.0	0.0	5.5
Multi-Use Lawn/Fields	25.2	22.4	25.2	20.5
Sports Field Complex	59.7	40.7	39.0	28.7
Waterfront Recreation & Event Pier	6.7	6.7	6.7	3.4
Subtotal	**91.6**	**69.8**	**70.9**	**58.1**
HPS2 POSH Total	**231.6**	**222.2**	**221.8**	**232.0**
OTHER PARKS				
Green Room	0.0	0.0	0.0	8.1
Gunning Crane Pier Habitats	9.5	9.5	9.5	9.2
Shipyard Hillside Open Space	2.6	2.6	2.6	0.0
Horne Boulevard Park	0.6	0.6	0.6	0.0
Subtotal	**12.7**	**12.7**	**12.7**	**17.3**
HPS2 Total	**244.3**	**234.9**	**234.5**	**249.3**
Candlestick Point				
NEW PARKS				
Alice Griffith Neighborhood Park	1.4	1.4	1.4	1.4
Bayview Gardens/Wedge Park	2.5	2.5	2.5	3.7
Candlestick Point Neighborhood Park	3.1	3.1	3.1	3.1
Mini Wedge Park	1.1	1.1	1.1	0.8
Subtotal	**8.1**	**8.1**	**8.1**	**9.0**
STATE PARK LAND				
Bayview Gardens North	9.5	9.5	9.5	9.5
Grasslands South	10.3	10.3	10.3	10.3
The Heart of the Park (Includes new State Park)	15.4	15.4	15.4	15.4
Last Port (includes new State Park)	14.6	14.6	14.6	14.6
The Last Rubble	24.5	24.5	24.5	24.5
The Neck (includes new State Park)	4.9	4.9	4.9	4.9
The Point	6.1	6.1	6.1	6.1
Wind Meadow	11.4	11.4	11.4	11.4
Subtotal	**96.7**	**96.7**	**96.7**	**96.7**
CP POSH Total	**104.8**	**104.8**	**104.8**	**105.7**
OTHER PARKS				
Bayview Hillside Open Space	2.9	2.9	2.9	3.5
Earl Boulevard Park	0.4	0.4	0.4	0.0
Jamestown Walker Slope	3.9	3.9	3.9	3.6
Subtotal	**7.1**	**7.1**	**7.1**	**7.1**
CP Total	**111.9**	**111.9**	**111.9**	**112.8**
CP-HPS2 TOTAL	**356.2**	**346.8**	**346.4**	**362.1**
NEW PARKS	148.1	160.5	159.0	182.9
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION	91.6	69.8	70.9	58.1
STATE PARK LAND	96.7	96.7	96.7	96.7
	336.4	327.0	326.6	337.7
OTHER PARKS	19.8	19.8	19.8	24.4

Appendix B
MMRP

ESA

Mitigation Monitoring and Reporting Program

SECTION 1: AUTHORITY

This Environmental Mitigation Monitoring and Reporting Program (MMRP) has been prepared pursuant to *California Environmental Quality Act* (known as CEQA [Public Resources Code Sections 21000 et seq.]) Section 21081.6 to provide for the monitoring of mitigation measures required of the Candlestick Point–Hunters Point Shipyard Phase II Development Plan (Project), as set forth in the Final Environmental Impact Report (Final EIR) prepared for the Project. This report will be kept on file in the offices of the San Francisco Redevelopment Agency (Agency), One South Van Ness Avenue, Fifth Floor, San Francisco, CA, 94103, and at the City Planning Department (City), 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103.

SECTION 2: MONITORING SCHEDULE

Prior to the issuance of building permits, while detailed development plans are being prepared for approval by Agency and/or City staff, Agency and/or City staff will be responsible for ensuring compliance with mitigation monitoring applicable to the project construction, development, and design phases. Agency and/or City staff will prepare or cause to be prepared reports identifying compliance with mitigation measures. Once construction has begun and is underway, monitoring of the mitigation measures associated with construction will be included in the responsibilities of designated Agency and/or City staff, who shall prepare or cause to be prepared reports of such monitoring no less than once a month until construction has been completed. Once construction has been completed, the Agency and/or City will monitor the project as deemed necessary.

SECTION 3: CHANGES TO MITIGATION MEASURES

Any substantive change in the monitoring and reporting plan made by Agency and/or City staff shall be reported in writing to the City Environmental Review Officer. Reference to such changes shall be made in the monthly/yearly Environmental Mitigation Monitoring Report prepared by City staff. Modifications to the mitigation measures may be made by City staff subject to one of the following findings, documented by evidence included in the record:

a. The mitigation measure included in the Final EIR and the Mitigation Monitoring and Reporting Program is no longer required because the significant environmental impact identified in the Final EIR has been found not to exist, or to occur at a level which makes the impact less than significant as a result of changes in the project, changes in conditions of the environment, or other factors.

OR

b. The modified or substitute mitigation measure to be included in the Mitigation Monitoring and Reporting Program either provides corrections to text without any substantive change in the intention or meaning of the original mitigation measure, or provides a level of environmental protection equal to or greater than that afforded by the mitigation measure included in the Final EIR and the Mitigation Monitoring and Reporting Program; and

The modified or substitute mitigation measures do not have significant adverse effects on the environment in addition to or greater than those which were considered by the responsible hearing bodies in their decisions on the Final EIR and the proposed project; and

The modified or substitute mitigation measures are feasible, and the City, through measures included in the Mitigation Monitoring and Reporting Program or other City procedures, can assure their implementation.

SECTION 4: SUPPORT DOCUMENTATION

Findings and related documentation supporting the findings involving modifications to mitigation measures shall be maintained in the project file with the MMRP and shall be made available to the public upon request.

SECTION 5: FORMAT OF MITIGATION MONITORING MATRIX

The mitigation monitoring matrix on the following pages identifies the environmental issue areas for which monitoring is required, the required mitigation measures, the timeframe for monitoring, and the responsible implementing and monitoring agencies. Mitigation measures include revisions from Addenda 1, 4, and 5.

If any mitigation measures are not being implemented, the Agency and/or City may pursue corrective action. Penalties that may be applied include, but are not limited to, the following: (1) a written notification and request for compliance; (2) withholding of permits; (3) administrative fines; (4) a stop-work order; (5) criminal prosecution and/or administrative fines; (6) forfeiture of security bonds or other guarantees; and (7) revocation of permits or other entitlements.

SECTION 6: DEFINITIONS

For purposes of this MMRP, the following definitions are used:

- **Arena Operator**—An individual who or business that operates the retail business constructed at the Arena site.
- **City's Environmental Review Officer**—The Environmental Review Officer at the San Francisco Planning Department, referred to herein as "ERO."
- **Developer**—An individual who or business that prepares raw land for the construction of buildings or causes to be built physical building space for use primarily by others. This includes contractors of an individual or business that is a developer.
- **Development/Construction Phases**—During construction, three major phases of activities would be expected: abatement and demolition, site preparation and earthwork/grading, and building construction. Within each of these phases are sub-phases generally identified by area. For each parcel, a lot application would be required and individual building permits.
- **Project Applicant**—A Developer or Vertical Developer.
- **Stadium Operator**—An individual who or business that enters into an agreement with the Agency to operate the Stadium constructed at the Stadium site.
- **SFRA**—San Francisco Redevelopment Agency, referred to herein as "Agency" or "SFRA."

- **Vertical Developer**—An individual who or business that constructs urban land uses. This term shall be construed to mean the subsequent developer(s) who constructs or extends urban land uses through subdivision of land and construction or alteration of structures. Vertical developer includes contractors of an individual or business that is a vertical developer.

Ordering and Pagination of Mitigation Measures in Table

Mitigation Measures	*Starts on Page Number*
Section III.D (Transportation and Circulation)	MMRP-4
MM TR-1 through MM TR-51	
Section III.E (Aesthetics)	MMRP-33
MM AE-2 through MM AE-7b.2	
Section III.G (Wind)	MMRP-36
MM W-1a	
Section III.H (Air Quality)	MMRP-37
MM AQ-2.1 through MM AQ-6.2	
Section III.I (Noise and Vibration)	MMRP-38
MM NO-1a.1 through MM NO-7.2	
Section III.J (Cultural Resources and Paleontological Resources)	MMRP-44
MM CP-1b.1 through MM CP-3a	
Section III.K (Hazards and Hazardous Materials)	MMRP-55
MM HZ-1a through MM HZ-15	
Section III.L (Geology and Soils)	MMRP-69
MM GE-2a through MM GE-11a	
Section III.M (Hydrology and Water Quality)	MMRP-82
MM HY-1a.1 through MM HY-14	
Section III.N (Biological Resources)	MMRP-103
MM BI-4a.1 through MM BI-19b.2	
Section III.O (Public Services)	MMRP-139
MM PS-1	
Section III.P (Recreation)	MMRP-139
MM RE-2	
Section III.Q (Utilities)	MMRP-140
MM UT-2 through MM UT-7a	
Section III.S (Greenhouse Gas Emissions)	MMRP-142
MM GC-1 through MM GC-4	

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.D (TRANSPORTATION AND CIRCULATION)					
MM TR-1 Candlestick Point–Hunters Point Shipyard Phase II Construction Traffic Management Program. The Project Applicant shall develop and implement a Candlestick Point–Hunters Point Shipyard Phase II Construction Traffic Management Program to minimize impacts of the Project and its contribution to cumulative impacts related to construction activities and construction traffic. The program shall 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 shall supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies. Preparation of the Construction Management Program shall be the responsibility of the Project Applicant, and shall be reviewed and approved by SFMTA and DPW prior to initiation of construction. The Project Applicant shall update the program prior to approval of development plans for Phase 2, Phase 3, and Phase 4 of construction to reflect any change to Project development schedule, reflect transportation network changes, to update status of other development construction activities, and to reflect any changes to City requirements. The program shall: ■ Identify construction traffic management practices in San Francisco, as well as other jurisdictions that although not being implemented in the City could provide useful	Project Applicant	Program shall be implemented at first sub-phase application and updated with each subsequent sub-phase application	San Francisco Municipal Transportation Agency (SFMTA)/ Department of Public Works (DPW)/SFRA/ DBI	SFRA/DBI	Confirm establishment as part of Phase 1 approval; Project Applicant shall update the program prior to approval of development plans for Phase 1, Phase 3, and Phase 4 SFMTA and DPW to approve program prior to each sub-phase approval; SFMTA and DPW to undertake ongoing enforcement during construction.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
guidance for a project of this size and characteristics. ■ Describe procedures required by different departments and/or agencies in the City for implementation of a construction management plan, such as reviewing agencies, approval process, and estimated timelines. ■ Describe coordination efforts associated with the Navy remediation efforts and scheduling regarding construction vehicle routing via the Crisp gate. ■ Identify construction traffic management strategies and other elements for the Project, and present a cohesive program of operational and demand management strategies designed to maintain acceptable levels of traffic flow during periods of construction activities in the Bayview Hunters Point area. These could include construction strategies, demand management strategies, alternate route strategies, and public information strategies. ■ Coordinate with other projects in construction in the immediate vicinity, so that they can take an integrated approach to construction-related traffic impacts. ■ Present guidelines for selection of construction traffic management strategies.					
MM TR-2 TDM Plan. The Project Applicant shall prepare and implement a final TDM plan, which shall include the following elements: ■ Visitor Variable, Market-Rate Parking Pricing ■ Maximum Permitted Parking Ratios ■ Flexible Parking Management Strategies ■ Unbundled Residential Parking	Project Applicant	TDM approval as part of DDA; Timing of mitigation components to be specified within TDM plan.	SFRA	SFRA/CP-HPS Transportation Management Association (TMA)	Confirm establishment of the TDM as part of the Disposition and Development Agreement. Agency to consult with TMA to submit periodic status reports to Agency as specified in the TDM Plan.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	***Responsibility for Implementation***	***Mitigation Timing***	***Enforcement Responsibility***	***Monitoring Responsibility***	***Monitoring Actions/ Verification of Compliance***
■ Transit Strategies and Support Strategies ■ Central Transit Hub ■ Enhanced Transit Service and Bicycle Facilities ■ Bicycle Support Facilities ■ Wayfinding Signs ■ EcoPass for Residents ■ Carshare Services ■ Employee TDM Programs > Information Boards/Kiosks > In-building Real-Time transit monitors with sightlines of transit hubs > Commuter Benefits > Employee EcoPass > Carpool/Vanpools > Guaranteed Ride Home Program > Compressed Work Weeks, Flex Time, and Telecommuting ■ CP-HPS Transportation Management Association ■ On-site Transportation Coordinator and Website ■ Targeted Marketing ■ Monitoring of Transportation Demand ■ Monitoring Effectiveness of Congestion-Reducing and Traffic-Calming Efforts The final TDM plan shall be approved as part of the Disposition and Development Agreement (DDA).					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-4 Restripe the northbound and southbound approaches of the intersection of Tunnel/Blanken to provide dedicated left-turn lanes adjacent to shared through/right-turn lanes. The restriping would require prohibition of parking for 160 feet in the southbound approach (loss of eight parking spaces) and for 100 feet in the northbound approach (loss of five parking spaces). Implementation of the intersection restriping shall be the responsibility of SFMTA, and shall be implemented when intersection improvements associated with the Visitacion Valley Redevelopment Plan (i.e., signalization) are no longer sufficient to maintain acceptable intersection level of service conditions.	Project Applicant/ SFMTA	Monitor the Tunnel/Blanken intersection biannually by undertaking traffic counts after implementation of the intersection improvements associated with the Visitacion Valley Redevelopment Plan (i.e., signalization). When LOS degrades to unacceptable levels, restripe intersection as indicated.	SFRA/SFMTA	SFRA/SFMTA/ Planning Department	Completed upon implementation of restriping of intersection If not needed by completion of Project buildout, MM TR-4 will not be required.
MM TR-6 Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts. The City of Brisbane and Caltrans, as part of the Harney Interchange Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) shall coordinate with the City of Brisbane and Caltrans to ensure Project-generated vehicle trips are accounted for in the Harney Interchange analyses and design. Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts, including freeway segment impacts, shall be formulated through the current interjurisdictional Bi-County Transportation Study effort being led by the SFCTA or its equivalent. The Project Applicant shall contribute its fair share to the Harney Interchange Project.	Project Applicant/ San Francisco County Transportation Authority (SFCTA)/ SFMTA/SFDPW/ Caltrans/City of Brisbane	Ongoing as part of the Harney Interchange Project	SFRA	SFRA	Completed upon payment of fair-share contribution to the Harney Interchange Project.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	***Responsibility for Implementation***	***Mitigation Timing***	***Enforcement Responsibility***	***Monitoring Responsibility***	***Monitoring Actions/ Verification of Compliance***
MM TR-7 Feasibility study of reconfiguring the southbound approach on Illinois Street to provide a dedicated southbound left turn lane and a dedicated right-turn lane. SFMTA shall conduct a feasibility study with the Port of San Francisco to determine the feasibility of reconfiguring the southbound approach on Illinois Street to provide a dedicated southbound left turn lane and a dedicated right-turn lane. Sufficient right-of-way is available to implement this improvement; however, provision of two southbound lanes would require narrowing a portion of the island to the west of the southbound approach to Cargo Way. Implementation of the intersection improvements shall be the responsibility of SFMTA and the Port of San Francisco, and shall be implemented when traffic operating conditions with the existing intersection configuration worsens to unacceptable levels. If determined feasible, the Project Applicant shall contribute its fair share to the intersection improvements.	Project Applicant/ SFMTA/The Port of San Francisco	Monitor the Amador/Cargo/ Illinois intersection biannually by undertaking traffic counts five years after occupancy of HPS begins. When LOS degrades to LOS D, SFMTA and the Port of San Francisco shall undertake the feasibility study. Improvements shall be implemented when LOS reaches mid-range LOS D.	SFRA/SFMTA	SFRA/SFMTA/Port of San Francisco	Upon completion of the feasibility study, the applicant shall contribute its fair share to the intersection improvements.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-8 Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts. The City of Brisbane, as part of the Geneva Avenue Extension Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) and SFMTA shall coordinate with the City of Brisbane to ensure projected traffic volumes are accounted for in the design of the Geneva Avenue Extension. Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts, including freeway segment impacts, shall be formulated through the current interjurisdictional Bi-County Transportation Study effort being led by the SFCTA or its equivalent. The Project Applicant shall contribute its fair share to the Geneva Avenue Extension Project.	Project Applicant/ San Francisco County Transportation Authority (SFCTA)/ SFMTA/SFDPW/ Caltrans/City of Brisbane	Ongoing as part of the Geneva Avenue Extension Project	SFRA	SFRA	Completed upon payment of fair-share contribution to the Geneva Avenue Extension Project
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 HP-04, as outlined in	Project Applicant/ SFDPW	Prior to issuance of Grading Permits for Phase 1 of the Project	SFMTA	SFMTA	Completed when improvements to Harney Way as Shown in Figure 5 of the Transportation Study are final.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 Authority.					
Prior to the issuance of grading permits for Candlestick Point Major Phases 2 and 3, 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.	Project Applicant/ SFMTA	Prior to the issuance of grading permits for Phases 2 and 3 of the Project, monitor traffic conditions on Harney Way by undertaking traffic counts and performing traffic study.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of the traffic study as directed by the SFMTA
	Project Applicant/ SFMTA	Upon completion of the traffic study as determined by the SFMTA, reconfigure Harney consistent with Figure 6, if deemed necessary by SFMTA	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements to Harney Way as Shown in Figure 6 of the Transportation Study are final as required by the SFMTA.
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:	Project Applicant/ SFMTA	The Project Transit Operating Plan shall be submitted as part of the Disposition and Development Agreement prior to project approval. Implementation of roadway improvements and transit service as specified in	SFRA/SFMTA	SFRA/SFMTA	Upon approval of DDA containing Project Transit Operating Plan

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
■ 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 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		Transit Operating Plan and Transportation Plan			

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 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.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-21.1 Maintain the proposed headways of the 9-San Bruno. To address Project impacts to the 9-San Bruno, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the San Bruno Avenue corridor, generally between Campbell Avenue and Silver Avenue. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 9-San Bruno.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 9-San Bruno prior to issuance of a grading permit for Phase I. As directed by monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by the SFMTA. Feasibility study submitted and approved by SFMTA
■ Install a transit-only lane on northbound San Bruno Avenue for the one-block section (400 feet) between Silliman Street and Silver Avenue. This would involve removal of five metered spaces on the east side of San Bruno Avenue, just south of Silver Avenue. Treatment for transit-only lanes can range from striping to physical elevation changes or barriers to protect transit right-of-way from mixed-flow traffic. ■ Install a transit-only lane on southbound San Bruno Avenue at the approach to Dwight Street/Paul Avenue. This lane would function as a so-called "queue-jump" lane, allowing buses to bypass queues on southbound San Bruno Avenue at the intersection. The lane should begin approximately 200 feet north of Dwight Street and extend one block (about 300 feet) south of Paul Avenue to Olmstead Street. This would involve the removal of up to 20 on-street parking spaces on the west side of San Bruno Avenue. This treatment could be limited to peak hours only, which would minimize the impact of the parking		Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
loss. The segment of San Bruno Avenue between Dwight Street and Olmstead Street is designated as Bicycle Routes #705 and 5 (Class III signed routes). ■ At the intersection of San Bruno/Silver install signal priority treatments on westbound Silver Avenue, where buses waiting to turn left from Silver Avenue onto southbound San Bruno Avenue must currently wait through almost an entire signal cycle due to the heavy oncoming traffic on eastbound Silver Avenue. Installation of a transit signal pre-emption at this location that provides a "green" signal for westbound vehicles but holds eastbound vehicles when buses are present would allow transit vehicles to turn left onto San Bruno Avenue without having to wait for opposing eastbound through traffic to clear. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include comprehensive replacement of stop-controlled intersections with interconnected traffic signals equipped with transit priority elements.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-21.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 9-San Bruno. Should mitigation measure MM TR-21.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 9-San Bruno. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.
MM TR-22.1 Maintain the proposed headways of the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy. To address Project impacts to the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Palou Avenue corridor, generally between Griffith Street and Newhall Street. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 23-Monterey, 24-Divisadero, and the 44-O'Shaughnessy prior to issuance of a grading permit for Phase 1. As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by the SFMTA. Feasibility study submitted and approved by SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Convert one of the two westbound travel lanes on Palou Avenue between Keith Street and Newhall Street (three blocks) to a transit-only lane at all times. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Because the westbound lanes between Third Street and Newhall Street are relatively narrow, parking would likely need to be prohibited on the north side of Palou Avenue between Third Street and Newhall Street (approximately 600 feet) during peak periods to maximize the effectiveness of the transit-only lane. ■ Convert one of the two eastbound travel lanes on Palou Avenue between Newhall Street and Third Street (one block) to a transit-only lane at all times. Because the eastbound travel lanes between Newhall Street are relatively narrow, parking would likely need to be prohibited on the south side of Palou Avenue between Newhall Street and Third Street (approximately 600 feet) during peak periods to maximize the effectiveness of the transit-only lane. In the eastbound direction, east of Third Street, buses would re-enter the single mixed-flow traffic lane at the bus stop on the far (east) side of Third Street. ■ There are currently pedestrian corner bulbs on the northwest and southwest corners of the intersection of Palou Avenue and Third Street. In order to accommodate the transit-only lanes west of Third Street, these bulbouts would be reconfigured or removed. Although removing pedestrian bulb-outs may increase pedestrian crossing distances and is generally inconsistent with the City's desire to	Project Applicant/ SFMTA/SFDPW	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
prioritize pedestrian activity, in this case, the improvement would offer substantial benefits to transit travel times by allowing a transit-only lane through a congested intersection. This would be consistent with the City's transit-first policy. ■ During the PM peak period only, prohibit parking on westbound Palou Avenue for the four-block segment between Griffith Street/Crisp Avenue and Keith Street, to provide for a PM peak period curb transit-only lane along this segment. This would create a continuous westbound transit-only lane on Palou Avenue between Griffith Street/Crisp Avenue and Newhall Street during the PM peak period. ■ As an alternative to the bulleted measures above, narrow the existing sidewalks on Palou Avenue from Third Street to Crisp Avenue (seven blocks) from 15 feet to 12 feet in width. The pedestrian bulb-outs on the west side of Third Street would be removed. The resulting 12-foot-wide sidewalks would be consistent with the Better Streets Plan guidelines. The reduction in sidewalk width would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Palou Avenue. This would preserve on-street parking along the corridor and provide a seven-block transit-only lane on Palou Avenue between Griffith Street/Crisp Avenue and Newhall Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Subsequent to publication of the Draft EIR, SFMTA and the Project Applicant					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
conducted an evaluation of this alternative measure and determined that it is a feasible and viable alternative to the four bulleted items above. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include signal priority treatments at other signalized intersections including at Bayshore/Cortland, Bayshore/Industrial, and Bayshore/Oakdale.					
MM TR-22.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 23-Monterey, the 24-Divisadero and the 44-O'Shaughnessy. Should mitigation measure MM TR-22.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 23-Monterey, the 24-Divisadero and the 44-O'Shaughnessy. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional vehicles is funded as determined by the feasibility study.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
MM TR-23.1 Maintain the proposed headways of the 29-Sunset. To address Project impacts to the 29-Sunset, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 29-Sunset prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA
	Project Applicant/ SFMTA	As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Feasibility study submitted and approved by SFMTA
■ Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno. ■ Implement traffic signal priority (TSP), which modifies the timing at signalized intersections to prioritize the movement of transit vehicles, at the intersections of Arelious Walker/Gilman Avenue, San Bruno Avenue/Paul Avenue, and Bayshore Boulevard/Paul Avenue. ■ Implement a far-side stop in the eastbound and westbound directions at the intersection	Project Applicant/ SFMTA/SFDPW	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
of Third Street/Gilman Avenue and a far-side stop in the westbound direction at the intersection of San Bruno/Paul Avenue. ■ Implement a peak period, transit-dedicated lane in the westbound direction along Paul Avenue between Third Street Bayshore Boulevard. The transit land would begin on Gilman Avenue and extend through the intersection to Paul Avenue. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.					
MM TR-23.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 29-Sunset. Should mitigation measure MM TR-23.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 29-Sunset. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-24.1 Maintain the proposed headways of the 48-Quintara-24th Street. To address Project impacts to the 48-Quintara-24th Street, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Evans Avenue corridor, generally between Hunters Point Boulevard and Napoleon Street. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 48-Quintara-24th Street.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 48-Quintara-24th Street prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA
	Project Applicant/ SFMTA	As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Feasibility study submitted and approved by SFMTA
■ On Evans Avenue, between Jennings Street and Napoleon Street (a nine-block segment—about 6,000 feet), convert one of the two travel lanes in each direction to a transit-only lane at all times. Treatment for transit-only lanes can range from striping to physical elevation changes or barriers to protect transit right-of-way from mixed-flow traffic.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.
The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include extension of transit only lanes in one or both directions between Napoleon Street and Cesar Chavez Street or onto Hunters Point Boulevard and Innes Avenue.					
Or:					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-24.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 48-Quintara-24th Street. Should mitigation measure MM TR-24.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 48-Quintara-24th Street. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study
MM TR-25 Purchase additional transit vehicles to mitigate the Project impacts and Project contribution to cumulative impacts to headways on 54-Felton. SFMTA shall purchase additional transit vehicles to mitigate the Project impacts and Project contribution to cumulative impacts to headways on 54-Felton. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 54-Felton prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA.
	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-26.1 Maintain the proposed headways of the T-Third. To address Project impacts to the T-Third, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvement that could reduce Project impacts on transit operations along Third Street between Thomas Avenue and Kirkwood Avenue. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the T-Third.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the T-Third prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA.
	Project Applicant/ SFMTA	As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule	SFRA/SFMTA	SFRA/SFMTA	Feasibility study submitted and approved by SFMTA
■ Reconfigure the section of Third Street between Thomas Avenue and Kirkwood Avenue (9 blocks) where the light rail vehicles currently share the travel lane with auto traffic to provide a dedicated transit right-of-way, consistent with the rest of the route. This would require either removal of one travel lane in each direction on Third Street, or removal of on-street parking and some sidewalk bulbouts. In addition, left-turns from Third Street in this segment would be restricted in both directions. Treatment for transit-only lanes can range from striping to physical elevation or barriers to protect transit right-of-way from mixed-flow traffic.	Project Applicant/ SFMTA/SFDPW	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in the feasibility study are implemented.
Implementation of the roadway reconfiguration shall be the responsibility of SFMTA, and shall be implemented when the results of the study described above indicate transit improvements are necessary. The Project Applicant shall fully fund the costs of implementing the transit priority improvements prior to approval of subsequent phases of development.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-26.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the T-Third. Should mitigation measure MM TR-26.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the T-Third. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.
MM TR-27.1 Ensure transit preferential treatment is accounted for in the design of the Geneva Avenue Extension. The City of Brisbane, as part of the Geneva Avenue Extension Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) and SFMTA shall coordinate with the City of Brisbane to ensure transit preferential treatment is accounted for in the design of the Geneva Avenue Extension.	Project Applicant/ SFMTA/SFCTA	Ongoing as part of the Geneva Avenue Extension Project	SFRA/SFMTA/SFCTA	SFRA/SFMTA/SFCTA	Upon completion of the Geneva Avenue Extension Project

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-27.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 28L-19th Avenue/Geneva Limited. Should mitigation measure MM TR-27.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 28L-19th Avenue/Geneva Limited. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 28L-29th Avenue/ Geneva Limited prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA.
	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFMTA	SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.
MM TR-32 Determine the feasibility of relocating Bicycle Routes #70 and #170. Prior to issuance of the grading permit for Development Phase 1, the Project Applicant shall fund a study to determine the feasibility of relocating Bicycle Routes #70 and #170. The study of the bicycle route relocation, necessary environmental clearance documentation, and implementation shall be the responsibility of SFMTA.	Project Applicant/ SFMTA	Prior to issuance of the grading permit for Phase 1	SFRA/SFMTA	SFMTA	Upon completion of the feasibility study.
MM TR-38 Transportation Management Plan (TMP) for the stadium. The stadium operators shall develop and maintain a Transportation Management Plan (TMP) for the stadium. The stadium operator shall work with representatives from the SFMTA, the State Highway Patrol, the Police Department, private charter operators, Caltrain and others on a continuing basis to develop and refine the TMP, as determined appropriate by SFMTA. The final stadium TMP shall be approved by SFMTA. Preparation of the TMP shall be fully funded by the stadium operator, and shall be completed in time for implementation on opening day of the stadium.	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of the Transportation Management Plan (TMP) by the SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
The following actions shall be included in the TMP: ■ Information on transportation options to the stadium, including game day service by the various regional service providers shall be distributed to season ticket holders, employees, and other patrons if possible. ■ A brochure, information packet, and/or web page providing full information on transit access to the stadium, similar to that currently offered at the 49ers website, shall be updated and maintained. ■ The use of charter buses to the stadium shall be encouraged and expanded. A number of measures shall be considered that could be implemented at low-cost to expand the use of group charters, including reduced parking costs, publicize the groups in 49ers publications and mailings, provide priority parking, provide lounges for bus drivers and provide support services for rooter clubs. ■ Residential Permit Parking Program and/or additional parking restrictions, such as time limits, during game days, particularly in the Bayview Hunters Point areas, shall be explored with residents to reduce potential for intrusion of stadium vehicles into the adjacent neighborhood during a football game or secondary event. ■ The stadium operator shall implement measures to encourage carpools of 4-plus persons per vehicle. ■ The stadium operator shall charge a higher parking cost for low occupancy vehicles. ■ The stadium operator shall develop a separate TDM plan for employees of the stadium and concessionaires. The plan shall consider measures such as providing					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
employees and concessionaires with free or subsidized transit passes to encourage transit use and reduce vehicular travel to the stadium. Employees shall not receive preferential parking. ■ The stadium operator shall develop measures with CPSRA to ensure that game day spectators do not park in CPSRA day use parking lots. Strategies to be explored include limiting parking in CPSRA lots to a limited duration during game days (e.g., to a two-hour period), or an increase in parking fees equivalent to game day parking, and ticketing and enforcement. ■ The TMP shall ensure that regular transit routes operate acceptably near the stadium. The plan should consider providing alternate routes for those transit lines that do not have exclusive right-of-way on game days (48-Quintara-24th Street, 44-O'Shaughnessy, 29-Sunset) onto transit-only facilities such as the BRT right-of-way to the south and Palou Avenue to the north (which would be a transit-only facility on game days).					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-39 *Transit Service during Game Days.* SFMTA shall increase frequency on regularly scheduled Muni routes serving the stadium area on game days. In addition, the stadium operator shall fund additional Muni shuttle service between the stadium and regional transit service, including BART (Balboa Park and/or Glen Park Station) and Caltrain (Bayshore Station). Although the specific frequencies of individual routes should be determined based on patron characteristics that may evolve over time, the increased transit service, taken as an aggregate, should generally compensate for the projected shortfall of 3,600 passengers per hour on the existing and proposed transit lines. Prior to opening day at the new stadium, the City and stadium operator shall determine costs associated with the increased service and determine funding sources. Examples of funding sources that shall be considered include a surcharge on game tickets or other such revenue mechanism. Implementation of increased transit service would be the responsibility of SFMTA and the stadium operator, and would be implemented when projected attendance warrants additional service.	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of gameday transit operating plan by SFMTA.
MM TR-46 Traffic Control Officers. The stadium operator shall develop as part of a stadium Transportation Management Plan (TMP), a strategy for coordinating with representatives of SFMTA and the SF Police Department for deploying traffic control officers in the Project vicinity to increase efficiency of pre- and post-event traffic, similar to what would be in place for football game days. The secondary event component of the stadium TMP shall be approved by SFMTA. The stadium operator shall fully fund implementation of the secondary event (i.e., non-49ers football events) measures.	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of the Transportation Management Plan (TMP) by the SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-47 Transit Service during Secondary Events. SFMTA shall increase frequency on regularly scheduled Muni routes serving the stadium area prior to large special events. In addition, the stadium operator shall fund additional Muni shuttle service between the stadium and regional transit service, including BART (Balboa Park and/or Glen Park stations) and Caltrain (Bayshore station). ■ Routes 24-Divisadero, 28L-19th Avenue Limited, and 44-O'Shaughnessey would already be operating near their maximum frequency. Therefore, this mitigation measure primarily applies to the 48-Quintara-24th Street route and the new HPX service. If each of these routes were increased to have five-minute frequencies (typically considered the maximum frequency that can be regularly maintained), the transit capacity toward the stadium would increase by 828 passengers per hour, for a total of 3,928 passengers. Even with the additional service on these two lines, there would be a shortfall of 1,797 passengers per hour in transit capacity. ■ Additional express service to key regional transit destinations and regional charter express service, similar to what is offered on football game days, would offset a portion of the shortfall in transit capacity. The amount and nature of special service to special stadium events would depend on the type and size of the special event. Generally, the capacity of the express service should compensate for the shortfall of 1,797 passengers per hour for a 37,500-person event (transit supply, would of course, be designed on a case-by-case basis depending on the expected size of the secondary event).	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of special-event transit operating plan by SFMTA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ SFMTA and the stadium operator shall implement a stadium transportation systems plan similar to that developed for game-day operations (except that the Yosemite Slough bridge shall not be available for private automobiles), on a case-by-case basis depending on the expected size of the secondary event. Prior to opening day at the new stadium, the City and the stadium operator shall determine costs associated with the increased service and determine funding requirements. Examples of funding sources that shall be considered include a surcharge on game tickets, parking or admission surcharge, or other such revenue mechanism. Implementation of increased transit service would be the responsibility of SFMTA and the stadium operator, and would be implemented when projected attendance warrants additional service.					

Mitigation Monitoring & Reporting Program

Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-51 Transportation Management Plan (TMP). The arena operator shall develop a Transportation Management Plan (TMP) for coordinating with representatives of SFMTA and the SF Police Department for deploying traffic control officers in the Project vicinity to increase efficiency of pre- and post- event traffic, and for developing incentives to increase transit ridership to the arena. If Variants 1, 2, or 2A are implemented the TMP shall provide for SFMTA to increase the frequency on regularly scheduled Muni routes (primarily the CPX-Candlestick Express) serving the arena area prior to large events at the arena and for the arena operator to provide additional shuttle service to key regional transit destinations, such as BART, Caltrain, and the T-Third light-rail route. Implementation of this mitigation measure would likely speed vehicle entrance and exit to the arena site as well as maintain orderly traffic and transit operations and reduce intrusion onto minor routes to and from the arena. Traffic control officers would facilitate traffic flow at the intersection of Harney/Jamestown which would operate at LOS F conditions with a sell-out arena event. The final arena TMP shall be approved by SFMTA. Preparation of the TMP Plan shall be fully funded by the arena operator, and shall be completed in time for implementation on opening day of the arena.	Arena Operators/ SFMTA	Prior to opening day of the Arena	SFRA/SFMTA	SFRA/SFMTA	Approval of the Transportation Management Plan (TMP) by the SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.	Project Applicant/ SFMTA	(a) Construction of intersection per phasing identified in Addendum 6. (b) Construction of Innes Avenue improvements per phasing identified in Addendum 6.	OCII/SFMTA	OCII/SFMTA	Upon completion of the improvements.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.E (AESTHETICS)					
MM AE-2 Mitigation for Visual Character/Quality Impacts During Construction. Construction documents shall require all construction contractors to strictly control the staging of construction equipment and the cleanliness of construction equipment stored or driven beyond the limits of the construction work area. Construction equipment shall be parked and staged on the Project site. Staging areas shall be screened from view at street level with solid wood fencing or green fence. Prior to the issuance of building permits, the Project Applicant (through the construction contractor[s]) shall submit a construction staging, access, and parking plan to the San Francisco Department of Building Inspection for review and approval. On-street parking of construction worker vehicles shall be prohibited. Vehicles shall be kept clean and free of mud and dust before leaving the Project site. Project contractors shall sweep surrounding streets used for construction access daily and maintain them free of dirt and debris.	Project Applicant	Requirements in construction documents: Prior to issuance of first permit for each phase of construction. Implementation of requirements: Ongoing through the construction process	SFRA/DBI	Construction Contractor	SFRA and DBI to review construction documents and construction staging, access, and parking plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM AE-7a.1 Lighting Direction/Fixtures and Screening Walls to Minimize Glare and Light Spill. The Project Applicant shall ensure that all parking lot and other security lighting shall be directed away from surrounding land uses and towards the specific location intended for illumination. State-of-the-art fixtures shall be used, and all lighting shall be shielded to minimize the production of glare and light spill onto surrounding use. All parking structures shall be constructed with screening walls of sufficient height to block spill light from vehicle headlights.	Project Applicant	Submission of lighting plan subject to lot application or open space design document review; prior to issuance of building permit	SFRA/DBI/DPW	SFRA/DBI/DPW	SFRA to review designs and specifications as part of lot application or open space design document review. DBI/DPW to issue permits and approve construction completion

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM AE-7a.2 Low-level/Unobtrusive Light Fixtures. The Project Applicant shall ensure that landscape illumination and exterior sign lighting shall be accomplished with low-level, unobtrusive fixtures.	Project Applicant	Submission of lighting plan subject to lot application or open space design document review; prior to issuance of building permit	SFRA/DBI/DPW	SFRA/DBI/DPW	SFRA to review designs and specifications as part of lot application or open space design document review. DBI/DPW to issue permits and approve construction completion
MM AE-7a.3 Lighting Plan. The Project Applicant shall prepare a lighting plan for each phase of the Project and submit it for review and approval to the San Francisco Police Department and the Agency prior to the issuance of building permits. Outdoor lighting shall maintain a minimum required illumination, as determined appropriate by the San Francisco Police Department and the Planning Department, for all parking and pedestrian areas. In addition, the plan shall include details such as beam spreads and/or photometric calculation, location and type of fixtures, exterior colors, details on foundations, and arrangement of exterior lighting such that it does not create glare, hazardous interference on adjacent streets, or properties or result in spill light that would adversely impact sensitive receptors in the project area.	Project Applicant	Submission of lighting plan prior to sub- Phase approval	SFRA	SFRA	SFRA to review design as part of sub-Phase application; DBI to issue permits and approve construction completion
MM AE-7a.4 Non-reflective Exterior Surfaces to Minimize Glare Impacts. The Project Applicant shall ensure that design of the proposed structures shall include the use of textured or other nonreflective exterior surfaces and nonreflective glass.	Project Applicant	At schematic lot application or open space design review and plan check; prior to issuance of building permit	SFRA/DBI	SFRA/DBI	SFRA to review designs and specifications as part of lot application or open space design application

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM AE-7b.1 Testing of the Field-Lighting System. Prior to opening the stadium, the Stadium Operator shall test the installed field-lighting system to ensure that lighting meets operating requirements in the stadium and minimizes obtrusive spill lighting in the ballpark facility. Testing shall include light-meter measurements at selected locations in the vicinity to measure spill lighting from stadium field-lighting fixtures, permit adjustment of lighting fixtures, and confirm that spill-lighting effects shall be within an acceptable range and compatible with typical street lighting fixtures.	Stadium Operator	Prior to opening day of the Stadium	SFRA/DBI	SFRA/DBI	SFRA to review designs and specifications as part of lot application review; DBI to issue schematic permits and approve construction completion
MM AE-7b.2 Stadium Lighting Orientation and Cut-Off Shields. Prior to opening the stadium, the Stadium Operator shall ensure that stadium lighting is oriented in such a manner to reduce the amount of light shed onto sensitive receptors and incorporate "cut-off" shields as appropriate to minimize any increase in lighting at adjacent properties, providing that it still meets the standard of lighting for football operations.	Stadium Operator	At lot application/schematic design documents submitted for approval	SFRA/DBI	SFRA/DBI	SFRA to review designs and specifications as part of lot application review; DBI to issue permits and approve construction completion

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.G (WIND)					
MM W-1a Building Design Wind Analysis. Prior to design approval of Project buildings, for high-rise structures above 100 feet, the Project Applicant shall retain a qualified wind consultant to provide a wind review to determine if the exposure, massing, and orientation of the building would result in wind impacts that could exceed the threshold of 26-mph-equivalent wind speed for a single hour during the year. The wind analysis shall be conducted to assess wind conditions for the proposed building(s) in conjunction with the anticipated pattern of development on surrounding blocks to determine if the Project building(s) would cause an exceedance of the wind hazard standard. The analysis shall be conducted as directed by the City's wind study guidelines, including, if required, wind tunnel modeling of potential adverse effects relating to hazardous wind conditions. The Agency shall require the Project Applicant to identify design changes that would mitigate the adverse wind conditions to below the threshold of 26-mph-equivalent wind speed for a single hour of the year. These design changes could include, but are not limited to, wind-mitigating features, such as placing towers on podiums with a minimum 15-foot setback from street edges, placement of awnings on building frontages, street and frontage plantings, articulation of building facades, or the use of a variety of architectural materials.	Project Applicant	At lot application schematic design review and plan check; prior to issuance of building permit.	SFRA/DBI	SFRA	SFRA to review design and specification as part of lot application schematic design review; DBI to issue permits and approve construction completion

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.H (AIR QUALITY)					
MM AQ-2.1 Implement Emission Control Device Installation on Construction. To reduce DPM emissions during Project construction, the Project Applicant shall require construction equipment used for the Project to utilize emission control technology such that 50% of the fleet will meet USEPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) during the first two years of construction activities, increasing to 75% of the fleet in the third year and 100% of the fleet starting in the fourth year and for the duration of the Project.	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI	SFRA/DBI	SFRA and DBI to review construction documents; Construction contractor to submit quarterly report and compliance of activity through fourth year of construction, and annually thereafter, until deemed complete by SFRA.
MM AQ-2.2 Implement Accelerated Emission Control Device Installation on Construction Equipment Used for Alice Griffith Parcels. In addition to mitigation measure MM AQ-2.1, in order to minimize the potential impacts to residents living in Alice Griffith from the construction activities in that area, the Project Applicant will require that all construction equipment used in the Alice Griffith parcels (CP01 though CP06) utilize equipment which meets the USEPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) throughout the entire duration of construction activities on those parcels.	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI	SFRA/DBI	SFRA and DBI to review construction documents; Construction contractor to submit quarterly report and compliance of activity through duration, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM AQ-6.1 If a facility with sources of TAC emission wishes to locate on a plot size smaller than 1 acre, an analysis will be required to show the facility, in conjunction with all other TAC emitting facilities in the R&D areas, will not cause these thresholds of a residential cancer risk of 10 in one million and a chronic noncancer HI of 1.0 to be exceeded at the nearest residential locations.	Project Applicant	Lot size submitted at time of sub-phase application; if lot size is less than 1 acre, TAC analysis required prior to building occupancy	SFRA/DBI	SFRA/DBI	SFRA and DBI to review sub-phase application; for lots under once acre SFRA and DBI to review TAC analysis prior to building occupancy. ,
MM AQ-6.2 Each facility with sources of TAC emissions on a plot of 1 acre or larger will limit their emissions such that residential cancer risk and chronic non-cancer hazard index evaluated at the facility boundary does not exceed 10 in one million or 1.0, respectively. If these thresholds are exceeded at the boundary, an analysis will be required to show the facility, in conjunction with all other TAC emitting facilities in the R&D areas, will not cause these thresholds to be exceeded at the nearest residential locations.	Project Applicant	Lot size submitted at time of sub-phase application; if lot size is equal to or greater than 1 acre, TAC analysis required annually. If thresholds exceeded, additional analysis required at direction of SFRA	SFRA/DBI	SFRA/DBI	Ongoing requirement
SECTION III.I (NOISE AND VIBRATION)					
MM NO-1a.1 Construction Document Mitigation to Reduce Noise Levels during Construction. The Project Applicant shall incorporate the following practices into the construction documents to be implemented by the Project contractor: ■ Provide enclosures and mufflers for stationary equipment, shrouding or shielding for impact tools, and barriers around particularly noisy operations on the site ■ Use construction equipment with lower noise emission ratings whenever possible, particularly air compressors ■ Provide sound-control devices on equipment no less effective than those provided by the manufacturer	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI/DPW	SFRA/DBI/DPW	Review and approve contract specifications; Project Applicant to submit quarterly report to SFRA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptors ■ Prohibit unnecessary idling of internal combustion engines ■ Require applicable construction-related vehicles and equipment to use designated truck routes to access the Project site ■ Implement noise attenuation measures to the extent feasible, which may include, but are not limited to, noise barriers or noise blankets. The placement of such attenuation measures will be reviewed and approved by the Director of Public Works prior to issuance of development permits for construction activities. ■ Designate a Noise Disturbance Coordinator who shall be responsible for responding to complaints about noise during construction. The telephone number of the Noise Disturbance Coordinator shall be conspicuously posted at the construction site and shall be provided to the City. Copies of the construction schedule shall also be posted at nearby noise-sensitive areas.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM NO-1a.2 Noise-reducing Pile Driving Techniques and Muffling Devices. The Project Applicant shall require its construction contractor to use noise-reducing pile driving techniques if nearby structures are subject to pile driving noise and vibration. These techniques include pre-drilling pile holes (if feasible, based on soils) to the maximum feasible depth, installing intake and exhaust mufflers on pile driving equipment, vibrating piles into place when feasible, and installing shrouds around the pile driving hammer where feasible. Contractors shall be required to use construction equipment with state-of-the-art noise shielding and muffling devices. In addition, at least 48 hours prior to pile-driving activities, the Project Applicant shall notify building owners and occupants within 500 feet of the Project site of the dates, hours, and expected duration of such activities.	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI/DPW	SFRA/DBI/DPW	Review and approve contract specifications; Project Applicant to submit quarterly report to SFRA
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	Project Applicant	Assessment prior to issuance of construction site permit; Monitoring: Ongoing through construction process	SFRA/DBI	SFRA/DBI/DPW	Review and approve corrective measures as identified throughout construction process quarterly report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 reviewed and approved by 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					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.[1] The trench should be long enough to effectively shield the structure from DDC vibrations.					
MM NO-7.1 Mitigation to Minimize Game/Concert-related Temporary Increases in Ambient Noise Levels at Nearby Residences. To ensure that stadium game-and event-induced interior L_{max} noise levels do not exceed an interior noise level of 60 dBA and interfere with speech and other indoor activities in the existing Hunters Point Hill residential community closest to and north of the proposed Stadium (i.e., as identified by the R3 stadium noise model receiver), the Stadium Operator shall: ■ After Stadium Operator enters into lease agreement with Agency, send notification of the establishment of a stadium noise mitigation program (SNMP) to the residential property owners in the identified neighborhood potentially affected by noise from the proposed Stadium	Stadium Operator	After stadium operator enters lease agreement with SFRA	SFRA	SFRA	Complete upon payment of qualified property owners as identified by the acoustical survey. Stadium operator to report to SFRA upon establishment SNMP and yearly threshold until SNMP is completely implemented; continue monitoring through creation of ad hoc community working group.

[1] ENGEO Incorporated, *Potential Constraints on Implementation of Deep Dynamic Compaction*, December 14, 2017, p. 1.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
■ Allow property owners an appropriate time after the date of notification about the SNMP to apply for the program, with a reminder sent to the owners before the end of the application period ■ Determine if responding property owners meet qualifications ■ Compile for property-owners reference and send to them a summary of standard types of structural acoustical mitigations ■ Choose a qualified acoustical consultant to survey the potentially affected residential units and recommend sound reduction measures appropriate to offset the modeled stadium noise impacts, which may include: > Acoustical upgrades to windows and doors > Acoustical stripping around doors and other openings > Ventilation improvements ■ Estimates cost of recommended sound reduction measures, which shall include labor and materials, permit fees, and City inspections; material costs will, as much as possible, be based on "like-for-like", that is, for replacement of existing materials similar in quality or appearance ■ Pay each qualifying property owner the amount of this estimate after obtaining a release from future claims for stadium event noise impacts at each property with each property owner responsible for implementing the sound reduction improvements ■ Establish an ad hoc community working group of neighbors to develop a mediation process should any future disputes arise over					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the effectiveness of the SNMP in eliminating stadium noise intrusions					
MM NO-7.2 Residential Use Plan Review by Qualified Acoustical Consultant. To ensure that stadium game-and event-induced interior L_{max} noise levels do not exceed an interior noise level of 60 dBA and interfere with speech and other indoor activities in the proposed on-site residential uses closest to the proposed Stadium, the Project Applicant shall choose a qualified acoustical consultant to review plans for the new residential uses planned for areas closest to the proposed Stadium and follow their recommendations to provide acoustic insulation or other equivalent measures to ensure that interior peak noise events would not exceed 60 dBA L_{max}.	Project Applicant	Design review lot application	SFRA/DBI	SFRA/DBI	Review in all design documents
SECTION III.J (CULTURAL RESOURCES AND PALEONTOLOGICAL RESOURCES)					
MM CP-1b.1 Mitigation to Minimize Impacts on Historic Resources at HPS Phase II. To reduce the adverse effect on historical resources, prior to any structural demolition and removal activities, the Project Applicant shall retain a professional who meets the Secretary of the of the Interior's Professional Qualifications Standards for Architectural History to prepare written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District, as identified in the report titled *Bayview Waterfront Plan Historic Resources Evaluation, Volume II: Draft Historic Resources Survey and Technical Report*, July 2009, prepared by Circa Historic Property Development. The documentation for the property shall be prepared based on the National Park Services' (NPS) Historic American Building Survey (HABS) / Historic American Engineering Record (HAER) Historical Report Guidelines. This type of	Project Applicant	Prior to issuance of any demolition and removal activities of historic resources	SFRA/Planning Department	SFRA	All written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District shall be approved by the SFRA prior to issuance and permits for any demolition and removal activities.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
documentation is based on a combination of both HABS/HAER standards (Levels II and III) and NPS new policy for NR-NHL photographic documentation as outlined in the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion (March 2005). The written historical data for this documentation shall follow HABS / HAER Level I standards. The written data shall be accompanied by a sketch plan of the property. Efforts should also be made to locate original construction drawings or plans of the property during the period of significance. If located, these drawings should be photographed, reproduced, and included in the dataset. If construction drawings or plans cannot be located as-built drawings shall be produced. Either HABS / HAER standard large format or digital photography shall be used. If digital photography is used, the ink and paper combinations for printing photographs must be in compliance with NR-NHL photo expansion policy and have a permanency rating of approximately 115 years. Digital photographs will be taken as uncompressed .TIF file format. The size of each image will be 1600x1200 pixels at 300 ppi (pixels per inch) or larger, color format, and printed in black and white. The file name for each electronic image shall correspond with the index of photographs and photograph label. Photograph views for the dataset shall include *(a)* contextual views; *(b)* views of each side of each building and interior views, where possible; *(c)* oblique views of buildings; and *(d)* detail views of character-defining features, including features on the interiors of some buildings. All views shall be referenced on a photographic key. This photograph key shall be on a map of the property and shall show the photograph number with an					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
arrow indicate the direction of the view. Historic photographs shall also be collected, reproduced, and included in the dataset. All written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District shall be approved by the SFRA, in consultation with the ERO, prior to any demolition and removal activities.					
MM CP-1b.2 Interpretive Displays Depicting History of HPS. Interpretive displays related to the history of HPS shall be installed at Heritage Park at Dry Dock Nos. 2 and 3. The number and type of displays shall be approved by the SFRA, in consultation with the ERO.	Project Applicant	Schematic design review for Heritage Park	SFRA/Planning Department	SFRA	Displays approved by SFRA; Project Applicant to provide report to SFRA once installed
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 archaeology. The archaeological consultant shall 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					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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	Project Applicant	Testing Plan: Completed prior to issuance of any permit authorizing soils disturbance Testing program: Completed Prior to commencement of any soils disturbing construction activity Testing Report: Completed prior to commencement of any soils disturbing activity	SFRA, ERO	SFRA, ERO	Quarterly MMRP reports to SFRA, to include reporting on any Archeo Mitigation Measure tasks completed Testing Plan complete upon approval by ERO of Final Testing Plan Testing Program and Report deemed complete upon approval by ERO Final Testing Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.					Prior to project construction demolition and remediation
<u>Archaeological Monitoring Program:</u> If the ERO, in consultation with the archaeological consultant, determines that an Archaeological Monitoring Program (AMP) shall be implemented, the AMP	Project Applicant	Monitoring Program: Development of program work scope prior to commencement of soils disturbing construction activity; monitoring activity to	SFRA; ERO	SFRA; ERO	Quarterly MMRP reports to SFRA, to include reporting on any Archeo Mitigation Measure tasks completed

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
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.		occur during site excavation and construction, as per monitoring program Monitoring Report: Report submitted to ERO upon completion of monitoring Program			Monitoring program and Report deemed Complete upon approval by ERO of Final Monitoring Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ 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 soil-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	Project Applicant	Data Recovery Plan: Development of Program work scope, in conjunction with work scope for Archeo Monitoring Program prior to commencement of soils	SFRA; ERO	SFRA; ERO	Quarterly MMRP reports to SFRA, to include reporting on any Archeological Mitigation Measure tasks completed Data Recovery Plan and Program deemed complete upon approval by ERO

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.		disturbance construction activity. More specific or detailed subsequent work scope may be required by ERO upon completion of Archeo Monitoring Program and Report Data Recovery program: Activity to occur during and subsequent to construction activity, as per Data Recovery Program			of Final report indicating completion of data recovery program.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ 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 soil-disturbing activity shall comply with applicable state and federal laws including immediate notification of the Office of the Chief Medical Examiner of the City and County of San Francisco and in the event of the 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 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 should take into consideration the appropriate excavation, removal, recordation, analysis, 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	Project Applicant	Upon discovery, if applicable	Coroner; SFRA	Applicant to notify SFRA, Coroner, and, if applicable, California State Native American Heritage Commission	Upon approval by ERO of Final Archaeological Resources Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.	Project Applicant	Upon completion of testing, monitoring and data recovery programs: For Horizontal Developer – prior to determination of substantial completion of infrastructure @ each sub-phase; For Vertical Developer – Prior to issuance of Certificate of Temporary or Final Occupancy, whichever occurs first	SFRA; ERO	SFRA; ERO	Upon approval by ERO of Final Archaeological Resources Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM CP-3a Paleontological Resources Monitoring and Mitigation Program: The Project Applicant shall retain the services of a qualified paleontological consultant having expertise in California paleontology to design and implement a Paleontological Resources Monitoring and Mitigation Program (PRMMP). The PRMMP shall include a description of when and where construction monitoring would be required; emergency discovery procedures; sampling and data recovery procedures; procedures for the preparation, identification, analysis, and curation of fossil specimens and data recovered; preconstruction coordination procedures; and procedures for reporting the results of the monitoring program.	Project Applicant	Design of Paleo Resources Monitoring and Mitigation Program (PRMMP) prior to soils disturbing activity	SFRA; ERO	SFRA; ERO	Approval by ERO of final design for PRMMP
		Monitoring of site for paleo resources pursuant to PRMMP, to occur throughout soils disturbing activity			Quarterly MMRP reports to SFRA, to include reporting on any Paleo Mitigation Measure tasks completed
The PRMMP shall be consistent with the Society for Vertebrate Paleontology (SVP) Standard Guidelines for the mitigation of construction-related adverse impacts to paleontological resources and the requirements of the designated repository for any fossils collected. During construction, earth-moving activities shall be monitored by a qualified paleontological consultant having expertise in California paleontology in the areas where these activities have the potential to disturb previously undisturbed native sediment or sedimentary rocks. Monitoring need not be conducted in areas where the ground has been previously disturbed, in areas of artificial fill, in areas underlain by nonsedimentary rocks (serpentinite, greenstone), or in areas where exposed sediment would be buried, but otherwise undisturbed.	Project Paleontologist	During project soils disturbing activities	SFRA, ERO	SFRA, ERO	During project soil disturbing activities. ERO to review and approve PRMMP and determine whether suspension of work is required.
The consultant's work shall be conducted in accordance with this measure and at the direction of the City's Environmental Review Officer (ERO).					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Plans and reports prepared by the consultant 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. Paleontological 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 paleontological resource as previously defined to a less-than-significant level.					
SECTION III.K (HAZARDS AND HAZARDOUS MATERIALS)					
MM HZ-1a Article 22A Site Mitigation Plans. (Applies only to Candlestick Point.) Prior to obtaining a site, building or other permit from the City for development activities involving subsurface disturbance at portions of Candlestick Point bayward of the high tide line, the Project Applicant shall comply with the requirements of San Francisco Health Code Article 22A. If the site investigation required by Article 22A (or, in the case of development activity in CPSRA, which is not subject to Article 22A, a comparable site investigation that is carried out to comply with this measure, and which involves notification to California State Parks if a site mitigation plan is prepared), indicates the presence of a hazardous materials release, a site mitigation plan must be prepared. The site mitigation plan must specify the actions that will be implemented to mitigate the significant environmental or health and safety risks caused or likely to be caused by the presence of the identified release of hazardous materials. The site mitigation plan shall identify, as appropriate, such measures as excavation, containment, or	Project Applicant/ SFRA	Prior to obtaining a site, building or other permit from the City for development activities involving subsurface disturbance at portions of Candlestick Point bayward of the high tide line	SFRA/DPH/California Department of Parks and Recreation if CDPR implements improvements	SFRA/DPH/California Department of Parks and Recreation if CDPR implements improvements	Approval of the site mitigation plan consistent with Article 22A

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
treatment of the hazardous materials, monitoring and follow-up testing, and procedures for safe handling and transportation of the excavated materials, or for protecting the integrity of the cover or for addressing emissions from remedial activities, consistent with the requirements set forth in Article 22A. To the extent that Article 22A does not apply to state-owned land at CPSRA, prior to undertaking subsurface disturbance activities at CPSRA, the Agency and the California Department of Parks and Recreation shall enter into an agreement to follow procedures equivalent to those set forth in Article 22A for construction and development activities conducted at Candlestick Point State Recreation Area.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-1b Compliance with Requirements Imposed by Cleanup Decision Documents and Property Transfer Documents. (Applies only to HPS Phase II) Prior to obtaining a grading, excavation, site, building or other permit from the City for development activity at HPS Phase II involving subsurface disturbance, the Project Applicant shall submit documentation acceptable to the San Francisco Department of Public Health that the work will be undertaken in compliance with all notices, restrictions, and requirements imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, including notices, restrictions, and requirements imposed in deeds, covenants, leases, easements, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans, Community Involvement Plans, and health and safety plans. Such restrictions, imposed by federal and state regulatory agencies as a condition on the Navy transfer of the property to the Agency, will ensure that the property after transfer will be used in a manner that is protective of the environment and human health. The City/Agency may choose to implement this measure by requiring these actions as part of amendments to San Francisco Health Code Article 31, which currently sets forth procedural requirements for development in HPS Phase I, or through an equivalent process established by the City or Agency.	Project Applicant	Prior to obtaining a grading, excavation, site, building or other permit from the City for development activity at HPS Phase 2 involving subsurface disturbance	SFRA/DPH	SFRA/DPH	DPH to determine Project Applicant's compliance with Cleanup Decision Documents and Property Transfer Documents

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-2a.1 Unknown Contaminant Contingency Plan. (Applies to Candlestick Point, HPS Phase II, and off-site improvements.) Prior to obtaining the first site, building or other permit for development activities involving subsurface disturbance, the Project Applicant shall prepare and the San Francisco Department of Public Health shall approve a contingency plan to address unknown contaminants encountered during development activities. This plan, the conditions of which shall be incorporated into the first permit and any applicable permit thereafter, shall establish and describe procedures for implementing a contingency plan, including appropriate notification to nearby property owners, schools, and residents and appropriate site control procedures, in the event unanticipated subsurface hazards or hazardous material releases are discovered during construction. Control procedures would include, but would not be limited to, further investigation and, if necessary remediation of such hazards or releases, including off-site removal and disposal, containment or treatment. In the event unanticipated subsurface hazards or hazardous material releases are discovered during construction, the requirements of this unknown contaminant contingency plan shall be followed. The contingency plan shall be amended, as necessary, in the event new information becomes available that could affect the implementation of the plan. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.	Project Applicant	Prior to obtaining the first site, building or other permit for development activities involving subsurface disturbance	SFRA/DPH	SFRA/DPH	DPH to approve contingency plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-2a.2 Site-Specific Health and Safety Plans. (Applies to Candlestick Point, HPS Phase II, and off-site improvements.) Prior to obtaining the first site, building or other permit for the Project from the City for development activities involving subsurface disturbance, the Project Applicant shall prepare and submit to SFDPH a site-specific health and safety plan (HASP) in compliance with applicable federal and state OSHA requirements and other applicable laws to minimize impacts to public health and the environment. development of the plan shall be required as a condition of any applicable permit. The plan shall include identification of chemicals of concern, potential hazards, personal protective equipment and devices, and emergency response procedures. The HASP shall be amended, as necessary, in the event new information becomes available that could affect the implementation of the plan. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.	Project Applicant	Prior to obtaining the first site, building or other permit for the Project from the City for development activities involving subsurface disturbance	SFRA/DPH	SFRA/DPH	DPH to approve HASP.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	***Responsibility for Implementation***	***Mitigation Timing***	***Enforcement Responsibility***	***Monitoring Responsibility***	***Monitoring Actions/ Verification of Compliance***
MM HZ-5a Foundation Support Piles Installation Plan. (Applies to Candlestick Point and HPS Phase II.) Prior to obtaining a permit from the City that authorizes installation of deep foundation piles, the Project Applicant shall prepare and submit a plan acceptable to the City stating that pilot boreholes for each pile would be drilled through the artificial fill materials so the piles can be installed without damage or misalignment and to prevent potentially contaminated fill materials from being pushed into the underlying sediments or groundwater. This measure shall be implemented for Candlestick Point through implementation of mitigation measure MM HZ-1a. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.	Project Applicant/ SFRA/DBI	Prior to obtaining a permit from the City that authorizes installation of deep foundation piles	SFRA/DBI/DPH	SFRA/DBI/DPH	DPH/DBI to approve plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-9 Navy-approved workplans for construction and remediation activities on Navy-owned property. (Applies only to the portions of HPS Phase II on Navy-owned property). Construction activities and remediation activities conducted on behalf of the Agency or the Project Applicant, on Navy-owned property shall be conducted in compliance with all required notices, restrictions, or other requirements set forth in the applicable lease, easement, or license or other form of right of entry and in accordance with a Navy-approved workplan. This mitigation measure also requires that such activities be conducted in accordance with applicable health and safety plans, dust control plans, stormwater pollution prevention plans, community involvement plans, or any other documents or plans required under applicable law. The City/Agency will access Navy property through a lease, license, or easement. The City/Agency shall not undertake any activity or approve any Project Applicant activity on Navy-owned property until the Navy and other agencies with approval authority have approved a workplan for the activity. The requirement to comply with the approved work plans shall be incorporated into and made a condition of any City/Agency approvals related to activities on Navy property. This measure shall be implemented for HPS Phase II through a process established by the City or Agency as explained in MM HZ-1b.	Project Applicant/ SFRA/City	Prior to construction and remediation activities on Navy-owned property.	City/SFRA	City/SFRA	Navy to approve construction and remediation activities workplan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM HZ-10b Regulatory Agency–Approved Workplans and Permits for Shoreline Improvements. Prior to undertaking any shoreline improvement activities that would affect sediment at HPS Phase II, the Agency or its contractor or Project Applicant shall prepare appropriate design documents and submit to USEPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH	Project Applicant/ Construction Contractor/SFRA	Prior to undertaking any shoreline improvement activities that would affect sediment at HPS Phase II	SFRA	US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH	Appropriate regulatory agencies to approve f design documents.

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
for approval. A Dredged Material Management Office (DMMO) permit shall be obtained. The design documents shall incorporate the necessary shoreline improvements required for each specific area (e.g., including, but not limited to, rock buttressing, pile replacement, backfilling, riprap, or installation of natural-looking shoreline protection using fill and ACB mats) such that remediation (removal of sediment and any necessary dredging) and structural improvements are performed under the same regulatory approvals and permits. Prior to undertaking any shoreline improvement activities that could affect contaminated sediments left in place and covered or capped with a Navy-installed remedial measure, or that would involve pile replacement in such areas, the Agency or its contractor or Project Applicant shall prepare appropriate design documents that: (1) describes how the cover or cap would be inspected to determine whether proposed shoreline improvements would adversely affect the cover or cap; and (2) describes how construction activities would be performed to mitigate environmental risk and to restore the cover or cap. The design documents shall be submitted to USEPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A DMMO permit shall be obtained, as applicable. Prior to undertaking any shoreline improvements that could encounter contaminated sediments, the Agency or its contractor or Project Applicant shall comply with all requirements incorporated into the design documents, work plans, health and safety plans, dust control plans, and any other document or plan required under the Administrative Order of Consent. This includes all restrictions imposed pursuant to a CERCLA ROD, Petroleum					

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans. Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities, SFDPH shall confirm that the work proposed complies with the applicable plans required by the Administrative Order of Consent. This measure shall be implemented through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.					
MM HZ-12 Compliance with Administrative Order on Consent at Early Transferred Parcels. (Applies only at HPS Phase II.) Prior to undertaking any remediation activities at HPS Phase II on property that the Navy has transferred to the Agency as part of an early-transfer, the Agency or its contractor or Project Applicant shall comply with all requirements incorporated into remedial design documents, work plans, health and safety plans, dust control plans, community involvement plans, and any other document or plan required under the Administrative Order of Consent. This includes all notices, restrictions, and requirements imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans, community involvement plans, and health and safety plans. Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities, SFDPH shall confirm that the work proposed complies with the applicable plans	Project Applicant/ SFRA	Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities	SFRA/DPH	SFRA/DPH	DPH to determine compliance with Administrative Order on Consent.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
required by the Administrative Order on Consent. This measure shall be implemented through a requirement in the potential additions to Article 31 imposing requirements to parcels other than Parcel A or through an equivalent process established by the City or Agency.					
MM HZ-15 Asbestos Dust Mitigation Plans and Dust Control Plans. Prior to obtaining a grading, excavation, site, building or other permit from the City that includes soil disturbance activities, the Project Applicant shall obtain approval of an Asbestos Dust Mitigation Plan (ADMP) from BAAQMD for areas over 1 acre that potentially contain naturally occurring asbestos and approval of a Dust Control Plan (DCP) from SFDPH for all areas at HPS Phase II and for areas over 0.5 acre at Candlestick Point. Compliance with the ADMP and DCP shall be required as a condition of the permit. The ADMP shall be submitted to and approved by the BAAQMD prior to the beginning of construction, and the Project Applicant must ensure the implementation of all specified dust control measures throughout the construction Project. The ADMP shall require compliance with the following specific control measures to the extent deemed necessary by the BAAQMD to meet its standard: ■ For construction activities disturbing less than one acre of rock containing naturally occurring asbestos, the following specific dust control measures must be implemented in accordance with the asbestos ATCM before construction begins and each measure must be maintained throughout the duration of the construction Project:	Project Applicant	Prior to obtaining a grading, excavation, site, building or other permit from the City that includes soil disturbance activities. Ongoing throughout construction activity	BAAQMD/DPH	BAAQMD/DPH	BAAQMD and DPH to approve site specific DCP and ADMP and to monitor compliance throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Limit construction vehicle speed at the work site to 15 miles per hour > Sufficiently wet all ground surfaces prior to disturbance to prevent visible dust emissions from crossing the property line > Keep all graded and excavated areas around soil improvement operations, visibly dry unpaved roads, parking and staging areas wetted at least three times per shift daily with reclaimed water during construction to prevent visible dust emissions from crossing the property line. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour > Adequately wet all storage piles, treat with chemical dust suppressants, or cover piles when material is not being added to or removed from the pile > Wash down all equipment before moving from the property onto a paved public road > Clean all visible track out from the paved public road by street sweeping or a HEPA filter equipped vacuum device within 24 hours ■ For construction activities disturbing greater than one acre of rock containing naturally occurring asbestos, construction contractors are required to prepare an ADMP specifying measures that will be taken to ensure that no visible dust crosses the property boundary during construction. The plan must specify the following measures, to the extent deemed necessary by the BAAQMD to meet its standard:					

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Prevent and control visible track out from the property onto adjacent paved roads. Sweep with reclaimed water at the end of each day if visible soil material is carried out from property > Ensure adequate wetting or covering of active storage piles > Hydroseed or apply non-toxic soil stabilizers to disturbed surface areas and storage piles greater than ten cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil that will remain inactive for seven days or more. > Control traffic on on-site unpaved roads, parking lots, and staging areas—including a maximum vehicle speed of 15 miles per hour or less > Control earth moving activities > Provide as much water as necessary to control dust (without creating run-off) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity > Control dust emissions from off-site transport of naturally occurring asbestos containing materials > Stabilize disturbed areas following construction If required by the BAAQMD, air monitoring shall be implemented to monitor for off-site migration of asbestos dust during construction activities, and appropriate protocols shall be established and implemented for notification of nearby schools, property owners, and residents when monitoring					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
results indicate asbestos levels that have exceeded the standards set forth in the plan. The DCP shall be submitted to and approved by the SFDPH prior to the beginning of construction, and the site operator must ensure the implementation of all specified dust control measures throughout the construction Project. The DCP shall require compliance with the following specific mitigation measures to the extent deemed necessary by the SFDPH to achieve no visible dust at the property boundary: ■ Submission of a map to the Director of Health showing all sensitive receptors within 1,000 feet of the site. ■ Keep all graded and excavated areas, areas around soil improvement operations, visibly dry unpaved roads, parking and staging areas wetted at least three times per shift daily with reclaimed water during construction to prevent visible dust emissions from crossing the property line. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour ■ Analysis of wind direction and placement of upwind and downwind particulate dust monitors. ■ Record keeping for particulate monitoring results. ■ Requirements for shutdown conditions based on wind, dust migration, or if dust is contained within the property boundary but not controlled after a specified number of minutes. ■ Establishing a hotline for surrounding community members who may be potentially affected by Project-related dust. Contact person shall respond and take corrective					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
action within 48 hours. Post publicly visible signs around the site with the hotline number as well as the phone number of the BAAQMD and make sure the numbers are given to adjacent residents, schools, and businesses. ■ Limiting the area subject to construction activities at any one time. ■ Installing dust curtains and windbreaks on windward and downwind sides of the property lines, as necessary. Windbreaks on windward side should have no more than 50% air porosity. ■ Limiting the amount of soil in trucks hauling soil around the job site to the size of the truck bed and securing with a tarpaulin or ensuring the soil contains adequate moisture to minimize or prevent dust generation during transportation. ■ Enforcing a 15 mph speed limit for vehicles entering and exiting construction areas. ■ Sweeping affected streets with water sweepers at the end of the day. ■ Hiring an independent third party to conduct inspections for visible dust and keeping records of those inspections. ■ Minimizing the amount of excavated material or waste materials stored at the site. ■ Prevent visible track out from the property onto adjacent paved roads. Sweep with reclaimed water at the end of each day if visible soil material is carried out from property For all areas, this measure shall be implemented through Article 22B (areas over one half acre) or for HPS Phase II through a requirement in the potential additions to Article 31 imposing requirements to parcels other than Parcel A or through an equivalent process established by the City or Agency.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.L (GEOLOGY AND SOILS)					
MM GE-2a Mitigation to Minimize Dewatering Impacts during Construction. Prior to the issuance of any permit for a construction activity that would involve dewatering that could affect structures on adjacent or nearby properties, the Applicant shall, in compliance with Section 1803.1 of the *San Francisco Building Code* (SFBC), include in the permit application methods and techniques to ensure that dewatering would not lower the water table such that unacceptable settlement (as determined by a California Certified Engineering Geologist [CEG] or California Registered Geotechnical Engineer [GE]) at adjacent or nearby properties would occur. Such methods and technologies shall be based on the specific conditions at the construction site and could include, but are not necessarily limited to, the following: ■ Excavating below the groundwater table in confined areas with steel sheet piling driven below the base elevation of the proposed excavation, installation of bracing to support the excavation walls as required and, if necessary, underpinning the foundations of adjacent structures. Subsequently, the excavation would be carried out and seepage that enters the dammed area would be pumped out. ■ Perform dewatering using methods such as wellpoint systems, drainage ditches, and sump pumps.	Project Applicant	Prior to the issuance of any permit for a construction activity that would involve dewatering that could affect structures on adjacent or nearby properties	DBI	DBI	Approval of permit applications
The excavation or dewatering methods shall be monitored to detect ground settlement and to monitor individual dewatering activities in the vicinity of an excavation. Monitoring results shall be submitted to the San Francisco Department of	Project Applicant	During excavation and dewatering activities	DBI	DBI	Approval of corrective measures. Ongoing throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Building Inspection (DBI). In the event of unacceptable ground movement, as determined by DBI inspections and/or the review of monitoring results, all excavation work shall cease and corrective measures (including, for example, different dewatering methods and/or ground stabilization methods) shall be determined by the Project CEG or GE and reviewed and approved by DBI. No construction permit involving dewatering would be issued until the Project CEG or GE and DBI have approved dewatering and/or ground stabilization methods. The Project CEG or GE shall implement the corrective measures and continue monitoring activities.					
MM GE-3 Mitigation to Minimize Rock Fragmentation Impacts during Construction. Prior to the issuance of any permit for a construction activity that would involve controlled rock fragmentation that could cause settlement or lateral movement of structures on adjacent or nearby properties, the Applicant shall, in compliance with Section 1803.1 of the *San Francisco Building Code* (SFBC), include in the permit application methods and techniques to ensure that controlled rock fragmentation would not cause unacceptable vibration and/or settlement or lateral movement of structures at adjacent or nearby properties. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following: ■ Pre-excavation surveying of potentially affected structures. ■ Underpinning of foundations of potentially affected structures, as necessary.	Project Applicant	Prior to the issuance of any permit for a construction activity that would involve controlled rock fragmentation	DBI	DBI	Approval of permit applications

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
The excavation 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 excavation work shall cease and corrective measures shall be implemented. The controlled rock fragmentation program and ground stabilization measures shall be reevaluated and approved by the DBI.		During controlled rock fragmentation activities	DBI	DBI	Approval of corrective measures. Ongoing throughout controlled rock fragmentation activities
MM GE-4a.1 Site-Specific Geotechnical Investigation with Seismic Analyses. Prior to the issuance of any 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 peak ground accelerations and structural design shall be consistent with SFBC standards to ensure that structures can withstand expected ground accelerations. The CEG or GE shall determine and DBI shall approve design requirements for foundations and all other improvements associated with the permit application.	Project Applicant	Prior to issuance of construction site permit	DBI	DBI	Approval of design requirements for foundations and all other improvements associated with the permit application. Ongoing throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ 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 Project CEG or GE shall be responsible for ensuring compliance with these requirements.	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI	Approval of site-specific geotechnical investigations. Ongoing throughout construction activity.
MM GE-4a.2 Seismic Design Compliance Documentation. Prior to the issuance of building permits for the replacement of the Alice Griffith Public Housing site, the Applicant shall submit any and all seismic design compliance documentation to the HUD, as required by that agency. The Project Developer shall confirm, by copy of all documents submitted, including transmittal, compliance with this requirement to DBI. The Project California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE) shall be responsible for verifying Project compliance with this requirement.	Project Applicant	Prior to the issuance of building permits for the replacement of the Alice Griffith Public Housing site	DBI/HUD	DBI	Approval of site-specific geotechnical investigations for the replacement of the Alice Griffith Public Housing site.

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM GE-4a.3 Site-specific Seismic Analyses to Ensure Safety of Bridge Design. Prior to the issuance of any building permits for the Project site, the California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE) for the Project shall confirm that the design-level geotechnical investigation for the Yosemite Slough bridge is based on Caltrans specifications (*Bridge Design Specifications*, Section 20 of *Bridge Memos to Designers*, *Seismic Design Criteria* as previously described) and meets the San Francisco Department of Public Works Bureau of Engineering (BOE) requirements. The Project CEG or GE and California Registered Structural Engineer (SE) shall approve bridge design. No building permits shall be issued until the CEG or GE and SE verify that the Project's bridge design complies with all Caltrans specifications and BOE requirements.	Project Applicant	Prior to the issuance of building permits for the Yosemite Slough bridge	DPW	DPW	Approval of site-specific geotechnical investigations for the Yosemite Slough bridge
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	Project Applicant/ Project Geologist	Prior to issuance of building permits for the Project site	DBI	DBI	Approval of site-specific geotechnical investigations

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations
■ 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:					
<u>Structural Measures</u>					
> Construction of deep foundations, which transfer loads to competent strata beneath the zone susceptible to					

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
liquefaction, for critical utilities and shallow foundations > Structural mat foundations to distribute concentrated load to prevent damage to structures <u>Ground Improvement Measures</u> > 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.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM GE-6a Site-Specific Geotechnical Investigation with Landslide Risk Analyses. 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 shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential landslide hazards.	Project Applicant	Prior to issuance of building permits for the Project site	DBI	DBI	Approval of site-specific geotechnical investigations
■ 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.	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations

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Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
■ 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 landslide hazards. The engineering design techniques to reduce landslide hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval. The design-level geologic and geotechnical studies shall identify the presence of landslides and potentially unstable slopes and shall identify means to avoid the hazard or support the design of engineering procedures to stabilize the slopes, as required by Chapter 18 (Soils and Foundations) of the SFBC, as well as the procedures outlined in CGS Special Publication 117A. SFBC Sections 1803 through 1812 contain the formulae, tables, and graphs by which the Project engineer shall develop the Project's slope-stability specifications, including the appropriate foundation designs for structures on slopes and which would be used by DBI to verify the applicability of the specifications. If the presence of unstable slopes is identified, appropriate support and protection procedures shall be designed and implemented to maintain the stability of slopes adjacent to newly graded or re-graded access roads, work areas, and structures during and after construction, and to minimize potential for damage to structures and facilities at the Project site. These					

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stabilization procedures, including, but not necessarily limited to, the following: > Retaining walls, rock buttresses, screw anchors, or concrete piers > Slope drainage or removal of unstable materials > Rockfall catch fences, rockfall mesh netting, or deflection walls > Setbacks at the toe of slopes > Avoidance of highly unstable areas ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					
MM GE-10a Site-Specific Geotechnical Investigation with Expansive Soils Analyses. 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). In addition, all engineering practices, and analyses of structural design shall be consistent with SFBC standards to ensure soils stability, including reduction of potential soil expansion hazards.	Project Applicant	Prior to issuance of building permits for the Project site	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations
■ 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	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 expansive soils hazards. The engineering design techniques to reduce expansive soils hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval. The design-level geologic and geotechnical studies shall identify the presence of expansive soils and potentially unstable soils and shall identify means to avoid the hazard or support the design of engineering procedures to stabilize the soils, as required by Chapter 18 (Soils and Foundations) of the SFBC. SFBC Sections 1803 through 1812 contain the formulae, tables, and graphs by which the Project engineer shall develop the Project's soil-stability specifications, including the appropriate foundation designs for structures on expansive soils and which would be used by DBI to verify the applicability of the					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
specifications. If the presence of expansive soils is identified, appropriate support and protection procedures shall be designed and implemented to maintain the stability of soils adjacent to newly graded or re-graded access roads, work areas, and structures during and after construction, and to minimize potential for damage to structures and facilities at the Project site. ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					
MM GE-11a Site-Specific Geotechnical Investigation with Corrosive Soils Analyses. 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). In addition, all engineering practices, and analyses of structural design shall be consistent with SFBC standards to ensure soils stability, including reduction of potential hazards from corrosive soils.	Project Applicant	Prior to issuance of building permits for the Project site	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations
■ 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-	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 potential hazards from corrosive soils. The engineering design techniques to reduce corrosive soils hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval. The design-level geologic and geotechnical studies shall identify the presence of corrosive soils and shall identify means to avoid the hazard, as required by Chapter 18 (Soils and Foundations) of the SFBC. SFBC Sections 1803 through 1812 contain the formulae, tables, and graphs by which the Project engineer shall develop the Project's structural design specifications, including the appropriate foundation designs for structures on corrosive soils and which would be used by DBI to verify the applicability of the specifications. If the presence of corrosive soils is identified, appropriate protection procedures shall be designed and					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
implemented to minimize potential for damage from corrosive soils to structures and facilities at the Project site. ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					
SECTION III.M (HYDROLOGY AND WATER QUALITY)					
MM HY-1a.1 Storm Water Pollution Prevention Plan: Combined Storm Sewer System. In compliance with the Article 4.1 of the Public Works Code and the City's Construction Site Water Pollution Prevention Program, the Project Applicant shall submit a site-specific Storm Water Pollution Prevention Plan (SWPPP) to the SFPUC for approval, prior to initiating construction activities in areas draining to the combined sewer system. The SFPUC requires implementation of appropriate Best Management Practices (BMPs) from the California Stormwater Quality Association Stormwater BMP Handbook- Construction or the Caltrans Construction Site BMPs Manual. In accordance with SFPUC's requirements, the SWPPP shall include: ■ An Erosion and Sediment Control Plan that includes a site map illustrating the BMPs that will be used to minimize on-site erosion and the sediment discharge into the combined sewer system, and a narrative description of those BMPs. Appropriate BMPs for Erosion and Sediment Control Plan may include: > Scheduling—Develop a schedule that includes sequencing of construction activities with the implementation of appropriate BMPs. Perform construction activities and control practices in accordance with the planned schedule. Schedule work to minimize soil-disturbing activities during the rainy season.	Project Applicant	Submit site-specific SWPPP to SFPUC for approval prior to initiating construction activity in any area draining to *combined* sewer system Inspection before and after storm event, and once per 24-hour period during storm event	SFPUC SFPUC	SFPUC SFPUC	SWPPP for each site undergoing construction in areas draining to combined sewer system to be approved by SFPUC Quarterly MMRP reports to SFPUC, to include reporting on compliance with this measure, until completion of construction

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Schedule major grading operations for the dry season when practical. Monitor the weather forecast for rainfall and adjust the schedule as appropriate. > Erosion Control BMPs—Preserve existing vegetation where feasible, apply mulch or hydroseed areas with native, non-invasive species, until permanent stabilization is established, and use soil binders, geotextiles and mats, earth dikes and drainage swales, velocity dissipation devices, slope drains, or polyacrylamide to protect soil from erosion. > Wind Erosion BMPs—Apply water or other dust palliatives to prevent dust nuisance; prevent overwatering which can cause erosion. Alternatively, cover small stockpiles or areas that remain inactive for seven or more days. > Sediment Control BMPs—Install silt fences, sediment basins, sediment traps, check dams, fiber rolls, sand or gravel bag barriers, straw bale barriers, approved chemical treatment, and storm drain inlet protection to minimize the discharge of sediment. Employ street sweeping to remove sediment from streets. > Tracking Controls—Stabilize the construction site entrance to prevent tracking of sediment onto public roads by construction vehicles. Stabilize on-site vehicle transportation routes immediately after grading to prevent erosion and control dust. Install a tire wash area to remove sediment from tires and under carriages. ■ Non-Stormwater Management BMPs that may include water conservation practices; dewatering practices that minimize sediment					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
discharges; and BMPs for: paving and grinding activities; identifying illicit connections and illegal dumping; irrigation and other planned or unplanned discharges of potable water; vehicle and equipment cleaning, fueling, and maintenance; concrete curing and finishing; temporary batch plants; implementing shoreline improvements and working over water. Discharges from dewatering activities shall comply with the SFPUC's Batch Wastewater Discharge Requirements that regulate influent concentrations for various constituents. ■ Waste Management BMPs shall be implemented for material delivery, use, and storage; stockpile management; spill prevention and control; solid and liquid waste management; hazardous waste management; contaminated soil management; concrete waste management; and septic/sanitary waste management. ■ SWPPP Training Requirements—Construction personnel will receive training on the SWPPP and BMP implementation. ■ Site Inspections and BMP Maintenance—An inspector identified in the SWPPP will inspect the site on a regular basis, before and after a storm event, and once each 24-hour period during extended storms to identify BMP effectiveness and implement corrective actions if required. The SWPPP shall include checklists that document when the inspections occurred, the results of the inspection, required corrective measures, and when corrective measures were implemented. Required BMP maintenance related to a storm event shall be completed within 48 hours of the storm event.	SFPUC	Before and after a storm event, and once each 24-hour period during extended storms	SFPUC	SFPUC	Ongoing throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HY-1a.2 Stormwater Pollution Prevention Plan: Separate Storm Sewer System. Consistent with the requirements of the SWRCB General Permit for Storm Water Discharges Associated with Construction and Land Disturbing Activities (Construction General Permit), the Project Applicant shall undertake the proposed Project in accordance with a project-specific Storm Water Pollution Prevention Plan (SWPPP) prepared by Qualified SWPPP Developer, who shall consult with California State Parks on those elements of the SWPPP that cover the Candlestick Park State Recreation Area, including selection of best management practices and other SWPPP improvements. The SFRWQCB, the primary agency responsible for protecting water quality within the project area, is responsible for reviewing and ensuring compliance with the SWPPP. This review is based on the Construction General Permit issued by the SWRCB.	Project Applicant	Submit site-specific SWPPP to SFRWQCB for approval prior to initiating construction activity in any area draining to *separate* storm sewer system (see also MM HY-1a.3 for more specific requirements related to groundwater dewatering)	SFRWQCB	SFRWQCB; SFRA	SWPPP for each site undergoing construction in areas draining to separate storm sewer system to be approved by SFRWQCB
		Construction monitoring and reporting ongoing throughout construction period			Quarterly reporting to SFRWQCB and SFRA, to include reporting on compliance with this measure, until completion of construction
The SWPPP shall include, as applicable, all Best Management Practices (BMPs) required in Attachment C of the Construction General Permit for Risk Level 1 dischargers, Attachment D for Risk Level 2 dischargers, or Attachment E for Risk Level 3 dischargers. In addition, recommended BMPs, subject to review and approval by the SFRWQCB, include the measures listed below. However, the measures themselves may be altered, supplemented, or deleted during the SFRWQCB's review process, since the SFRWQCB has final authority over the terms of the SWPPP. ■ Scheduling: > To reduce the potential for erosion and sediment discharge, schedule construction to minimize ground disturbance during the rainy season.		Post construction BMPs monitoring and maintenance in accordance with SWPPP			Annual post-construction period reporting to SFRWQCB and SFRA, to include reporting on compliance with this measure

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Schedule major grading operations during the dry season when practical, and allow enough time before rainfall begins to stabilize the soil with vegetation or to install sediment-trapping devices. > Sequence construction activities to minimize the amount of time that soils remain disturbed. > Stabilize all disturbed soils as soon as possible following the completion of ground disturbing work. > Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities. ■ Erosion and Sedimentation: > Preserve existing vegetation in areas where no construction activity is planned or where construction activity will occur at a later date. > Stabilize and re-vegetate disturbed areas as soon as possible after construction with planting, seeding, and/or mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material) except in actively cultivated areas. Planting and seeding shall use native, non-invasive species. > Install silt fences, coir rolls, and other suitable measures around the perimeter of the areas affected by construction and staging areas and around riparian buffers, storm drains, temporary stockpiles, spoil areas, stream channels, swales, down-slope of all exposed soil areas, and in other locations determined necessary to prevent off-site sedimentation.					

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
> Install temporary slope breakers during the rainy season on slopes greater than 5 percent where the base of the slope is less than 50 feet from a water body, wetland, or road crossing at spacing intervals required by the SFRWQCB. > Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets. > Detain and treat stormwater using sedimentation basins, sediment traps, baker tanks, or other measures to ensure that discharges to receiving waters meet applicable water quality objectives. > Install check dams, where applicable, to reduce flow velocities. Check dams reduce erosion and allow sediment to settle out of runoff. > Install outlet protection/energy dissipation, where applicable, to prevent scour of the soil caused by concentrated high velocity flows. > Implement control measures such as spraying water or other dust palliatives to alleviate nuisance caused by dust. ■ Groundwater/Dewatering: > Prepare a dewatering plan prior to excavation specifying methods of water collection, transport, treatment, and discharge of all water produced by construction site dewatering. > Impound water produced by dewatering in sediment retention basins or other holding facilities to settle the solids and provide other treatment as necessary prior to discharge to receiving waters. Locate sedimentation basins and other					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
retention and treatment facilities away from waterways to prevent sediment-laden water from reaching streams. > Control discharges of water produced by dewatering to prevent erosion. > If contaminated groundwater is encountered, contact the SFRWQCB for appropriate disposal options. Depending on the constituents of concern, such discharges may be disallowed altogether, or require regulation under a separate general or individual permit that would impose appropriate treatment requirements prior to discharge to the stormwater drainage system. ■ Tracking Controls: > Grade and stabilize construction site entrances and exits to prevent runoff from the site and to prevent erosion. > Install a tire washing facility at the site access to allow for tire washing when vehicles exit the site. > Remove any soil or sediment tracked off paved roads during construction by street sweeping. ■ Non-stormwater Controls: > Place drip pans under construction vehicles and all parked equipment. > Check construction equipment for leaks regularly. > Wash construction equipment in a designated enclosed area regularly. > Contain vehicle and equipment wash water for percolation or evaporative drying away from storm drain inlets.					

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
> Refuel vehicles and equipment away from receiving waters and storm drain inlets, contain the area to prevent run-on and run-off, and promptly cleanup spills. > Cover all storm drain inlets when paving or applying seals or similar materials to prevent the discharge of these materials. ■ Waste Management and Hazardous Materials Pollution Control: > Remove trash and construction debris from the project area daily. > Locate sanitary facilities a minimum of 300 feet from receiving waters. Maintain sanitary facilities regularly. > Store all hazardous materials in an area protected from rainfall and stormwater run-on and prevent the off-site discharge of hazardous materials. > Minimize the potential for contamination of receiving waters by maintaining spill containment and cleanup equipment on site, and by properly labeling and disposing of hazardous wastes. > Locate waste collection areas close to construction entrances and away from roadways, storm drains, and receiving waters. > Inspect dumpsters and other waste and debris containers regularly for leaks and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers. > Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Implement construction materials management BMPs for: > Road paving, surfacing and asphalt removal activities. > Handling and disposal of concrete and cement. ■ BMP Inspection, Maintenance, and Repair: > Inspect all BMPs on a regular basis to confirm proper installation and function. Inspect BMPs daily during storms. > Immediately repair or replace BMPs that have failed. Provide sufficient devices and materials (e.g., silt fence, coir rolls, erosion blankets, etc.) throughout project construction to enable immediate corrective action for failed BMPs. ■ Monitoring and Reporting: > Provide the required documentation for SWPPP inspections, maintenance, and repair requirements. Personnel that will perform monitoring and inspection activities shall be identified in the SWPPP. > Maintain written records of inspections, spills, BMP-related maintenance activities, corrective actions, and visual observations of off-site discharges of sediment or other pollutants, as required by the SFRWQCB. > Monitor the water quality of discharges from the site to assess the effectiveness of control measures. ■ Implement Shoreline Improvements and work over water BMPs to minimize the potential transport of sediment, debris, and construction materials to the Lower Bay					

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
during construction of shoreline improvements. ■ Post-construction BMPs: > Re-vegetate all temporarily disturbed areas as required after construction activities are completed. Re-vegetation shall use native, non-invasive species. > Remove any remaining construction debris and trash from the project site and area upon project completion. > Phase the removal of temporary BMPs as necessary to ensure stabilization of the site. > Maintain post-construction site conditions to avoid formation of unintended drainage channels, erosion, or areas of sedimentation. > Correct post-construction site conditions as necessary to comply with the SWPPP and any other pertinent SFRWQCB requirements. ■ Train construction site personnel on components of the SWPPP and BMP implementation. Train personnel that will perform inspection and monitoring activities.					
MM HY-1a.3 Groundwater Dewatering Plan. Prior to commencement of construction activities and to minimize potential impacts to receiving water quality during the construction period, the Project Applicant shall through the proper implementation of this dewatering plan, show compliance with SFRWQCB/NPDES requirements, whichever are applicable. The Dewatering Plan shall specify how the water would be collected, contained, treated, monitored, and/or discharged to the vicinity drainage system	Project Applicant	Groundwater Dewatering Plan to be a specific component of SWPPP, to be submitted to SFRWQCB for approval prior to initiating construction activity in any area draining to *separate* sewer system	SFRWQCB	SFRWQCB; SFRA	SWPPP for each site undergoing construction in areas draining to separate storm sewer system to be approved by SFRWQCB Quarterly reporting to SFRWQCB and SFRA, to include reporting on compliance with this measure, until completion of construction

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
or Lower Bay. Subject to the review and approval of the SFRWQCB, the Dewatering Plan shall include, at a minimum: ■ Identification of methods for collecting and handling water on site for treatment prior to discharge, including locations and capacity of settling basins, infiltration basins (where not restricted by site conditions), treatment ponds, and/or holding tanks ■ Identification of methods for treating water on site prior to discharge, such as filtration, coagulation, sedimentation settlement areas, oil skimmers, pH adjustment, and other BMPs ■ Procedures and methods for maintaining and monitoring dewatering operations to ensure that no breach in the process occurs that could result in an exceedance of applicable water quality objectives ■ Identification of discharge locations and inclusion of details on how the discharge would be conducted to minimize erosion and scour ■ Identification of maximum discharge rates to prevent exceedance of storm drain system capacities ■ Additional requirements of the applicable General Permit or NPDES Permit/WDR (including effluent and discharge limitations and reporting and monitoring requirements, as applicable) shall be incorporated into the Dewatering Plan Any exceedance of established narrative or numeric water quality objectives shall be reported to the SFRWQCB and corrective action taken as required by the SFRWQCB and the Dewatering Plan. Corrective action may include increased					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
residence time in treatment features (e.g., longer holding time in settling basins) and/or incorporation of additional treatment measures (e.g., addition of sand filtration prior to discharge).					
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 Management Requirements and Stormwater Design Guidelines (SMR). The 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 SMR. Per the 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	Project Applicant	Stormwater Control Plan (SCP) and Stormwater Drainage Master Plan (SDMP) to be submitted to SFPUC as part of development application.	SFPUC; SFRA	SFPUC; SFRA	Approval by SFPUC of SCP and SDMP

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> 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 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, and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.24 inch per hour. Treatment trains shall be used where feasible. Additional 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.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ 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 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.	Project Applicant	Prior to approval of site specific development plans	SFPUC/DPW	SFPUC/DPW	Approval of the SDMP
MM HY-6a.2 Recycled Water Irrigation Requirements. Prior to application of recycled water at the Project site for landscape irrigation, the Project Applicant shall demonstrate compliance with all terms and conditions of the SFPUC's Operations and Maintenance Plan and the Recycled Water General Permit conditions for the use of recycled water. As required by the Recycled Water General Permit, the Project Applicant shall submit an Operations and Maintenance Plan and an Irrigation Management Plan to the SWRCB. The Project Applicant shall also submit the Operations and Maintenance Plan and the Irrigation Management Plan to the SFPUC. Prior to on-site application of recycled water, the Project Applicant shall obtain written confirmation from the SFPUC that the Project Operations and Maintenance Plan and the Irrigation Management Plan is in compliance with the SFPUC's Operations and Maintenance Plan, and other SFPUC requirements for the use of recycled water. All recycled water provided to Project Applicant, pursuant to the Recycled Water General Permit, shall be treated in and managed in conformance with all applicable provisions of the Recycled	Project Applicant	Prior to application of recycled water at project site for landscaping irrigation, Applicant to submit Operations and Management Plan, and Irrigation Management Plan to both SWRCB and SFPUC	SWRCB/SFPUC	SWRCB/SFPUC	Approval of Operations and Management Plan and Irrigation Management Plan by SFPUC
		Monthly monitoring of recycled water applied	SWRCB/SFPUC/ SFRA	SWRCB/SFPUC/ SFRA	Ongoing reporting to SFPUC and SFRA

Mitigation Monitoring & Reporting Program					
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Water Policy and shall meet Title 22 Requirements for disinfected tertiary recycled water as described in CCR Title 22, sections 60301.230 and 60301.320. In accordance with the Recycled Water General Permit, the Project Applicant's Operations and Maintenance Plan shall describe methods and procedures for complying with recycled water regulations, and the maintenance of equipment and emergency backup systems to maintain compliance with the General Permit conditions and California Department of Public Health (CDPH) requirements. The Project Applicant shall ensure that all users of recycled water comply with the Operations and Maintenance Plan by developing educational materials (e.g., pamphlet or brochure) that convey key operational elements (e.g., prevention of cross-connections) of the plan. In accordance with the Recycled Water General Permit, the Project Applicant's Irrigation Management Plan shall include measures to ensure the use of recycled water occurs at an agronomic rate while employing practices to minimize application of salinity constituents. The Irrigation Management Plan shall account for soil characteristics, recycled water characteristics, plant species irrigation requirements, climatic conditions, supplemental nutrient additions to support plant growth, and management of impoundments used to store or collect recycled water. The Irrigation Management Plan shall describe any conditions of approval required by the City, CDPH, or SWRCB. The Project Applicant shall implement the following landscape irrigation BMPs in accordance with Recycled Water General Permit Requirements:					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ The Operations and Maintenance Plan shall include leak detection methods and correction within 72 hours of identifying a leak or prior to the release of 1,000 gallons. ■ Recycled water shall not be applied during precipitation events. ■ Impoundment areas shall be managed such that no discharge occurs from storms smaller than the 25-year, 24-hour event. The Project Applicant shall also implement BMPs for general operational controls, protection of workers and the public (e.g., education about not drinking recycled water), and efficient irrigation (e.g., dedicated landscape water meters for monitoring water usage and leak detection). The Project Applicant shall conduct monthly monitoring to quantify the volume of recycled water applied, the locations and total area of application, and the mass of nitrogen and salinity constituents applied.					
MM HY-6b.1 Limitations on Stormwater Infiltration. Infiltration BMPs on HPS Phase II shall be prohibited. Alternative BMPs for stormwater quality control, reuse, and treatment shall be used. For instance, biofiltration BMPs can be implemented with an impervious liner and subdrain system to treat stormwater runoff while preventing infiltration. Overland flow (greater than the five-year and up to the 100-year storm) shall be conveyed in lined channels or other conveyances that will not result in infiltration.	Project Applicant	With respect to Hunters Point Shipyard Phase II, the SCP and SDMP referred to in HY-6a.1 will avoid infiltration BMPs	SFPUC	SFPUC	Approval by SFPUC of SCP and SDMP
MM HY-6b.2 Industrial General Permit. The Facility Operator shall apply for an Industrial General Permit prior to operational activities for facilities requiring coverage under the Industrial General Permit, which is determined based on the facility's SIC. The Facility Operator shall comply	Project Applicant/ Site Specific Facility Operator	Prior to facility operation	SWRCB/SFPUC	SWRCB/SFPUC	Approval by SFRWQCB

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Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
with all provisions in the Industrial General Permit, including implementation of a SWPPP, to effectively control pollutants to the BAT/BCT during the normal course of operations. Primary components and pollution prevention measures that the SWPPP shall address are described below. The Facility Operator shall refer to the California Stormwater Quality Association Stormwater Best Management Practice Handbook – Industrial and Commercial or equivalent for details on BMP implementation. The SFRWQCB is responsible for overseeing Industrial General Permit activities, including SWPPP compliance. The following BMPs shall be incorporated into the SWPPP. Non-Structural BMPs ■ Good Housekeeping: Good housekeeping generally consists of practical procedures to maintain a clean and orderly facility. ■ Preventive Maintenance: Regular inspection and maintenance of structural stormwater controls (catch basins, oil/water separators, etc.) as well as other facility equipment and systems. ■ Spill Response: Spill clean-up procedures and necessary clean-up equipment based upon the quantities and locations of significant materials that may spill or leak. ■ Material Handling and Storage: Procedures to minimize the potential for spills and leaks and to minimize exposure of significant materials to stormwater and authorized non-stormwater discharges. ■ Employee Training: Training of personnel who are responsible for (1) implementing activities identified in the SWPPP, (2) conducting inspections, sampling, and visual					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
observations, and (3) managing stormwater. The SWPPP shall identify periodic dates for such training. Records shall be maintained of all training sessions held. ■ Waste Handling/Recycling: Procedures or processes to handle, store, or dispose of waste materials or recyclable materials. ■ Recordkeeping and Internal Reporting: Procedures to ensure that all records of inspections, spills, maintenance activities, corrective actions, visual observations, etc., are developed, retained, and provided, as necessary, to the appropriate facility personnel. ■ Erosion Control and Site Stabilization: This may include the planting and maintenance of vegetation, diversion of run-on and runoff, placement of sandbags, silt screens, or other sediment control devices, etc. ■ Inspections: This includes, in addition to the preventative maintenance inspections identified above, an inspection schedule of all potential pollutant sources. Tracking and follow-up procedures shall be described to ensure adequate corrective actions are taken and SWPPP revisions are made as needed. ■ Quality Assurance: Procedures to ensure that all elements of the SWPPP and Monitoring Program are adequately conducted. <u>Structural BMPs to be Considered</u> ■ Overhead Coverage: Structures that provide horizontal coverage of materials, chemicals, and pollutant sources from contact with stormwater and authorized non-stormwater discharges.					

Mitigation Monitoring & Reporting Program					
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■ Retention Ponds: Basins, ponds, surface impoundments, etc. that do not allow stormwater to discharge from the facility. ■ Control Devices: Berms or other devices that channel or route run-on and runoff away from pollutant sources. ■ Secondary Containment Structures: This generally includes containment structures around storage tanks and other areas for the purpose of collecting any leaks or spills. ■ Treatment: This includes inlet controls, infiltration devices, oil/water separators, detention ponds, vegetative swales, etc. that reduce the pollutants in stormwater discharges and authorized non-stormwater discharges. However, because of extensive site constraints, use of infiltration BMPs shall be limited.					
MM HY-6b.3 Clean Marinas California Program. The marina operator shall obtain certification under the Clean Marinas California Program. The Clean Marinas California Program has developed marina BMPs and an inspection and certification process for marinas that meet the program standard for BMP implementation. The marina operator shall implement BMPs that address the following sources of pollution: petroleum containment, topside boat maintenance and cleaning, underwater boat hull cleaning, marina operations, marina debris, boat sewage discharge, solid waste, liquid waste, fish waste, hazardous materials, and stormwater runoff.	Project Applicant	Prior to marina operation	SFRWQCB/SFRA	SFRWQCB/SFRA	Upon certification of the Clean Marinas Program

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 5.5 feet above the Base Flood Elevation (BFE) to 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 SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.	Project Applicant	Prior to issuance of construction permits	DPW/DBI	DPW/DBI	Upon revision of the City's interim Floodplain Map OR: Upon issuance of LOMAR-F from FEMA
MM HY-12a.2 Shoreline Improvements for Future Sea-Level Rise. Shoreline and public access improvements shall be designed to allow for future 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 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	Project Applicant	Prior to issuance of construction permits for shoreline improvements	SFRA/DPW	SFRA/DPW	Upon approval of development permits

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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 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. **MM HY-13b** Floodplain Development Permit. To reduce the impacts of placing structures in a 100-year flood hazard area that could impede or redirect flows, the Project Applicant shall implement that following measures: ■ The Project Applicant shall obtain a Floodplain Development Permit from the Office of the City Administrator in accordance with the City's floodplain management ordinance that includes a hydraulic evaluation to determine whether structures or structural elements would impede or redirect flood flows and mandates minimum design and construction standards. Design and construction methods shall comply with NFIP requirements for placing structures in Zone V. ■ The Floodplain Development Permit shall include a "V-Zone Certification" in accordance with the NFIP. As part of the certification, a professional engineer or architect shall consider the NFIP "Free-of-Obstruction" requirement, to ensure that floodwaters or waves would not be deflected into a building or adjacent structure.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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[2] (or updated Shoreline Improvements Reports). Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.	Project Applicant	Prior to issuance of construction permits for shoreline improvements	SFRA/DPW	SFRA/DPW	Upon approval of development permits
SECTION III.N (BIOLOGICAL RESOURCES)					
MM BI-4a.1 Wetlands and Jurisdictional/ Regulated Waters Mitigation for Temporary and/or Permanent Impacts. Wetlands and jurisdictional waters shall be avoided to the maximum extent practicable for all Project components. For example, any measures taken to improve the existing shoreline of Candlestick Point or HPS Phase II for purposes of flood control, erosion control, or repair or stabilization of existing structures shall minimize the amount of fill to be placed in jurisdictional areas. Where avoidance of existing wetlands and drainages is not feasible, and before any construction activities are initiated in jurisdictional areas, the Applicant shall obtain the following permits, as applicable to the activities in question: ■ CWA Section 404 permit from the USACE. ■ Section 10 *Rivers and Harbors Act* Permit from the USACE. ■ CWA Section 401 water quality certification from the RWQCB, and/or Report of Waste Discharge for Waters of the State.	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and City/ SFRA	SFRA	Obtain and comply with applicable permits

[2] Moffatt & Nichols, 2009, Candlestick Point / Hunters Point Redevelopment Project Proposed Shoreline Improvements, prepared for Lennar Urban, September, 2009.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ CWA Section 402/National Pollution Discharge Elimination System permit from SWRCB [requiring preparation of a Stormwater Pollution Prevention Plan (SWPPP)]. ■ CDFG Section 1602 streambed alteration agreement from CDFG. ■ A permit from the BCDC. ■ Dredging permits from the USACE and BCDC as required, obtained through the Dredged Material Management Office (DMMO) process. Copies of these permits shall be provided to the contractor, along with the construction specifications. The Project Applicant shall be responsible for complying with all of the conditions set forth in these permits, including any financial responsibilities. Compensation for impacts to wetlands and jurisdictional waters shall be required to mitigate any permanent impacts to these habitats to less-than significant-levels. Such mitigation shall also be developed (separately from the CEQA process) as a part of the permitting process with the USACE, or for non-USACE-jurisdictional wetlands, during permitting through the SFRWQCB, BCDC, and/or CDFG. The exact mitigation ratio shall be established during the permitting process, and depends on a number of factors, including the type and value of the wetlands permanently affected by the Project; however, mitigation shall be provided at a ratio of no less than 1:1 (at least 1 acre of mitigation for every 1 acre of waters of the US/State permanently filled). Mitigation could be achieved through a combination of on-site restoration or creation of wetlands or aquatic habitats (including removal of on-site fill or structures such as piers, resulting in a gain of wetland or aquatic habitats); off-site restoration/creation; and/or mitigation credits purchased at mitigation banks within the San					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Francisco Bay Region. However, any mitigation for impacts to jurisdictional waters providing habitat for special-status fish such as the green sturgeon, Central California Coast steelhead, Chinook salmon, and longfin smelt must result in the restoration or creation (at a minimum 1:1 ratio) of suitable habitat for these species, and any mitigation for impacts to jurisdictional wetlands or other waters that are considered EFH by the NMFS must result in the restoration or creation (at a minimum 1:1 ratio) of EFH. Suitably planned mitigation sites may satisfy mitigation requirements for jurisdictional areas, special-status fish, and EFH simultaneously (i.e., in the same mitigation areas) if the mitigation satisfies all these needs.					
For funding of off-site improvements or purchase of mitigation bank credits, the Project Applicant shall provide written evidence to the City/Agency that either (a) compensation has been established through the purchase of a sufficient number of mitigation credits to satisfy the mitigation acreage requirements of the Project activity, or (b) funds sufficient for the restoration of the mitigation acreage requirements of the Project activity have been paid to the BCDC, CCC, or other entity or agency that offers mitigation credits in the San Francisco Bay Area.	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and SFRA	SFRA	Written evidence to the City/SFRA for funding of off-site improvements or purchase of mitigation bank credits
For areas to be restored, to mitigate for temporary or permanent impacts, the Project Applicant shall prepare and implement a Wetland and Jurisdictional Waters Mitigation Monitoring Plan (Mitigation Monitoring Plan). The Plan shall be submitted to the regulatory agencies along with permit application materials for approval, along with a copy to the City/Agency. The Project Applicant shall retain a restoration ecologist or wetland biologist to develop the Wetland and Jurisdictional Waters Mitigation and	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and SFRA	SFRA	Preparation and implementation of Wetland and Jurisdictional Waters Mitigation and Monitoring Plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	***Responsibility for Implementation***	***Mitigation Timing***	***Enforcement Responsibility***	***Monitoring Responsibility***	***Monitoring Actions/ Verification of Compliance***
Monitoring Plan, and it shall contain the following components (or as otherwise modified by regulatory agency permitting conditions): 1. Summary of habitat impacts and proposed mitigation ratios, along with a description of any other mitigation strategies used to achieve the overall mitigation ratios, such as funding of off-site improvements and/or purchase of mitigation bank credits 2. Goal of the restoration to achieve no net loss of habitat functions and values 3. Location of mitigation site(s) and description of existing site conditions 4. Mitigation design: ■ Existing and proposed site hydrology ■ Grading plan if appropriate, including bank stabilization or other site stabilization features ■ Soil amendments and other site preparation elements as appropriate ■ Planting plan ■ Irrigation and maintenance plan ■ Remedial measures/adaptive management, etc. 5. Monitoring plan (including final and performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.) 6. Contingency plan for mitigation elements that do not meet performance or final success criteria. Restoration and/or creation of wetlands or aquatic habitats could occur on site or off site and at one or more locations, as approved by the regulatory agencies. Impacts occurring due to activities on Candlestick Point may be mitigated by restoration or creation activities on HPS Phase II and vice versa.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
For example, loss of open water habitat that might result from construction of shoreline treatments could potentially be mitigated by the removal of fill or structures from aquatic habitat on HPS Phase II.					
The Project Applicant, or its agent, shall implement the Wetland and Jurisdictional Waters Mitigation Monitoring Plan. At least five years of monitoring (or more if required as a condition of the permits) shall be conducted to document whether the success criteria (that are determined as part of the mitigation plan) are achieved, and to identify any remedial actions that must be taken if the identified success criteria are not met. Annual monitoring reports (described below) shall be submitted to CDFG, the USACE, the BCDC, the City/Agency, and the SFRWQCB. Each report shall summarize data collected during the monitoring period, describe how the habitats are progressing in terms of the success criteria, and discuss any remedial actions performed. Additional reporting requirements imposed by permit conditions shall be incorporated into the Wetland and Jurisdictional Waters Mitigation Monitoring Plan and implemented. Success criteria for specified years of monitoring for vegetated mitigation wetlands are as follows (though these may be subject to change pending development of specific Mitigation and Monitoring Plans and consultation during the permit process): ■ Year 1 after restored areas reach elevations suitable for colonization by wetland plants: 10 percent combined area and basal cover (rhizomatous turf) of all vegetation in the preserve wetland; at least two hydrophytic plants co-dominant with whatever other vegetative cover exists. ■ Year 3 after restored areas reach colonization elevation: 50 percent combined	Project Applicant	During construction activities, for at least 5 years	CDFG, the USACE, the BCDC, SFRWQCB; and City/ SFRA	SFRA	At least 5 years of monitoring, and preparation of annual monitoring reports to be submitted to CDFG, USACE, BCDC, SFRA, and SFRWQCB. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
area and basal cover (rhizomatous turf) of all vegetation; prevalence of hydrophytic species in terms of both cover and dominant species composition of the vegetation; native vascular species shall comprise 95 percent of the vegetation in the preserve wetland. ■ Year 5 after restored areas reach colonization elevation: 70 percent combined area and basal cover (rhizomatous turf) of all vegetation; more than 50 percent dominance in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) species; native vascular species shall comprise 95 percent of the vegetation in the preserve wetlands.					
Other success criteria shall be developed for open water/mud flat habitats (which would not be expected to support vegetation) or for wetland complexes specifically designed to contain extensive areas of channels, pannes, or flats that would not be vegetated. In addition, the final Project design shall avoid substantial adverse effects to the pre-Project hydrology, water quality, or water quantity in any wetland that is to be retained on site. This shall be accomplished by avoiding or repairing any disturbance to the hydrologic conditions supporting these wetlands, as verified through an on-site Wetland Protection Plan that shall be prepared by a restoration ecologist or wetland biologist that is retained by the Project Applicant, and submitted to regulatory agencies for approval, along with a copy to the City/Agency. If such indirect effects cannot be avoided, compensatory mitigation shall be provided for the indirectly affected wetlands at a minimum 1:1 ratio, as described above. Mitigation for indirectly impacted wetlands shall be described in the Wetland and Jurisdictional Waters Mitigation and Monitoring Plan.	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and City/ SFRA	SFRA	Preparation of an on-site Wetland Protection Plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Project features resulting in impacts to open water areas as a result of the marina, bridge, and breakwater construction shall be designed to be the minimum size required to meet their designated need. The opening in the breakwater shall be large enough and positioned such that it would allow for a complete daily exchange of water within the marina that would otherwise result from normal tidal flow, as determined by a coastal engineer and an aquatic biologist. This opening shall be designed to minimize disruption to the local hydrology generated by the breakwater and allow for normal tidal flow to ensure the daily exchange of nutrients.	Project Applicant	During Project design	SFRA	SFRA	Approval of final design
MM BI-4a.2 Wetlands and Jurisdictional/Regulated Waters Impact Minimization for Construction-Related Impacts. The Project Applicant shall ensure that the contractor minimizes indirect construction-related impacts on wetlands and jurisdictional/regulated waters throughout the Study Area by implementing the following Best Management Practices (BMPs): ■ Prior to any construction activities on the site, a protective fence shall be installed a minimum of one foot (or greater, if feasible) from the edge of all wetland habitat to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all wetland features have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities within 50 feet of the protected feature have been completed.	Project Applicant	Prior to initiation of construction activities	DBI/SFRA; CDFG, USACE, BCDC, SFRWQCB	DBI/SFRA, in consultation with other regulatory agencies, as necessary	SFRA and DBI to review construction documents and construction staging, access, and parking plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Construction inspectors shall routinely inspect protected areas to ensure that protective measures remain in place and effective until all construction activities near the protected resource have been completed. The fencing shall be removed immediately following construction activities. ■ To maintain hydrologic connections, the Project design shall include culverts for all seasonal and perennial drainages that are waters of the United States and/or Waters of the State. ■ Sediment mitigation measures shall be in place prior to the onset of Project construction and shall be monitored and maintained until construction activities have been completed. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas. Excess excavated soil shall be disposed of at a regional landfill or at another approved and/or properly permitted location. Stockpiles that are to remain on the site throughout the wet season shall be protected to prevent erosion. ■ Where determined necessary by regulatory agencies, geotextile cushions and other appropriate materials (i.e., timber pads, prefabricated equipment pads, geotextile fabric) shall be used in saturated conditions to minimize damage to the substrate and vegetation. ■ Exposed slopes and banks shall be stabilized immediately following completion of construction activities to reduce the effects of erosion on the drainage system.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ In highly erodible areas, such as Yosemite Slough, banks shall be stabilized using a non-vegetative material that shall bind the soil initially and break down within a few years. If, during review of the grading permit for this area, the City/Agency determines that more aggressive erosion control treatments are needed, the contractor shall be directed to use geotextile mats, excelsior blankets, or other soil stabilization products. ■ The contractors shall develop a Storm Water Pollution Prevention Plan (SWPPP) prior to construction. As discussed in the Regulatory Framework of the Hydrology and Water Quality section of this EIR, the SWPPP will comply with applicable local, state, and federal requirements. Erosion control BMPs may include, but are not limited to, the application of straw mulch; seeding with fast growing grasses; construction of berms, silt fences, hay bale dikes, stormwater detention basins, and other energy dissipaters. BMPs shall be selected and implemented to ensure that contaminants are prevented from entering the San Francisco Bay during construction and operation of the facilities shall protect water quality and the marine species in accordance with all regulatory standards and requirements. ■ Testing and disposal of any dredged sediment shall be conducted as required by the USACE and the Long-Term Management Strategy (LTMS)[3]					

[3] US Army Corps of Engineers, US 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.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ All temporarily impacted wetlands and other jurisdictional waters, whether in tidal or non-tidal areas, shall be restored to pre-construction contours following construction. Such impact areas include areas that are dewatered (e.g., using coffer dams) and/or used for construction access. Temporarily impacted wetlands that were vegetated prior to construction shall be revegetated in accordance with a Wetlands and Jurisdictional Water Mitigation and Monitoring Plan as described above. ■ For impacts to tidal habitats: > Conduct all work in dewatered work areas > Install sediment curtains around the worksite to minimize sediment transport > Work only during periods of slack, tide (minimal current) and low wind to minimize transport of sediment laden water					
MM BI-4c Mitigation for Shading Impacts to Jurisdictional/Regulated Waters. Mud flats and aquatic habitats impacted by permanent shading from the Yosemite Slough bridge shall be mitigated by the creation or restoration, either on site, off site, and/or via purchase of mitigation bank credits, at a 0.5:1 (mitigation:impacted) ratio. Aside from the mitigation ratio, such mitigation shall be provided as described for mitigation measure MM BI-4a.1.	Project Applicant	Prior to initiation of construction activities	DBI/SFRA; CDFG, USACE, BCDC, SFRWQCB	DBI/SFRA, in consultation with other regulatory agencies, as necessary	Written evidence to the City/SFRA for funding of off-site improvements or purchase of mitigation bank credits; preparation of Wetland and Jurisdictional Waters Mitigation and Monitoring Plan and subsequent annual monitoring reports for areas to be restored shall be submitted to CDFG, the USACE, the BCDC, the City/SFRA, and the SFRWQCB.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM BI-5b.1 Avoidance of Impacts to Eelgrass. As the design of shoreline treatments progresses, and a specific Shoreline Treatment Plan is determined, the Plan shall minimize any in-water construction required for installation of any treatment measures near either of the two eelgrass locations noted above.	Project Applicant	During the design of shoreline treatments	NMFS; SFRA	SFRA	Approval of Shoreline Treatment Plan; Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-5b.2 Eelgrass Survey. Prior to the initiation of construction of the Yosemite Slough bridge or construction of shoreline treatments, an update to the existing eelgrass mapping shall be conducted to determine the precise locations of the eelgrass beds. This survey shall occur when a final Shoreline Treatment Plan has been prepared. The survey shall be conducted by a biologist(s) familiar with eelgrass identification and ecology and approved by NMFS to conduct such a survey. The area to be surveyed shall encompass the mapped eelgrass beds, plus a buffer of 750 feet. Survey methods shall employ either SCUBA or sufficient grab samples to ensure that the bottom was adequately inventoried. The survey shall occur between August and October and collect data on eelgrass distribution, density, and depth of occurrence for the survey areas. The edges of the eelgrass beds shall be mapped. At the conclusion of the survey a report shall be prepared documenting the survey methods, results, and eelgrass distribution within the survey area. This report shall be submitted to NMFS for approval. The survey data shall feed back into the shoreline treatment design process so that Project engineers can redesign the treatments to avoid or minimize any direct impacts to eelgrass beds. If the shoreline treatments can be adjusted so that no direct impacts to eelgrass beds would occur, no further mitigation under this measure would be	Project Applicant	When a final Shoreline Treatment Plan has been prepared	NMFS; SFRA	SFRA	Submittal of a report for NMFS approval documenting survey methods, results, and eelgrass distribution within the survey area. Submit report and proof of NMFS approval to SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
required for shoreline treatment construction. Management of water quality concerns is addressed through mitigation measure MM BI-5b.4 and shall be required to minimize sediment accumulation on the eelgrass. If direct impacts to eelgrass beds cannot be avoided, either by Hunters Point shoreline treatments or Yosemite Slough bridge construction, mitigation measure MM BI-5b.3 shall be implemented.					
MM BI-5b.3 Compensatory Eelgrass Mitigation. If direct impacts to eelgrass beds cannot be avoided, compensatory mitigation shall be provided in conformance with the Southern California Eelgrass Mitigation Policy. Mitigation shall entail the replacement of impacted eelgrass at a 3:1 (mitigation:impact) ratio on an acreage basis, based on the eelgrass mapping described in mitigation measure MM BI-5b.2 and detailed designs of the feature(s) that would impact eelgrass beds. Such mitigation could occur either off site or on site.[4] Off-site mitigation could be achieved through distribution of a sufficient amount of funding to allow restoration or enhancement of eelgrass beds at another location in the Bay. If this option is selected, all funds shall be distributed to the appropriate state or federal agency or restoration-focused non-governmental agency (i.e., CDFG restoration fund, California Coastal Conservancy, Save the Bay, etc.). The Project Applicant shall provide written evidence to the City/Agency that either a) compensation has been established through the purchase of a sufficient number of mitigation credits to satisfy the mitigation acreage requirements of the Project activity, or b) funds sufficient for the restoration of	Project Applicant	Upon the determination that direct impacts to eelgrass beds cannot be avoided, and off-site mitigation would be appropriate (prior to in-water construction)	NMFS/SFRA	SFRA	Written evidence to the City/SFRA for the compensation of off-site mitigation credits or funds

[4] NMFS, Southwest Regional Office, Southern California Eelgrass Mitigation Policy, as revised August 30, 2005. Website: http://swr.nmfs.noaa.gov/hcd/policies/EELPOLrev11_final.pdf. Accessed July 20, 2009.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the mitigation acreage requirements of the Project activity have been paid. These funds shall be applied only to eelgrass restoration within the Bay.					
If on-site mitigation is selected as the appropriate option, the Project Applicant shall retain a qualified biologist familiar with eelgrass ecology (as approved by the City/Agency) to prepare and implement a detailed Eelgrass Mitigation Plan. Unless otherwise directed by NMFS, the Eelgrass Mitigation Plan shall follow the basic outline and contain all the components required of the Southern California Eelgrass Mitigation Policy (as revised in 2005),[5] including: identification of the mitigation need, site, transplant methodology, mitigation extent (typically 3:1 on an acreage basis[6]), monitoring protocols (including frequency, staffing, reviewing agencies, duration, etc.), and success criteria. A draft Eelgrass Mitigation Plan shall be submitted to NMFS, for its review and approval prior to implementation, with a copy to the City/Agency. Once the plan has been approved, it shall be implemented in the following appropriate season for transplantation. Restored eelgrass beds shall be monitored for success over a 5-year period.	Project Applicant	Upon the determination that direct impacts to eelgrass beds cannot be avoided, and on-site mitigation would be appropriate (prior to in-water construction)	NMFS/SFRA	SFRA	Preparation and implementation of an Eelgrass Mitigation Plan if on-site mitigation occurs.

[5] NMFS, Southwest Regional Office, Southern California Eelgrass Mitigation Policy, as revised August 30, 2005. Website: http://swr.nmfs.noaa.gov/hcd/policies/EELPOLrev11_final.pdf. Accessed July 20, 2009.

[6] US Army Corps of Engineers, US 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 – ESA and EFH Consultation.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM BI-5b.4 Eelgrass Water Quality BMPs. To prevent sediment that could be suspended during construction from settling out onto eelgrass, for any shoreline treatments within 750 feet of identified eelgrass beds, the Project Applicant shall require the selected contractor to implement appropriate BMPs that could include any or all of the following options, or others deemed appropriate by NMFS: 1. Conduct all work in dewatered work areas 2. Conduct all in-water work during periods of eelgrass dormancy (November 1-March 31) 3. Install sediment curtains around the worksite to minimize sediment transport 4. Work only during periods of slack tide (minimal current) and low wind to minimize transport of sediment laden water	Project Applicant	Prior to and during in-water construction	NMFS/SFRA	SFRA	BMPs deemed appropriate by NMFS
MM BI-6a.1 Impact Avoidance and Pre-Construction Surveys for Nesting Special-Status and Legally Protected Avian Species. The following measures shall be implemented by the Project Developer to avoid impacts to nesting birds. 1. Not more than 15 days prior to construction activities that occur between February 1 and August 31, surveys for nesting birds shall be conducted by a qualified biologist (one familiar with the breeding biology and nesting habits of birds that may breed in the Project vicinity) that is selected by the Project Developer, and approved by the City/Agency. Surveys shall cover the entire area to be affected by construction and the area within a 250-foot buffer of construction or ground-disturbing activities. The results of the surveys, including survey dates, times, methods, species observed, and a map of any discovered nests,	Project Applicant	Not more than 15 days prior to construction activities that occur between February 1 and August 31	CDFG	SFRA	Submittal of nesting bird survey findings to the SFRA and consultation with CDFG as appropriate

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
shall be submitted to the City/Agency. If no active avian nests (i.e. nests with eggs or young) are identified on or within 250 feet of the limits of the disturbance area, no further mitigation is necessary. Phased construction work shall require additional surveys if vegetation or building removal has not occurred within 15 days of the initial survey or is planned for an area that was not previously surveyed. Alternatively, to avoid impacts, the Project Developer shall begin construction after the previous breeding season for local raptors and other special-status species has ended (after August 31) and before the next breeding season begins (before February 1). 2. If active nests (with eggs or young) of special-status or protected avian species are found within 250 feet of the proposed disturbance area, a minimum 250-foot no-disturbance buffer zone surrounding active raptor nests and a minimum 100-foot buffer zone surrounding nests of other special-status or protected avian species shall be established until the young have fledged. Project activities shall not occur within the buffer as long as the nest is active. The size of the buffer area may be reduced if a qualified biologist familiar with the species' nesting biology (as approved by the City/Agency) and CDFG determine it would not be likely to have adverse effects on the particular species. Alternatively, certain activities may occur within the aforementioned buffers, with CDFG concurrence, if a qualified biologist monitors the activity of nesting birds for signs of agitation while those activities are being performed. If the birds show signs of agitation suggesting that they could abandon the nest,					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
activities would cease within the buffer area. No action other than avoidance shall be taken without CDFG consultation. 3. Completion of the nesting cycle (to determine when construction near the nest can commence) shall be determined by a qualified biologist experienced in identification and biology of the specific special-status or protected species.					
MM BI-6a.2 Burrowing Owl Protocol Surveys and Mitigation. Because burrowing owls may take refuge in burrows any time of year, species-specific measures are necessary to avoid take of this species. The following measures shall be undertaken by the Project Developer to protect burrowing owls. Prior to construction activities, focused pre-construction surveys shall be conducted for burrowing owls where suitable habitat is present within the construction areas. Surveys shall be conducted by a qualified biologist (i.e., one who is familiar with burrowing owl ecology and experienced in performing surveys for them, approved by the City/Agency) no more than 30 days prior to commencement of construction activities. These surveys shall be conducted in accordance with the CDFG burrowing owl survey protocol contained within California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, or any more current equivalent should new guidelines be released before construction. 1. If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings shall be submitted to the City/Agency and CDFG, and no further mitigation is necessary.	Project Applicant	No more than 30 days prior to commencement of construction activities	CDFG	SFRA	Submittal of burrowing owl survey findings to the SFRA and consultation with CDFG as appropriate

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
2. If unoccupied burrows are found during the non-breeding season, prior to construction activities, the Project Developer shall collapse the unoccupied burrows, or otherwise obstruct their entrances to prevent owls from entering and nesting in the burrows. This measure would prevent inadvertent impacts during construction activities.	Project Applicant	Upon determination that impacts to occupied burrows are unavoidable and prior to construction activities	CDFG	SFRA	If unoccupied burrows are found during non-breeding season, unoccupied burrows will be collapsed. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
3. If occupied burrows are found, a letter report documenting survey methods and findings (including a map showing the locations of the occupied burrows) shall be submitted to the City/Agency and CDFG. Impacts to the burrows shall be avoided by providing a construction-free buffer of 250 feet during the nesting season (February 1 through August 31). A buffer of 165 feet from the active burrows should be provided during the non-breeding season (September 1 through January 31) if feasible, though a reduced buffer is acceptable during the non-breeding season as long as construction avoids direct impacts to the burrow(s) used by the owls. The size of the buffer area may be reduced if the CDFG determines it would not be likely to have adverse effects on the owls. No Project activity shall commence within the buffer area until a qualified biologist (as approved by the City/Agency) confirms that the burrow is no longer occupied. If the burrow is occupied by a nesting pair, as recommended by the California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, a minimum of 6.5 acres of foraging habitat contiguous (immediately adjacent) to the burrow shall be maintained until the nesting season is over. If the foraging habitat contiguous to the	Project Applicant	Prior to construction activities upon completion of preconstruction focused surveys for burrowing owls	CDFG	SFRA	If occupied burrows are found, a letter report of findings will be submitted to CDFG and the City/SFRA. Avoidance of occupied burrows and compensatory habitat mitigation, as appropriate, shall occur as stated. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
occupied burrow is currently less than 6.5 acres, the entire foraging habitat shall be maintained until the nesting season is over.					
4. If impacts to occupied burrows are unavoidable, passive relocation techniques approved by CDFG shall be used to evict owls from burrows within the construction area prior to construction activities. However, no occupied burrows shall be disturbed during the nesting season unless a qualified biologist (as approved by the City/Agency) verifies through non-invasive methods that juveniles from the occupied burrows are foraging independently and are capable of independent survival, or verifies the owls have not yet laid eggs. If any breeding owls must be relocated (i.e., after the nesting season has ended), mitigation of impacts to lost foraging and nesting habitat for relocated pairs shall follow guidelines provided in the California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, which depending upon conditions detailed in the guidance (such as mitigation habitat quality), range from 7.5 to 19.5 acres per pair. This mitigation may take the form of the purchase of credits in a burrowing owl mitigation bank or the preservation and management of the required habitat acreage on site (e.g., in the Grasslands Ecology Park) or off site. If mitigation is provided via on-site or off-site habitat preservation and management, a Burrowing Owl Habitat Management Plan shall be prepared by a qualified biologist and submitted to the CDFG for review and approval, along with a copy to the City/Agency. This plan shall detail the location of the mitigation site, the means of preservation of the site (i.e., via a conservation easement), any enhancement and	Project Applicant	Upon determination that impacts to occupied burrows are unavoidable and prior to construction activities	CDFG	SFRA	If mitigation is required and provided via on-site or off-site habitat preservation and management, a Burrowing Owl Habitat Management Plan to be prepared by qualified biologist and submitted to the CDFG for review and approval, along with a copy to the City/SFRA. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
management measures necessary to ensure that habitat for burrowing owls is maintained in the long term, a monitoring program, and the size of an endowment established for the long-term maintenance of the site.					
MM BI-6b American Peregrine Falcon Nest Protection Measures. To protect the nest of peregrine falcons during construction, the following measures shall be implemented by the Project Developer prior to construction or other disturbance within 500 feet of the Re-gunning crane nest. 1. Not more than 30 days prior to construction activities that occur between February 1 and August 15, surveys for nesting peregrine falcons shall be conducted on the Re-gunning crane, and within a 500-foot buffer surrounding the potential nesting location. Surveys shall be performed by a qualified biologist (i.e., one familiar with falcon biology and nesting) that is selected by the Project Developer, and approved by the City/Agency. The results of the surveys shall be submitted to the City/Agency and the CDFG. If no active peregrine falcon nests, eggs, or breeding activity, are identified on or within 500 feet of the limits of the disturbance area, no further mitigation is necessary. Alternatively, to avoid impacts, the Project Developer can begin construction after the previous breeding season has ended (after August 31) and before the next breeding season begins (before February 1). 2. If active peregrine nests or breeding activity are observed within the survey area, a minimum 250-foot no disturbance buffer zone surrounding the nesting location shall be established until the young have fledged. Within this buffer, no Project construction	Project Applicant	Not more than 30 days prior to construction activities that occur between February 1 and August 15.	CDFG	SFRA	Survey for nesting peregrine falcons and submittal of results to CDFG and the City/SFRA. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
activities shall occur while the nest is active. The size of the buffer area may be reduced if a qualified biologist and CDFG determine it would not be likely to have adverse effects on the falcons. No action other than avoidance shall be taken without CDFG consultation. 3. No new Project construction activity shall commence within the buffer area until young have fledged and the nest is no longer active, or until nesting has been terminated for reasons unrelated to Project activities. Completion of the nesting cycle shall be determined by a qualified biologist who is experienced in peregrine falcon breeding biology (as determined and approved by the City/Agency).					
MM BI-7b Enhancement of Raptor Foraging Habitat. The Draft Parks, Open Space, and Habitat Concept Plan shall implement, at a minimum, the following measures in open space areas outside the CPSRA, and if allowed, within the CPSRA area: ■ **Restoration and Management of Grasslands:** To maintain grassland-associated wildlife species on the site, grasslands extensive enough to support such species shall be maintained and enhanced through the restoration of native grasses. Such grassland habitat shall not be well manicured or regularly mown. No trees shall be planted within such areas, and shrub cover would be limited to a few small, scattered patches of low-statured coastal scrub plants. At a minimum, replacement of non-native grassland impacted at HPS Phase II with native-dominated grassland shall occur at a ratio of 1:1 (1 acre of native-dominated grassland restored: 1 acre of non-native grassland impacted).	Project Applicant	Throughout the construction phase	SFRA	SFRA	Approval of Plan by SFRA and, if applicable, by CPSRA. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ **Increase in Tree/Shrub Cover:** Trees and shrubs (particularly natives) shall be planted and maintained outside the designated grassland restoration area to provide foraging habitat for raptors and other migratory birds, and cover for mammals, reptiles, and smaller birds that may serve as raptor prey. While native vegetation shall be favored, site-appropriate non-native trees and shrubs that provide food or structural resources that are particularly valuable to native wildlife shall also be considered. Approximately 10,000 net new trees shall be planted at the Project site and in the community, in addition to trees that will be replaced as required by the Urban Forestry Ordinance or MM BI-14a.					
The elements identified above shall be reviewed and approved by a qualified biologist (one familiar with the ecology of the Project site), and the Draft Parks, Open Space, and Habitat Concept Plan shall be implemented during construction of the Project. This plan shall be approved by the City/Agency prior to construction, and its preparation and implementation shall be the financial responsibility of the Project Applicant.	Project Applicant	Plan to be approved by City/ SFRA prior to construction, and implemented throughout the construction phase of the Project	SFRA	SFRA	Approval and implementation of the Draft Parks, Open Space, and Habitat Concept Plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-9b Pile Driving Design and Minimization Measures. To minimize impacts on fish and marine mammals, the Project Applicant shall be implemented the following measure to reduce the amount of pressure waves generated by pile driving. The first set of measures shall be implemented during Project design. The second set of measures shall be implemented during construction.					

Mitigation Monitoring & Reporting Program

Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Design Measures: 1. Engineer structures to use fewer or smaller piles, where feasible, and preferably, solid piles. 2. Design structures that can be installed in a short period of time (i.e., during periods of slack tide when fish movements are lower). 3. Do not use unsheathed creosote-soaked wood pilings. The City/Agency, with consultation from a qualified biologist who is familiar with marine biology, as approved by the City/Agency, shall review the final Project design to ensure that these design requirements have been incorporated into the Project.	Project Applicant	During Project design	DBI/SFRA	DBI/SFRA	Approval of final plans
Construction Measures: 1. Drive piles with a vibratory device instead of an impact hammer if feasible. 2. Restrict pile driving of steel piles to the June 1 to November 30 work window, or as otherwise recommended by NMFS (driving of concrete piles would not be subject to this condition). 3. Avoid installation of any piles during the Pacific herring spawning season of December through February. Consult with the CDFG regarding actual spawning times if pile installation occurs between October and April. 4. If steel piles must be driven with an impact hammer, an air curtain shall be installed to disrupt sound wave propagation, or the area around the piles being driven shall be dewatered using a cofferdam. The goal of either measure is to disrupt the sound wave as it moves from water into air. 5. If an air curtain is used, a qualified biologist shall monitor pile driving to ensure that the air curtain is functioning properly and Project-	Project Applicant	During construction activities	DBI/SFRA, in consultation with NMFS and CDFG, if necessary	DBI/SFRA, in consultation with NMFS and CDFG, if necessary	Monitoring of pile driving activities. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
generated sound waves do not exceed the threshold of 180-decibels generating 1 micropascal (as established by NMFS guidelines). This shall require monitoring of in-water sound waves during pile driving. 6. Unless the area around the piles is dewatered during pile driving, a qualified biologist shall be present during pile driving of steel piles to monitor the work area for marine mammals. Driving of steel piles shall cease if a marine mammal approaches within 250 feet of the work area or until the animal leaves the work area of its own accord.					
MM BI-12a.1 Seasonal Restrictions on In-Water Work. In-water work when juvenile salmonids are moving through the estuary on the way to the ocean or when groundfish and prey species could be directly impacted shall be avoided. Because steelhead are potentially present, the allowed dredge window for this area of the San Francisco Bay is June 1 through November 30. All in-water construction shall occur during this window. If completion of in-water work within this period is not feasible due to scheduling issues, new timing guidelines that shall be established and submitted to NMFS and CDFG for review and approval.	Project Applicant	During construction between June 1st and November 30th	NMFS and CDFG	SFRA, in consultation with NMFS and CDFG, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM BI-12a.2 Worker Training. Personnel involved in in-water construction and deconstruction activities shall be trained by a qualified biologist (experienced in construction monitoring, as approved by the City/Agency) in the importance of the marine environment to special-status fish, birds, and marine mammals and the environmental protection measures put in place to prevent impacts to these species, their habitats, and Essential Fish Habitat. The training shall include, at a minimum, the following: ■ A review of the special-status fish, birds, and marine mammals and sensitive habitats that could be found in work areas ■ Measures to avoid and minimize adverse effects to special-status fish, birds, marine mammals, their habitats, and Essential Fish Habitat ■ A review of all conditions and requirements of environmental permits, reports, and plans (i.e., USACE permits)	Project Applicant	Prior to construction activities	DBI/SFRA	DBI/SFRA	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-12b.1 Essential Fish Habitat Avoidance and Minimization Measures. The following mitigation measures have been adapted from Amendment 11 of the West Coast Groundfish Plan[7] and Appendix A of the Pacific Coast Salmon Plan.[8] Incorporation of the following, or equivalent mitigation as otherwise required by the USACE or NMFS, would reduce the impacts to Essential Fish Habitat (EFH) to a level considered less than significant. Unless modified by the federal permitting agencies (NMFS or USACE), these measures shall be implemented during construction by the Project Applicant. Any reporting	Project Applicant	During construction activities	USACE; NMFS	SFRA, in consultation with NMFS and USACE, as necessary	Approval of dredging permits. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

[7] PFMC 1998. Essential Fish Habitat – West Coast Groundfish, Amendment 11.

[8] PFMC 1999. Appendix A: Identification and description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. *In* Pacific Coast Salmon Plan (1997) as amended through Amendment 14. Website: http://www.pcouncil.org/salmon/salfmp/a14.html.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
required shall be specified in the USACE permits and reports shall be submitted to the USACE and NMFS. ■ If dredging is required, permits will be obtained through the Dredged Material Management Office (DMMO) process, and the following mitigation from the Long-Term Management Strategy (LTMS) shall be implemented: > Dredging shall avoid areas with submerged aquatic vegetation (eelgrass beds or other EFH areas of particular concern) especially where the action could affect groundfish, prey of outmigrating juvenile salmon or groundfish, larval marine species, or habitat for native oysters > Sediments shall be tested for contaminants as per EPA and USACE requirements. Contaminated sediments shall be disposed of in accordance with EPA and USACE guidelines > Slopes of the dredged area shall be gradual enough so that sloughing is unlikely to occur. Verification of these conditions shall be achieved through follow-up bathymetric surveys > To minimize turbidity and potential resuspension of contaminated sediments, dredging shall use suction equipment, or similar equipment, when feasible. Where an equipment type may generate significant turbidity (i.e., clamshell), dredging shall be conducted using adequate engineering and best management practices to control turbidity. These include, but are not limited to, sediment curtains and tidal work windows.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ All construction equipment used in conjunction with in-water work (pipelines, barges, cranes, etc.) shall avoid wetlands, marshes, and areas of subaquatic vegetation (including eelgrass beds) ■ Upland disposal options shall be considered for all spoils generated by on-site construction, especially if high levels of contaminants are present ■ Maximize the use of clean dredged material for beneficial use opportunities, such as salt marsh restoration ■ Use Best Management Practices (BMPs) for controlling pollution from marina operations, boatyards, and fueling facilities that meet, as applicable, the BMPs listed in the National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating[9]					
MM BI-12b.2 Deconstruction/Construction Debris Recovery. A Seafloor Debris Minimization and Removal Plan shall be prepared by the Project Applicant and approved by the City/Agency, prior to initiation of in-water deconstruction (dismantling) or construction activities. The Plan shall be implemented during in-water deconstruction or construction activities, and such activities shall be monitored by a qualified biologist who is experienced in construction monitoring (as approved by the City/Agency). The Seafloor Debris Minimization and Removal Plan shall include, at a minimum: ■ Debris field boundaries associated with deconstruction activities	Project Applicant	Seafloor Debris Minimization and Removal Plan to be prepared prior to initiation of in-water deconstruction or construction activities; implementation of the plan to occur during in-water deconstruction or construction activities	DBI/SFRA	DBI/SFRA	Approval of Seafloor Debris Minimization and Removal Plan; Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

[9] National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA 841-B-01-005, November 2001.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Identification of measures taken to minimize the potential for debris to fall into aquatic habitats (i.e., the use of netting below in-water construction or deconstruction areas) ■ Deconstruction equipment, tools, pipes, pilings, and other materials or debris that are inadvertently dropped into the Bay, along with their descriptions and locations ■ Circumstances requiring immediate cessation of deconstruction activities and immediate initiation of search and recovery efforts, including procedures for implementing those recovery efforts ■ How lost debris that is to be removed post-deconstruction is to be identified, who will be conducting search and recovery operations, and the survey methods to be employed to locate lost equipment and materials ■ Criteria that will be used to: > Determine whether recovery efforts are appropriate for the object being recovered and do not result in potential environmental impairment greater than if the debris was allowed to remain in place > When sufficient effort has been expended to recover a lost object(s) with no success and continued efforts to recover the seafloor debris have diminishing potential for success and/or result in environmental impairment greater than leaving the debris in place ■ Person(s) responsible for implementing the Plan and making the determination on the type of recovery required ■ How debris is to be disposed of or recycled ■ Metrics for determining when recovery efforts will be considered complete					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Following completion of all post deconstruction recovery efforts for seafloor debris, a report shall be prepared by the Project Applicant and submitted to the City/Agency detailing, at a minimum, (1) recovery activities during deconstruction and post-deconstruction, (2) listings of all lost and recovered debris, (3) final disposition of recovered debris, and (4) discussion of what debris could not be recovered and why.	Project Applicant	Following completion of all post deconstruction recovery efforts for seafloor debris	DBI/SFRA	DBI/SFRA	Receipt of report of recovery activities by DBI/SFRA
MM BI-14a Preservation and Replacement of Significant Trees, and Preservation and Planting of Street Trees. Construction activities outside of the Department of Public Works (DPW) jurisdiction could result in the disturbance or removal of a large number of trees. To minimize this impact, the following measures shall be implemented by the Project Applicant in these areas: 1. Avoidance of the removal of trees that meet the size specifications of significant trees in the Public Works Code Article 16 shall occur to the maximum extent feasible, and any such trees that are removed shall be replaced at a minimum of 1:1 (1 impacted:1 replaced). The species used for replacement shall be consistent with DPW recommendations. 2. Street trees shall be planted in all new development areas. The species, size, and locations shall be consistent with the requirements specified in Planning Code Section 143, including, but not limited to, the following: a) The street trees installed shall be a minimum of one 24-inch box tree for each 20 feet of frontage of the property along each street or alley, with any remaining fraction of 10 feet or more of frontage requiring an additional tree.	Project Applicant	During construction activities	DBI/SFRA	DBI/SFRA	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
Such trees shall be located either within a setback area on the lot or within the public right-of-way along such lot. b) The species of trees selected shall be suitable for the site, and, in the case of trees installed in the public right-of-way, the species and locations shall be subject to the approval by the DPW. Procedures and other requirements for the installation, maintenance, and protection of trees in the public right-of-way shall be as set forth in Public Works Code Article 16.					
3. If a significant tree or street tree will not be removed, but construction activities will occur within the dripline of such trees, a Tree Protection Plan shall be prepared by an International Society of Arboriculture (ISA) certified arborist, in accordance with the Urban Forestry Ordinance. This plan shall be submitted to the Planning Department for review and approval prior to issuance of a demolition or building permit. The Tree Protection Plan shall include measures to protect all parts of a tree from disturbance during construction, and may include the following: a) A site plan with tree species, trunk location, trunk diameter at breast height, and the canopy dripline area within development b) The use of protective fencing to establish an area to be left undisturbed during construction c) Protection specifications, including construction specifications such as boring instead of trenching for utility lines, or tree	Project Applicant	Prior to issuance of a demolition or building permit	Planning Department/ SFRA	Planning Department/ SFRA	Approval of a Tree Protection Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
specifications such as drainage, fertilization, or irrigation measures d) Pruning specifications, if needed, to preserve the health of the tree and allow construction to proceed					
MM BI-18b.1 Maintenance Dredging and Turbidity Minimization Measures for the Operation of the Marina. Maintenance dredging for the marina could remove or generate sediment plumes that could impact special-status species, their habitats, and Essential Fish Habitat (EFH). To minimize this effect, the following measures shall be implemented by the Project Applicant:					
1. Conduct a detailed survey for native oysters in all suitable substrates within the marina, which includes the area between the land and breakwaters, after construction of the new breakwaters. This survey shall be conducted by a qualified oyster biologist at low tides that expose the maximum amount of substrate possible. Surveys can be conducted at any time of year, but late summer and early fall are optimal because newly settled oysters are detectable. This survey shall occur before any construction within the proposed marina location takes place to establish a baseline condition. If few or no oysters are observed on hard substrates that would remain in place after dredging, no further mitigation is required.	Project Applicant	Prior to in-water dredging activities, and at low tides preferably in late summer or early fall	NMFS	SFRA, in consultation with NMFS, as necessary	Approval by NMFS of Survey for native oysters
2. If oysters are found at densities at or above 90 oysters per square meter[10] on suitable oyster-settlement substrates that would be removed or in areas where dredging sediment could	Project Applicant	Prior to issuance of any permits for construction of marina structures	USACE; NMFS	SFRA, in consultation with NMFS and USACE, as necessary	Submittal of a detailed sediment plume modeling study to NMFS

[10] MACTEC Engineering and Consulting, Inc. 2008. *Oyster Point Marina Olympia Oyster Surveys Pre- and Post-Dredging February 2008, Oyster Point Marina, South San Francisco, California*. Prepared for PBS&J; Obernolte. 2009. Personal communication between MACTEC and PBS&J.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
settle out onto the oysters, a detailed sediment plume modeling study of the proposed marina operation shall be conducted to determine if the operations and maintenance of the marina would generate a substantial plume of sediment. This model shall include the local bathymetry and sediment information, tidal data, and detailed marina information (number and types of boats, etc.). The model shall be prepared by a qualified harbor engineer (as approved by the City/Agency) with direct experience in this type of work within San Francisco Bay, prior to issuance of any permits for the construction of features directly associated with the marina. A report documenting modeling methods, input data, assumptions, results, and implications for increased rates of sedimentation shall be prepared and provided to NMFS during the USACE-directed Section 7 and EFH consultation for the marina. If the model demonstrates minimal sediment resuspension that would settle out before reaching sensitive habitats, no further mitigation is required.					
3. If the sediment plume reaches sensitive shoreline habitats (substrates that support native oysters), compensatory mitigation shall be provided by the Project Applicant at a ratio recommended by NMFS for the type of habitat adversely affected. The Project Applicant shall retain a qualified oyster biologist (as approved by the City/Agency) to develop an Oyster Restoration Plan that shall be reviewed and approved by the City/Agency. This Plan shall include site selection, substrate installation, and monitoring procedures, and include the	Project Applicant	Prior to issuance of any permits for construction of marina structures	NMFS	SFRA, in consultation with NMFS, as necessary	Development and approval of an Oyster Restoration Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
following components (unless otherwise modified by NMFS): ■ A suitable site for installation of replacement substrate would be one with adequate daily tidal flow, a location that would not be affected by maintenance dredging or other routine marina maintenance activities, and one that is lacking in appropriate settlement substrate. A location outside of the new breakwaters or in association with any eelgrass mitigation sites would be appropriate. ■ Although oysters would settle on a variety of materials, the most appropriate for restoration purposes is oyster shell. This is typically installed by placing the shell into mesh bags that can then be placed in piles on the seafloor of the mitigation site. Enough shell shall be installed under the guidance of a qualified oyster biologist to make up for the loss attributable to the Project. Mitigation shall occur after construction of all in-water elements of the Project within HPS Phase II. ■ The restoration site shall be monitored on a regular basis by a qualified oyster biologist for a minimum of two years, or until success criteria are achieved if they are not achieved within two years. Monitoring shall involve routine checks (bi-monthly during the winter and monthly during the spring and summer) to evaluate settlement, growth, and survival on the mitigation site. Success shall be determined to have been achieved when settlement and survival					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
rates for oysters are not statistically significantly different between the mitigation site and either populations being impacted (if data are available) or nearby established populations (i.e., Oyster Point Marina).					
MM BI-18b.2 Implement BMPs to Reduce Impacts of Dredging to Water Quality. BMPs established in Appendix I of the Long-Term Management Strategy (LTMS) for management of disposal of dredge material in San Francisco Bay are designed specifically to minimize spread of contaminants Long-Term Management Strategy (LTMS) outside of dredge areas. All of these elements of the LTMS shall be applied to any proposed dredging or construction activities associated with the Project unless otherwise modified by the USACE, BCDC, or SFRWQCB in permit conditions associated with the proposed dredging activities associated with this Project (same as MM BI-19b.2).	Project Applicant	During dredging or construction activities	USACE, BCDC, SFRWQCB	SFRA, in consultation with regulatory agencies, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
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).[11] The window in which 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 December 1 to February 28.[12] Therefore,	Project Applicant	Dredging activities may not occur between March 1 and November 30	NMFS	SFRA, in consultation with NMFS, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

[11] US Army Corps of Engineers, US 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.
[12] US Army Corps of Engineers, US 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.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is June 1 to November 30.					
MM BI-19b.2 Implement BMPs to Reduce Impacts of Dredging to Water Quality. BMPs established in Appendix I of the Long-Term Management Strategy (LTMS) are designed specifically to minimize spread of contaminants outside of dredge areas. All of these elements of the LTMS shall be applied to any proposed dredging or construction activities associated with the Project unless otherwise modified by the USACE, BCDC, or the San Francisco Bay Regional Water Quality Control Board in permit conditions associated with the proposed dredging activities associated with this Project (same as MM BI-18b.2).	Project Applicant	During dredging or construction activities	USACE, BCDC, SFRWQCB	SFRA, in consultation with regulatory agencies, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-20a.1 Lighting Measures to Reduce Impacts to Birds. During building design, 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, use 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.	Project Applicant	During Project design	DBI/SFRA	DBI/SFRA	DBI/SFRA approval of building designs

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
■ 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 within 300 feet of a potential "urban bird refuge" (an open space 2 acres and larger dominated by vegetation, including vegetated	Project Applicant	During Project design	DBI/SFRA	DBI/SFRA	DBI/SFRA approval of building designs

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.					
SECTION III.O (PUBLIC SERVICES)					
MM PS-1 Site Security Measures During Construction. During site preparation and in advance of construction of individual buildings, fencing, screening, and security lighting shall be provided by the Project Applicant. During non-construction hours the site must be secured and locked, and ample security lighting shall be provided.	Project Applicant	During site preparation and in advance of construction of individual buildings, fencing, screening, and security lighting	DBI/SFRA	DBI/SFRA	DBI/SFRA approval of construction documents. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
SECTION III.P (RECREATION)					
MM RE-2 Phasing of parkland with respect to residential and/or employment generating uses. Development of the Project and associated parkland shall 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	Project Applicant	Prior to issuance of a temporary certificate of occupancy	DBI/SFRA	DBI/SFRA	Issuance of a temporary certificate of occupancy

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
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.					
SECTION III.Q (UTILITIES)					
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 off-site 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 Palou and Griffith Avenues, with service along Spear Avenue/Crisp Road.	Project Applicant	Prior to issuance of occupancy permits	San Francisco Fire Dept.	SFFD/SFRA	Approval of Infrastructure Plan; Deemed complete upon issuance of temporary certificate of occupancy.
MM UT-3a Wet-Weather Wastewater Handling. Prior to approval of the Project's wastewater infrastructure construction documents for any new development, the Project Applicant shall demonstrate to the San Francisco Public Utilities Commission (SFPUC), in writing, that there will be no net increase in wastewater discharges during wet-weather conditions from within the Project Area boundary to the Bayside System compared to pre-Project discharges. This may be accomplished through a variety of means, including, but not limited to: ■ Temporary on-site retention or detention of flows to the system ■ Separation of all or a portion of the stormwater and wastewater system at Candlestick Point	Project Applicant	Prior to approval of wastewater infrastructure construction documents for new developments	SFPUC	SFPUC	Approval of wastewater infrastructure construction documents

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM UT-5a Construction Waste Diversion Plan. The Project Applicant shall submit a Construction Waste Diversion Plan to the Director of the San Francisco Department of the Environment demonstrating a plan to divert at least 75 percent of or more of the total construction and demolition debris produced as the result of the Project (such as wood, metal, concrete, asphalt, and sheetrock) from landfill interment, which is required by the City's Green Building Ordinance. The Plan shall be submitted and approved by the Director of the San Francisco Department of the Environment before the issuance of building permits. This Plan shall include (1) identification of how much material resulting from demolition of existing facilities could be reused on site (e.g., existing asphalt and concrete could be removed, crushed, reconditioned, and reused as base material for new roadways and parking lots); (2) the extent to which materials could be sorted on site (e.g., through piecemeal demolition of selected facilities to extract recyclable materials), (3) the amount of material that would be transported to an off-site location for separation; and (4) the amount of materials that cannot be reused or recycled and would be interred at a landfill, such as the Altamont Landfill in Livermore.	Project Applicant	Prior to the issuance of building permits	SFRA/Department of the Environment	SFRA/Department of the Environment	Submittal and approval of a Construction Waste Diversion Plan
MM UT-7a Site Waste Management Plan. The Project Applicant shall prepare a Site Waste Management Plan (SWMP) in cooperation with the Agency to describe the methods by which the Project shall minimize waste generation not otherwise covered by existing City regulatory policies, with the goal of achieving a diversion rate of at least 72 percent, consistent with the City's existing diversion rate in 2008. The SWMP shall be submitted to the Department of Environment (DOE) for approval prior to the issuance of the first development permit for the Project.	Project Applicant	Prior to the issuance of the first development permit	SFRA/Department of the Environment	SFRA/Department of the Environment	Submittal and approval of a Site Waste Management Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.S (GREENHOUSE GAS EMISSIONS)					
MM GC-1 Plant up to 10,000 net new trees at the Project site and in the community.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.
MM GC-2 Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.
MM GC-3 Install ENERGY STAR appliances, where appliances are offered by homebuilders.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.
MM GC-4 Use light emitting diode (LED) based energy efficient street lighting.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.

Appendix C

Impacts Evaluated in Addendum 5

ESA

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
SECTION III.B (LAND USE AND PLANS)		
Impact LU-1 Implementation of the Project would not physically divide an established community.	✕	
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.	✕	
Impact LU-3 Implementation of the Project would not have a substantial adverse impact on the existing character of the vicinity.	✕	
SECTION III.C (POPULATION, HOUSING, AND EMPLOYMENT)		
Impact PH-1 Construction of the Project would not induce substantial direct population growth.	✕	
Impact PH-2 Operation of the Project would not induce substantial direct or indirect population growth.	✕*	
Impact PH-2a Operation of Candlestick Point would not induce substantial direct or indirect population growth.	✕	
Impact PH-2b Operation of HPS Phase II would not induce substantial direct or indirect population growth.	✕	
Impact PH-3 The Project would not displace existing housing units or residents, necessitating the construction of new units elsewhere.	✕*	
Impact PH-3a Implementation of the Project would not displace existing housing units and residents at Candlestick Point, necessitating the construction of new units elsewhere.	✕	
Impact PH-3b Implementation of the Project would not displace existing housing units or residents at HPS Phase II, necessitating the construction of new units elsewhere.	✕	
SECTION III.D (TRANSPORTATION AND CIRCULATION)		
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.	✕	
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.	✕	
Impact TR-3 Implementation of the Project would contribute traffic to significant cumulative impacts at intersections in the Project vicinity.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	

* Where the combined impact of CP and HPS2 was analyzed, it is assumed that the individual impacts of CP and HPS2 were analyzed, as well.

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact TR-10 Implementation of the Project would result in significant Project traffic spillover impacts and contribute to cumulative traffic spillover impacts.	✕	
Impact TR-11 Implementation of the Project would contribute to significant cumulative traffic impacts at four freeway segments.	✕	
Impact TR-12 Implementation of the Project would result in significant impacts at four freeway on-ramp locations.	✕	
Impact TR-13 Implementation of the Project would contribute to significant cumulative traffic impacts at 12 freeway ramp locations.	✕	
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.	✕	
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).	✕	
Impact TR-16 Implementation of the Project would increase traffic volumes and would not make a considerable contribution to cumulative traffic volumes on Harney Way.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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.	✕	
Impact TR-29 Implementation of the Project would not contribute to cumulative impacts on the 14X-Mission Express transit route when on I-280.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
Impact TR-37 Implementation of the Project would not result in significant impacts associated with a lack of adequate supply of loading spaces.	✕	
Impact TR-38 For as many as 12 times a year, 49ers games at the proposed stadium would result in significant impacts on study area roadways and intersections.		✕
Impact TR-39 Implementation of the Project with existing game day service and Project transit improvements would not be adequate to accommodate projected transit demand.		✕
Impact TR-40 For as many of 12 times per year during game days, bicycle access in the vicinity of the proposed stadium would be constrained, however, accommodations for bicycle access and circulation would be provided.		✕
Impact TR-41 For as many of 12 times per year during game days, pedestrian access in the vicinity of the proposed stadium would be constrained, however, accommodations for pedestrian access and circulation would be provided.		✕
Impact TR-42 For as many as 12 times per year during game days, access to state park facilities for vehicles, bicyclists and pedestrians would be constrained, and heavy traffic congestion could discourage use of the park. However, access for vehicles, bicyclists, and pedestrians would be maintained.		✕
Impact TR-43 For as many of 12 times per year during game days, parking demand associated with sell-out events would exceed the proposed on-site supply, resulting in a parking supply shortfall. The shortfall would be accommodated within other on-street and off-street parking facilities, and some patrons may elect to take transit to the stadium.		✕
Impact TR-44 Implementation of the Project would result in stadium game day loading demand that would be accommodated within the proposed on-site supply.		✕
Impact TR-45 During game days, accommodation for emergency access would be provided.		✕
Impact TR-46 Weekday evening secondary events at the stadium would result in increased congestion at intersections, freeway mainline, and freeway ramps already operating at unacceptable LOS under Project conditions without a secondary event, and result in significant impacts at nine additional intersections and one additional freeway off-ramp.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6		
Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact TR-47 With implementation of the Project, the existing transit service and Project improvements would not be adequate to accommodate projected transit demand during secondary events with attendance of 37,500 spectators. In addition, transit lines serving the area would experience additional delays due to traffic generated by the secondary event.		✕
Impact TR-48 With implementation of the Project, bicycle circulation would not be impeded during secondary events at the stadium.		✕
Impact TR-49 With implementation of the Project, pedestrian circulation would not be impeded during arena events.		✕
Impact TR-50 With implementation of the Project, parking demand associated with a secondary event with an attendance of 37,500 spectators would be accommodated within the proposed supply.		✕
Impact TR-51 With implementation of the Project, weekday evening events at the arena would exacerbate congestion at intersections, freeway mainline, and freeway ramps already operating at unacceptable LOS under Project conditions without an arena event, and result in significant traffic impacts at Harney Way and Jamestown Avenue, which was operating acceptably under Project conditions without an arena event.	✕	
Impact TR-52 With implementation of the Project, sell-out weekday evening events at the arena could impact existing and proposed transit service.	✕	
Impact TR-53 With implementation of the Project, bicycle circulation would not be impeded during arena events.	✕	
Impact TR-54 With implementation of the Project, pedestrian circulation would not be impeded during arena events.	✕	
Impact TR-55 With implementation of the Project, arena parking demand would be accommodated on street and within proposed off-street parking facilities.	✕	
Impact TR-56 Implementation of the Project would not impact air traffic.	✕	
Impact TR-57 Implementation of the Project would not create hazards due to any proposed design features.	✕	
Impact TR-58 Implementation of the Project would not result in significant emergency access impacts.	✕	
SECTION III.E (AESTHETICS)		
Impact AE-1 Construction activities associated with the Project would not have a substantial adverse effect on a scenic vista or scenic resources.	✕	
Impact AE-2 Construction activities associated with the Project would not result in temporary degradation of the visual character or quality of the site.	✕	
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.	✕	
Impact AE-4 Implementation of the Project would not have a substantial adverse effect on a scenic vista.	✕	
Impact AE-5 Implementation of the Project 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.		✕
Impact AE-5a Implementation of the Project at Candlestick Point 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.		✕
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.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact AE-6 Implementation of the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.		✕
Impact AE-6a Implementation of the Project at Candlestick Point would not substantially degrade the existing visual character or quality of the site or its surroundings.		✕
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.	✕	
Impact AE-7 Implementation of 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.		✕
Impact AE-7a Implementation of the Project at Candlestick Point 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.		✕
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.	✕	
SECTION III.F (SHADOWS)		
Impact SH-1 Implementation of the Project 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.		✕
Impact SH-1a Implementation of the Project at Candlestick Point 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.		✕
Impact SH-1b Implementation of the Project at HPS Phase II 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.	✕	
SECTION III.G (WIND)		
Impact W-1 Implementation of the Project 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.		✕
Impact W-1a Implementation of the Project at Candlestick Point 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.		✕
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.	✕	
SECTION III.H (AIR QUALITY)		
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.	✕	
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.		✕
Impact AQ-2a Construction at Candlestick Point would not result in impacts to off-site populations from Project-generated emissions of DPM.		✕
Impact AQ-2b Construction at HPS Phase II would not result in impacts to off-site populations from Project-generated emissions of DPM.	✕	
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.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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}.		✕
Impact AQ-3a Construction at Candlestick Point would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}.		✕
Impact AQ-3b Construction at HPS Phase II would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}.	✕	
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 buildout.	✕	
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.	✕	
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.	✕	
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.	✕	
Impact AQ-8 Implementation of the Project would not generate objectionable odors affecting a substantial number of people.	✕	
Impact AQ-9 The Project would conform to the current regional air quality plan.	✕	
SECTION III.I (NOISE AND VIBRATION)		
Impact NO-1 Construction activities associated with the Project would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would occur primarily in noise-sensitive areas adjacent or near to active construction sites (which would vary in location and duration over the entire period the proposed Project would be under construction); 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*.		✕
Impact NO-1a Construction at Candlestick Point would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would occur primarily in noise-sensitive areas adjacent or near to active construction sites (which would vary in location and duration over the entire period the proposed Project would be under construction), they would not occur during recognized sleep hours, and would be consistent with the requirements for construction noise that exist in Sections 2907 & 2908 of the *Municipal Code*.		✕
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*.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact NO-2 Construction activities associated with the Project 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 still be significant.		✕
Impact NO-2a Construction activities at Candlestick Point 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 still be significant.		✕
Impact NO-2b Rock removal in the Alice Griffith and Jamestown districts would result in vibration levels that exceed the FTA threshold of 80 VdB or could cause damage to structures from vibration caused by the fracturing of bedrock for excavation.		✕
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.	✕	
Impact NO-3 Construction activities associated with the Project would result in a substantial temporary or periodic increase in ambient noise levels.	✕	
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.	✕	
Impact NO-5 Implementation of the Project would not generate or expose persons on or off site to excessive groundborne vibration.	✕	
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.	✕	
Impact NO-7 Noise during football games and concerts at the proposed stadium would result in temporary increases in ambient noise levels that could adversely affect surrounding residents for the duration of a game or concert.		✕
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.	✕	
SECTION III.J (CULTURAL RESOURCES AND PALEONTOLOGICAL RESOURCES)		
Impact CP-1 Construction activities associated with the Project could result in a substantial adverse change in the significance of a historical resource.		✕
Impact CP-1a Construction at Candlestick Point would not result in a substantial adverse change in the significance of an historical resource.		✕
Impact CP-1b Construction at HPS Phase II could result in a substantial adverse change in the significance of an historical resource.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6		
Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact CP-2 Construction activities associated with the Project 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.		×
Impact CP-2a Construction at Candlestick Point would not result in a substantial adverse change in the significance of archaeological resources, including prehistoric Native American, Chinese fishing camp, and maritime-related archaeological remains.		×
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.	×	
Impact CP-3 Construction activities associated with the Project would not result in a substantial adverse change in the significance of a paleontological resource.		×
Impact CP-3a Construction at Candlestick Point would not result in a substantial adverse change in the significance of a paleontological resource.		×
Impact CP-3b Construction at HPS Phase II would not result in a substantial adverse change in the significance of a paleontological resource.	×	
Impact CP-3c Construction of the Yosemite Slough bridge, shoreline improvements, and the marina improvements activities, including in-water activities, would not result in a substantial adverse change in the significance of a paleontological resource.		×
Impact CP-3d Pile driving associated with construction of the Yosemite Slough bridge, shoreline improvements, and the marina improvements would not result in a substantial adverse change in the significance of a paleontological resource.		×
SECTION III.K (HAZARDS AND HAZARDOUS MATERIALS)		
Impact HZ-1 Construction activities associated with the Project 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.		×
Impact HZ-1a Construction at Candlestick Point bayward of the historic high tide line 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.		×
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.	×	
Impact HZ-2 Construction activities associated with the Project 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.		×
Impact HZ-2a Construction at Candlestick Point 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.		×
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.	×	
Impact HZ-3 Construction activities associated with the Project 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.		×
Impact HZ-3a Construction at Candlestick Point 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.		×

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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.	✕	
Impact HZ-4 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of improvements to existing and installation of new underground utilities.		✕
Impact HZ-4a Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of improvements to existing and installation of new underground utilities.		✕
Impact HZ-4b 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 improvements to existing and installation of new underground utilities.	✕	
Impact HZ-5 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.		✕
Impact HZ-5a Construction at Candlestick Point would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles.		✕
Impact HZ-5b Construction at HPS Phase II would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles.	✕	
Impact HZ-6 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the handling, stockpiling, and transport of soil that may contain contaminants.		✕
Impact HZ-6a Construction at Candlestick Point 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.		✕
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.	✕	
Impact HZ-7 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff.		✕
Impact HZ-7a 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.		✕
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.	✕	
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.	✕	
Impact HZ-9 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 Yosemite Slough bridge construction.		✕
Impact HZ-10 Construction activities associated with the Project in shoreline areas 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 may contain chemical or radiological contaminants.		✕
Impact HZ-10a Construction in the shoreline areas at Candlestick Point 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 may contain chemical contaminants.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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.	✕	
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.	✕	
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.	✕	
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.	✕	
Impact HZ-14 Construction activities associated with the Project would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater with contaminants from historic uses.		✕
Impact HZ-14a Construction at Candlestick Point 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 contaminants from historic uses.		✕
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 contaminants from historic uses.	✕	
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.	✕	
Impact HZ-16 Construction activities associated with the Project 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.		✕
Impact HZ-16a Construction at Candlestick Point 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.		✕
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.	✕	
Impact HZ-17 Construction activities associated with the Project 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.		✕
Impact HZ-17a Construction at Candlestick Point would not expose construction workers to unacceptable levels of hazardous materials in soil or groundwater in a manner which would present a human health risk.		✕
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.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact HZ-18 Construction activities associated with the Project 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.		✕
Impact HZ-18a Construction at Candlestick Point 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.		✕
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.	✕	
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.	✕	
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.	✕	
Impact HZ-21 Implementation of the Project 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.		✕
Impact HZ-21a Implementation of the Project at Candlestick Point 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.		✕
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
SECTION III.L (GEOLOGY AND SOILS)		
Impact GE-1 Construction activities associated with the Project would not result in the loss of topsoil caused by soil erosion.		✕
Impact GE-1a Construction at Candlestick Point, including the Yosemite Slough bridge, would not result in the loss of topsoil caused by soil erosion.		✕
Impact GE-1b Construction at HPS Phase II would not result in the loss of topsoil caused by soil erosion.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact GE-2 Construction activities associated with the Project would not result in damage to structures caused by settlement from lowering of groundwater levels.		✕
Impact GE-2a Construction at Candlestick Point and the Yosemite Slough bridge would not result in damage to structures from settlement caused by lowering of groundwater levels.		✕
Impact GE-2b Construction at HPS Phase II would not result in damage to structures caused by settlement from lowering of groundwater levels.	✕	
Impact GE-3 Rock removal activities at the Alice Griffith Public Housing site and the Jamestown area would not result in damage to structures from vibration and/or settlement caused by the fracturing of bedrock for excavation.		✕
Impact GE-4 Implementation of the Project would not expose people and structures to substantial adverse effects caused by seismically induced groundshaking.		✕
Impact GE-4a Implementation of the Project at Candlestick Point, including the Yosemite Slough bridge and Alice Griffith Housing, would not expose people or structures to substantial adverse effects caused by seismically induced groundshaking.		✕
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.	✕	
Impact GE-5 Implementation of the Project would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement.		✕
Impact GE-5a Implementation of the Project at Candlestick Point, including the Alice Griffith Housing and Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement.		✕
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.	✕	
Impact GE-6 Implementation of the Project would not expose people or structures to substantial adverse effects caused by seismically induced landslides.		✕
Impact GE-6a Implementation of the Project at Candlestick Point, including the Alice Griffith Housing, would not expose people or structures to substantial adverse effects caused by seismically induced landslides.		✕
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.	✕	
Impact GE-7 Implementation of the Project would not expose people or structures to substantial adverse effects caused by shoreline instability.		✕
Impact GE-7a Implementation of the Project at Candlestick Point would not expose people or structures to substantial adverse effects caused by shoreline instability.		✕
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.	✕	
Impact GE-8 Implementation of the Project would not expose people or structures to substantial adverse effects caused by landslides.		✕
Impact GE-8a Implementation of the Project at Candlestick Point would not expose people or structures to substantial adverse effects caused by landslides.		✕
Impact GE-8b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by landslides.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact GE-9 Implementation of the Project would not expose people or structures to substantial adverse effects caused by damage from settlement.		✕
Impact GE-9a Implementation of the Project at Candlestick Point, including Alice Griffith Housing and the Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by damage from settlement.		✕
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.	✕	
Impact GE-10 Implementation of the Project would not expose people or structures to substantial adverse effects caused by expansive soils.		✕
Impact GE-10a Implementation of the Project at Candlestick Point, including Alice Griffith Housing and the Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by expansive soils.		✕
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.	✕	
Impact GE-11 Implementation of the Project would not expose people or structures to substantial adverse effects caused by corrosive soils.		✕
Impact GE-11a Implementation of the Project at Candlestick Point, including Alice Griffith Housing and the Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by corrosive soils.		✕
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.	✕	
Impact GE-12 Implementation of the Project would not expose people or structures to substantial adverse effects 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.	✕	
Impact GE-14 Implementation of the Project would not result in a substantial change of topography or destruction of unique geologic features.	✕	
SECTION III.M (HYDROLOGY AND WATER QUALITY)		
Impact HY-1 Construction activities associated with the Project would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.		✕
Impact HY–1a Construction at Candlestick Point would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.		✕
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.	✕	
Impact HY-1c Construction of the Yosemite Slough bridge would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.		✕
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.	✕	
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.	✕	
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.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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.	✕	
Impact HY-6 Implementation of the Project would not contribute to violations of water quality standards or waste discharge requirements.		✕
Impact HY-6a Implementation of the Project at Candlestick Point would not contribute to violations of water quality standards or waste discharge requirements.		✕
Impact HY-6b Implementation of the Project at HPS Phase II would not contribute to violations of water quality standards or waste discharge requirements.	✕	
Impact HY-6c Implementation of the Yosemite Slough bridge would not contribute to violations of water quality standards or waste discharge requirements.		✕
Impact HY-7 Implementation of the Project would not otherwise degrade water quality.	✕	
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.	✕	
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.	✕	
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.	✕	
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.	✕	
Impact HY–12 Implementation of the Project 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.		✕
Impact HY-12a Implementation of the Project at Candlestick Point 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.		✕
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.	✕	
Impact HY-13 Implementation of the Project would not place structures within a 100-year flood hazard area or impede or redirect flood flows.		✕
Impact HY-13a Implementation of the Project at Candlestick Point would not place structures within a 100-year flood hazard area that could impede or redirect flood flows.		✕
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.	✕	
Impact HY-13c The Yosemite Slough bridge would not place structures within a 100-year flood hazard area or impede or redirect flood flows.		✕
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.	✕	
Impact HY-15 Implementation of the Project would not expose people or structures to inundation by seiche, tsunami, or mudflow.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
SECTION III.N (BIOLOGICAL RESOURCES)		
(Note: Project impacts for Impact BI-3a through Impact BI-21b are provided by Impact BI-22 through Impact BI-26)		
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.	×	
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.	×	
Impact BI-3a Construction at Candlestick Point 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 CDFG or USFWS.		×
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 CDFG or USFWS.	×	
Impact BI-4a Construction at Candlestick Point would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the *Clean Water Act* through direct removal, filling, hydrological interruption, or other means.		×
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.	×	
Impact BI-4c Construction of the Yosemite Slough bridge 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.		×
Impact BI-5a Construction at Candlestick Point 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 CDFG or USFWS.		×
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 CDFG or USFWS.	×	
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.	×	
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 CDFG or USFWS.	×	
Impact BI-7a Construction at Candlestick Point would not have a substantial adverse effect on the quantity and quality of suitable foraging habitat for raptors.		×
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.	×	
Impact BI-8a Construction at Candlestick Point 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 CDFG or USFWS.		×

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	Impact Evaluated in Addendum 5	Impact Not Evaluated in Addendum 5
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 CDFG or USFWS.	✕	
Impact BI-9a Pile driving associated with construction at Candlestick Point would not have a substantial adverse effect 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 CDFG or USFWS.		✕
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 CDFG or USFWS.	✕	
Impact BI-10a Construction of the Candlestick Point would require the removal of hard substrates (riprap) used by native oysters, but would not have a substantial adverse effect, either directly or through habitat modifications, on this species.		✕
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.	✕	
Impact BI-10c Construction of the Yosemite Slough bridge may 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.		✕
Impact BI-11a Construction at Candlestick Point 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 disturbance and loss of aquatic and mudflat habitat as a result of construction of shoreline revetments.		✕
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.	✕	
Impact BI-11c Construction of the Yosemite Slough bridge 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, Chinook salmon, or longfin smelt through disturbance or loss of aquatic and mudflat habitat as a result of construction of shoreline revetments.		✕
Impact BI-12a Construction at Candlestick Point would not have a substantial adverse effect on designated essential fish habitat through (EFH) or result in a substantial change in total available essential fish habitat 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 CDFG or USFWS.		✕
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 CDFG or USFWS.	✕	
Impact BI-12c Construction of the Yosemite Slough bridge 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 CDFG or USFWS.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact BI-13a Construction at Candlestick Point would not interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites.		×
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.	×	
Impact BI-14a Construction at Candlestick Point would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.		×
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.	×	
Impact BI-15a Construction within the shoreline or Bay at Candlestick Point would not result in the disturbance of contaminated soil or the re-suspension of contaminated sediments.		×
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.	×	
Impact BI-16a Implementation of the Project at Candlestick Point would not 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 CDFG or USFWS or interfere substantially with the movement of any native resident or migratory fish, or impede the use of native wildlife nursery sites.		×
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 CDFG 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.	×	
Impact BI-17a Implementation of the Project at Candlestick Point 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 CDFG or USFWS.		×
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 CDFG or USFWS.	×	
Impact BI-18a Implementation of the Project at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on aquatic species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFG 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.		×
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 CDFG 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.	×	
Impact BI-19a Implementation of the Project at Candlestick Point would not result in impacts to aquatic organisms through the re-suspension of contaminated sediments.		×

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6		
Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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 CDFG 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 CDFG 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.	✕	
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.	✕	
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.	✕	
Impact BI-21a Implementation of the Project at Candlestick Point would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.		✕
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.	✕	
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 CDFG, USFWS, or NMFS.	✕	
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 CDFG, USFWS, or NMFS.	✕	
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.	✕	
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.	✕	
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.	✕	
SECTION III.O (PUBLIC SERVICES)		
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.	✕	
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.	✕	
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.	✕	
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.	✕	
Impact PS-5 Construction activities associated with the Project would not affect the provision of school services by decreasing access to school services.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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.	✕	
Impact PS-7 Construction activities associated with the Project would not affect provision of school services by decreasing access to library services.	✕	
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.	✕	
SECTION III.P (RECREATION)		
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.	✕	
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.	✕	
Impact RE-3 Implementation of the Project would decrease the size of CPSRA but would not, overall, have an adverse effect on the recreational opportunities offered by that park, nor would it substantially adversely affect windsurfing opportunities at the Project site.		✕
SECTION III.Q (UTILITIES)		
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.	✕	
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.	✕	
Impact UT-3 Implementation of the Project would not require expansion of existing off-site wastewater conveyance or treatment facilities.		✕
Impact UT-3a Implementation of the Project at Candlestick Point would not require expansion of existing off-site wastewater conveyance facilities.		✕
Impact UT-3b Implementation of the Project at HPS Phase II would not require expansion of existing off-site wastewater conveyance facilities.	✕	
Impact UT-4 Implementation of the Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.	✕	
Impact UT-5 Construction activities associated with the Project, 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.		✕
Impact UT-5a Construction at Candlestick Point, 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.		✕
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.	✕	
Impact UT-6 Construction activities associated with the Project 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.		✕
Impact UT-6a Construction at Candlestick Point 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.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6		
Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
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.	✕	
Impact UT-7 Implementation of the Project would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.		✕
Impact UT-7a Implementation of the Project at Candlestick Point would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.		✕
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.	✕	
Impact UT-8 Implementation of the Project would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste.		✕
Impact UT-8a Implementation of the Project at Candlestick Point would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste.		✕
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.	✕	
Impact UT-9 Implementation of the Project would comply with federal, state, and local statutes and regulations related to solid waste.	✕	
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.	✕	
SECTION III.R (ENERGY)		
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.	✕	
Impact ME-2 Buildings constructed by the Project would not use large amounts of electricity in a wasteful manner.	✕	
Impact ME-3 Buildings constructed by the Project would not use large amounts of natural gas in a wasteful manner.	✕	
Impact ME-4 Vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner.	✕	
SECTION III.S (GREENHOUSE GAS EMISSIONS)		
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.	✕	

Appendix D
Analysis of Transportation Effects

ESA

FEHR PEERS

April 4, 2018

Mr. Jose Campos
Office of Community Investment and Infrastructure
1 South Van Ness Avenue, 5th Floor
San Francisco, CA 94103

Subject: Analysis of Transportation Effects of Project Refinements to the Candlestick Point/Hunters Point Shipyard Phase II Project Since Certification of the Project's Final EIR (Addendum 5)

Dear Joy:

As you know, the *Candlestick Point/Hunters Point Shipyard Phase II Project Final EIR* (herein referred to simply as "EIR") was certified by the San Francisco Planning Commission and the San Francisco Redevelopment Commission in June 2010. The EIR analyzed the originally-proposed project (as described in Chapter II of the FEIR, hereinafter referred to as "FEIR Project"), several variants (as described in Chapter IV of the FEIR), and several alternatives (as described in Chapter VI of the FEIR). The City's subsequent actions approved a subset of the options analyzed in the EIR, including:

1. The Project with a stadium, with Candlestick Tower Variant 3D, Utilities Variant 4, and Shared Stadium Variant 5;
2. The Project without the stadium, with Non-Stadium R&D Variant 1, Candlestick Tower Variant 3D, and Utilities Variant 4;
3. The Project without the stadium, with Non-Stadium Housing Variant 2, Non-Stadium Housing/R&D Variant 2a, Candlestick Tower Variant 3D, and Utilities 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 Variants or non-stadium Variants (see Board of Supervisors CEQA Findings pp. 2–4).

Since the certification of the EIR, a number of refinements have been proposed to the FEIR Project. Modifications to the FEIR Project 2010 Phasing Schedule 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. (The same City agencies also approved

FEIR Addenda 2 and 3; however, FEIR Addendum 2 is no longer applicable to the Modified Project and Addendum 3 did not modify any portion of the project affecting the transportation network or affect any transportation impact analysis, and thus are not discussed further.)

The Modified Project, as proposed in this analysis, is most similar in land uses to Non-Stadium R&D Variant 1, listed above. This letter summarizes a review of the proposed refinements to determine whether and to what extent they would change conclusions regarding significant transportation-related impacts and associated mitigation measures as described in the EIR.

PROJECT MODIFICATIONS

Table 1 highlights the Addendum 5 transportation-related revisions as well as other previously analyzed and approved revisions from prior addenda, followed by a brief description of the changes. **Table 2** summarizes the Modified Project proposed land uses at Candlestick Point and at Hunters Point Shipyard (herein referred to as "CP" and "HPS," respectively). A detailed comparison of the modified land uses to the FEIR Project, FEIR Variant 1 (R&D), and FEIR Variant 2A (Housing/R&D) is provided in **Appendix A**. Compared to FEIR Variant 1, the Modified Project would reduce the number of housing units in CP by 632 housing units, relocating those units at HP. Additionally in HPS, the Modified Project would add a 175-room hotel, add 410,000 square feet of institutional/educational uses, reduce R&D/Office in HPS from 5,000,000 square feet to 4,265,000 square feet, and increase the retail/maker space in HPS from 125,000 square feet to 401,000 square feet (71,000 square feet of the retail in HPS would be retail that was previously approved and no longer planned to be built as part of HPS Phase 1). HPS would also include an additional 172 housing units that were previously approved but no longer planned to be built as part of HPS Phase 1. The Modified Project site plan is shown in **Figure 1**.

TABLE 1: PROJECT DESCRIPTION REVISIONS

Project Description Component	Change from FEIR Assumptions for Variant 1 (R&D)				
	Addendum 1[1]	**Addendum 2**	**Addendum 3**	**Addendum 4[2]**	**Addendum 5**
Land Use	No Change	Project change involved implementation of an Automated Waste Collection System to serve the entire project site, including very minor effects to the transportation system. That system is no longer proposed and the effects studied in Addendum 2 are no longer applicable to the Modified Project.	Project change does not impact transportation assumptions or conclusions	• Convert 15.5 ksf of office to 6 ksf of local serving retail • Convert 42 ksf of performance venue space to 1,200-seat (42 ksf) cinema • All other uses (and balance of office and performance venue space) to remain unchanged • Reduce the number of seats in the performance venue from 10,000 to 5,600 (including a Performance Arts Center and a Film Arts Center)	FEIR Variant 1 (R&D) land uses, plus the following changes: • Reduce R&D/Office from 5,000,000 square feet to 4,265,000 square feet at HP • Add a 175-room hotel at HP • Add 410,000 square feet of institutional/educational uses at HP • Increase the retail/maker space from 125,000 square feet to 401,000 square feet at HP • Relocation of 632 housing units from CP to HP • Addition of 172 additional residential dwelling units at HP previously approved but no longer planned to be built as part of HP Phase 1
Construction Phasing	Generally accelerated construction within Candlestick Point, including the regional retail center, and postponed construction within Hunters Point Shipyard. As a result of changes to development phasing, also included changes to phasing of internal transportation infrastructure, off-site roadway improvements, and transit service improvements.			No changes to project construction phasing compared to Addendum 1. EIR analyzed an initial and long-term configuration for Harney Way. Addendum 4 analyzed the effects of splitting construction of the initial configuration into two phases. Attachment A in the transportation assessment included with Addendum 4 illustrates the initial configuration.	Same land uses within CP as FEIR Variant 1 (with the exception of 632 residential units relocated from CP to HP as part of the Modified Project), but with similar construction phasing to Addendum 1 (i.e., overall acceleration of construction at CP). Within HP, as a result of additional changes to development phasing, more substantial changes to construction phasing, including internal transportation infrastructure, off-site roadway improvements, and transit service improvements

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Roadway Geometry					
Roadway Cross Sections	A number of changes to roadway cross-sections based on need to align roadways and standardize lane widths per SFMTA direction.	Project change involved implementation of an Automated Waste Collection System to serve the entire project site, including very minor effects to the transportation system. That system is no longer proposed and the effects studied in Addendum 2 are no longer applicable to the Modified Project.	Project change does not impact transportation assumptions or conclusions	Additional changes to lane, sidewalk, and median widths to accommodate storm-water treatment and fire department requirements. Number of lanes and facility capacity generally remained unchanged. Attachment C of the transportation assessment included with Addendum 4 includes a cross-section comparison figure.	No changes in CP compared to Addendum 4. Changes in HPS South associated with re-orientation of street grid. Changes in R&D and HPS North associated with improvements to bicycle network to connect cycletrack through entire CP site, as well as to provide transit-only lanes on Lockwood Avenue. Generally, street design principles remain unchanged and facility capacity generally remains unchanged. Appendix D includes the revised cross-sections.
Gilman Avenue	No Change			Reconfigure the Gilman Avenue cross-section between Third Street and Arelious Walker. The cross-section would be revised to increase the sidewalk width and decrease the number of travel lanes from two lanes to one lane in each direction. Parking would remain on both sides of the street. Attachment D of the transportation assessment included with Addendum 4 illustrates the revised cross-section.	No change compared to Addendum 4
Roadway Alignment	Revised roadway alignment to accommodate changes to BRT alignment.			No changes to roadway alignment compared to Addendum 1.	Updated alignment of internal streets in HPS South associated with reorientation of street grid. Modified Project now also includes optional extension of Donahue Avenue from its current terminus south to connect to Crisp Avenue.
Yosemite Slough Bridge	Widen the bridge by four feet from the previously-approved non-stadium project alternative, to accommodate bicycle and pedestrian circulation on both sides of the bridge. Total width still within the maximum width evaluated in the EIR for the Stadium Alternative.			No additional changes to Yosemite Slough Bridge cross-section since Addendum 1.	No additional changes to Yosemite Slough Bridge cross-section since Addendum 1.

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Transit		Project change involved implementation of an Automated Waste Collection System to serve the entire project site, including very minor effects to the transportation system. That system is no longer proposed and the effects studied in Addendum 2 are no longer applicable to the Modified Project.	Project change does not impact transportation assumptions or conclusions		
BRT Alignment	Convert proposed BRT lanes from a two-way, side-running alignment to a center-running alignment, where possible. At the Candlestick Point site, the BRT lanes would be re-oriented such that both BRT lanes are on the west side of the Wedge Park.			No additional changes to BRT alignment since Addendum 1.	No additional changes to BRT alignment since Addendum 1.
29 Sunset	Minor re-routing through Candlestick Point.			No additional changes to the 29-Sunset route since Addendum 1.	No additional changes to the 29-Sunset route since Addendum 1.
Hunters Point Shipyard Transit Center	Relocate the Hunters Point Transit Center one block north from the originally proposed location, resulting in re-routing all bus routes traversing the transit center.			No additional changes to the Hunters Point Shipyard Transit Center or transit routes since Addendum 1.	Relocate the Hunters Point Transit Center one block north from the revised location analyzed in Addendum 1, resulting in minor rerouting of all bus routes traversing the transit center in its vicinity. Figure 8 illustrates the proposed change.
Bicycle Network	Refine the bicycle network including the addition of a cycle track near the Candlestick Point Retail Center. The cycle track would replace the Class II bike lanes originally proposed on Arelious Walker and Harney Way.			Minor bicycle network refinement. Replace Class III sharrows with Class II bike lanes on Earl Street. Attachment H of the Transportation Assessment included with Addendum 4 shows the revisions to the bicycle network.	No changes to the bicycle network in CP compared to Addendum 4. Changes 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. Cycletrack would continue through HPS South and across Drydock 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. Figure 12 presents the Modified Project bicycle network.
Pedestrian Network	Minor refinements to the pedestrian network.			Addition of sidewalk on the west-side of Arelious Walker, between Jamestown Avenue and Ingerson Avenue. Other minor changes to sidewalk widths to accommodate storm-water runoff, as noted above.	Changes in HP associated with realigned street grid; however, sidewalk widths and intersection density remain similar. Creation of two pedestrian bridges across Drydock 4. See Appendix D for revised cross-sections.

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Parking	Minor refinement to the total parking supply. Generally the Project would supply parking within the range contemplated in the EIR (2,800 to 20,000 on- and/or off-street parking spaces).			Minor increases to the total off-street parking supply to account for loss of anticipated on-street parking. Accomplished through modifications to parking rates outlined in the D4D. Total parking supply is similar to what was initially contemplated in the EIR.	Minor changes to total supply associated with minor changes in land use and refinements to street and intersection designs. Decrease of approximately 725 spaces in Hunters Point and a decrease of approximately 250 in Candlestick Point compared to FEIR Variant 1 (R&D). No changes to maximum parking rates by land use, however. Generally, the Project would supply parking within the range contemplated in the EIR for Variant 1 (R&D) (3,000 to 23,000 on- and/or off-street parking spaces).
Loading	No Changes			No Changes	No Changes

Notes:

1. Detailed changes to the Project Description are described in Addendum 1, dated December 11, 2013.
2. Addendum 4 did not propose revisions that would affect the transportation system or analysis at the Hunters Point Shipyard site. Detailed changes to the Project Description are described in Addendum 4, dated February 22, 2016.

TABLE 2

MODIFIED PROJECT PROPOSED LAND USES

Land Use Program	FEIR Variant 1 (R&D)				Modified Project			
	CP		HPS		CP		HPS	
	Size	Units	Size	Units	Size	Units	Size	Units
Residential[1]	7,850	units	2,650	units	7,218	units	3,454	units
Neighborhood Retail/Maker Space[1,2]	125	ksf	125	ksf	125	ksf	301	ksf
Regional Retail	635	ksf	--	ksf	635	ksf	100	ksf
Office	150	ksf	--	ksf	150	ksf	--	ksf
Hotel	220	rooms	--	rooms	220	rooms	175	rooms
Community Services	50	ksf	50	ksf	50	ksf	50	ksf
Park	147	acres	238	acres	105.7	acres	337.7	acres
Arena	10,000	seats	--	seats	10,000	seats	--	seats
R&D	--	ksf	5,000	ksf	--	ksf	4,265	ksf
Artists' Studios	--	ksf	255	ksf	--	ksf	255	ksf
Marina	--	slips	300	slips	--	slips	300	slips
Institutional (Jr. HS/HS)	--	students	--	students	--	students	1,000[3]	students
Institutional (HS/Post-Secondary)	--	students	--	students	--	students	1,000[3]	students

1. The total amount of proposed land development for HPS Phase 2 shown in Table 2 includes 71 ksf of additional retail space and 172 additional dwelling units that will no longer be included as part of the HPS Phase 1 development, and therefore, would not represent "net new" approved development within the overall HPS Plan Area.
2. 75 ksf of the 301 ksf of Neighborhood Retail at HPS would be dedicated for maker space uses.
3. Includes 600 HS students and 400 college students. Half of the HS students would be on site at any given time. Only 1/3 of college students would be on site at any one time.

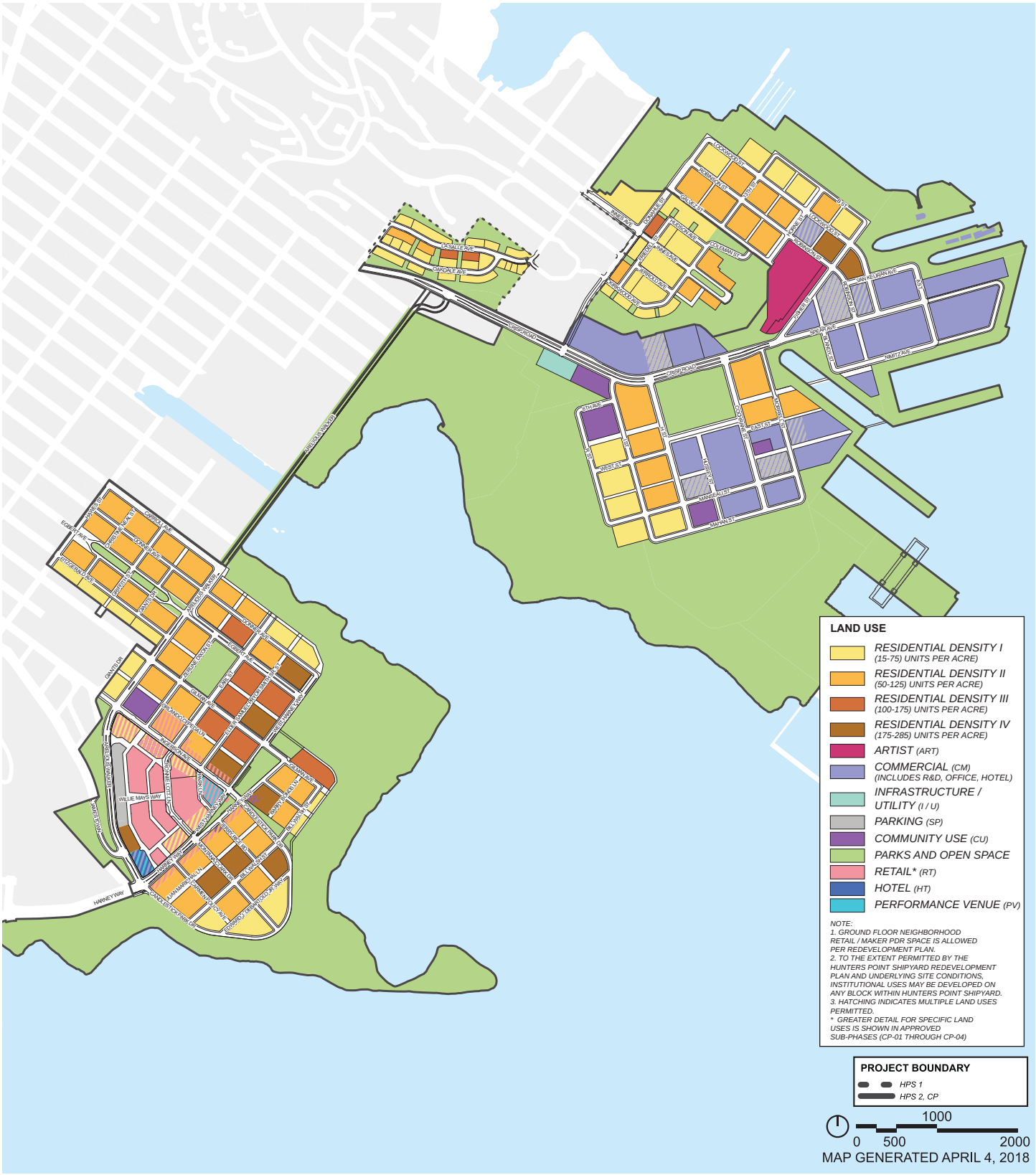


Figure 1

Modified Project Site Plan

TRAVEL DEMAND

Fehr & Peers conducted a detailed travel demand forecast of the Modified Project land uses using the same methods as described in the EIR. As noted earlier, the FEIR analyzed the FEIR Project as well as several variants and alternatives to the originally-proposed project. The land uses and travel demand characteristics of the Modified Project are similar to FEIR Variant 1 (R&D). Therefore, **Table 3**, below, compares the travel demand forecasts for the Modified Project with both the FIER Project and FEIR Variant 1 (R&D). Detailed calculation sheets are provided in **Appendix B**.

TABLE 3

TRAVEL DEMAND FORECAST COMPARISON (VEHICLE TRIPS)

		FEIR Project	FEIR Variant 1 (R&D)	Modified Project	Difference from FEIR Variant 1 (R&D)
AM Peak Hour	CP	2,310	2,310	2,264	-46
	HP	1,924	3,065	3,212	+147
	Total	**4,234**	**5,375**	**5,476**	**+101[1]**
PM Peak Hour	CP	4,913	4,913	4,882	-31
	HP	2,164	3,134	3,644	+510
	Total	**7,077**	**8,047**	**8,526**	**+479**

Notes:

1. Increases in trips associated with the Modified Project include approximately 100 AM peak hour and 200 PM peak hour vehicle trips for 172 dwelling units and 71 ksf of retail space. These new trips would not affect the total amount of traffic in the area at Project buildout because they correspond to the number of units and commercial square footage approved but not built, and no longer planned to be built, as part of the adjacent HPS Phase 1 project; however, they do represent an increase in the number of trips that are considered a part of the Modified Project. Thus, although the Modified Project's contribution in traffic is expected to increase by approximately 100 to 480 vehicle trips in the AM and PM peak hours,respectively, the total traffic volume in the area is expected to be nearly identical to the FEIR in the AM peak hour and increase by approximately 280 trips in the PM peak hour, since the other vehicle trips were previously accounted for as part of Phase 1.

As shown, the Modified Project would generate approximately 100 more vehicle trips overall in the AM peak hour (although it would generate approximately 150 more vehicle trips at Hunters Point Shipyard, which would be offset by a decrease of nearly 50 vehicle trips at Candlestick Point). In the PM peak hour, it would generate approximately 480 peak hour vehicle trips more than FEIR Variant 1, which includes an increase of approximately 500 trips at Hunters Point and a decrease of approximately 30 trips at Candlestick Point. Overall, the changes compared to Variant 1 represent an increase of 1.9 percent in vehicle trips during the AM peak hour and an increase of 6.0 percent during the PM peak hour associated with the Modified Project. In reviewing these numbers it is important to recall that nearly all of the AM peak hour increase and approximately 40 percent of the PM peak hour increase is due to land uses that were previously considered as part of Phase 1 and which are now considered part of the Modified Project. Thus, the overall increase in traffic in the area associated with the Modified Project is essentially nothing in the AM peak hour and 3.5 percent in the PM peak hour, even though the Modified Project's portion of the total traffic generated is higher.

Tables 4 and 5, below, summarize the change in transit travel demand associated with the Modified Project compared to Variant 1 (R&D). As shown, the Modified Project would generate slightly fewer transit trips than Variant 1 (R&D) from the EIR, although demand would increase slightly inbound to the HP and CP sites and decrease slightly outbound from the site in the AM peak hour compared to Variant 1 (R&D). The reverse phenomenon occurs in the PM peak hour.

TABLE 4
TRAVEL DEMAND FORECAST COMPARISON (TRANSIT TRIPS)

		FEIR Project	FEIR Variant 1 (R&D)	Modified Project	Difference from FEIR Variant 1 (R&D)
AM Peak Hour	Inbound	998	1,103	1,163	+52
	Outbound	813	1,215	1,155	-53
	Total	**1,811**	**2,318**	**2,318**	**-1**
PM Peak Hour	Inbound	1,475	1,506	1,602	-96
	Outbound	1,415	1,869	1,831	+37
	Total	**2,890**	**3,375**	**3,433**	**-59**

TABLE 5 FEIR VARIANT 1 (R&D) AND MODIFIED PROJECT TRANSIT TRIP GENERATION							
		FEIR Variant 1 (R&D)			**Modified Project**		
		CP	**HP**	**Total**	**CP**	**HP**	**Total**
AM Peak Hour	Inbound	299	916	1,103	300	863	1,163
	Outbound	667	435	1,215	642	513	1,155
	Total	**966**	**1,352**	**2,318**	**942**	**1,376**	**2,318**
PM Peak Hour	Inbound	1,054	452	1,506	1,029	573	1,602
	Outbound	835	1,033	1,869	833	998	1,831
	Total	**1,889**	**1,486**	**3,375**	**1,861**	**1,571**	**3,433**

Below is a discussion of the effects of the proposed changes on the impacts identified in the EIR.

IMPACT TR-1: ON-SITE AND OFF-SITE CONSTRUCTION IMPACTS

As described in the EIR, 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 EIR 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 Modified Project will be the same as or less than originally conceived and described for the FEIR Project, although the sequencing may be somewhat different. The FEIR Project analysis anticipated development phasing that would create more construction activities in the Hunters Point Shipyard in the early years of project buildout, with higher construction levels in Candlestick Point during later phases. Additionally, the FEIR Project also included construction of a new NFL stadium in the very early phases of development, which would have resulted in much more intense construction activities then will likely ever occur during any of the non-stadium options.

The revised phasing proposed for the Modified Project will reverse this, with more construction activities in Candlestick Point during the earlier years and more activity in the Hunters Point Shipyard site during later years. Further, because the Modified Project does not include a new NFL stadium, the overall construction activities will be more spread out over time and well below the peak levels anticipated for the FEIR Project.

Although the latest proposed phasing at Candlestick Point is slightly different from previous analyses of accelerated construction at Candlestick Point, such as the evaluation outlined in EIR Addendum 1, the overall construction activities and general proposal is similar to what was analyzed in EIR Addendum 1. Portions of the construction outlined in Addendum 1, including demolition of Candlestick Park, have already occurred. Postponement of construction in Hunters Point Shipyard 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 buildout associated with the FEIR Project and the Modified Project, as well as a chart illustrating the difference in terms of construction truck trips over time between the two, is provided in **Appendix C**.

Overall, although the timing and location of construction activities may vary within the site compared to what was originally anticipated, the construction activities are expected to create similar or even less intense significant and unavoidable localized construction-related traffic impacts as were originally described in Impact TR-1 the EIR. Mitigation measure MM-TR-1, development of a Construction Traffic Management Program, would still apply, although impacts would continue to remain significant and unavoidable.

Therefore, construction of the Modified Project would not result in any new significant effects to transportation beyond those identified in the EIR nor would they result in a substantial increase in the severity of a significant impact, and no new mitigation measures would be required.

IMPACTS TR-2 THROUGH TR-16: TRAFFIC IMPACTS TO REGIONAL AND LOCAL ROADWAY SYSTEM, STUDY INTERSECTIONS, AND FREEWAY FACILITIES

As described in the EIR, the Project would generate substantial amounts of new vehicular traffic resulting in a number of significant impacts and mitigation measures. More specifically, the EIR identified Impact TR-2, a significant impact related to the Project's overall increase in traffic generation in relation to the current roadway system capacity. The EIR identified Mitigation Measure MM TR-2, the development and implementation of the Project's Transportation Demand

Management (TDM) plan as a means to lessen the severity of Project-generated traffic impact; however, Impact TR-2 would remain significant and unavoidable with mitigation.

The EIR identified Impacts TR-3 through TR-8, which described locations where the Project would create new project-related impacts or contribute to significant cumulative impacts at study intersections. Mitigation Measures MM TR-4 (restriping at the intersection of Tunnel/Blanken), MM TR-6 (participating in the bi-county study and paying a fair share contribution toward improvements near the Geneva Avenue/US 101 interchange), MM TR-7 (restriping at the Amador/Cargo Way intersection), and MM TR-8 (participating in the bi-county study and paying a fair share contribution toward improvements near the Bayshore/Geneva intersection) were recommended to reduce the severity of Project-related impacts. However, due to uncertainty regarding implementation of mitigation measures, Impacts TR-3 through TR-8 were determined to remain significant and unavoidable with mitigation. The EIR also identified Impact TR-9, which described the project's less than significant impact to a number of other study intersections.

At a slightly larger scale, the EIR identified Impact TR-10, which describes the effect of Project-related traffic spilling over into nearby residential neighborhood streets. The EIR determined this impact to be significant, and referenced other mitigation measures described elsewhere in the EIR (including Mitigation Measure MM TR-2, the development and implementation of a TDM Plan) as appropriate strategies to reduce the severity of Impact TR-10. However, the EIR determined that the impact would remain significant and unavoidable with mitigation.

The EIR also identified a number of significant Project-related impacts to freeway facilities, including Impacts TR-11 through TR-15. No feasible mitigation measures were identified for Impacts TR-11 through TR-13 and these impacts would be significant and unavoidable. Mitigation Measures MM TR-14 and MM TR-15, which called for participation in the bi-county study and payment of a fair share contribution toward improvements near the Geneva Avenue / US 101 interchange area, were identified to reduce the severity of Impacts TR-14 and TR-15; however, since the implementation of these measures was uncertain, Impacts TR-14 and TR-15 would also remain significant and unavoidable.

Finally, the EIR identified Impact TR-16, a significant impact associated with the Project's contribution to traffic on Harney Way, which will be a primary access route for all modes between the Project site and regional transportation facilities (US 101, Bayshore Caltrain, Balboa Park BART, the Bay Trail, etc.). Mitigation Measure MM TR-16 called for the project to construct the initial

phase of Harney Way at the outset of construction of the first major phase, which would reduce the Project's impact to less than significant.

However, as shown in Tables 3 and 4, the Modified Project would be most similar to FEIR Variant 1 (R&D) in terms of vehicle trips generated. The EIR also included a discussion of how the transportation impacts associated with Variant 1 (R&D) would be different from those of the FEIR Project summarized above. As noted in the EIR (pp. IV-18-IV-21), in addition to the same significant impacts as the FEIR Project, Project Variant 1 (R&D) would also have significant project-level or cumulative impacts on five intersections that would not occur with the FEIR Project. Specifically, FEIR Variant 1 (R&D) would have significant and unavoidable impacts at three additional intersections:

- Ingalls Street / Carrol Avenue
- Bayshore Boulevard / Oakdale Street
- Evans Avenue / Jennings Street

FEIR Variant 1 (R&D) would also have significant impacts at two additional intersections that could be reduced to less than significant levels with mitigation:

- Crisp Road / Palou Avenue / Griffith Street
- Innes Avenue / Earl Street

Mitigation at Crisp Road / Palou Avenue / Griffith Street identified in the EIR for Variant 1 (R&D) would involve re-striping the southbound approach to provide a dedicated left-turn lane and a shared through/right-turn lane, and prohibiting on-street parking on Griffith Street between Palou Avenue and Oakdale Avenue.

Mitigation at Innes Avenue / Earl Street identified in the EIR for Variant 1 (R&D) would involve constructing a new traffic signal at the intersection. Subsequent to the preparation of the EIR, the India Basin project has been proposed, and as of the writing of this analysis, that project has published a Draft EIR for public review and comment. The India Basin project includes construction of a traffic signal at this intersection.

There are two components to the discussion of the Modified Project's traffic impacts: one component addresses how project refinements would affect impacts under long-term buildout

conditions (similar to the conditions analyzed in the EIR) and the other component addresses how changes to project phasing would affect auto access to the site during the buildout period.

Buildout Conditions

The EIR's discussion of traffic impacts is based on project buildout. Refinements have been made to the internal roadway network, both to cross-section dimensions and roadway alignments. Refinements to roadway cross sections have been made to continue 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 Candlestick Point. 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 Modified Project are presented in **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 Modified Project. Those elements are described generally 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[1] 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 Hunters Point Shipyard, before terminating near Spear Avenue. The modifications described in Addendum 1 related to the bicycle network revisions in Candlestick Point remain unchanged since Addendum 1.

[1] 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.

Refer to Addendum 1, p. 26 for a comparison of the FEIR Project and the Addendum 1 refinements to the bicycle network. However, the Modified Project proposes to realign the cycletrack through HPS such that it traverses the open space to the south of Crisp Road, and then uses a neighborhood midblock break in Hunters Point South to travel parallel to Crisp Road. Refer to the bicycle impacts section of this letter for further discussion of the changes to the bicycle network.

- **Reorientation of Street Grid in Hunters Point South.** Streets in the Hunters Point South neighborhood associated with the Modified Project are similar to what was proposed in FEIR Variant 1 (R&D) (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 FEIR Variant 1 (R&D) and therefore, transportation capacity is expected to be similar.

- **Extension of Donahue Street south to Crisp Road.** Within Hunters Point, the originally-proposed 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 Hunters Point Shipyard 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.

Although most roadway cross-section refinements consist of relatively minor modifications to the roadway network to accommodate refined bus circulation, bicycle networks, and pedestrian amenities as described above, one refinement is proposed – to Arelious Walker Drive – that does affect vehicular capacity at buildout. That refinement would reduce the ultimate width of the street from six lanes to four lanes, and would remove on-street parking and Class II bike lanes (to be replaced by the Class I cycletrack discussed elsewhere). This proposed change was evaluated and approved in Addendum 1, and found to continue to provide acceptable vehicular capacity for the refined land uses evaluated in Addendum 1. This change is also included in the Modified Project,

and the evaluation discussed in this section assesses the degree to which this change would continue to provide acceptable vehicular capacity for the Modified Project.

The EIR assessed cumulative (year 2030) weekday AM and PM peak hour intersection turning movement volumes for approximately 60 study intersections, assuming the development of the FIER Project (and numerous variants and alternatives), a number of adjacent planned projects, and some background traffic growth on area roadways. The operating characteristics of these study intersections were described in terms of Level of Service ("LOS")[2].

Because the Modified Project results in changes to the overall peak hour travel demand and includes some modifications that affect vehicular capacity, as noted above, this assessment includes a LOS analysis at a subset of intersections closest to the Modified Project site to assess the degree to which the Modified Project may affect impact determinations identified in the EIR. The subset of intersections evaluated is expected to include the intersections that experience the majority of project-related traffic volume changes, as they are closer to the project site where traffic is less dispersed. If changes to delay and LOS at these intersections are relatively small, it can reasonably be concluded that changes to other intersections further away from the project site would be even smaller.

Below, **Table 6** summarizes the intersection LOS for intersections nearest to the project site at full project buildout as described for Variant 1 (R&D) in the EIR and as forecasted with the Modified Project, including the proposed change to the ultimate configuration of Arelious Walker Drive (i.e., two through lanes in each direction instead of three). As shown, the Modified Project would have only minor effects to the intersection LOS analysis compared to Variant 1 (R&D) as outlined in the EIR. No intersections that operate at LOS D or better under Variant 1 (R&D) would deteriorate to LOS E or F, or deteriorate from LOS E under Variant 1 (R&D) to LOS F. Furthermore, the intersections forecasted to operate at LOS E or F under conditions with Variant 1 (R&D) would continue to operate at LOS E or F, respectively under the Modified Project. Volume to capacity ratios at each of the intersections forecasted to operate at LOS F with delays over 80 seconds per

[2] LOS is a qualitative description of an intersection's performance based on the average delay of per vehicles traveling through it. Intersection levels of service range from "A", which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. LOS A through D are considered excellent to satisfactory service levels.

TABLE 6

INTERSECTION OPERATIONS

Intersection[1]	FEIR Variant 1 (R&D)[2,3,4]				Modified Project[2,3]			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C
#4 – Evans / Third	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.65**
#6 – Palou / Third	**>80 / F**	**2.22**	**>80 / F**	**5.97**	**>80 / F**	**2.47**	**>80 / F**	**6.65**
#9 – Gilman / Third[5]	**>80 / F**	**2.02**	**>80 / F**	**3.40**	**>80 / F**	**1.63**	**>80 / F**	**2.94**
#29 – Harney / Arelious Walker	25 / C	--	53 / D	--	22 / C	--	36 / D	--
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 / F**	**1.18**	**>80 / F**	**1.12**	**>80 / F**	**1.21**
#34 – Arelious Walker / Gilman[5]	30 / C	--	38 / D	--	36 / D	--	52 / D	--
#46 – Innes Ave / Fitch	5 / A	--	6 / A	--	5 / A	--	6 / A	--
#47 – Innes Ave / Earl	1 (21) / A (C)[5]	--	3 (**63**) / A (**F**) [6]	--	1 (24) / A (C)	--	4 (**77**) / A (**F**)	--
#48 – Middle Point / Evans / Jennings	**61 / E**	**1.17**	43 / D	--	**64 / E**	**1.15**	30 / C	--
#54 – Ingalls / Palou	23 / C	--	33 / C	--	22 / C	--	37 / D	--
#55 – Keith / Palou	9 / A	--	8 / A	--	9 / A	--	8 / A	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. Refer to Tables 45 and 46, on pp. 167-172 of the Project's Transportation Impact Study, included as Appendix D to the FEIR, for LOS results for FEIR Variant 1 (R&D).
5. The analysis of conditions with the Modified Project at Gilman / Third and Gilman / Arelious Walker was performed using a more detailed and sophisticated software, the Synchro platform, than what was used in the FEIR in order to capture unique features of those intersections. Analysis of Modified Project conditions at Gilman / Third also reflects updated lane configurations established by SFMTA subsequent to publication of the EIR.
6. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

vehicle would change only slightly at all intersections, indicating little change in operating conditions at these intersections, with the exception of Palou Avenue / Third Street in the PM peak hour. At Palou Avenue / Third Street, the v/c ratio would increase from 2.22 and 5.97 to 2.47 to 6.65 with the Modified Project in the AM and PM peak hours, respectively – an increase of approximately 10 percent. Overall, the Modified Project would increase volumes by approximately 14 vehicles in the AM peak hour and 87 vehicles in the PM peak hour, an increase of less than 0.3 percent in the AM peak hour and 1.5 percent in the PM peak hour. This increase in traffic volumes is well within the range of error of the project's travel demand forecasts[3] and is therefore not likely to create a perceptible difference for users.

Finally, as shown in Table 6 for Intersections #29 and #34, the proposed reduction in travel lanes from six to four lanes on Arelious Walker Drive that was first proposed in Addendum 1 would continue to provide for acceptable intersection operations under the Modified Project. Detailed intersection LOS calculations are included in **Appendix E**.

As noted above, significant impacts at the intersections of Crisp / Palou and Innes / Earl were able to be reduced to less than significant with mitigation measures identified specifically for Variant 1 (R&D) in the EIR. Implementation of the traffic signal at the intersection of Innes / Earl, as identified in the EIR, would continue to reduce impacts at this intersection to less than significant levels with the Modified Project.

However, the mitigation measure identified for Crisp / Palou would not be sufficient to reduce the impacts associated with the Modified Project to less than significant levels. As a result, a revised mitigation measure at this intersection would be required to achieve acceptable operations and reduce the impacts at this intersection to less than significant levels.

Therefore, the paragraph in the EIR describing the mitigation measure at this intersection (p. IV-19) should be revised, as follows:

[3] Refer to *Trip Generation*, 9th Edition, Institute of Transportation Engineers, which was the source of the data used in this study for forecasting trip generation, and is widely used in the industry. Generally, forecasts from this source are based average rates or fitted curve equations based on a set of observed data. However, the standard deviation of the data to the rates or equations is greater than two percent in virtually every land use category.

Striping the southbound approach to provide a dedicated ~~left~~right-turn lane and a shared through/~~right~~left-turn lane, ~~and~~ prohibiting on-street parking on Griffith Street between Palou Avenue and Oakdale Avenue, and constructing the westbound approach on Crisp Avenue to provide two dedicated left-turn lanes and one shared through/right-turn lane would result in an LOS D at the intersection. Implementation of this improvement would be the responsibility of SFMTA and DPW, the Project Applicant shall contribute its fair-share toward construction of the mitigation measure. Prior to payment of the contribution, the City shall create a mechanism to determine and receive fair share contributions from the Project Applicant. The SFMTA and DPW shall design and implement the measure as necessary.

Table 7, below, shows the operation of these two intersections with the mitigation measures as described above. With mitigation measures, these two intersections would operate acceptably and the impacts associated with the Modified Project would be less than significant, similar to the conclusions in the FEIR for Variant 1 (R&D).

TABLE 7

INTERSECTION OPERATIONS WITH MITIGATION

Intersection[1]	Modified Project[2,3]				Modified Project With Mitigation[2,3]			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 /F**	**1.21**	33 / C	0.86	36 / D	0.85
#47 – Innes Ave / Earl	1 (24) / A (C)[4]	--	4 (77) / A (F)[4]	--	18 / B	--	21 / C	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

Therefore, because travel demand would be similar to that identified for Variant 1 (R&D) in the EIR, there would be no changes to auto capacity associated with project refinements that result in additional or more severe significant impacts, and intersection LOS would be similar to that identified in the EIR for Variant 1 (R&D) with some minor revisions to one of the mitigation measures identified in the EIR, the Modified Project would have similar impact conclusions for Impacts TR-2 through TR-16, as applied to Variant 1 (R&D) in the EIR. Mitigation measures MM TR-2, MM TR-4, MM TR-6, MM TR-7, MM TR-8, and MM TR-16 will continue to apply, including the additional locations identified for Variant 1 (R&D) in the EIR, revised as noted above.

Timing of Traffic Improvements

Although, for purposes of assessing transportation impacts, the Modified Project will be similar to FEIR Variant 1 (R&D) at buildout, the project development phasing has changed. The phasing of traffic improvements was set forth in a memorandum included as Appendix A4 to the FEIR Comments & Responses[4]. An analysis of the Modified Project phasing and infrastructure implementation timing was conducted to determine whether the Modified Project would provide auto circulation and access at a level adequate to meet the travel demand throughout the buildout period.

Candlestick Point

As noted earlier, development at Candlestick Point 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[5]. As shown in **Table 8**, most roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the EIR, 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 will not affect

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

[5] Although previous EIR Addenda also considered revisions to the project phasing compared to what was analyzed in the EIR, the comparison in this Addendum compares the Modified Project with the FEIR Project, and not to previously contemplated revisions.

TABLE 8
PROJECT STREET SEGMENT IMPROVEMENTS - CANDLESTICK POINT

Intersection	Improvement	Original Non-Stadium Option[d]		Modified Project	
		Traffic Volume Trigger?[c]	Trigger	Traffic Volume Trigger?[c]	Trigger[e]
Arelious Walker Drive, Shafter Avenue to Carroll Avenue	Construct Yosemite Slough Bridge[a]	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[c]	No	CP-02 (Adjacency)
	Long-Term (See Addendum 2)	TBD[b]	Per Mitigation Measure MM TR-16	TBD[b]	Per Mitigation Measure MM TR-16
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)[c]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[c]
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]

a. The cross-section for Yosemite Slough Bridge has been modified from what is shown in the EIR for the Non-Stadium alternative. However, at 45-feet in width, the structure would be smaller than the bridge approved in the Stadium scenario.
b. 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 buildout 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 will be conducted prior to construction of each development phase to determine whether conditions are better or worse than projected. The results of that study will indicate whether additional development can be accommodated under the near-term configuration while maintaining acceptable LOS or whether widening is required.
c. Based on trip rates by land use used in the EIR for Variant 1 (R&D) and currently-proposed phasing. See Appendix E for LOS calculation showing that approximately 82% of project-related growth (corresponding to approximately 7,600 vehicle trips) can be accommodated at this intersection before significant LOS impacts would occur.
d. As summarized in the 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.
e. 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.

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 FIER, these improvements are not needed as quickly, and technical analysis has shown that they can be postponed until Subphase CP-07 (see discussion below).

Figures 2 – 4, attached, illustrate the auto access routes that would be available based on the Modified Project development and roadway infrastructure phasing. As shown, the major connections between the Candlestick Point 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 Avenue, Gilman Avenue, Ingerson Avenue, and Jamestown Avenue.

Within Major Phase 1 in Candlestick Point, the development will 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 will generate approximately 100 PM peak hour auto trips, based on the methodology described in the EIR. 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.

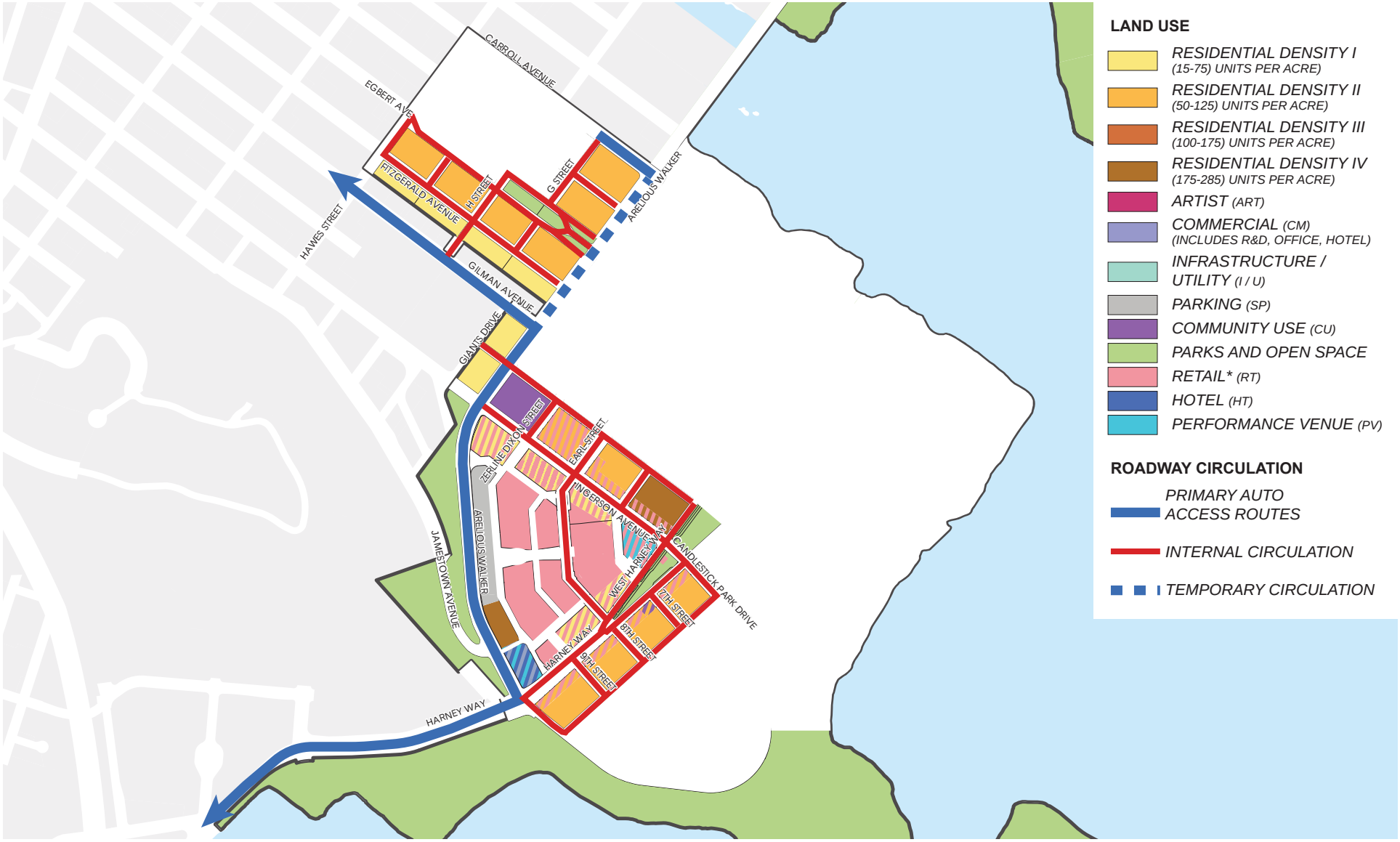


Figure 2

CP Major Phase 1

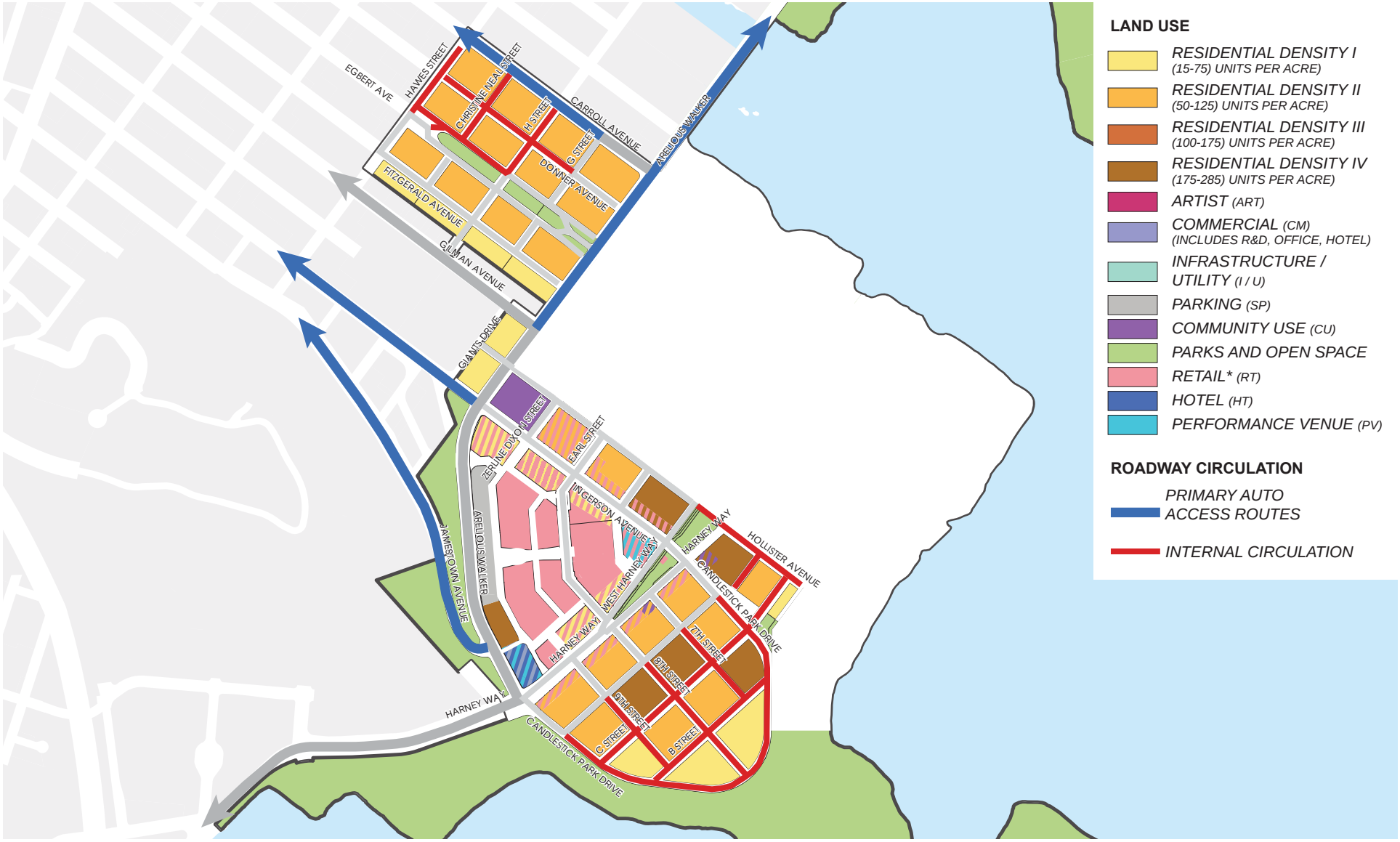


Figure 3

CP Major Phase 2

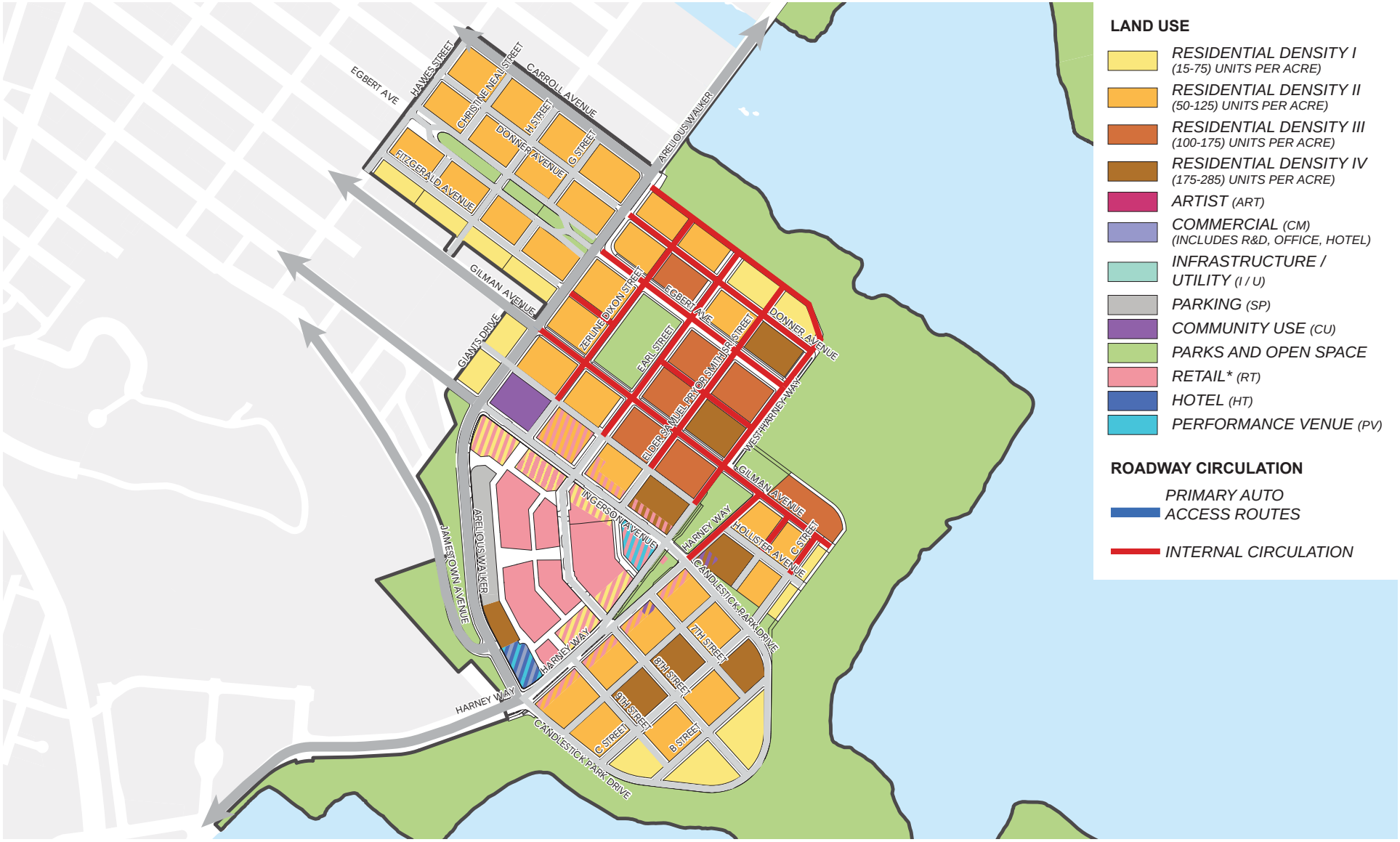


Figure 4

CP Major Phase 3

Sub-phase CP-02 would develop the 635 ksf regional retail center, a 220-room hotel, 419 residential units, 150 ksf of office, and the 10,000-seat arena. To support this large amount of new development, the key transportation infrastructure connecting Candlestick Point to external routes will 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 will be constructed to its initial configuration with four lanes, as described in the EIR[6]. 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 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[7].

Note that Mitigation Measure MM TR-16 in the EIR requires Harney Way to be reconstructed prior to the issuance of a grading permit for the first Major Phase of development. As noted in EIR Addendum 1, since the first Sub-phase in Major Phase 1 in Candlestick Point, CP-01, does not connect to Harney Way and improvements to Harney Way would not affect auto capacity associated with CP-01, reconstruction of Harney Way is not necessary for the first subphase of development. Consequently, a modification was proposed to Mitigation Measure MM TR-16 as part of Addendum 1 (and subsequently approved by OCII, as noted earlier) to provide that Harney Way would be constructed such that it is complete prior to the issuance of occupancy permits for the second subphase of Major Phase 1, CP-02. These same revisions addressed in Addendum 1 would continue to apply to the modified Project.

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 will be constructed as part of Sub-phase CP-02. Carroll Avenue is at the northernmost portion of the CP site, and therefore, not likely to be a desirable route to the Candlestick Point retail center, which

[6] 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 Modified Project.

[7] 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.

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 will 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 Candlestick Point required to connect project-related traffic to the external roadway network will be constructed, as will most of the off-site capacity enhancements, including Harney Way and Gilman Avenue.

Subphase 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 will be constructed earlier, as part of CP-01 and CP-02.

With the opening of CP-04, the first four subphases would generate about 3,750 vehicle trips, which would exceed the trigger point identified in the 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[8]. The analysis conducted for the FEIR was based on the original phasing, which as noted earlier, would develop in the Hunters Point Shipyard site faster than currently proposed. As a result, the automobile route around Yosemite Slough was identified as appropriate infrastructure to provide access to Candlestick Point and US 101 from the development at Hunters Point Shipyard. The trigger in the 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 Hunters Point Shipyard and substantially more development in Candlestick Point than originally anticipated. As a result, there is likely to be less auto demand for travel between the Hunters Point site and US 101 or

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

between the Candlestick Point and Hunters Point Shipyard sites, making the auto route around Yosemite Slough less critical at such an early stage.

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. Intersection LOS calculation sheets demonstrating that the intersection would operate acceptably under its current configuration up to approximately 85 percent of the total forecasted growth is provided in **Appendix E**.

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 Candlestick Point, 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, as shown in **Table 9** below, and therefore, no significant impacts would occur as a result of providing this interim condition through Sub-phases CP-01 through CP-06. Detailed LOS calculations are provided in **Appendix E**.

TABLE 9
INTERIM INTERSECTION OPERATIONS – ARELIOUS WALKER DRIVE

Intersection	**Arelious Walker/Gilman (PM Peak Hour)**	
	Delay[1]	**LOS[1]**
Interim Condition at completion of CP-06	53	D

Notes:
1. Intersection level of service (LOS) based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.

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 – 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 Candlestick Point area will be greater than or similar to what was described in the EIR throughout the development buildout.

Hunters Point Shipyard

As noted earlier, development at Hunters Point Shipyard 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 FEIR improvement phasing requirements are proposed to better respond to land use phasing. As shown in **Table 10**, similar to the proposed changes at Candlestick Point, all roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the EIR.

Figures 5 – 7 show the development of land use and roadway infrastructure for Major Phases 1 – 3 for the Hunters Point Shipyard site, respectively. At buildout, the primary access routes to the Hunters Point Shipyard site include the four-lane Innes Avenue and the two-lane Palou Avenue. **Figure 5** illustrates that the primary northern access route to the Shipyard site, Donahue Street and Innes Avenue, would be constructed and connected to the HPS North area as part of Major Phase 1. 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 Subphase CP-01, prior to any new trips generated by development in the Hunters Point Shipyard 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 will provide a complete, continuous route from Innes Avenue to Crisp and Palou avenues. This access route accounts for the total auto capacity of the HPS site to connect with the surrounding neighborhoods and will be adequate to serve the development proposed as part of Major Phase 1 in Hunters Point

Shipyard. Internal streets proposed as part of Major Phase 1 in Hunters Point Shipyard would connect between Donohue Street and Innes Avenue.

TABLE 10

PROJECT STREET SEGMENT IMPROVEMENTS – HUNTERS POINT SHIPYARD

Intersection	Improvement	Original Non-Stadium Option[c]		Modified Project	
		Traffic Volume Trigger?[b]	Trigger	Traffic Volume Trigger?[b]	Trigger[d]
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)[a]	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.

a. Combined total from CP and HP
b. Based on trip rates by land use used in the EIR for Variant 1 (R&D).
c. As summarized in the FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan, Fehr & Peers, March 17, 2010
d. 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.
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.

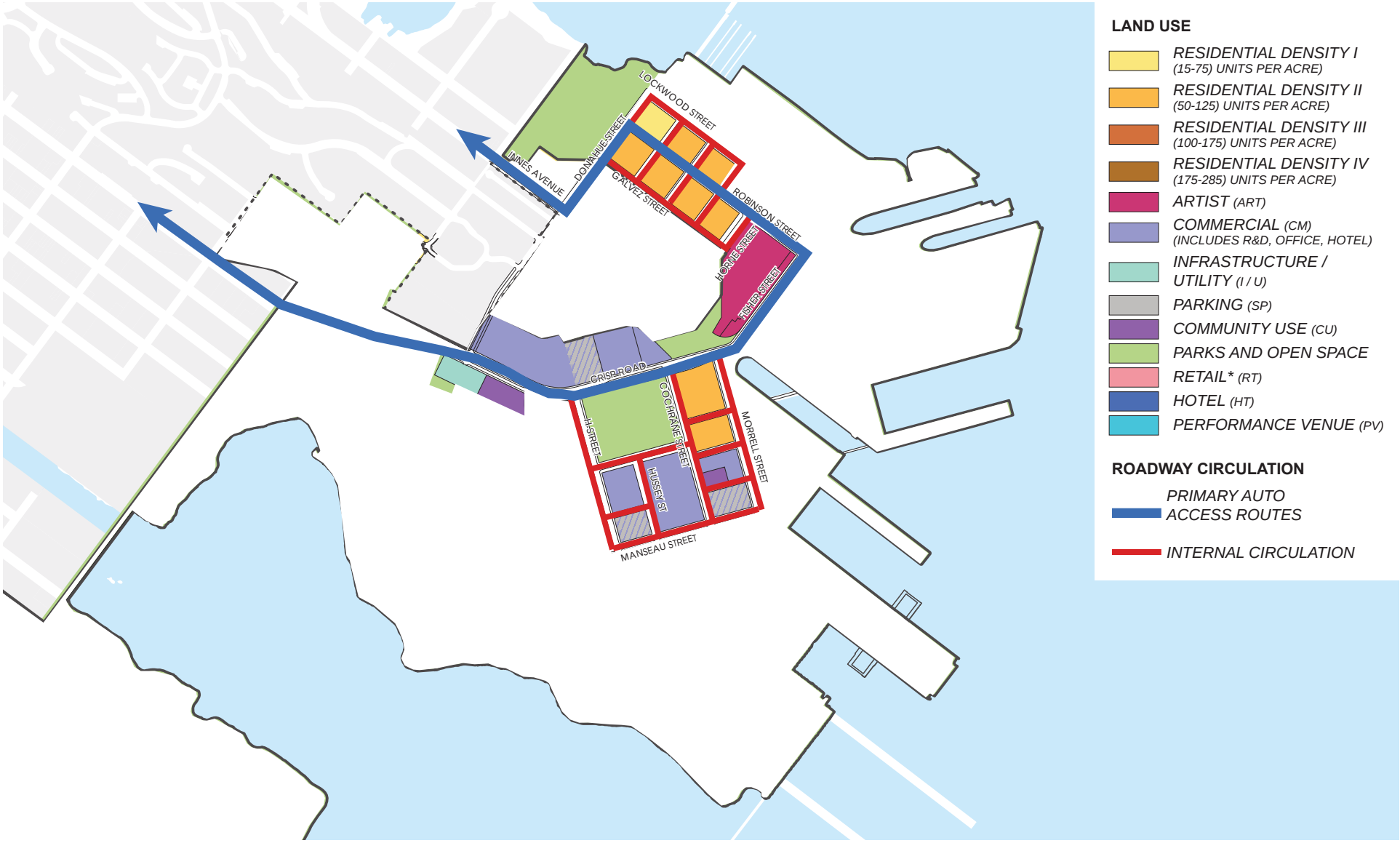


Figure 5

HP Major Phase 1

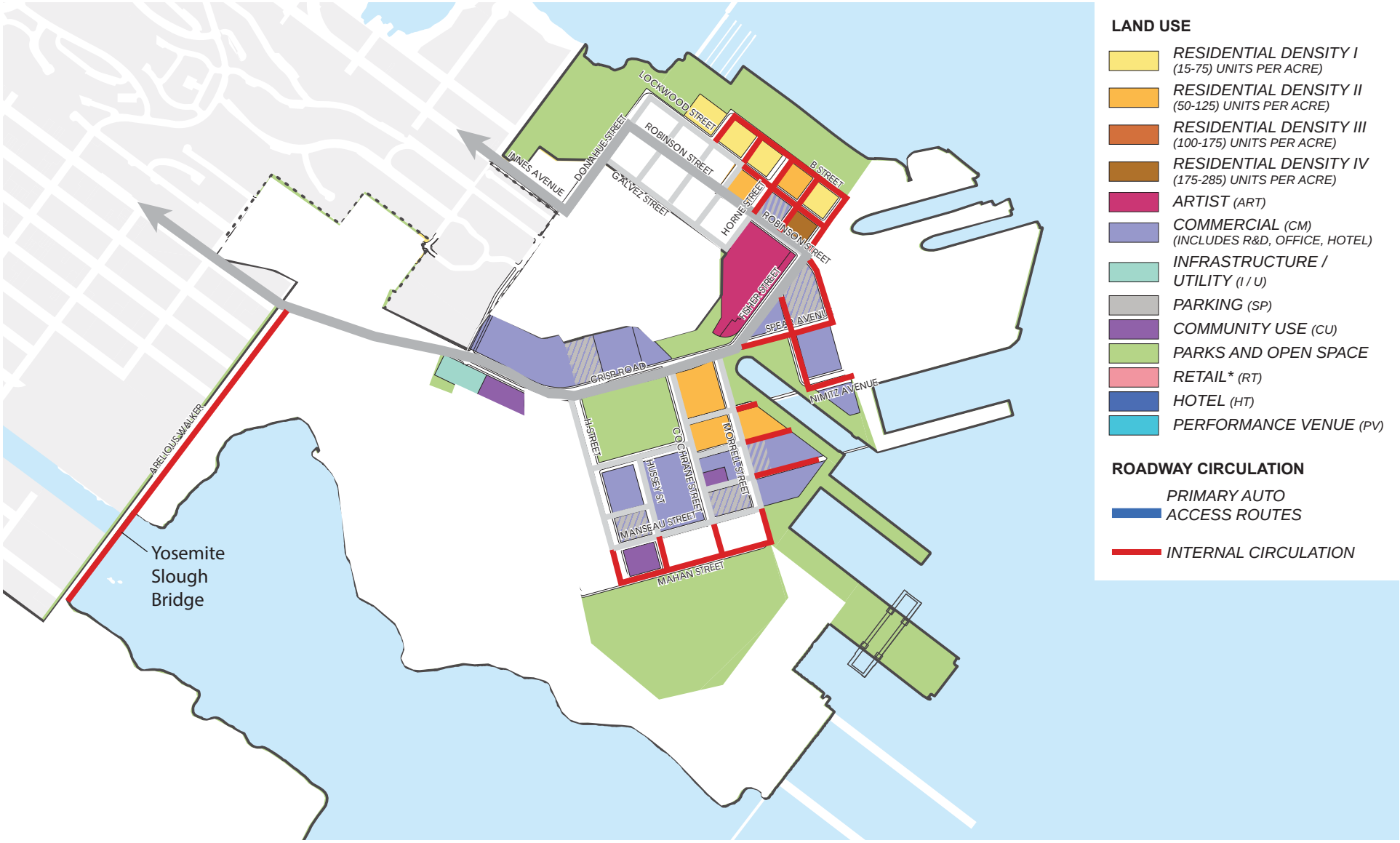


Figure 6

HP Major Phase 2

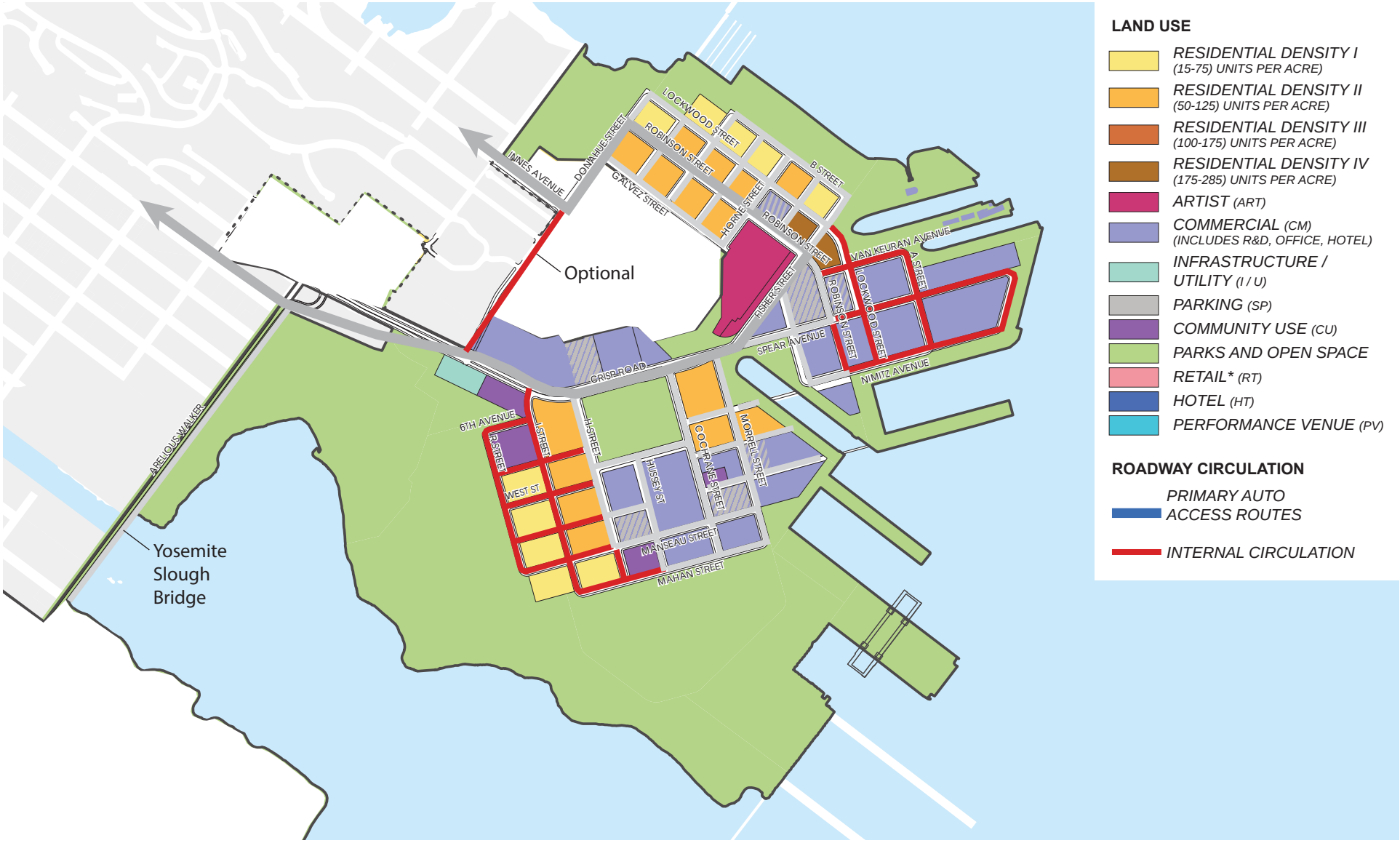


Figure 7

HP Major Phase 3

Figures 6 and 7 illustrate that, other than the optional extension of Donahue Street to Crisp Avenue, subsequent phases would simply build out the internal roadway network adjacent to individual development parcels, all of which will connect to the major access routes. Therefore, the major pieces of auto infrastructure connecting Hunters Point Shipyard with the external roadway network will be constructed as part of Major Phase 1 in Hunters Point Shipyard, and therefore, auto capacity should be greater than or similar to what was described in the EIR during all phases of development.

As noted earlier, the Modified Project includes an optional extension of Donahue Street to provide a better connection between the northern and southern portions of Hunters Point Shipyard. The technical analysis conducted as part of this letter report does not include this extension.

However, the decision to implement this extension would not affect impact conclusions. For example, under conditions without the extension, traffic from the southern portion of Hunters Point Shipyard 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, if anything, 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 Modified Project or the modified phasing compared to the traffic impacts described in the EIR associated with FEIR Variant 1 (R&D), and therefore, no new mitigation measures are required. Conditions with mitigation measures described in the FIER (and as modified above) would continue to operate similarly to conditions described in the FEIR.

IMPACTS TR-17 THROUGH TR-30: IMPACTS TO LOCAL AND REGIONAL TRANSIT OPERATIONS AND CAPACITY

The EIR described the Project's impacts to transit in Impacts TR-17 through TR-30. Impacts TR-17 through TR-20 identified that, with implementation of the Project's Transit Operating Plan (identified as Mitigation Measure MM TR-17), the Project would provide adequate transit capacity locally, at the standard Downtown screenlines, and regionally to meet its projected demand. With implementation of MM TR-17, Impacts TR-17 through TR-20 were determined to be less than significant.

The EIR also identified Impacts TR-21 through TR-27, which describe impacts to transit travel time associated with Project-generated traffic congestion on specific corridors affecting specific transit lines. Mitigation Measures MM TR-21 through MM TR-27 were identified and consist of three parts:

- Transit travel times should be monitored throughout the course of project buildout to determine whether Project-generated traffic is decreasing transit travel speeds.
- If speeds are decreasing, travel time reduction measures should be implemented on the affected corridors. These measures typically involve dedication of transit-only lanes.
- If reduction measures are either infeasible or not effective at improving travel speeds, new vehicles should be purchased to allow SFMTA to maintain planned service frequencies.

However, because implementation of these measures requires substantial additional outreach and design, the feasibility of these measures is uncertain, and Impacts TR-21 through TR-27 were determined to be significant and unavoidable.

The EIR also identifies Impact TR-28, a significant and unavoidable impact to SFMTA transit express routes using US 101 that may be slowed down by Project-generated freeway traffic for which no mitigation measures were identified. Impact TR-29 was identified as a less than significant impact to SFMTA transit express routes using I-280 because project-generated traffic on this route would not be as substantial. Impact TR-30 would be a significant and unavoidable impact to other regional transit routes (such as SamTrans express routes) using regional facilities to which the Project would contribute substantial amounts of traffic congestion.

The EIR concluded that Variant 1 (R&D) would have significant impacts to transit at the same locations as the FIER Project, but that Variant 1 (R&D) impacts would be more severe than the FEIR Project due to higher levels of traffic generated. No additional mitigation measures were required as part of Variant 1 (R&D), although the number of additional vehicles that may be required on the 48 Quintara was determined to be higher than that of the Proposed Project. Generally, the mitigation measures would be as effective at reducing the impacts to transit associated with Variant 1 (R&D) as they were forecasted to be at reducing the FEIR Project's impacts.

Similar to traffic impacts, the Modified Project's transit impacts at buildout as described in Impacts TR-17 through TR-30 will be similar to what was described in the EIR for Variant 1 (R&D), although two minor changes have been proposed. Specifically, the Modified Project proposes minor changes to the proposed routes for the 29 Sunset in Candlestick Point and to all routes in the Hunters Point Shipyard 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 FIER 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 FEIR Project for details on the original transit plan. Refer to the revised Transit Operating Plan, included as Appendix A to the Modified Project's Transportation Plan, which has been prepared as part of the Modified Project, for a more detailed presentation of the Modified Project's transit service plan.

The modification to the 29 Sunset was evaluated as part of EIR 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 EIR. The 29 Sunset routing proposed as part of the Modified Project is identical to those evaluated in Addendum 1 and approved by OCII and SFMTA.

Figure 8 illustrates the proposed changes to routes serving the Hunters Point Shipyard. The changes 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 FEIR. Land uses along Lockwood Street and Robinson Street are relatively 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.

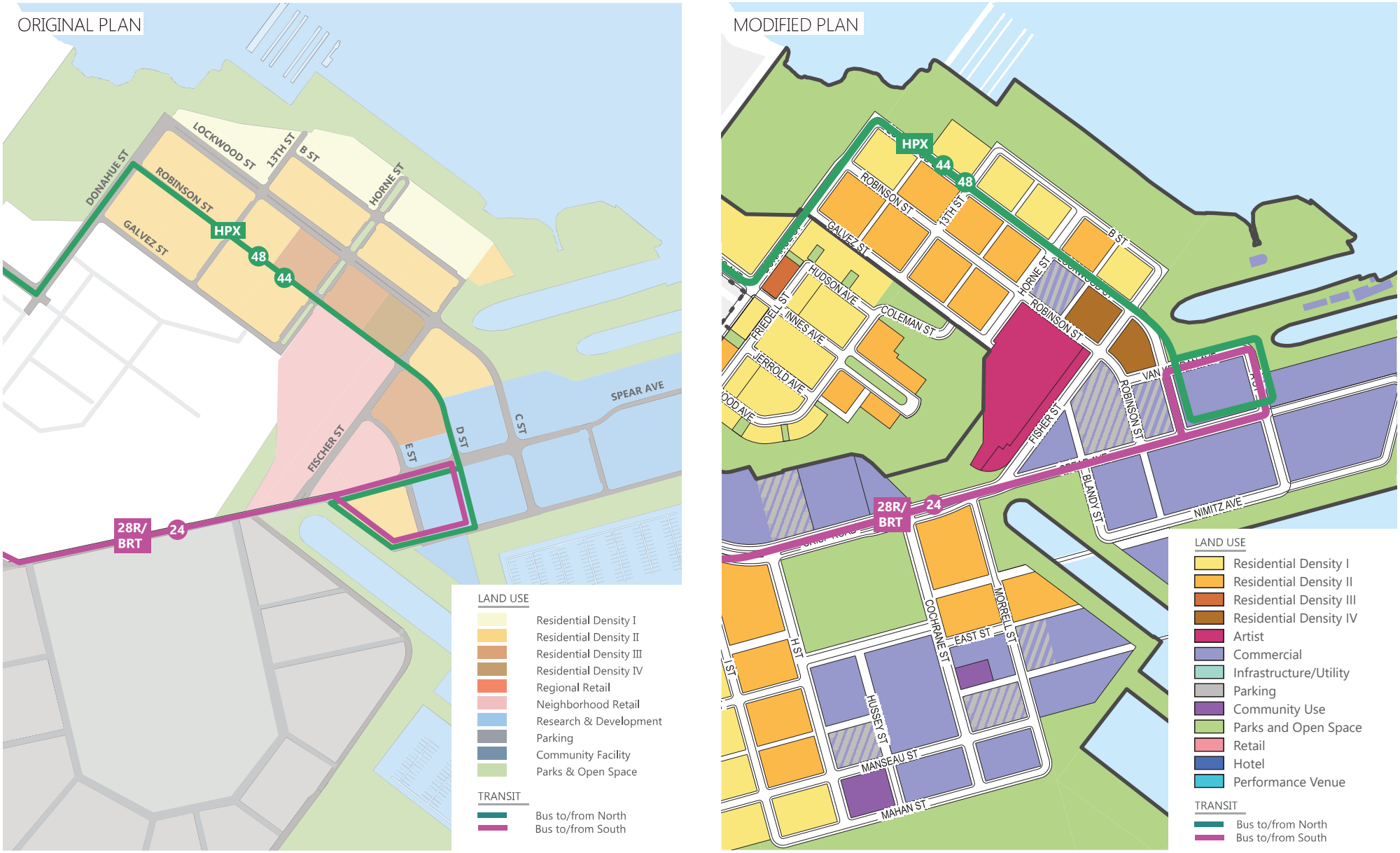


Figure 8

Proposed Change to Hunters Point Shipyard Transit

Transit Demand and Capacity

As shown in Tables 3 – 5 above, the changes contemplated as part of the Modified Project would slightly increase traffic demand and would not substantially change transit demand compared to FEIR Variant 1 (R&D) in the EIR. Furthermore, the proposed changes in routing are not likely to have an effect on mode share. Therefore, the proposed modifications will not likely result in additional or substantially more severe significant impacts beyond those identified in the EIR under buildout conditions as it relates to transit capacity impacts or delay associated with traffic congestion.

Transit Delay

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. Mitigation Measures MM TR-21, MM TR-22, MM TR-23, MM TR-24, MM TR-25, MM TR-26, and MM TR-27, which call for the applicant and SFMTA to implement transit priority features or purchase new vehicles to maintain headways affected by Project-generated traffic congestion, would also still apply.

As noted in Table 3, the Modified Project would increase traffic volumes within the Hunters Point Shipyard site, possibly increasing delays to transit serving the Hunters Point Shipyard site. However, the Modified Project 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 Modified Project includes new transit only lanes along Lockwood Avenue that were not part of the 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 FEIR, and monitoring is required to determine when/if the mitigation is needed. To the extent changes in Addendum 6 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 will not get worse than what the FEIR contemplated.

Similarly, the 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 Modified Project are greater (or materialize more quickly in the buildout stages of the Modified Project) than

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

While implementation of the India Basin 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 FEIR for Variant 1 (R&D) as the amount of traffic increase along Innes Avenue associated with the Modified Project would be relatively small (i.e., less than 100) since the Modified Project represents a net increase of only approximately 280 vehicle trips in the PM peak hour compared to 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.

Transit Phasing

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 EIR "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 EIR
- Adequate capacity to serve projected transit ridership
- Similar or less severe traffic impacts to those identified in the EIR

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 thus propose changes to the Transit Operating Plan to better meet future demands consistent with the Mitigation Measure MM TR-17 provisions.

The FEIR Project and Modified Project transit phasing are shown in **Table 11**. **Appendix F** includes detailed comparison of the approximate number of transit trips (and approximate level of development) that would be in place at the time each level of transit service would be implemented under the FEIR Project and the Modified Project. Generally, changes to the transit phasing delay the provision of transit service to the Hunters Point Shipyard site, due to the delay in development there. In response to the acceleration of planned development in Candlestick Point, transit service at Candlestick Point would be accelerated. 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 FEIR Project and Modified Project, combined with engineering judgment to account for the unique development phasing currently proposed.

Additional analysis demonstrating that the levels of transit service relative to development would result in similar effectiveness to the analysis in the FEIR is provided later in this section. **Figures 9 – 11** show the phasing of transit and bicycle infrastructure relative to the three Major Phases of development at HP. (Phasing of transit and bicycle infrastructure at CP is relatively similar to what was assessed in Addendum 1, and therefore, no additional detail is provided here).

CP-01, CP-03, and CP-04 are currently slated to be first sub-phases completed as part of Major Phase 1. They consist of residential and neighborhood-serving retail uses. The primary transit service likely to be used by residents in CP is express bus service to Downtown San Francisco. Thus, as part of these sub-phases (currently scheduled to be completed by approximately 2021), the Candlestick Point Express (CPX) bus route will be initiated. Because of the relatively high number of residential units comprising these sub-phases, the CPX will start out at 15-minute headways and then quickly increase to 10-minute headways.

TABLE 11

TRANSIT PHASING

Route	Frequency	FEIR/Approved Transit Operating Plan		Modified Project	
		Major Phase	Approx. Year	Major Phase/ Subphase	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 Modified Project.

b) The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for 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 somewhat 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 completed 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.

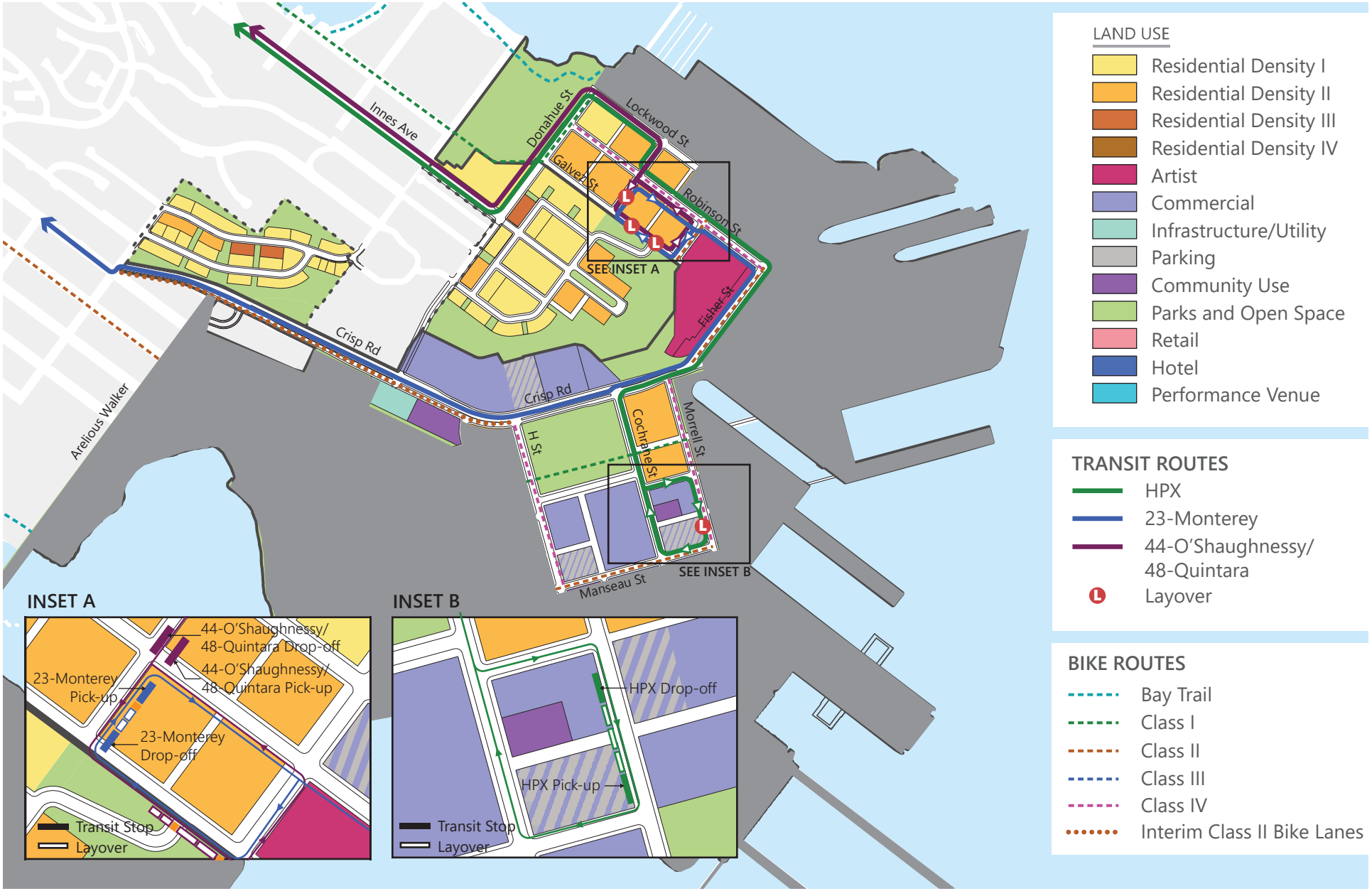


Figure 9

Hunters Point Shipyard - Major Phase I

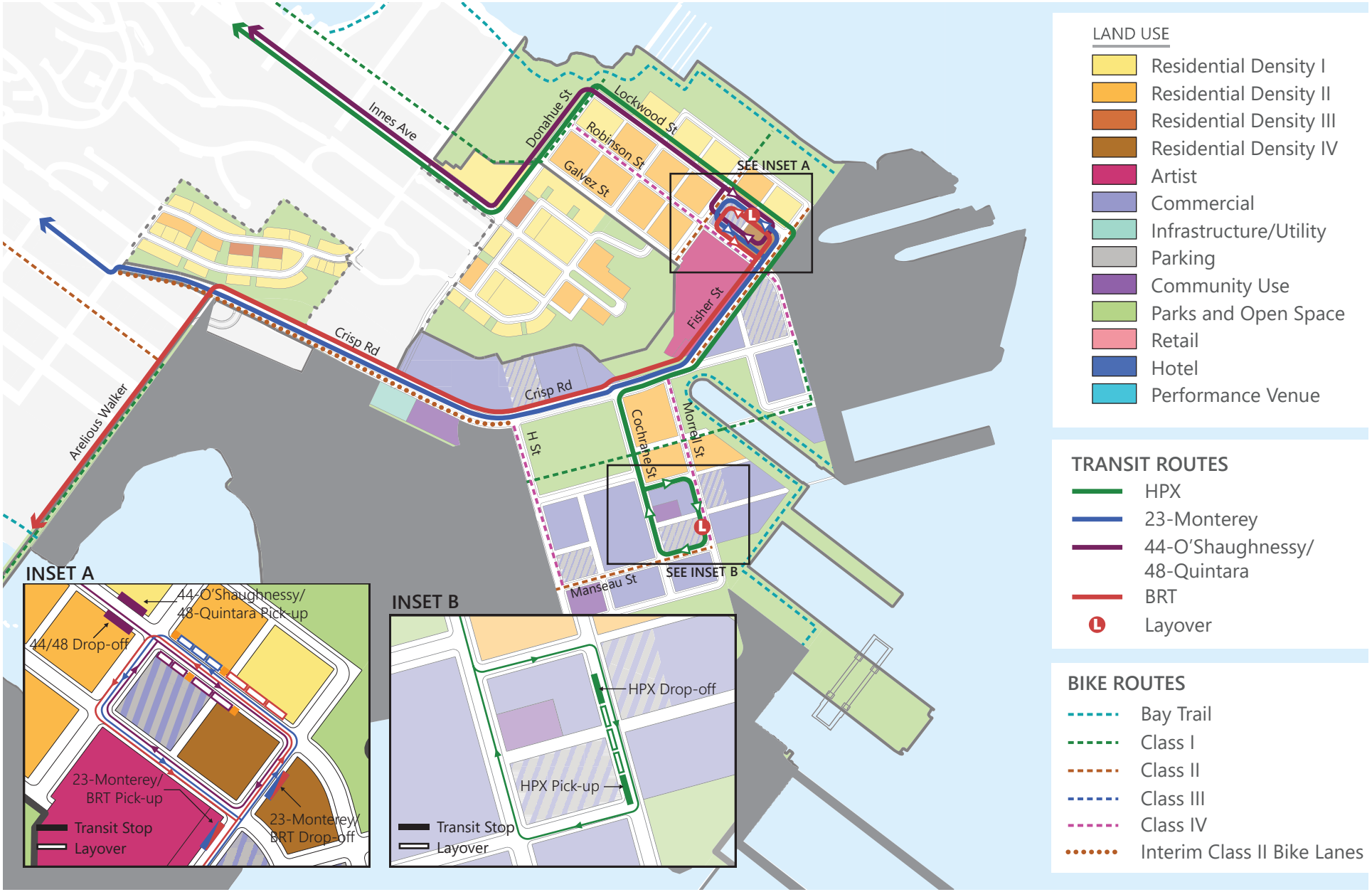


Figure 10

Hunters Point Shipyard - Major Phase II

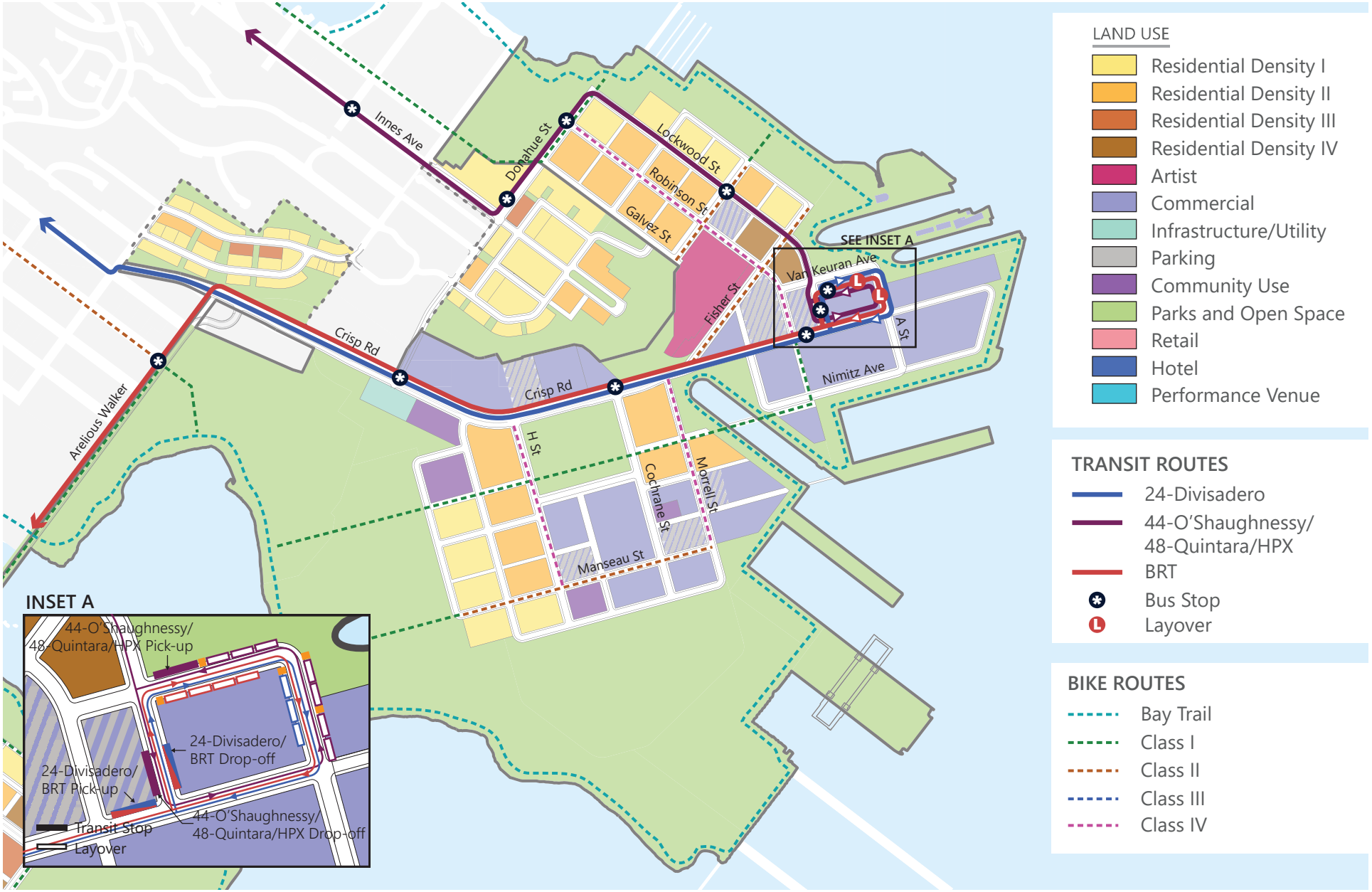


Figure 11

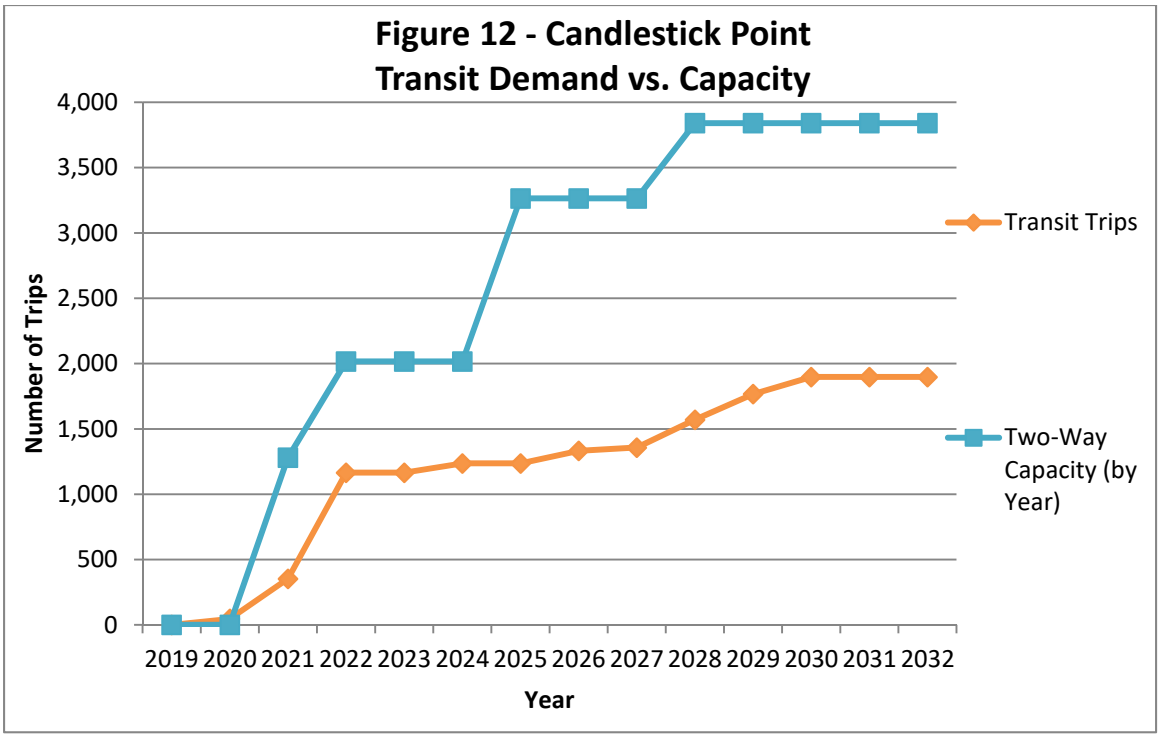
Hunters Point Shipyard - Major Phase III

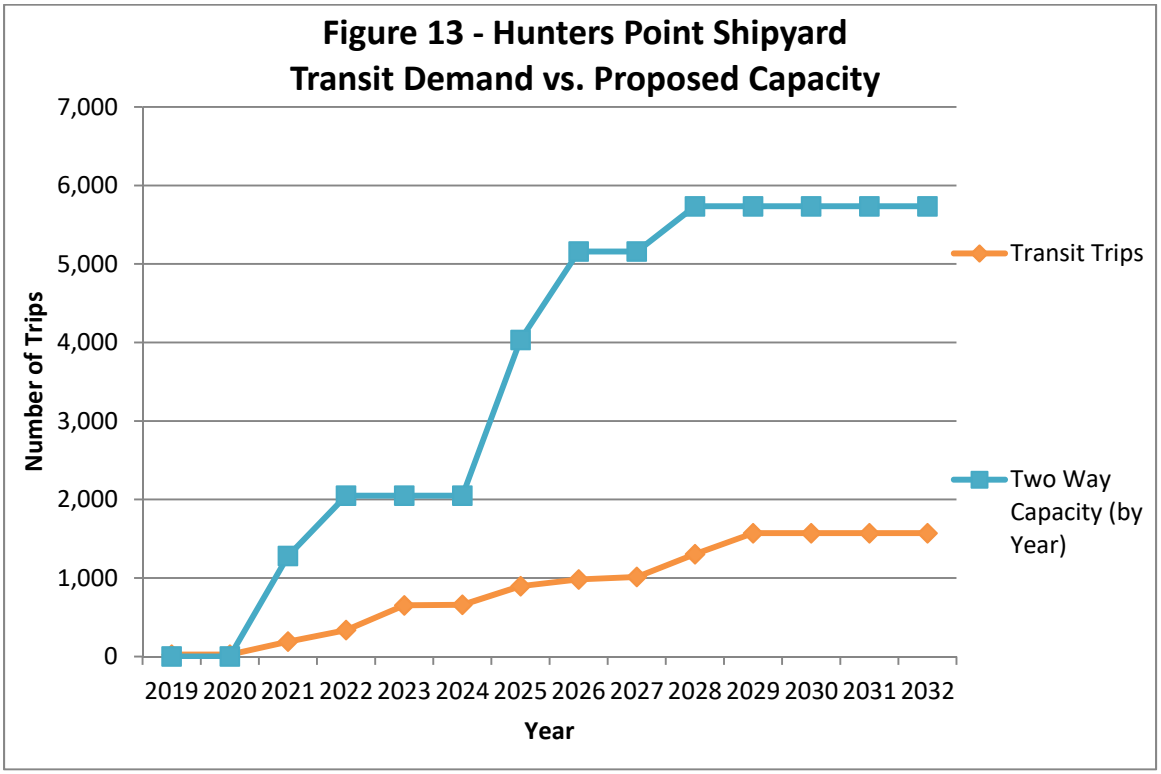
To serve the retail center planned as part of CP-02, currently scheduled for completion around 2022, the 29 Sunset would be extended to the retail center. The FEIR also assumed the 28R BRT route would be operational prior to opening of the CP retail center. Because the opening of the retail center is currently proposed to be sooner relative to the rest of the development in the Project, SFMTA has indicated that operating the 28R BRT route is not possible in the near term, because of fleet requirements and infrastructure needs (both the Yosemite Slough Bridge and a workable routing west of US 101 prior to completion of the Geneva Interchange Project).

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 will be offered at 7.5 minute frequency with approximately 30-passenger vehicles. This service will be interim service until the 28R BRT route, or other comparable transit service is implemented. Although the shuttle service will initially be oriented to the Balboa Park BART Station, the site's TDM coordinator will 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 will remain in the Transit Operating Plan as part of the Modified Project.

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 Modified Project 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 original FEIR Transit Operating Plan.

Figures 12 and 13 summarize 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 Candlestick Point and Hunters Point Shipyard, respectively. **Appendix F** provides a year-by-year summary of anticipated development, auto trip generation, and transit trip generation for the Candlestick Point and Hunters Point Shipyard sites, which, along with anticipated transit phasing described in Table 9, formed the basis for **Figures 12 and 13**.


Figure 12 - Candlestick Point
Transit Demand vs. Capacity
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Number of Trips
2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032
Year
Transit Trips
Two-Way Capacity (by Year)


Figure 13 - Hunters Point Shipyard
Transit Demand vs. Proposed Capacity
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Number of Trips
2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032
Year
Transit Trips
Two Way Capacity (by Year)

The figures illustrate that with the proposed changes in development and transit phasing, the level of transit service proposed over time increases roughly in proportion to (and where possible, in advance of) increases in development and associated transit demand. **Figure 12** illustrates that with the Modified Project development schedule and transit phasing, the level of transit service relative to demand will always remain substantially higher than the demand at the Candlestick Point 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 buildout, means the transit will remain an attractive option for travelers in the area.

Figure 13 similarly illustrates that transit service relative to development at Hunters Point Shipyard will generally increase along with, and where possible, in advance of development.

Therefore, transit capacity will be adequate to serve the expected demand, and the mode split (i.e., the percentage of trips made by transit) should remain similar, meaning that there will not be additional significant transit impacts beyond those described in the EIR, nor will the Modified Project substantially increase the severity of significant impacts identified in the FIER, and no additional mitigation measures are required.

IMPACT TR-31 AND TR-32: BICYCLE CIRCULATION

The EIR identified Impacts TR-31 and TR-32 to bicycle circulation. Impact TR-31 generally describes the overall improvement to the areawide bicycle network that would result from the Project. Impact TR-32 describes a significant impact to Bicycle Routes #70 and #170 on Palou Avenue that would be adversely affected by the substantial increases to transit service along this street. Mitigation Measure MM TR-32 calls for relocating the bicycle routes to another nearby street with fewer conflicts, although the measure does not specify where the bicycle facilities should be relocated to.

As noted in the EIR, bicycle facilities are typically categorized as one of four "classes." A Class I facility is a dedicated, off-street space for bicycles to operate without interference from cars, except at intersections. Class I facilities can be one-way or two-way, and can also be shared with pedestrians in some cases. Class II facilities are on-street striped bicycle lanes, which allocate specific space on the street for bicycle use only. Class III facilities are bicycle routes, which do not allocate space dedicated for bicycles, but often include signage and "sharrow" pavement markings

alerting drivers to the likely presence of bicycles. Class IV facilities are exclusively for the use of bicycles and are separated from adjacent auto traffic lanes.

As shown in **Figures 14 and 15**, the Modified Project includes refinements to the proposed bicycle network. Many of these changes – particularly those in Candlestick Point – were addressed in and approved as part of Addendum 1 (pp. 25-27), and would not be changed further as part of the Modified Project being assessed herein. Therefore, they are not discussed further here.

The primary change to the bicycle network in the Modified Project compared to the changes approved as part of Addendum 1 is the re-alignment of the cycletrack in Hunters Point Shipyard South. One of the primary modifications approved as part of Addendum 1 was a new two-way cycletrack connecting the Hunters Point Shipyard and Candlestick Point neighborhoods. Within Hunters Point Shipyard, the cycletrack was to travel along the northern side of Crisp Avenue.

However, the Modified Project 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 Modified Project 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 Drydock 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 project. As a result, the modified Project 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.

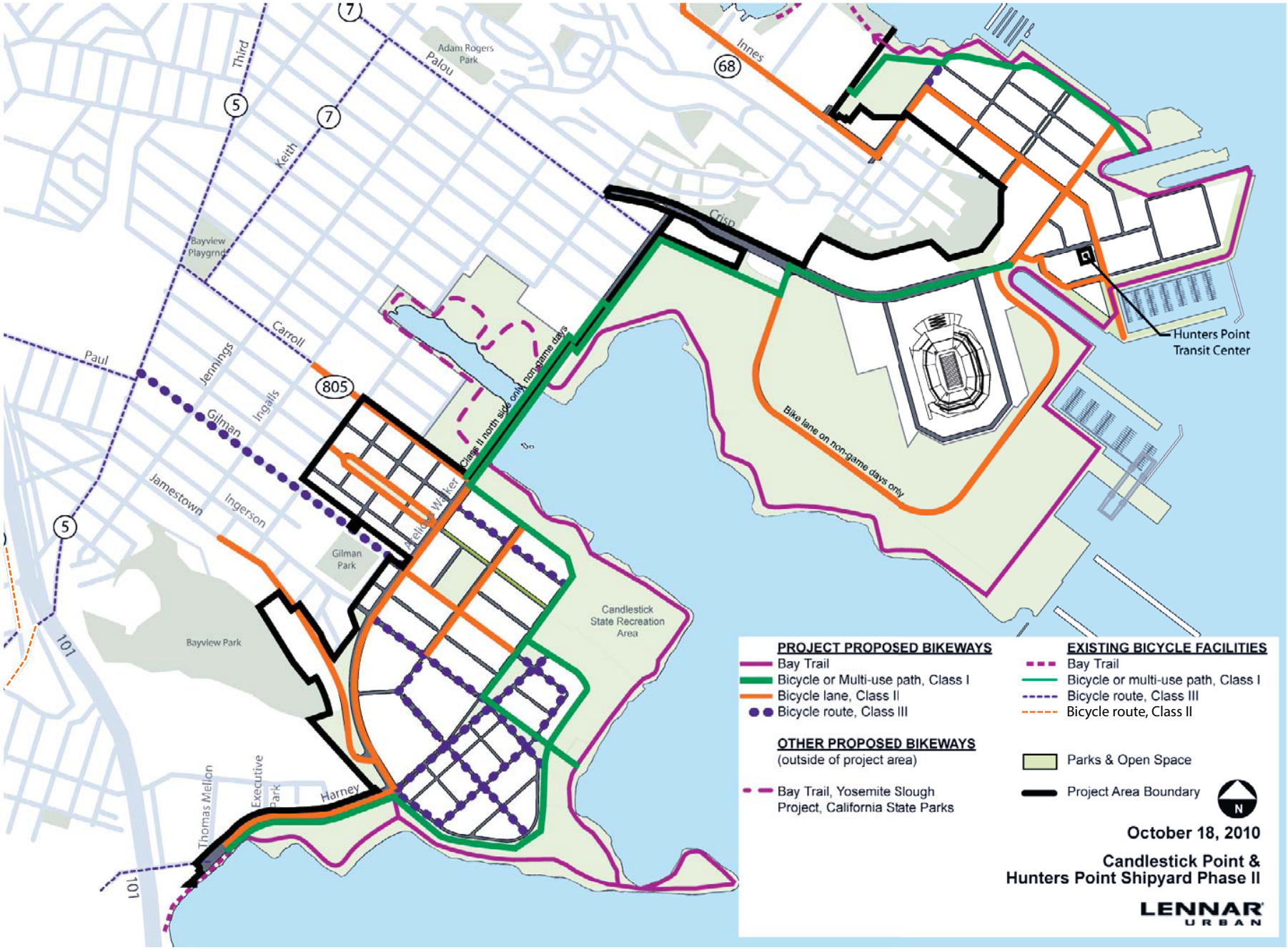


Figure 14

Originally Approved Bicycle Network

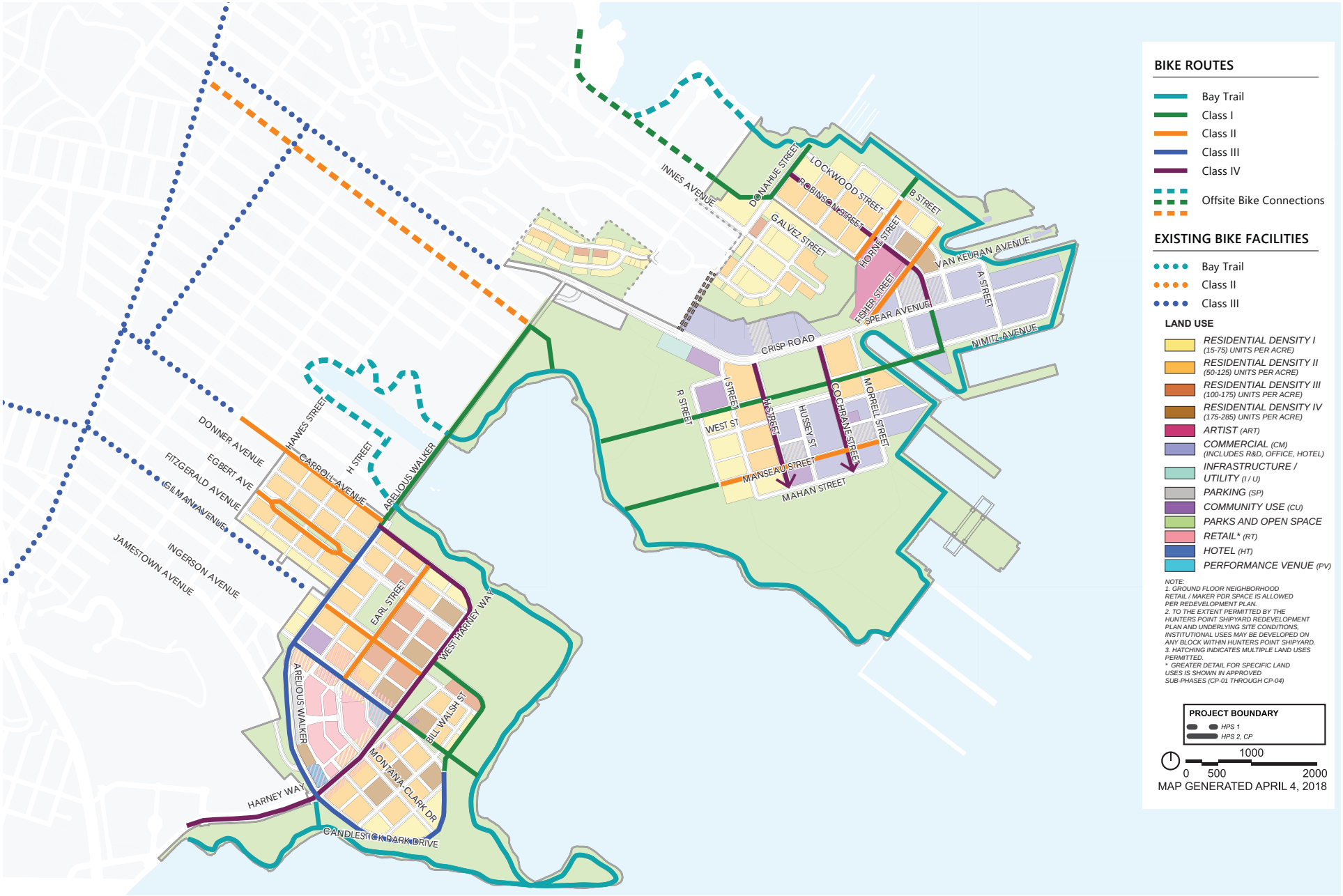


Figure 15

Modified Bicycle Network

Overall, the project refinements would continue to improve the overall bicycle network in the study area and facilities will 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 EIR, this study must be complete prior to issuance of the grading permit for Major Phase 1 at Hunters Point Shipyard. No new significant impacts beyond those identified in the EIR would result from the Modified Project and the Modified Project would not make bicycle impacts substantially more severe than identified in the FIER, and therefore, no additional mitigation measures are required.

IMPACTS TR-33 AND TR-34: PEDESTRIAN CIRCULATION

The EIR identified Impacts TR-33 and TR-34 and determined that the Project would cause less than significant impacts on pedestrian circulation. The Modified Project generally 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. As noted earlier, sidewalks would generally remain between 12 and 15 feet, within the range of sidewalks considered in the original plan.

Overall, the Modified Project includes minor changes with respect to the pedestrian realm, such as slightly modified sidewalk widths and reoriented streets as shown in Appendix D and impacts are expected to be similar to Impacts TR-33 and TR-34, as described in the EIR and no new significant impacts or mitigation measures would be required.

IMPACTS TR-35 AND TR-36: PARKING

The EIR identified Impacts TR-35 and TR-36, which determined that although the Project would result in a shortfall of parking spaces compared to its projected demand and would remove some existing on-street parking spaces, the Project's impacts to parking conditions would be less than significant. The Modified Project may result in slightly fewer parking spaces on-street than the maximum envelope anticipated as part of FEIR Variant 1 (R&D). Specifically, the EIR identified that Variant 1 (R&D) would include approximately 3,000 on-street parking spaces (roughly evenly split between Candlestick Point and Hunters Point Shipyard) and between zero and approximately

20,000 off-street spaces. Therefore, the EIR concluded there would be a range of between approximately 3,000 spaces and 23,000 spaces in the entire development area.

The Modified Project would reduce on-street parking supply by up to several hundred spaces between Candlestick Point and Hunters Point Shipyard based on more detailed designs prepared as part of subphase 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 FEIR, it is reasonable to expect that the Modified Project will build at least as many off-street spaces as would be removed through the minor design changes, such that with the loss of a few hundred on-street spaces, the Modified Project will still contain between 3,000 spaces and total 23,000 spaces.

Furthermore, **Table 12**, below, compares the maximum amount of parking allowed for FEIR Variant 1 (R&D) and the maximum amount that would be allowed for the Modified Project as described herein. As shown, 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 Candlestick Point of 242 spaces. The resulting maximum total of parking allowed within the Modified Project would be 495 more spaces than allowed under FEIR Variant 1 (R&D).

Therefore, since the Modified Project will still provide parking within the range identified in the EIR, or possibly very slightly above it, conclusions in the EIR related to parking, as described in Impacts TR-35 and TR-36, remain valid, no new significant impacts have been identified, and no new mitigation measures would be required.

TABLE 12 MAXIMUM ALLOWED PARKING SUPPLY						
	FEIR Variant 1 (R&D)			Modified Project		
	CP	HP	Total	CP	HP	Total
On-Street	1,360	1,678	3,038	1,360	1,487	2,847
Off-Street	10,196	9,678	19,874	9,954	10,606	20,560
Total	11,556	11,356	22,912	11,314	12,093	23,407
Source: Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR (2010) and FivePoint (2018)						

IMPACT TR-37: LOADING

The EIR identified Impact TR-37 and determined that the Project would provide adequate loading supply and therefore concluded that impacts related to loading would be less than significant, and that no mitigation measures would be required. As the modified Project does not change the overall loading requirements, implementation of the Modified Project would not result in any new significant impacts related to loading and no new mitigation measures would be required.

IMPACTS TR-38 THROUGH TR-50: STADIUM IMPACTS

The EIR included a number of impacts related to operation of the proposed new NFL stadium in the Hunters Point Shipyard site. However, the stadium is not part of the modified Project and these impacts and associated mitigation measures no longer apply.

IMPACT TR-51 THROUGH TR-55: ARENA IMPACTS

The EIR determined that the Project's proposed Arena use would create new impacts. Specifically, Impact TR-51 noted that the arena component of the Project would create significant and unavoidable traffic and site access impacts, and required development of an event Transportation

Management Plan (TMP) by the arena operator as Mitigation Measure MM TR-51. However, even with MM TR-51, the arena's impacts to site access and traffic would be significant and unavoidable. The EIR also identified as part of impact TR-52, that the arena's traffic generation would have significant impacts to transit operation and identified Mitigation Measure MM TR-23.1 (operational improvements to the 29 Sunset route) as a way to reduce the effects of the arena traffic on the 29 Sunset travel times. However, even with implementation of these two mitigation measures, the EIR concluded that the arena's impacts to traffic congestion and transit operations would remain significant and unavoidable.

The EIR also determined that the arena would have a less than significant impact to bicycle circulation (TR-53), pedestrian circulation (TR-54), and parking conditions (TR-55).

The Modified Project would not change the project with respect to the arena. Thus, the "event conditions" impacts associated with the arena would be essentially the same as identified in the FEIR. The Modified Project would not create any new significant impacts or substantially increase the severity of a significant impact associated with events at the arena compared to what was described in the EIR, and therefore no additional mitigation measures are required, although the previously-identified mitigation measures would continue to apply.

IMPACT TR-56: AIR TRAFFIC IMPACTS

The EIR determined that the Project would have a less than significant impact on air traffic. The modified Project would contain the same overall land uses and general development form and would not change the EIR's conclusion regarding air traffic. The modified Project would not create any new significant impacts with respect to air traffic and no additional mitigation measures are required.

IMPACT TR-57: HAZARDS DUE TO DESIGN FEATURES

The EIR 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 modified Project would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, no new significant impacts to design features have been identified and no mitigation measures are required.

IMPACT TR-58: EMERGENCY ACCESS

The EIR 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 modified Project would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, no new significant impacts to emergency access have been identified and no mitigation measures are required.

CUMULATIVE IMPACTS

As noted in the EIR, the discussion of cumulative impacts was included with the discussion of project-related impacts in Impacts TR-1 through TR-58 and no additional cumulative impact discussion is necessary. Similar to what is described above and in the EIR, since the modified Project would generate similar levels of travel demand at buildout and would have a similar transportation infrastructure, the modified Project's contribution to cumulative impacts would be the same as what is described in the EIR.

VMT ANALYSIS (FOR INFORMATIONAL PURPOSES ONLY)

Subsequent to certification of the FEIR in 2010, and consistent with guidance from the State of California Office of Planning and Research (OPR)[9], the San Francisco Planning Commission adopted Planning Commission Resolution 19579 in March 2016 modifying the City's environmental review process by:

> *"removing automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, as a significant impact on the environmental [sic] pursuant to the California Environmental Quality Act, and replace it with vehicle miles traveled criteria which promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."*[10]

As a result of this change, project-related effects on congestion are no longer considered significant traffic-related impacts for projects where the San Francisco Planning Department is the Lead

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[9] California Office of Planning and Research, *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA,* January 20, 2016

[10] San Francisco Planning Department, *Executive Summary: Resolution Modifying Transportation Impact Analysis*, March 3, 2016.

Agency. Instead, the City of San Francisco replaced level of service as a metric with a new vehicle-miles traveled (VMT) metric and threshold.

However, since OCII is the Lead Agency for this project, and OCII has not adopted such a revised significance metric and threshold, effects on traffic congestion are still considered in the analysis, as described above. However, because the project is nearby other projects that have recently undergone environmental under the Planning Department's purview, this section presents a discussion of the Modified Project's effects on VMT for informational purposes only.

Background

Many factors affect travel behavior. These factors include density, diversity of land uses, the design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management. Typically, low-density development at great distance from other land uses, located in areas with poor access to non-private vehicular modes of travel, generate more automobile travel compared to development located in urban areas, where a higher density, mix of land uses, and travel options other than private vehicles are available.

Given these travel behavior factors, San Francisco has a lower VMT ratio than the nine-county San Francisco Bay Area region. In addition, some areas of the City have lower VMT ratios than other areas of the City. These areas of the City can be expressed geographically through transportation analysis zones. Transportation analysis zones are used in transportation planning models for transportation analysis and other planning purposes. The zones vary in size from single city blocks in the downtown core, multiple blocks in outer neighborhoods, to even larger zones in historically industrial areas like the Hunters Point Shipyard.

The San Francisco County Transportation Authority (Transportation Authority) uses the San Francisco Chained Activity Model Process (SF-CHAMP) to estimate VMT by private automobiles and taxis for different land use types. Travel behavior in SF-CHAMP is calibrated based on observed behavior from the California Household Travel Survey 2010-2012, Census data regarding automobile ownership rates and county-to-county worker flows, and observed vehicle counts and transit boardings. SF-CHAMP uses a synthetic population, which is a simulated set of individual actors that represents the Bay Area's actual population, who make simulated travel decisions for a complete day. The Transportation Authority uses tour-based analysis for office and residential uses, which examines the entire chain of trips over the course of a day, not just trips to and from the

project. For retail uses, the Transportation Authority uses trip-based analysis, which counts VMT from individual trips to and from the project (as opposed to entire chain of trips). A trip-based approach, as opposed to a tour-based approach, is necessary for retail projects because a tour is likely to consist of trips stopping in multiple locations, and the summarizing of tour VMT to each location would over-estimate VMT.[11,12]

Although not directly applicable to this analysis because the San Francisco Planning Department is not the lead agency, the Planning Department's threshold of significance for the new VMT metric states that:

- The project would have a significant adverse impact if it would cause major traffic hazards.
- The project would have a significant effect on the environment if it would cause substantial additional VMT.
- The project would have a significant effect on the environment if it would substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network.

Specifically, Planning Commission Resolution 19579 and supporting materials provide direction for analyzing transportation conditions and identifying the transportation impacts of a proposed project in San Francisco based on the following:

> For residential projects, a project would generate substantial additional VMT if it exceeds the regional household VMT per capita minus 15 percent.[13] For office projects, a project would generate substantial additional VMT if it exceeds the regional VMT per employee minus 15 percent. As documented in the *Revised Proposal on Updates to the CEQA*

[11] To state another way: a tour-based assessment of VMT at a retail site would consider the VMT for all trips in the tour, for any tour with a stop at the retail site. If a single tour stops at two retail locations, for example, a coffee shop on the way to work and a restaurant on the way back home, then both retail locations would be allotted the total tour VMT. A trip-based approach allows us to apportion all retail-related VMT to retail sites without double-counting.

[12] San Francisco Planning Department, Executive Summary: Resolution Modifying Transportation Impact Analysis, Appendix F, Attachment A, March 3, 2016.

[13] OPR's proposed transportation impact guidelines states a project would cause substantial additional VMT if it exceeds both the existing City household VMT per capita minus 15 percent and existing regional household VMT per capita minus 15 percent. In San Francisco, the City's average VMT per capita is lower (8.4) than the regional average (17.2). Therefore, the City average is irrelevant for the purposes of the analysis.

Guidelines on Evaluating Transportation Impacts in CEQA ("proposed transportation impact guidelines"), a 15 percent threshold below existing development is "both reasonably ambitious and generally achievable." [14] For retail projects, the Planning Department uses a VMT efficiency metric approach for retail projects: a project would generate substantial additional VMT if it exceeds the regional VMT per retail employee minus 15 percent. For mixed-use projects, each proposed land use is evaluated independently, per the criteria described above.

VMT Assessment

Table 13, below, presents the existing and future year VMT per capita rates for the Bay Area region and for the TAZs at CP and HP that include the Modified Project for both existing conditions and future year 2040 conditions. For residential development, the regional average daily VMT per capita is 17.2.[15] For office and retail development, regional average daily work-related VMT per employee is 19.1 and 14.9, respectively.

The Candlestick Point portion of the Modified Project includes residential, office, retail, hotel, and community services uses, plus an arena. The City considers VMT associated with hotel uses to be similar to residential. The arena has components that function similarly to retail and office. The community services are still somewhat undefined, but will likely also function similarly to retail. Therefore, the evaluation of the three primary land use categories for which data is available from the City adequately covers VMT patterns associated with all land uses at Candlestick Point.

As shown, at Candlestick Point, the VMT per capita for residential and retail uses are currently below the City's threshold of 15 percent below the regional average. VMT per capita for office uses at CP would currently exceed the threshold. However, by year 2040, all three land use types would generate VMT per capita substantially below the regional average and less than the City's threshold of significance. This is because the increased density associated with the Modified Project reduces the need for people to travel outside of the area for goods and services, and also because the substantial investment in transit service to the site reduces the need for people to travel to and from the site by automobile. So, buildout of the Modified Project itself would reduce the VMT at the site such that it would not exceed the thresholds.

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[14] This document is available online at: https://www.opr.ca.gov/s_sb743.php, page III:20.

[15] Includes the VMT generated by the households in the development.

Table 13. Daily Vehicle Miles Traveled per Capita[1]

Land Use	Bay Area			Candlestick Point						Hunters Point Shipyard			
				TAZ 882 (CP North)		TAZ 881 (CP South/Retail)		TAZ 891 (Alice Griffith)		TAZ 386 (HP North)		TAZ 387 (HP South/R&D)	
	Regional Average	Regional Average minus 15%	Year 2040 Regional Average minus 15%	Existing	Future Year 2040 (With Buildout of Proposed Project)	Existing	Future Year 2040 (With Buildout of Proposed Project)	Existing	Future Year 2040 (With Buildout of Proposed Project)	Existing	Future Year 2040 (With Buildout of Proposed Project)	Existing	Future Year 2040 (With Buildout of Proposed Project)
Households (Residential)	17.2	14.6	13.7	11.4	10.1	11.4	10.1	10.6	9.8	9.3	9.0	**17.5**	0.0[2]
Employment (Office)	19.1	16.2	14.5	**18.7**	13.8	**18.5**	13.5	**17.8**	13.7	**19.9**	12.4	**20.9**	13.6[2]
Visitors (Retail)	14.9	12.6	12.4	9.1	9.5	9.0	9.5	10.3	9.6	8.0	7.8	7.6	**15.4[2]**

Notes:

1. VMT rates exceeding the respective threshold are shown in **bold**.
2. The SF-CHAMP model land use assumptions for TAZ 387 assume primarily office and retail land uses, and do not include residential uses. Thus, the model reports a residential VMT per capita of 0.0 in TAZ 387 for year 2040, and similarly, reports an atypically high rate of VMT generation for retail uses (which derive a large portion of trips from residential uses). However, since the mix of uses actually proposed in that TAZ are more similar to those assumed in the model for TAZ 386, the VMT forecasts for TAZ 386 are likely representative of what would occur at TAZ 387 as well, all of which would be well below the City's threshold.

Source: www.sftransportationmap.org (accessed December 29, 2017)

At the Hunters Point Shipyard site, the Modified Project includes residential, retail, office/R&D, community services, a hotel, educational uses, a marina, and artists' studios. As with Candlestick Point, the community services uses will likely function similar to retail and the hotel will function similarly to residential. The artists' studios will function similarly to office in some respects and retail in other respects. The City considers educational uses to function similarly to office uses. Finally, the marina will function similarly to a recreational use, which the City considers to operate similar to retail. Thus, similar to Candlestick Point, all uses proposed at Hunters Point can be approximated using the three primary uses the City provides VMT data for.

As shown in Table 13, at Hunters Point Shipyard, the VMT per capita for retail uses is currently below the City's threshold of 15 percent below the regional average. VMT per capita for residential uses in HP North area also currently below the City's threshold. VMT per capita for office use in HP North and for both office and residential uses at HP South and the R&D area would currently exceed the threshold.

However, by year 2040, according to SF-CHAMP, all office and residential uses would be within the threshold, retail uses at HP North would be within the City's threshold, but retail uses at HP South and the R&D area would exceed the City's threshold. Land use assumptions in SF-CHAMP for TAZ 387 assume primarily office and retail land uses, and do not include residential uses. Thus, the model reports a residential VMT per capita of 0.0 in TAZ 387 for year 2040, and similarly, reports an atypically high rate of VMT generation for retail uses (which derive a large portion of trips from residential uses). However, the Modified Project would include office, retail, and residential in both TAZ 386 and 387. Since the mix of uses actually proposed in TAZ 387 is more similar to those assumed in the model for TAZ 386, the VMT forecasts for TAZ 386 are likely representative of what would occur at both TAZ 386 and 387, and therefore, the VMT per capita generated by the Modified Project in both Hunters Point Shipyard would be within the City's threshold.

CONCLUSION

In conclusion, the Modified Project would not change or alter any of the EIR's findings with respect to transportation impacts. All impacts would remain less than significant, less than significant with mitigation, or significant and unavoidable, as previously identified, and no new mitigation measures would be required. Additionally, the EIR's transportation cumulative impact conclusions would not be altered.

We hope you have found this useful.

Sincerely,

FEHR & PEERS



Chris Mitchell, PE
Principal

APPENDIX A

Comparison of Modified Project and FEIR Project/Variants

Land Uses

Table A-2: Comparison of 2018 Modified Project Variant to 2010 Project

	2010 FEIR PROJECT			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NON-RESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	1,860,000 SF	**1,860,000** SF	0 SF	0 SF	**0** SF	0 SF	-1,860,000 SF	**-1,860,000** SF
	0 SEATS	69,000 SEATS	**69,000** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	-69,000 SEATS	**-69,000** SEATS
R&D/Office	150,000 SF	2,500,000 SF	**2,650,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,765,000 SF	**1,765,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**4,790,000** SF	**5,975,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**711,000** SF	**711,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,028 SPACES	**6,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	3,124 SPACES	**3,514** SPACES
Parking Total	**10,196** SPACES	**6,678** SPACES	**16,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**3,928** SPACES	**3,686** SPACES
± *On-street Parking*	1,360 SPACES	683 SPACES	**2,043** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	804 SPACES	**804** SPACES
Dedicated Stadium Parking	0 SPACES	12,665 SPACES	**12,665** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	-12,665 SPACES	**-12,665** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	140.0 AC	148.1 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	33.9 AC	34.8 AC
New Sports Fields & Active Urban Recreation	0.0 AC	91.6 AC	91.6 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-33.5 AC	-33.5 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**231.6** AC	**336.4** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**0.4** AC	**1.3** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table II-3 & Table II-6 of the FEIR.

[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] Includes 400 high school 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] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Retail at CP; converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1 to HPS2.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

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

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-3: Comparison of 2018 Modified Project Variant to 2010 R&D Variant 1

	2010 R&D VARIANT 1			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NON-RESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	5,000,000 SF	**5,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	-735,000 SF	**-735,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**5,430,000** SF	**6,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**71,000** SF	**71,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	7,028 SPACES	**9,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	124 SPACES	**514** SPACES
Parking Total	**10,196** SPACES	**9,678** SPACES	**19,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**928** SPACES	**686** SPACES
± On-street Parking	1,360 SPACES	1,678 SPACES	**3,038** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	-191 SPACES	**-191** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	152.4 AC	160.5 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	21.5 AC	22.4 AC
New Sports Fields & Active Urban Recreation	0.0 AC	69.8 AC	69.8 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-11.7 AC	-11.7 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**222.2** AC	**327.0** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**9.8** AC	**10.7** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-3 & Table II-5 of the FEIR.

[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] Includes 400 high school 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] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Retail at CP; converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1 to HPS2.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

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

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-4: Comparison of 2018 Modified Project Variant to 2010 Housing/R&D Variant 2A

	2010 HOUSING/R&D VARIANT 2A			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NON-RESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	3,000,000 SF	**3,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,265,000 SF	**1,265,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF[e]	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000**	**3,430,000** SF	**4,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**2,071,000** SF	**2,071,000** SF
RESIDENTIAL	**6,225** UNITS	**4,275** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**993** UNITS	**-821** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	6,225 SPACES	4,275 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	993 SPACES	-821 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,428 SPACES	**6,774** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	2,724 SPACES	**3,114** SPACES
Parking Total	**8,571** SPACES	**8,703** SPACES	**17,274** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**1,383** SPACES	**1,903** SPACES	**3,286** SPACES
± On-street Parking	1,360 SPACES	1,428 SPACES	**2,788** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	59 SPACES	**59** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	150.9 AC	159.0 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	23.0 AC	23.9 AC
New Sports Fields & Active Urban Recreation	0.0 AC	70.9 AC	70.9 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-12.8 AC	-12.8 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**221.8** AC	**326.6** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**10.2** AC	**11.1** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-19a & Table IV-21a of the FEIR.

[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] Includes 400 high school 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] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Retail at CP; converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1 to HPS2.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

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

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-5: Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant 1, and Housing/R&D Variant 2A (Parks and Open Space)

	2010 PROJECT	2010 R&D VARIANT 1	2010 HOUSING/R&D VARIANT 2A	2018 MODIFIED PROJECT VARIANT
Hunters Point Shipyard Phase II (HPS2)				
NEW PARKS				
Grassland Ecology Park	82.1	82.7	83.4	106.8
Heritage Park	15.6	15.6	15.6	15.5
Hunters Point Mini Park	0.0	0.0	0.7	0
Hunters Point Neighborhood Park	0.0	0.0	0.9	0
Hunters Point Park Blocks	0.0	4.5	0.0	0
Hunters Point South Park	0.0	0.0	2.0	0
Hunters Point Wedge Park	0.0	2.8	3.1	0
Northside Park	12.8	12.8	12.8	12.8
R&D Plaza	0.0	2.1	0.0	0
Shipyard Hillside Open Space	0.0	0.0	0.0	2.4
Water Room/Dry Dock 4	0.0	0.0	0.0	7.3
Waterfront Promenade	29.5	31.9	32.4	29.1
Subtotal	**140.0**	**152.4**	**150.9**	**173.9**
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION				
Maintenance Yard	0.0	0.0	0.0	5.5
Multi-Use Lawn/Fields	25.2	22.4	25.2	20.5
Sports Field Complex	59.7	40.7	39.0	28.7
Waterfront Recreation & Event Pier	6.7	6.7	6.7	3.4
Subtotal	**91.6**	**69.8**	**70.9**	**58.1**
HPS2 POSH Total	**231.6**	**222.2**	**221.8**	**232.0**
OTHER PARKS				
Green Room	0.0	0.0	0.0	8.1
Gunning Crane Pier Habitats	9.5	9.5	9.5	9.2
Shipyard Hillside Open Space	2.6	2.6	2.6	0.0
Horne Boulevard Park	0.6	0.6	0.6	0.0
Subtotal	**12.7**	**12.7**	**12.7**	**17.3**
HPS2 Total	**244.3**	**234.9**	**234.5**	**249.3**
Candlestick Point				
NEW PARKS				
Alice Griffith Neighborhood Park	1.4	1.4	1.4	1.4
Bayview Gardens/Wedge Park	2.5	2.5	2.5	3.7
Candlestick Point Neighborhood Park	3.1	3.1	3.1	3.1
Mini Wedge Park	1.1	1.1	1.1	0.8
Subtotal	**8.1**	**8.1**	**8.1**	**9.0**
STATE PARK LAND				
Bayview Gardens North	9.5	9.5	9.5	9.5
Grasslands South	10.3	10.3	10.3	10.3
The Heart of the Park (Includes new State Park)	15.4	15.4	15.4	15.4
Last Port (includes new State Park)	14.6	14.6	14.6	14.6
The Last Rubble	24.5	24.5	24.5	24.5
The Neck (includes new State Park)	4.9	4.9	4.9	4.9
The Point	6.1	6.1	6.1	6.1
Wind Meadow	11.4	11.4	11.4	11.4
Subtotal	**96.7**	**96.7**	**96.7**	**96.7**
CP POSH Total	**104.8**	**104.8**	**104.8**	**105.7**
OTHER PARKS				
Bayview Hillside Open Space	2.9	2.9	2.9	3.5
Earl Boulevard Park	0.4	0.4	0.4	0.0
Jamestown Walker Slope	3.9	3.9	3.9	3.6
Subtotal	**7.1**	**7.1**	**7.1**	**7.1**
CP Total	**111.9**	**111.9**	**111.9**	**112.8**
CP-HPS2 TOTAL	**356.2**	**346.8**	**346.4**	**362.1**
NEW PARKS	148.1	160.5	159.0	182.9
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION	91.6	69.8	70.9	58.1
STATE PARK LAND	96.7	96.7	96.7	96.7
	336.4	327.0	326.6	337.7
OTHER PARKS	19.8	19.8	19.8	24.4

APPENDIX B

Detailed Trip Generation Calculations

Table A-1
Candlestick Point Trip Generation:

AM Peak Hour

Category		Total Use SF	Units	Land Use	ITE Land Use Code	AM ITE Trip Generation: Rate or Eqn	AM Vehicle Trips	AM Person Trips	%In	%Out	AM Vehicle Trips In	AM Person Trips In	AM Vehicle Trips Out	AM Person Trips Out	Internal Trip %	Internal Person Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Person Trips (ITE less internalization, pass-by, and diverted): AM In	AM Out	AM Total	Transit %	External Transit Trips (Person Trips): AM In	AM Out	AM Total	Vehicle Trips Replaced by Transit: AM Total	External Vehicle Trips (Person/1.6): AM In	AM Out	AM Total	Bicycle Mode Share Adjustment
RETAIL		**760.0**	**ksf**	**Neighborhood Serving + Ancillary**																											
		635.0	ksf	Shopping Center	820	Eqn	808	1,293	61%	39%	493	789	315	504	36%	460					508	325	833	15%	75	48	123	77	271	173	444	
		125.0	ksf	Specialty Retail	814	Rate	148	237	61%	39%	65	104	83	133	36%	84					93	59	153	15%	14	9	22	14	50	32	81	
COMMERCIAL / ADAPTIVE REUSE																															
		150.0	**ksf**	**Buildings 1, 2, and 3**																											
		150.0	ksf	General Office	710	Eqn	261	418	88%	12%	229	366	32	51	36%	149					237	32	269	21%	49	7	55	35	118	16	134	
		25.0	ksf	Arena	710	Eqn	63	101	88%	12%	55	88	8	13	36%	36					57	8	65	21%	12	2	13	8	28	4	32	
RECREATION																															
		50.0	**ksf**																												
		0.0	ksf	Elementary School	520	Rate	0	0	54%	46%	0	0	0	0	36%	0					0	0	0	47%	0	0	0	0	0	0	0	
		0.0	ksf	Police/Fire Station	730	Rate	0	0	84%	16%	0	0	0	0	36%	0					0	0	0	47%	0	0	0	0	0	0	0	
		50.0	ksf	Recreational Comm Center	495	Rate	108	173	88%	12%	95	152	13	21	36%	61					98	13	111	21%	21	3	24	15	48	7	55	
		97	acres	County Park	412	Rate	2	3	80%	20%	1	2	1	2	36%	1					2	0	2	21%	0	0	0	0	1	0	1	
HOTELS																															
		220.0	**rooms**																												
		0.0	rooms	Resort Hotel	330	Rate	0	0	72%	28%	0	0	0	0	36%	0					0	0	0	20%	0	0	0	0	0	0	0	
		220.0	rooms	Hotel	310	Eqn	110	176	61%	39%	67	107	43	69	36%	63					69	44	113	20%	14	9	23	14	34	22	56	
RESIDENTIAL																															
		6962.0	**units**																												
		6962.0	units	Residential Townhouse	230	Rate	3,064	4,902	17%	83%	521	834	2,543	4,069	36%	1744					537	2,622	3,158	22%	116	565	681	425	263	1,285	1,549	
		0.0	units	Apartment	220	Rate	0	0	20%	80%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	High-Rise Apartment	222	Rate	0	0	25%	75%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	All Suites Hotel	311	Rate	0	0	55%	45%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
Total							**4,564**	**7,302**	**33%**	**67%**	**1,526**	**2,442**	**3,038**	**4,861**	**36%**	**2,598**					**1,601**	**3,104**	**4,705**		**300**	**642**	**942**	**589**	**813**	**1,539**	**2,352**	**2,264**

PM Peak Hour

Category		Total Use SF	Units	Land Use	ITE Land Use Code	PM ITE Trip Generation: Rate or Eqn	PM Vehicle Trips	PM Person Trips	%In	%Out	PM Vehicle Trips In	PM Person Trips In	PM Vehicle Trips Out	PM Person Trips Out	Internal Trip %	Internal Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Trips (ITE less internalization, pass-by, and diverted): PM In	PM Out	PM Total	Transit %	External Transit Trips (Person Trips): PM In	PM Out	PM Total	Vehicle Trips Replaced by Transit: PM Total	External Vehicle Trips (Person/1.6): PM In	PM Out	PM Total	
RETAIL		**760.0**	**ksf**	**Neighborhood Serving + Ancillary**																											
		635.0	ksf	Shopping Center	820	Eqn	3,606	5,770	48%	52%	1,731	2,770	1,875	3,000	26%	1491					2,054	2,225	4,279	15%	309	335	644	402	1,090	1,181	2,272	
		125.0	ksf	Specialty Retail	814	Eqn	548	877	44%	56%	241	386	307	491	26%	227					286	364	650	15%	43	55	98	61	152	193	345	
COMMERCIAL / ADAPTIVE REUSE																															
		175.0	**ksf**	**Buildings 1, 2, and 3**																											
		150.0	ksf	General Office	710	Eqn	247	395	17%	83%	42	67	205	328	26%	102					50	243	293	23%	12	57	69	43	24	116	140	
		25.0	ksf	Arena	710	Eqn	108	173	17%	83%	19	30	89	142	26%	45					22	106	128	23%	5	25	30	19	10	51	61	
RECREATION																															
		147.0	**acres**																												
		0.0	ksf	Elementary School	520	Rate	0	0	43%	57%	0	0	0	0	26%	0					0	0	0	47%	0	0	0	0	0	0	0	
		0.0	ksf	Police/Fire Station	730	Rate	0	0	31%	69%	0	0	0	0	26%	0					0	0	0	47%	0	0	0	0	0	0	0	
		50.0	ksf	Recreational Comm Center	495	Rate	135	216	17%	83%	23	37	112	179	26%	56					27	133	160	23%	6	31	38	23	13	64	77	
		97	acres	County Park	412	rate	7	11	41%	59%	3	5	4	6	26%	3					3	5	8	25%	1	1	2	1	2	2	4	
HOTELS																															
		220.0	**rooms**																												
		0.0	rooms	Resort Hotel	330	Rate	0	0	43%	57%	0	0	0	0	26%	0					0	0	0	39%	0	0	0	0	0	0	0	
		220.0	rooms	Hotel	310	Eqn	131	210	53%	47%	69	110	62	99	26%	54					82	73	155	23%	19	17	35	22	40	35	75	
RESIDENTIAL																															
		6962.0	**units**																												
		6962.0	units	Residential Townhouse	230	Rate	3,621	5,794	67%	33%	2,426	3,882	1,195	1,912	26%	1497					2,879	1,418	4,297	22%	634	312	946	591	1,403	691	2,094	
		0.0	units	Apartment	220	Rate	0	0	65%	35%	0	0	0	0	26%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	High-Rise Apartment	222	Rate	0	0	61%	39%	0	0	0	0	26%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	All Suites Hotel	311	Rate	0	0	45%	55%	0	0	0	0	26%	0					0	0	0	50%	0	0	0	0	0	0	0	
Total							**8,403**	**13,445**	**54%**	**46%**	**4,554**	**7,286**	**3,849**	**6,158**	**26%**	**3,474**					**5,403**	**4,568**	**9,971**		**1,029**	**833**	**1,861**	**1,163**	**2,734**	**2,334**	**5,068**	**4,882**

Table A-2
Hunters Point Trip Generation:

AM Peak Hour

Category		Total Use SF	Units	Land Use	ITE Land Use Code	AM ITE Trip Generation: Rate or Eqn	AM Vehicle Trips	AM Person Trips	%In	%Out	AM Vehicle Trips In	AM Person Trips In	AM Vehicle Trips Out	AM Person Trips Out	Internal Trip %	Internal Person Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Person Trips (ITE less internalization, pass-by, and diverted): AM In	AM Out	AM Total	Transit %	External Transit Trips (Person Trips): AM In	AM Out	AM Total	Vehicle Trips Replaced by Transit: AM Total	External Vehicle Trips (Person/1.6): AM In	AM Out	AM Total	Bicycle Mode Share Adjustment
RETAIL																															
		226.0	**ksf**	**Neighborhood Serving + Ancillary**																											
		226.0	ksf	Specialty Retail	814	Rate	258	413	61%	39%	114	182	144	230	34%	141					166	106	272	15%	24	16	40	25	88	57	145	
		100.0	ksf	Shopping Center	820	Eqn	267	427	61%	39%	163	261	104	166	34%	146					172	110	281	15%	25	16	41	26	91	58	150	
COMMERCIAL / ADAPTIVE REUSE																															
		4280.0	**ksf**	**Buildings 1, 2, and 3**																											
		15.0	ksf	Artist's	710	Eqn	42	67	88%	12%	37	59	5	8	34%	23					39	5	44	21%	8	1	9	6	19	3	22	
		4265.0	ksf	R&D	760	Eqn	3,356	5,370	83%	17%	2,785	4,456	571	914	34%	1834					2,935	601	3,536	21%	616	126	742	464	1,449	297	1,746	
		75.0	ksf	Maker's Space	BLEND	BLEND	81	130	75%	26%	60	96	21	34	34%	44					64	22	85	21%	13	5	18	11	31	11	42	
RECREATION																															
		0.0	students	Private School - Elementary	536	Rate	0	0	55%	45%	0	0	0	0	34%	0					0	0	0	20%	0	0	0	0	0	0	0	
		264.0	students	Private School - Middle	536	Rate	215	344	55%	45%	118	189	97	155	34%	117					125	102	227	20%	25	20	45	28	62	51	113	
		336.0	students	Private School - High	536	Rate	274	438	61%	39%	167	267	107	171	34%	150					176	113	289	20%	35	23	58	36	88	56	144	
		300.0	students	STEM Academy	530	Rate	130	208	68%	32%	88	141	42	67	34%	71					93	44	137	20%	19	9	27	17	47	22	68	
		135.0	students	SF State	550	Eqn	39	62	78%	22%	30	48	9	14	34%	21					32	9	41	20%	6	2	8	5	16	5	21	
		0.0	ksf	Police/Fire Station	730	Rate	0	0	84%	16%	0	0	0	0	34%	0					0	0	0	47%	0	0	0	0	0	0	0	
		50.0	ksf	Recreational Comm Center	495	Eqn	108	173	88%	12%	95	152	13	21	34%	59					100	14	114	21%	21	3	24	15	49	7	56	
		238	acres	County Park	412	Eqn	3	5	80%	20%	2	3	1	2	34%	2					3	1	3	21%	1	0	1	0	1	0	2	
HOTELS																															
		175.0	**rooms**																												
		0.0	rooms	Resort Hotel	330	Rate	0	0	72%	28%	0	0	0	0	34%	0					0	0	0	39%	0	0	0	0	0	0	0	
		175.0	rooms	Hotel	310	Eqn	82	131	61%	39%	50	80	32	51	34%	45					53	34	86	20%	11	7	17	11	26	17	43	
RESIDENTIAL																															
		3454.0	**units**																												
		3454.0	units	Residential Townhouse	230	Rate	1,521	2,434	17%	83%	259	414	1,262	2,019	34%	831					272	1,330	1,602	22%	59	287	345	216	134	652	786	
		0.0	units	Apartment	220	Rate	0	0	20%	80%	0	0	0	0	34%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	High-Rise Apartment	222	Rate	0	0	25%	75%	0	0	0	0	34%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	All Suites Hotel	311	Rate	0	0	55%	45%	0	0	0	0	34%	0					0	0	0	50%	0	0	0	0	0	0	0	
Total							**6,376**	**10,202**	**62%**	**38%**	**3,968**	**6,349**	**2,408**	**3,853**	**34%**	**3,484**					**4,228**	**2,489**	**6,718**		**863**	**513**	**1,376**	**860**	**2,103**	**1,235**	**3,338**	**3,212**

PM Peak Hour

Category		Total Use SF	Units	Land Use	ITE Land Use Code	PM ITE Trip Generation: Rate or Eqn	PM Vehicle Trips	PM Person Trips	%In	%Out	PM Vehicle Trips In	PM Person Trips In	PM Vehicle Trips Out	PM Person Trips Out	Internal Trip %	Internal Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Person Trips (ITE less internalization, pass-by, and diverted): PM In	PM Out	PM Total	Transit %	External Transit Trips (Person Trips): PM In	PM Out	PM Total	Vehicle Trips Replaced by Transit: PM Total	External Vehicle Trips (Person/1.6): PM In	PM Out	PM Total	Bicycle Mode Share Adjustment
RETAIL																															
		226.0	**ksf**	**Neighborhood Serving + Ancillary**																											
		226.0	ksf	Specialty Retail	814	Eqn	959	1,534	44%	56%	422	675	537	859	36%	549					433	552	985	15%	65	83	148	93	230	293	523	
		100.0	ksf	Shopping Center	820	Eqn	1,065	1,704	48%	52%	511	818	554	886	36%	610					525	569	1,094	15%	79	86	165	103	279	302	581	
COMMERCIAL / ADAPTIVE REUSE																															
		4280.0	**ksf**	**Buildings 1, 2, and 3**																											
		15.0	ksf	Artist's	710	Eqn	97	155	17%	83%	17	27	80	128	36%	56					17	83	100	23%	4	19	23	15	8	40	48	
		4265.0	ksf	R&D	760	Eqn	2,819	4,510	15%	85%	423	677	2,396	3,834	36%	1615					434	2,461	2,896	23%	101	573	674	421	208	1,180	1,388	
		75.0	ksf	Maker's Space	BLEND	BLEND	209	334	28%	72%	59	94	150	240	36%	120					60	155	215	23%	14	36	50	31	29	74	103	
RECREATION																															
		1323.0	**acres**																												
		0.0	students	Private School - Elementary	536	Rate	0	0	47%	53%	0	0	0	0	36%	0					0	0	0	20%	0	0	0	0	0	0	0	
		264.0	students	Private School - Middle	536	Rate	46	74	47%	53%	22	35	24	38	36%	26					22	25	47	20%	4	5	9	6	11	13	24	
		336.0	students	Private School - High	536	Rate	58	93	43%	57%	25	40	33	53	36%	33					26	34	60	20%	5	7	12	7	13	17	30	
		300.0	students	STEM Academy	530	Rate	40	64	47%	53%	19	30	21	34	36%	23					19	22	41	20%	4	4	8	5	10	11	21	
		135.0	students	SF State	550	Eqn	84	134	32%	68%	27	43	57	91	36%	48					28	59	86	20%	6	12	17	11	14	29	43	
		0.0	ksf	Police/Fire Station	730	Rate	0	0	31%	69%	0	0	0	0	36%	0					0	0	0	47%	0	0	0	0	0	0	0	
		50.0	ksf	Recreational Comm Center	495	Eqn	135	216	17%	83%	23	37	112	179	36%	77					24	115	139	23%	6	27	32	20	11	55	66	
		238	acres	County Park	412	Eqn	15	24	41%	59%	6	10	9	14	36%	9					6	9	15	25%	2	2	4	2	3	4	7	
HOTELS																															
		175.0	**rooms**																												
		0.0	rooms	Resort Hotel	330	Rate	0	0	43%	57%	0	0	0	0	36%	0					0	0	0	39%	0	0	0	0	0	0	0	
		175.0	rooms	Hotel	310	Eqn	104	166	53%	47%	55	88	49	78	36%	60					57	50	107	20%	11	10	21	13	28	25	53	
RESIDENTIAL																															
		3454.0	**units**																												
		3454.0	units	Residential Townhouse	230	Rate	1,797	2,875	67%	33%	1,204	1,926	593	949	36%	1029					1,237	609	1,846	22%	272	134	406	254	603	297	900	
		0.0	units	Apartment	220	Rate	0	0	65%	35%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	High-Rise Apartment	222	Rate	0	0	61%	39%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	All Suites Hotel	311	Rate	0	0	45%	55%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
Total							**7,428**	**11,886**	**38%**	**62%**	**2,813**	**4,501**	**4,615**	**7,384**	**36%**	**4,255**					**2,889**	**4,743**	**7,631**		**573**	**998**	**1,572**	**982**	**1,447**	**2,340**	**3,787**	**3,644**

APPENDIX C

Construction Activities

Table 90
Construction Workers and Trucks by Phase
Hunters Point Shipyard and Candlestick Point

Project Area/Construction Phase	Construction Duration	Daily Construction Workers	Daily Construction Truck Trips
Hunters Point Shipyard			
Phase 1 – Site Preparation [1]			
Abatement & Demolition	2010 – 2015	10-50	8-48
Grading and Infrastructure	2012 - 2016	30-145	128-424
Phase 1 – Building Construction [1]			
Structure/Rough In	2012 - 2017	10-60	8-32
Interior and Exterior Finishes	2012 - 2017	8-10	8-16
Phase 2 – Site Preparation			
Abatement & Demolition	2014 – 2017	16-20	8-16
Grading and Infrastructure	2016 - 2019	26-85	224-256
Phase 2 – Building Construction			
Structure/Rough In	2016 - 2021	26-68	16-64
Interior and Exterior Finishes	2016 - 2021	30-60	16-64
Candlestick Point			
Phase 1 – Site Preparation			
Abatement & Demolition	2010 - 2015	10-20	8-24
Grading and Infrastructure	2012 – 2016	16-33	8-144
Phase 1 – Building Construction			
Structure/Rough In	2023 - 2017	14-18	8-16
Interior and Exterior Finishes	2023 - 2017	8-10	8-16
Phase 2 – Site Preparation			
Abatement & Demolition	2014 – 2017	10-40	8-48
Grading and Infrastructure	2016 - 2019	24-63	8-40
Phase 2 – Building Construction			
Structure/Rough In	2016 - 2021	14-18	8-16
Interior and Exterior Finishes	2016 - 2021	8-10	8-16
Phase 3 – Site Preparation			
Abatement & Demolition	2018 – 2021	16-20	16-24
Grading and Infrastructure	2020 - 2023	24-60	8-40
Phase 3 – Building Construction			
Structure/Rough In	2019 – 2025	14-40	8-32
Interior and Exterior Finishes	2019 – 2025	8-20	8-32
Phase 4 – Site Preparation			
Abatement & Demolition	2022 – 2024	16-20	16-24
Grading and Infrastructure	2024 - 2026	24-35	8-16
Phase 4 – Building Construction			
Structure/Rough In	2024 - 2028	10-20	8-16
Interior and Exterior Finishes	2024 – 2028	8-20	8-32
Yosemite Slough Bridge	2015 – 2016	62-78	24-32
HPS Off-site Improvements	2011 – 2016	24-30	8-16
CP Off-site Improvements	2011 – 2015	24-30	8-16

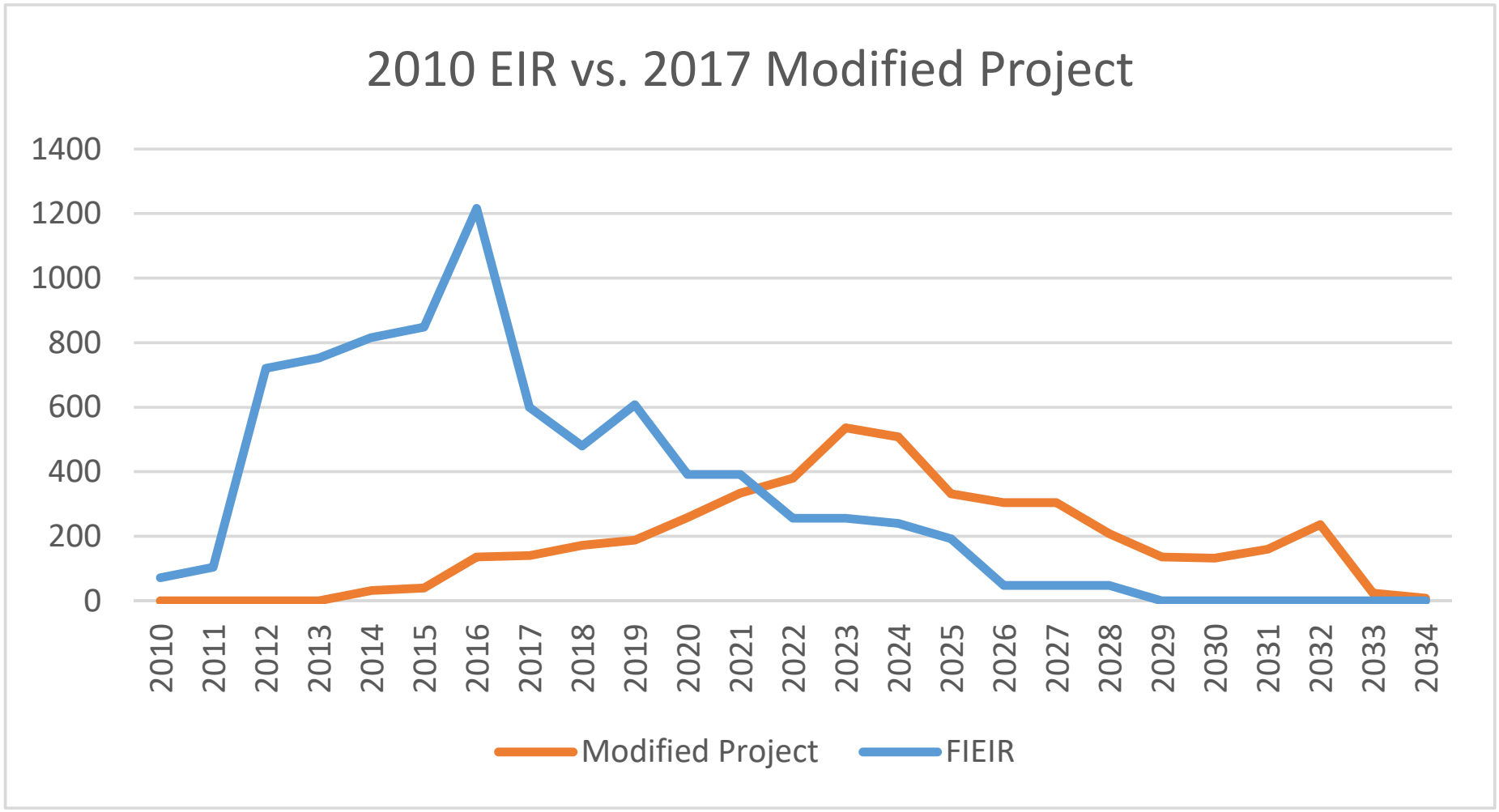
Note:
1. Includes stadium construction.
Source: MACTEC, 2009.

Table ## Project Construction Truck Trips

Year	Candlestick Point		Hunters Point Shipyard		Field Management		Combined	
	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips
2014	24	12	0	0	8	4	32	16
2015	40	20	0	0	8	4	48	24
2016	136	88	0	0	8	4	144	92
2017	116	74	24	12	8	4	148	90
2018	150	91	24	12	8	4	182	107
2019	164	84	154	93	8	4	326	181
2020	106	53	233	133	8	4	347	190
2021	72	36	266	155	8	4	346	195
2022	84	42	296	166	8	4	388	212
2023	144	78	392	230	8	4	544	312
2024	216	110	292	160	8	4	516	274
2025	188	96	144	76	8	4	340	176
2026	192	96	112	60	8	4	312	160
2027	232	116	72	40	8	4	312	160
2028	196	98	12	8	8	4	216	110
2029	96	48	40	24	8	4	144	76
2030	36	18	96	56	8	4	140	78
2031	24	12	136	84	8	4	168	100
2032	48	24	188	148	4	2	240	174
2033	0	0	24	12	4	2	28	14
2034	0	0	8	4	4	2	12	6

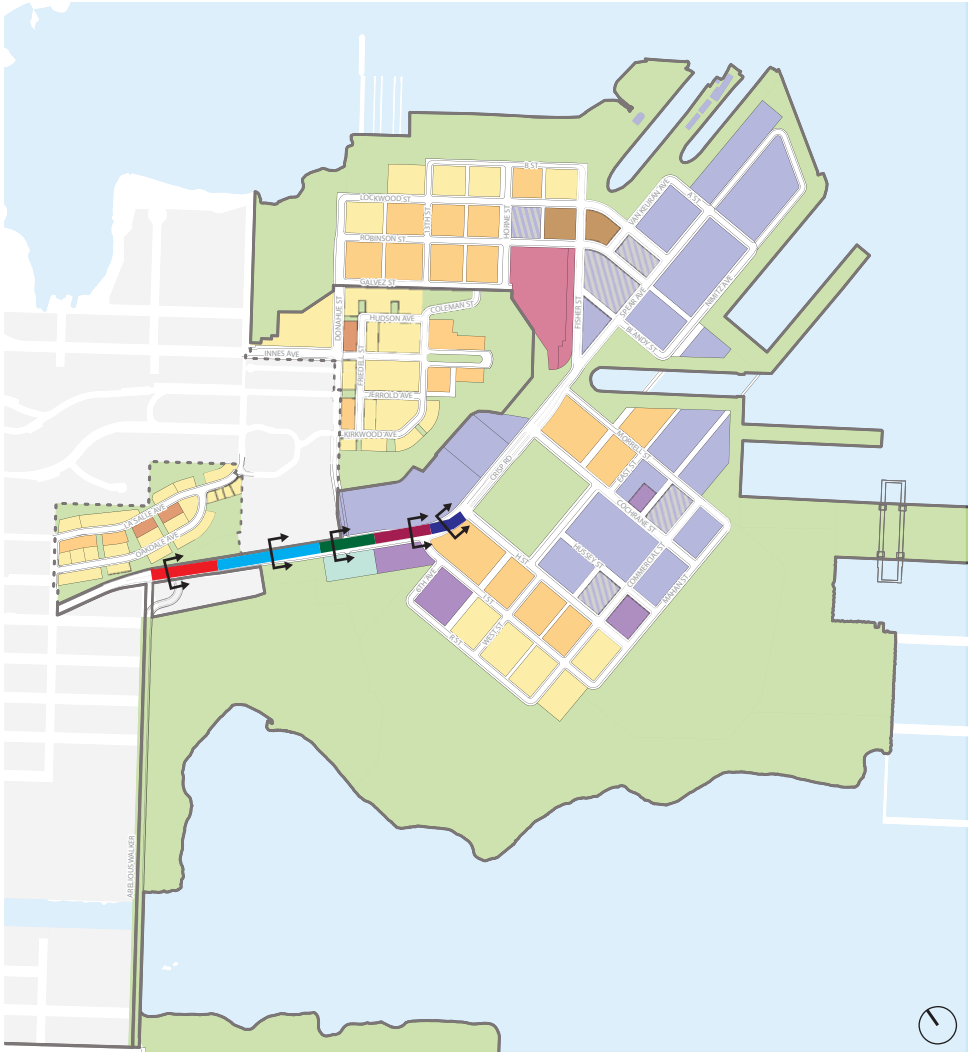
SOURCE: TRC, 2018

a.Truck trips includes on-site construction, off-site roadway improvements, and shoreline improvements.


2010 EIR vs. 2017 Modified Project
1400
1200
1000
800
600
400
200
0
2010
2011
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Modified Project
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APPENDIX D

Revised Roadway Cross-Sections

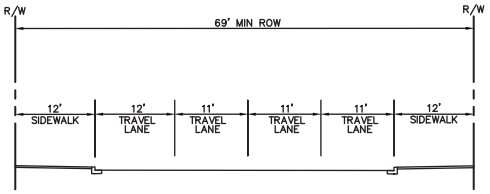


LAND USE

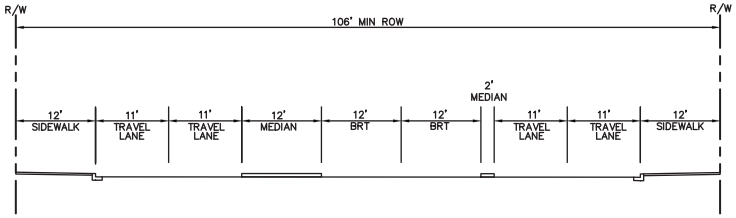
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

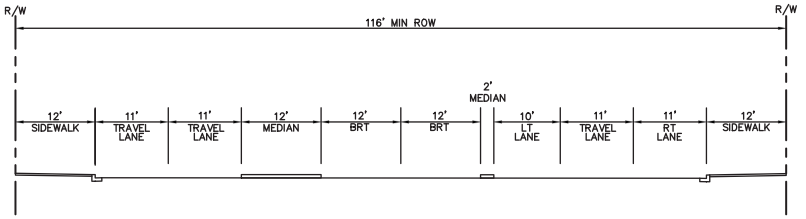
Crisp Road, west of Arelious Walker



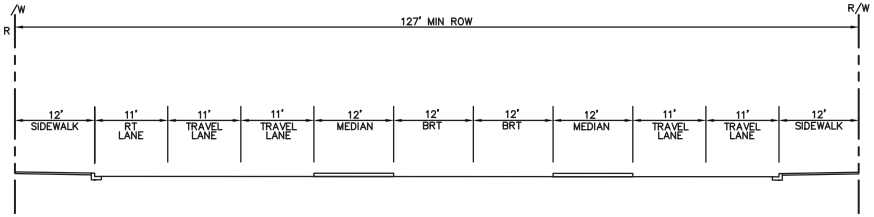
Crisp Road, east of Arelious Walker



Crisp Road, west of Donahue Street



Crisp Road, east of Donahue Street



Crisp Road, between I Street and H Street

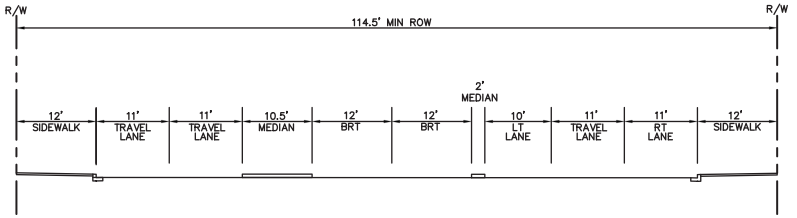
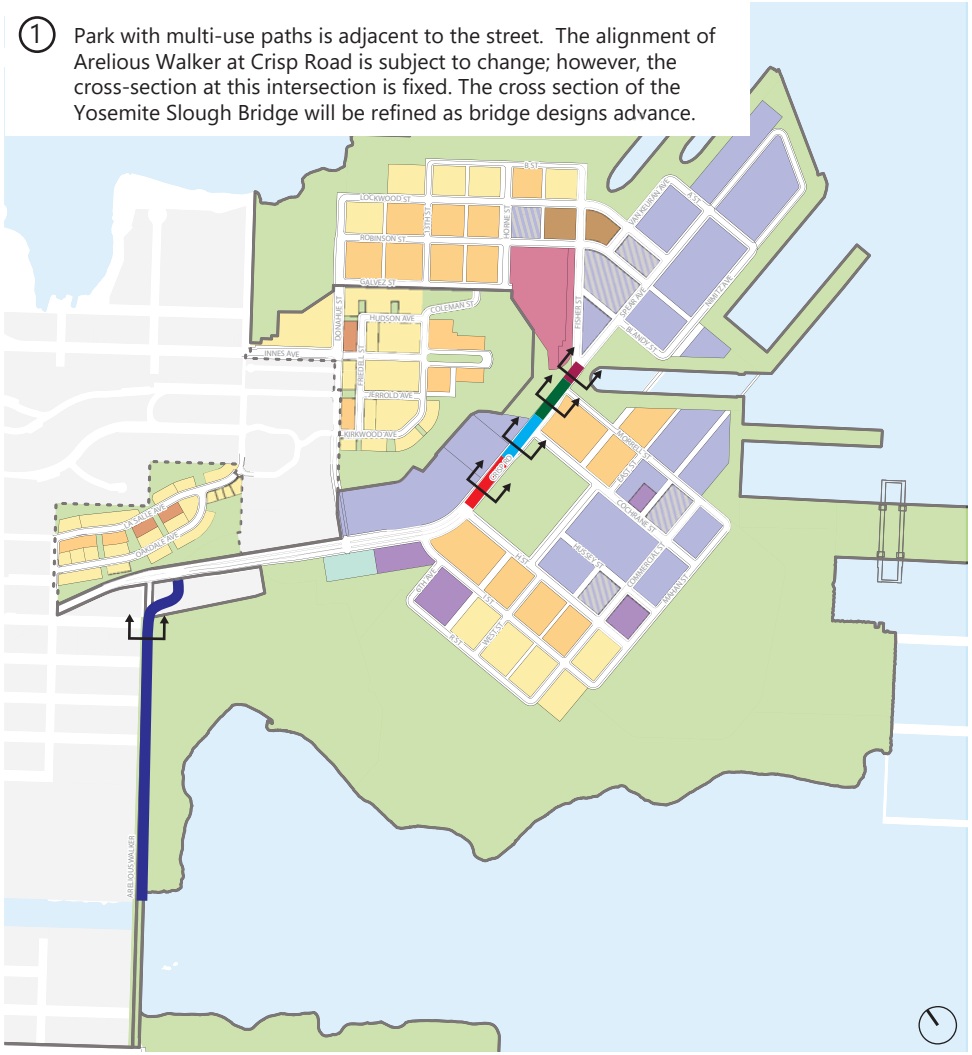


Figure 1

Hunters Point Shipyard Phase II Development: On-Site Street Network

① Park with multi-use paths is adjacent to the street. The alignment of Arelious Walker at Crisp Road is subject to change; however, the cross-section at this intersection is fixed. The cross section of the Yosemite Slough Bridge will be refined as bridge designs advance.

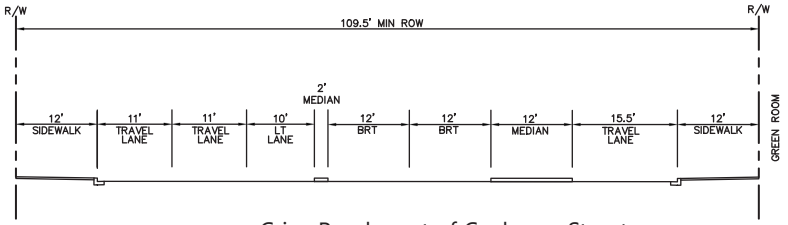


LAND USE

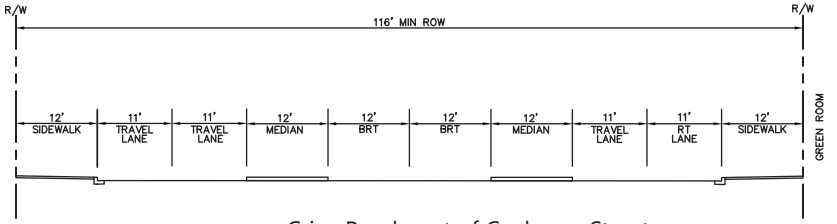
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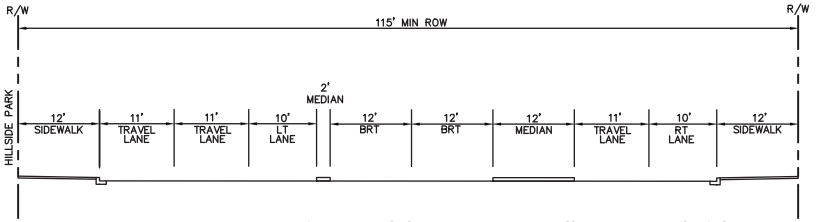
Crisp Road, east of H Street



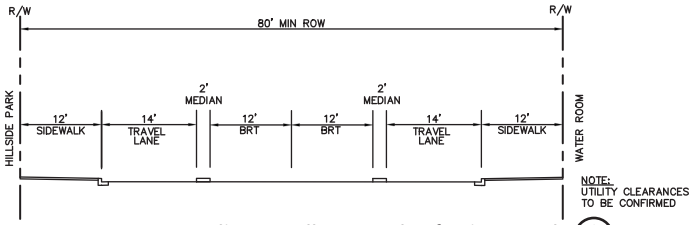
Crisp Road, west of Cochrane Street



Crisp Road, east of Cochrane Street



Crisp Road, between Morrell Street and Fisher Avenue



Arelious Walker, south of Crisp Road ①

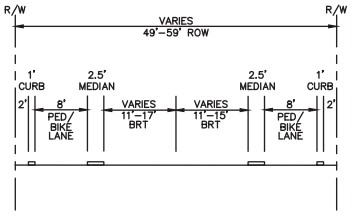
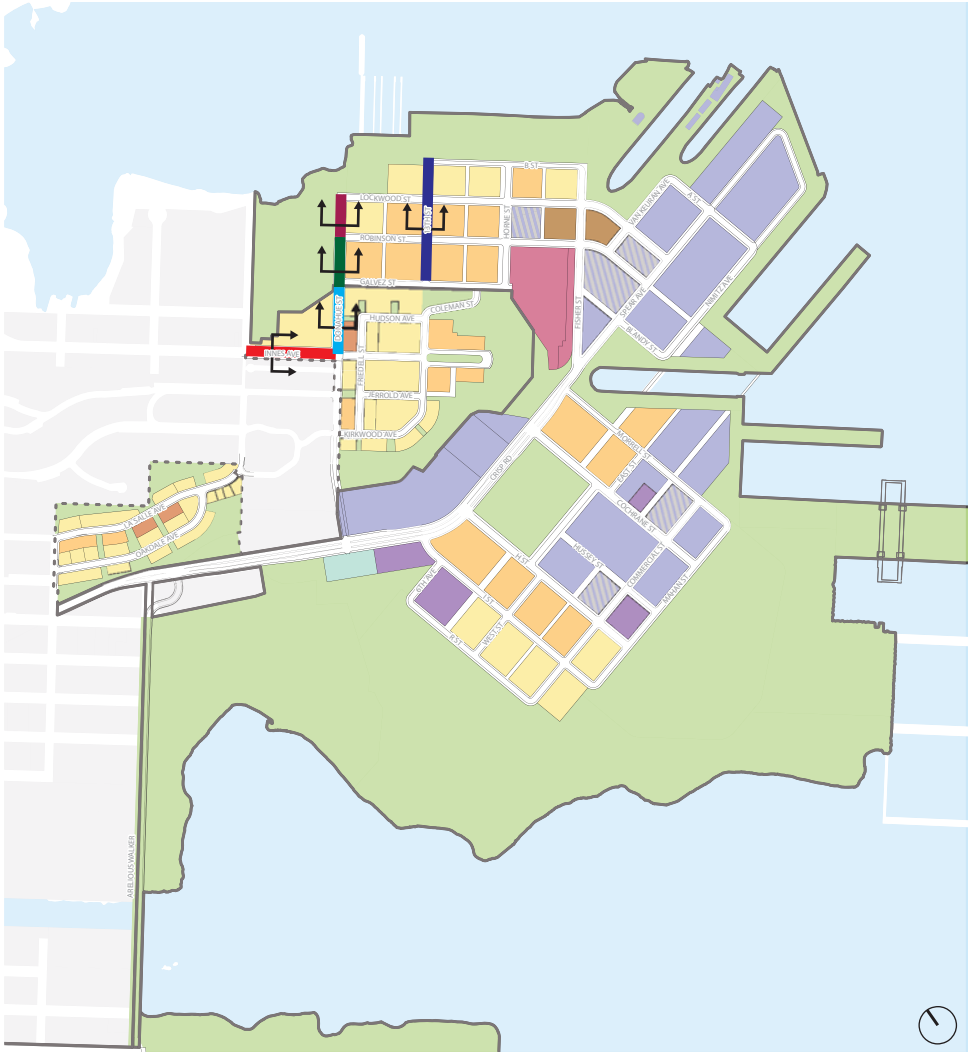
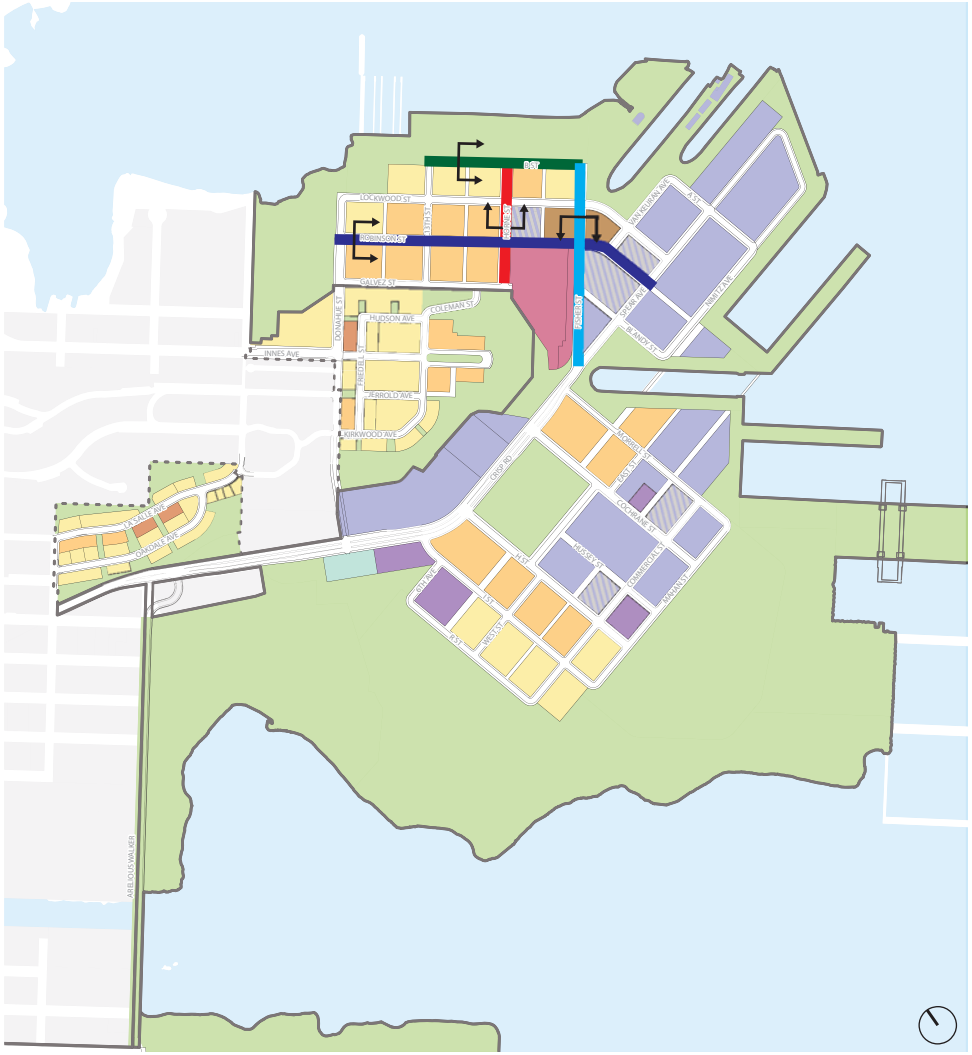


Figure 2

Hunters Point Shipyard Phase II Development: On-Site Street Network


LOCKWOOD ST
ROBINSON ST
GALVEZ ST
HUDSON AVE
COLEMAN ST
INNES AVE
KIRKWOOD AVE
CRISP RD
GRADY WAY
CLIPPER DR
CONSTITUTION DR
CROSS RD
CP-01
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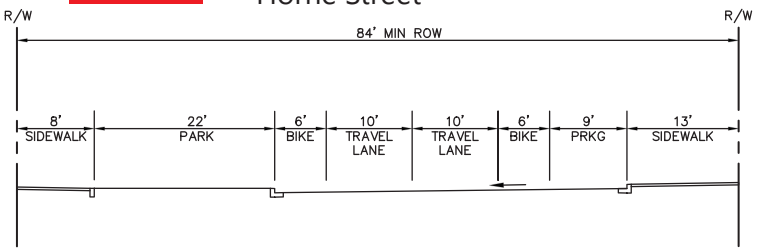


LAND USE

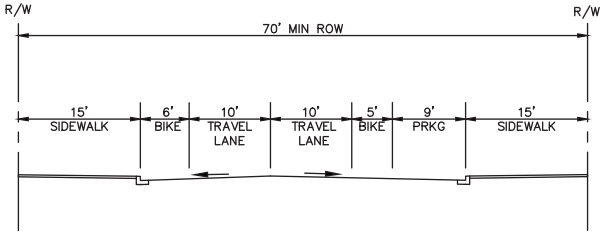
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
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- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

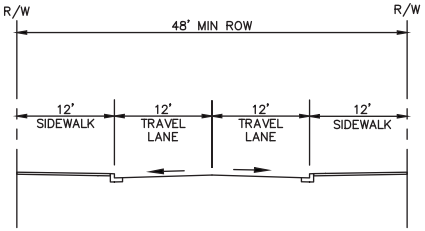
Horne Street



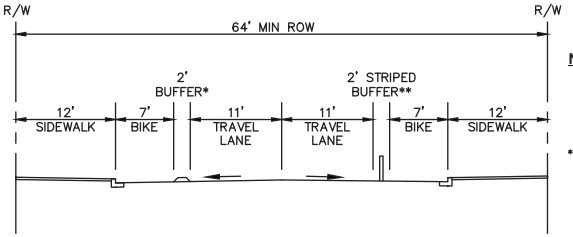
Fisher Street



B Street



Robinson Street



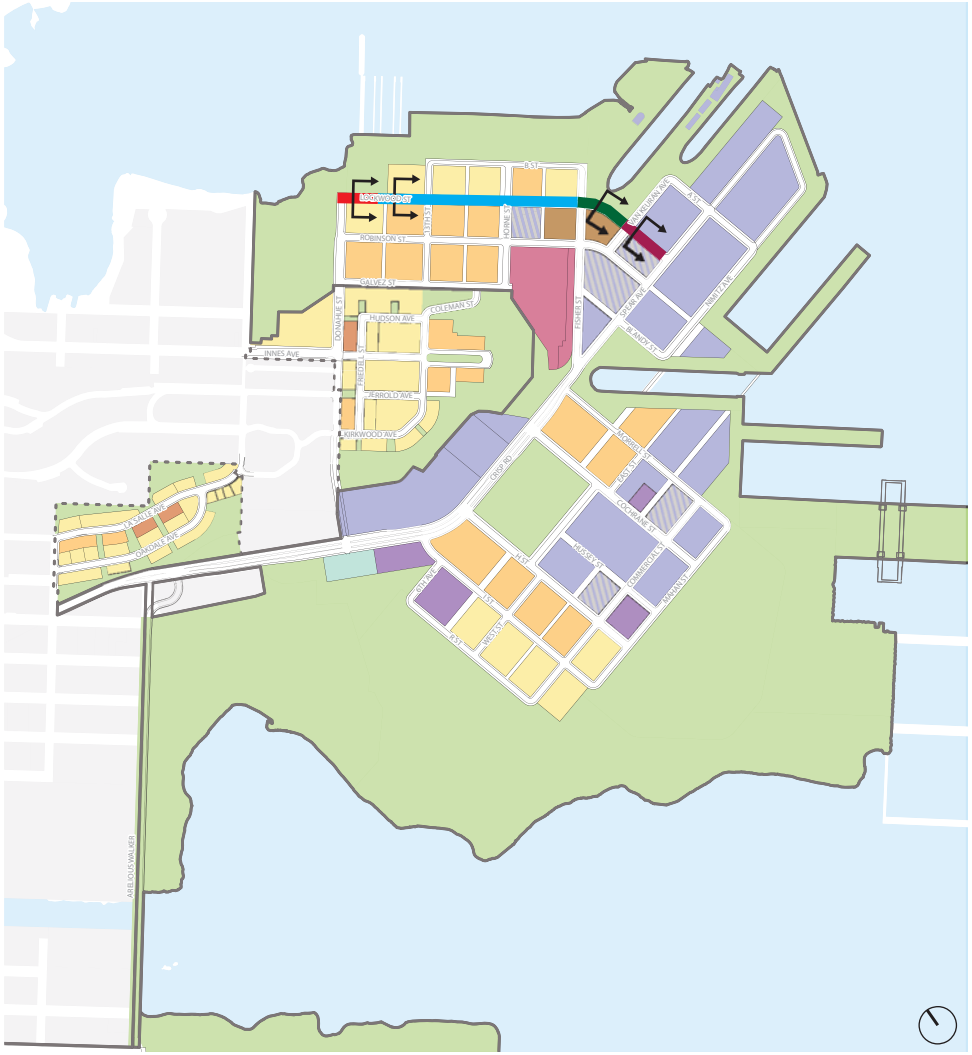
NOTE:

***6" RAISED MEDIAN, OR STRIPED BUFFER WHERE REQUIRED BY SFPUC FOR UTILITY CLEARANCE**

****STRIPED BUFFER WITH SAFE HIT POSTS. CURB MAY BE IMPLEMENTED IF STRIPED BUFFER NOT REQUIRED BY SFPUC FOR UTILITY CLEARANCE**

Figure 4

Hunters Point Shipyard Phase II Development: On-Site Street Network

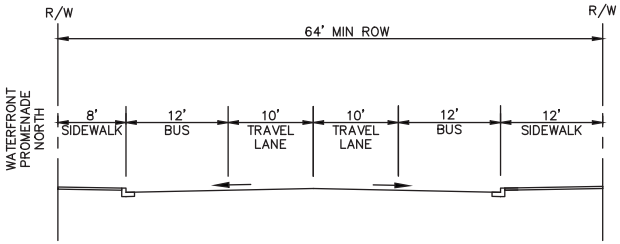


LAND USE

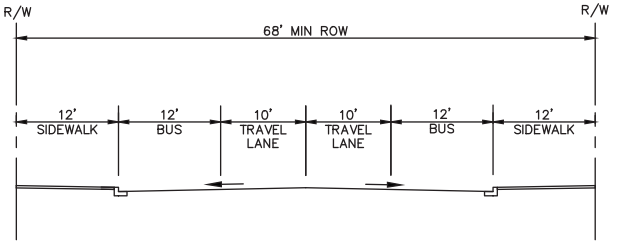
- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
- RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)
- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)

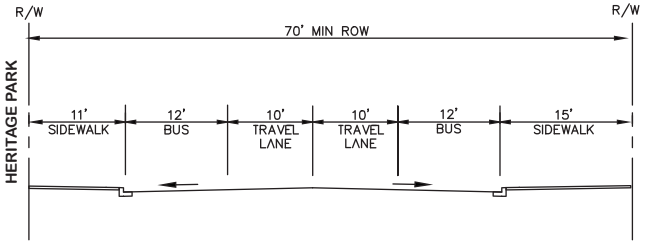
Lockwood Between Donahue and Midblock



Lockwood Between midblock and Fisher Ave



Lockwood Between Fisher Ave and Van Keuran



Lockwood Between Van Keuran and Spear

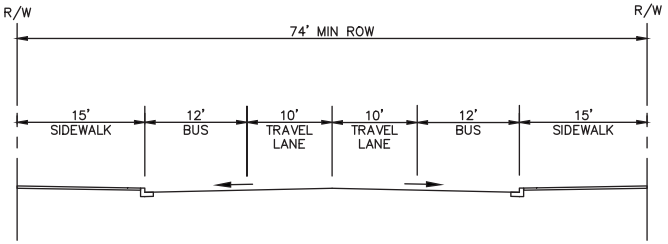
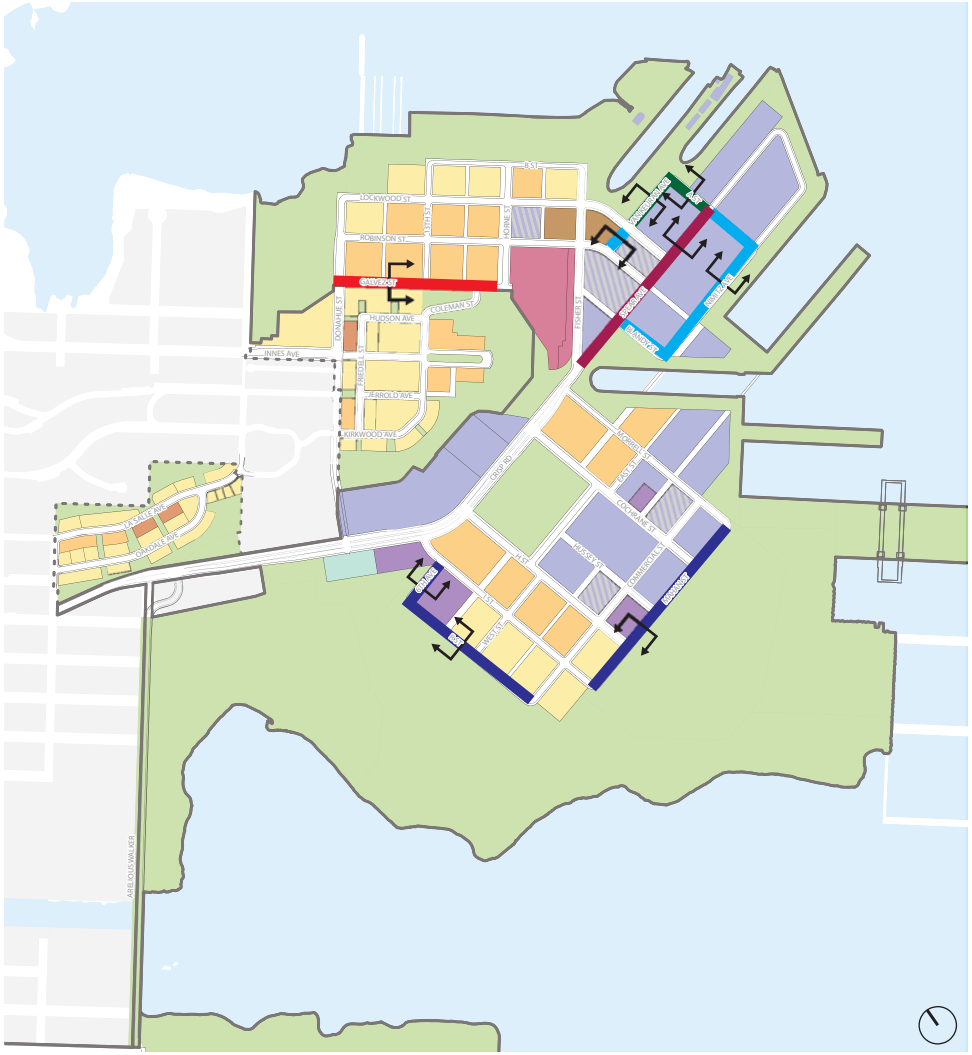


Figure 5

Hunters Point Shipyard Phase II Development: On-Site Street Network

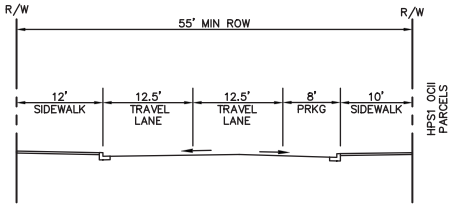


LAND USE

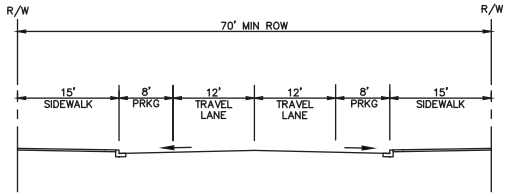
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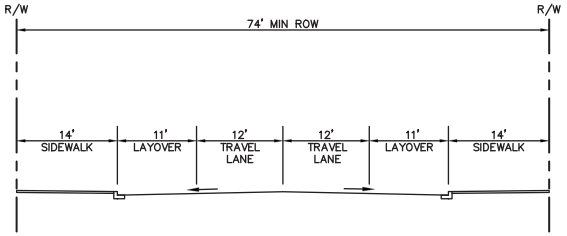
Galvez Avenue



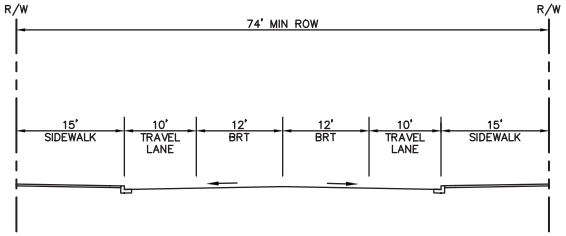
Commercial Roadway



Transit Layover



Spear Avenue



Residential/Commercial Roadway

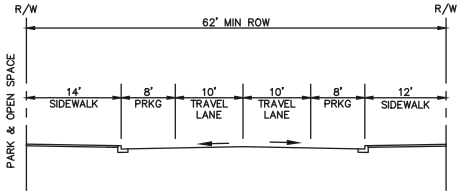
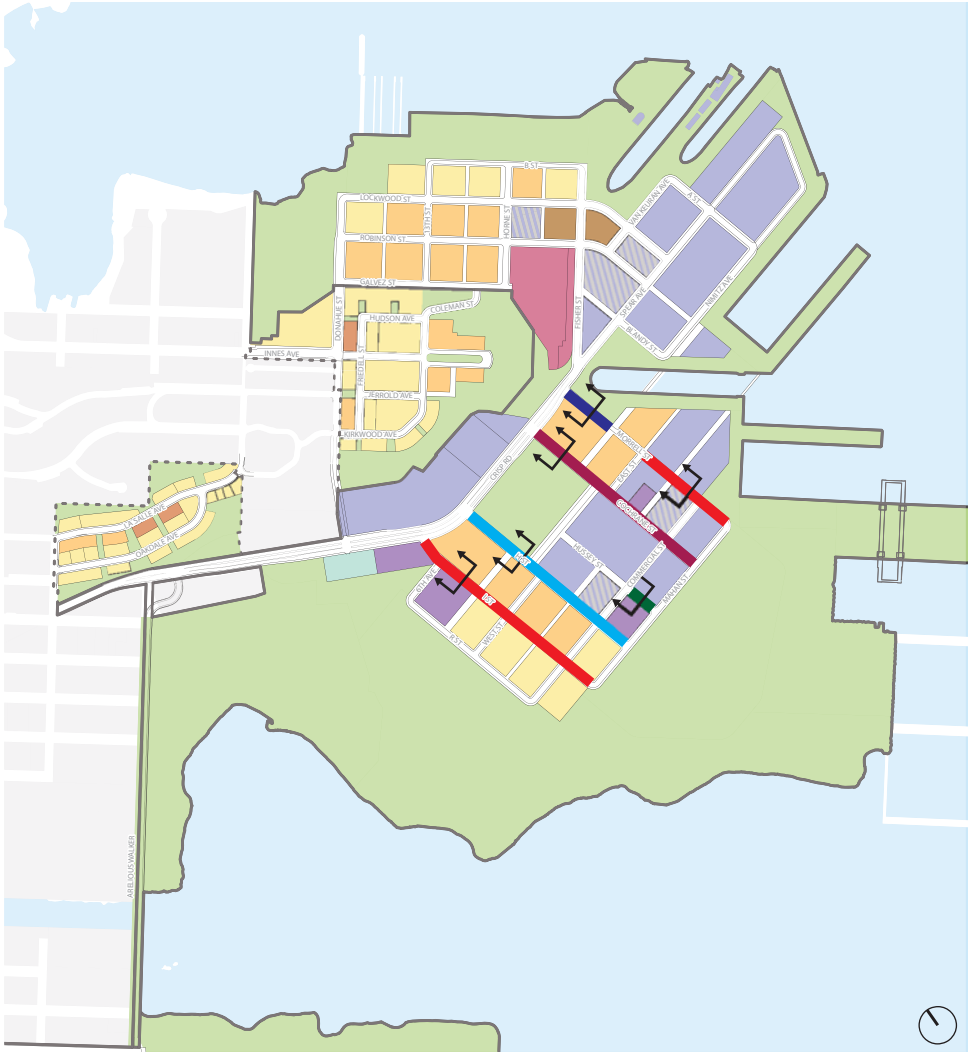
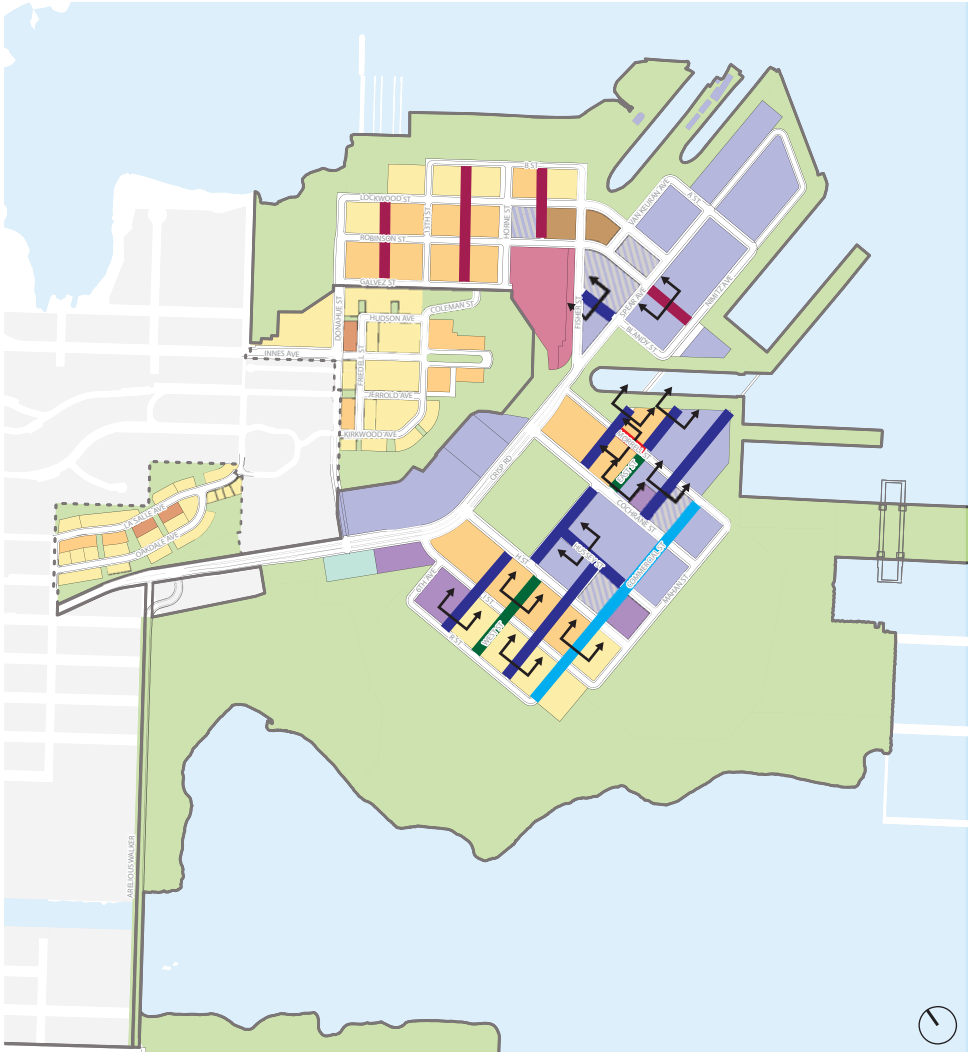


Figure 6

Hunters Point Shipyard Phase II Development: On-Site Street Network


LOCKWOOD ST
ROBINSON ST
GALVEZ ST
HUDSON AVE
COLEMAN ST
INNES AVE
KIRKWOOD AVE
JERROLD AVE
CRISP RD
CRISP RD
CRISP RD

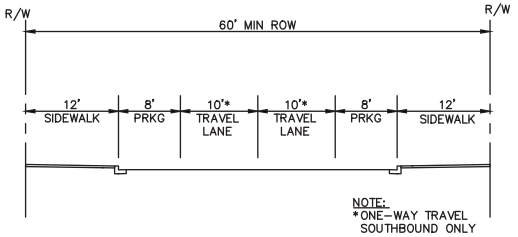


LAND USE

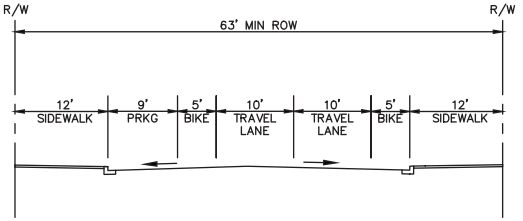
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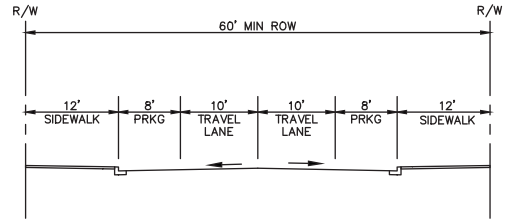
Morrell Street, between Mid-block and East Street



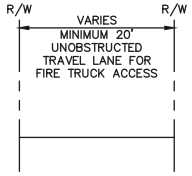
Manseau Street



Residential/Commercial Roadway



Private Mid-block Break (20' Minimum Emergency Vehicle Access)



Private Mid-block Break (26' Minimum Emergency Vehicle Access)

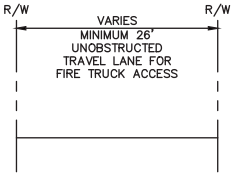
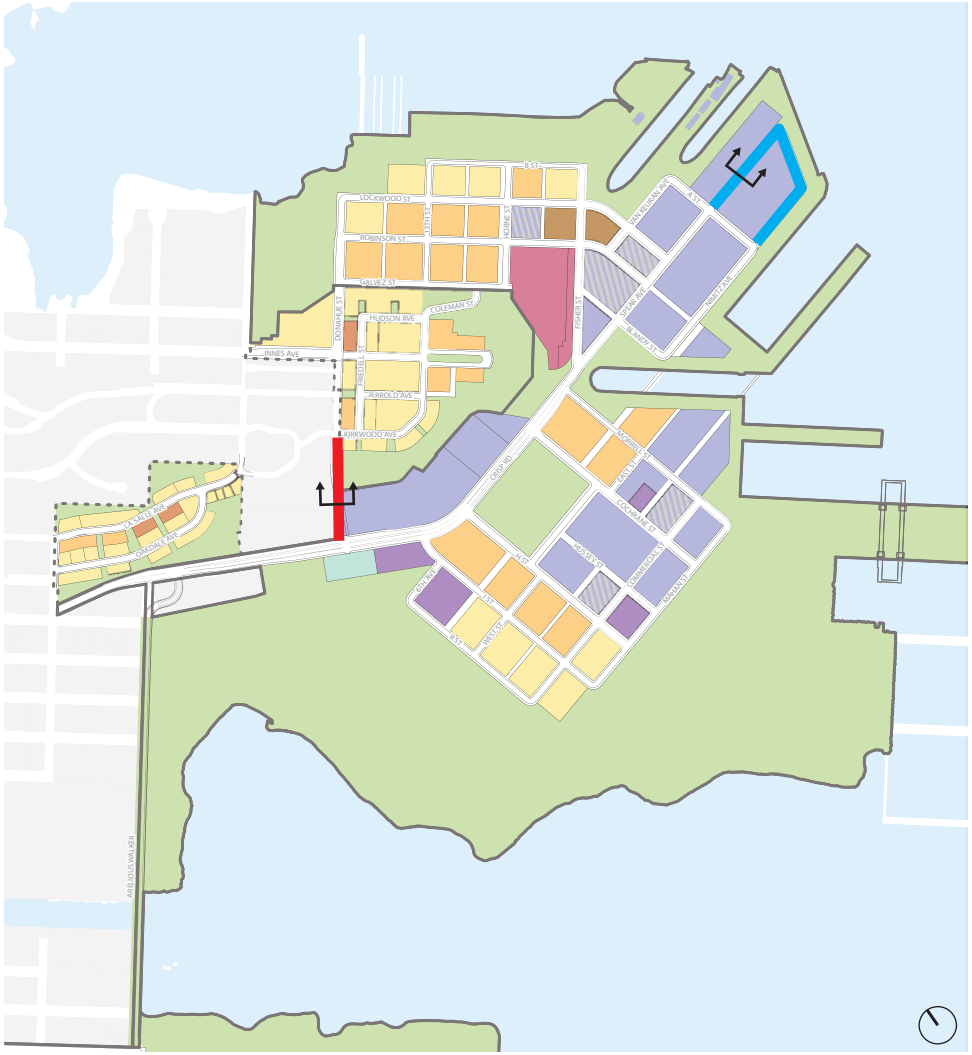


Figure 8

Hunters Point Shipyard Phase II Development: On-Site Street Network

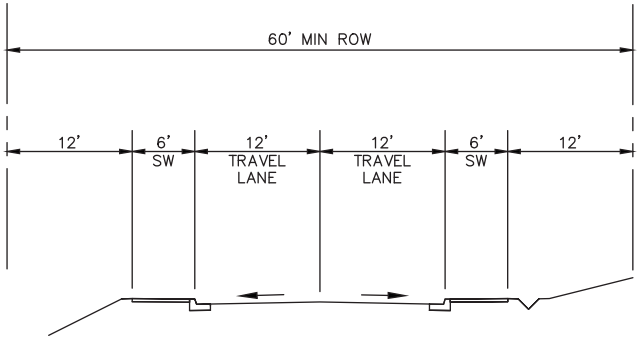


LAND USE

- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
- RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)
- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)

Residential/Commercial Roadway



NOTE:
THE EXTENSION OF DONAHUE STREET IS NOT VITAL TO SITE CIRCULATION. THIS SECTION MAY NOT BE CONSTRUCTED DEPENDING ON FEASIBILITY.

Note: The Developer is pursuing the extension of Donahue Street to Crisp Road. However, the Developer is not obligated to complete the extension of Donahue Street as it relies on several external factors

Commercial Street

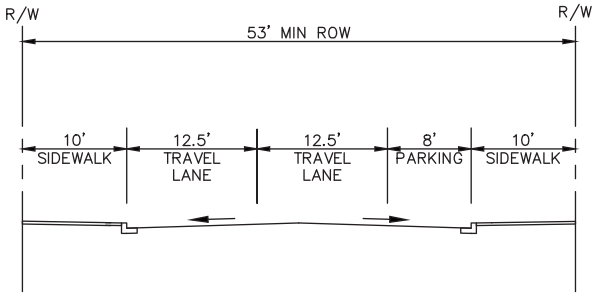
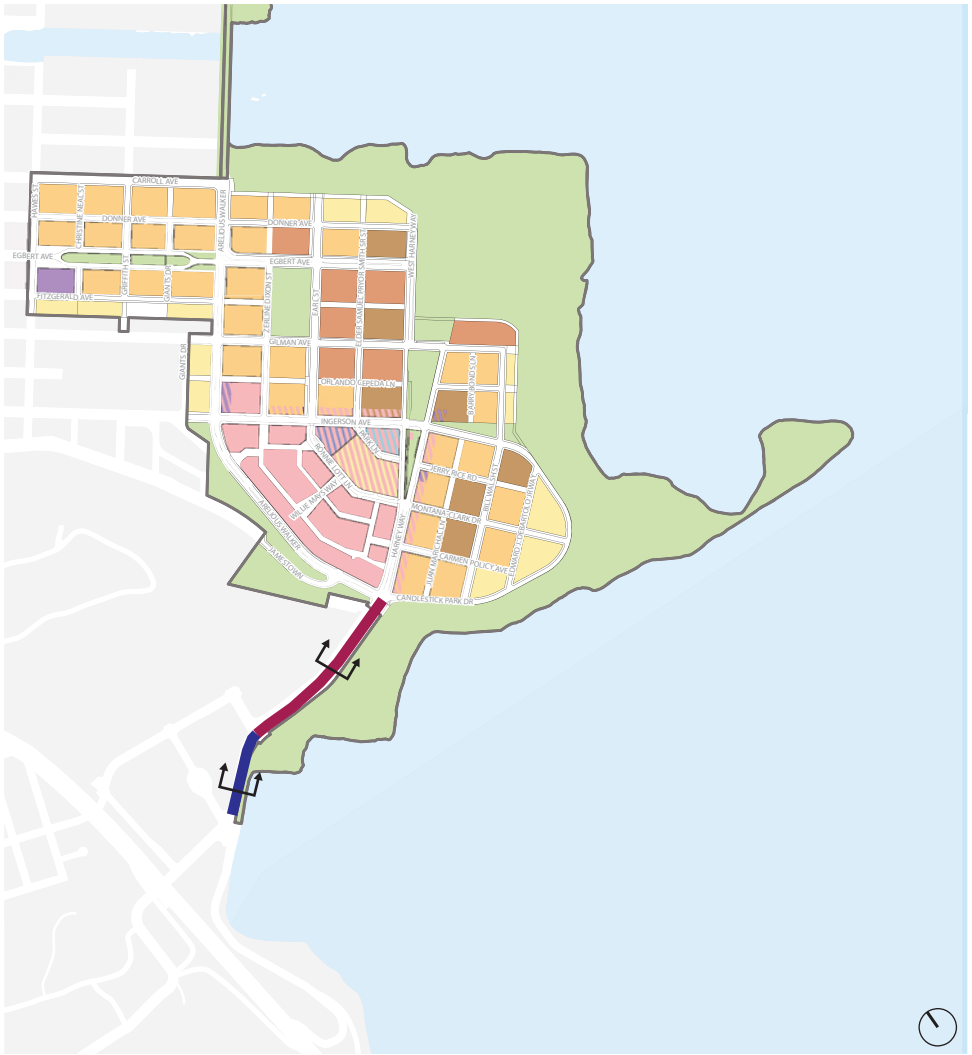


Figure 9

Hunters Point Shipyard Phase II Development: On-Site Street Network

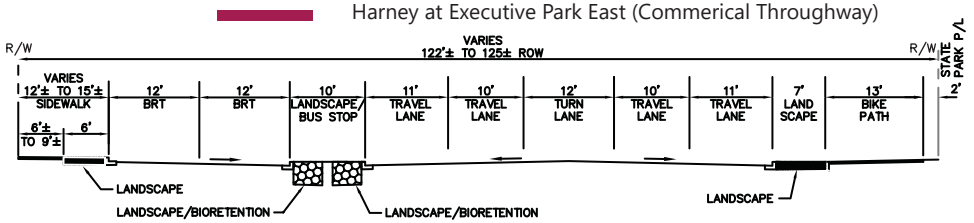


LAND USE

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- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
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2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Harney at Executive Park East (Commerical Throughway)



Harney at Thomas Mellon (Commercial Throughway)

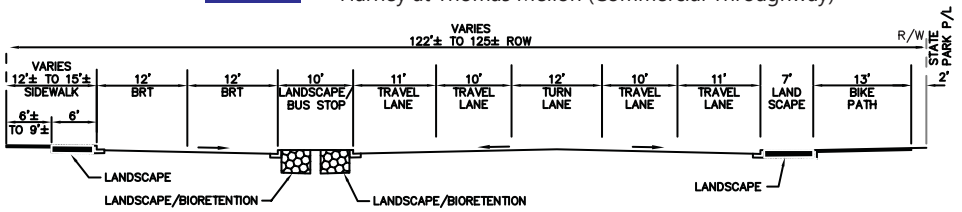
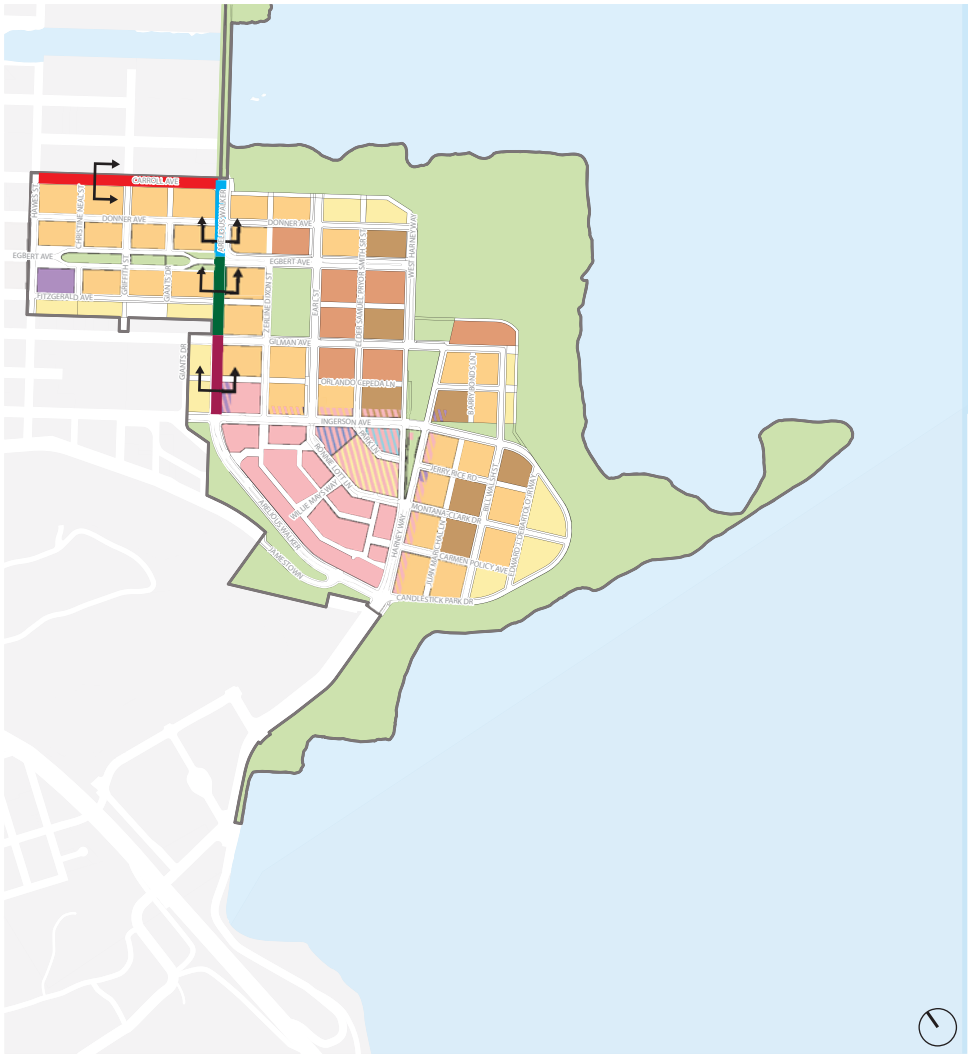


Figure 10

Candlestick Point Development: On-Site Street Network

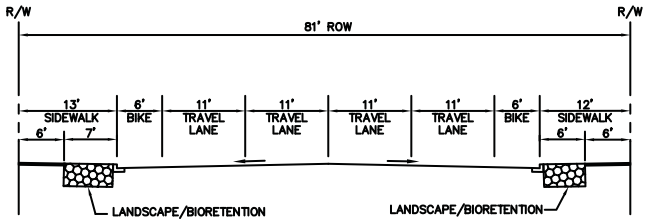


LAND USE

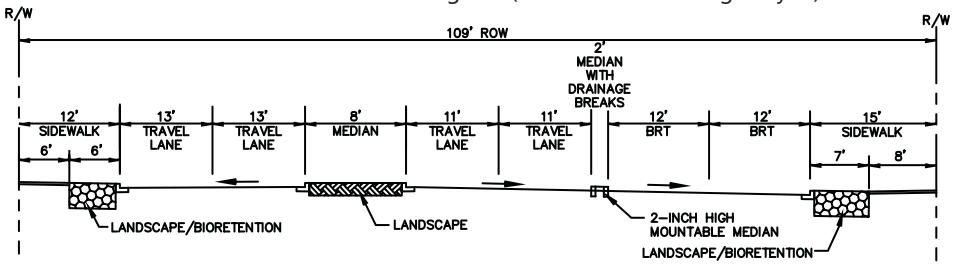
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- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
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- PERFORMANCE VENUE (PV)

NOTE:
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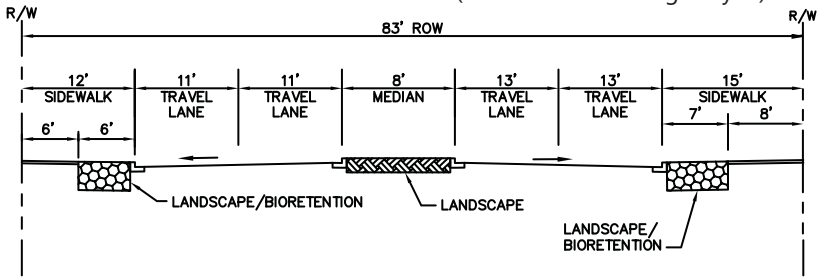
Carroll at Ingalls ("Industrial Mixed-Use Street" *)



Arelious Walker at Egbert ("Commercial Throughway" *)



Arelious Walker at Gilman ("Commercial Throughway" *)



Arelious Walker at Ingerson ("Commercial Throughway" *)

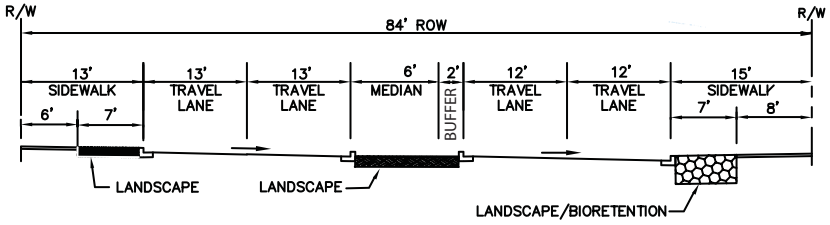
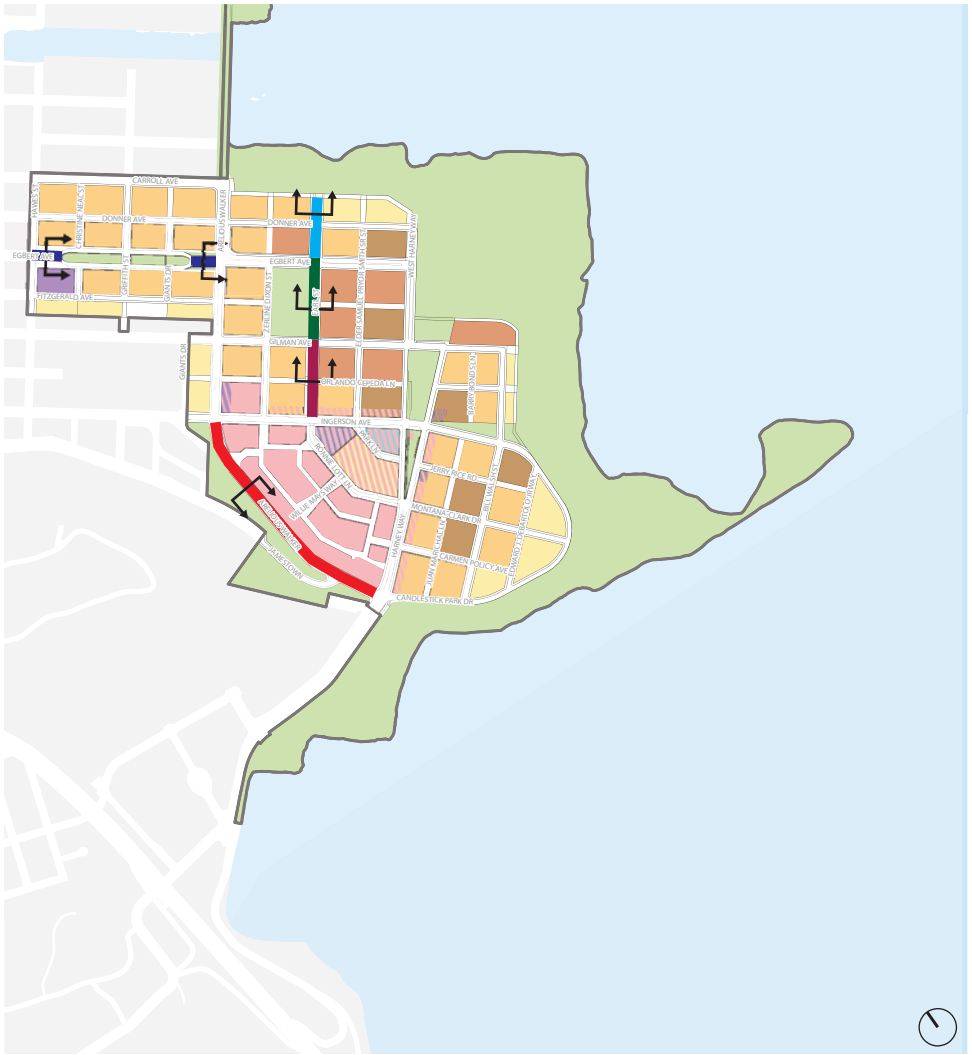


Figure 11

Candlestick Point Development: On-Site Street Network

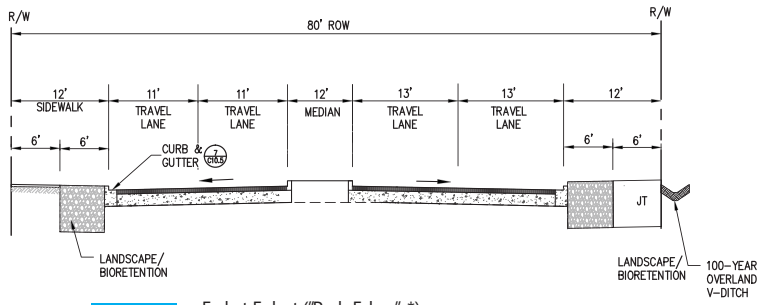


LAND USE

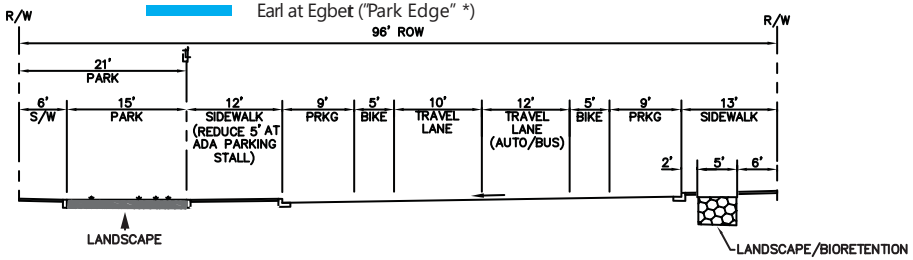
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- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
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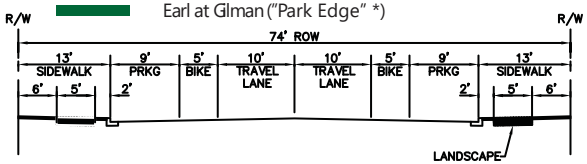
Arelious Walker at Harney ("Commercial Throughway" *)



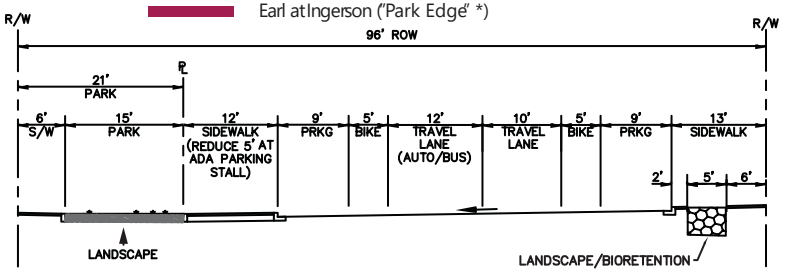
Earl at Egbert ("Park Edge" *)



Earl at Gilman ("Park Edge" *)



Earl at Ingerson ("Park Edge" *)



Egbert at Alice Griffith Park ("Parkway" *)①

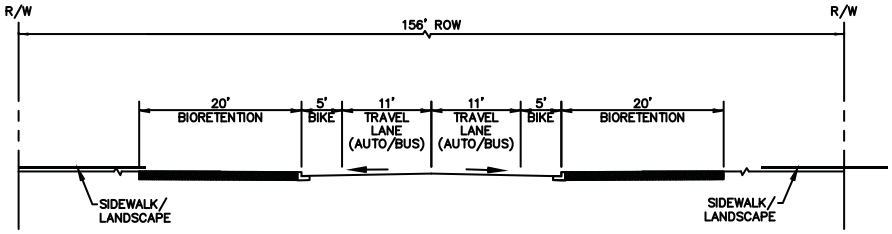
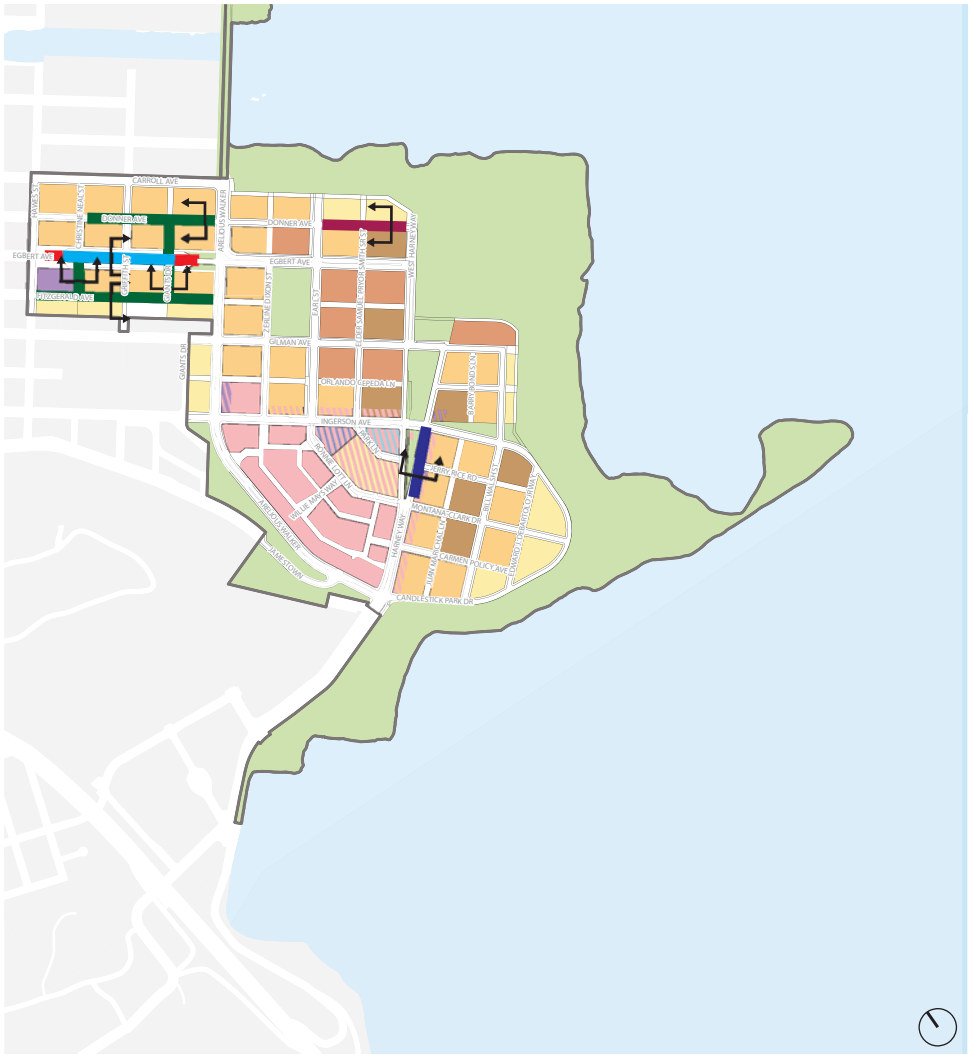


Figure 12

Candlestick Point Development: On-Site Street Network

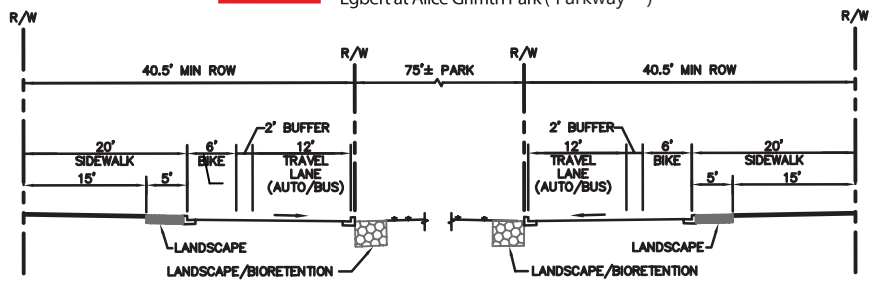


LAND USE

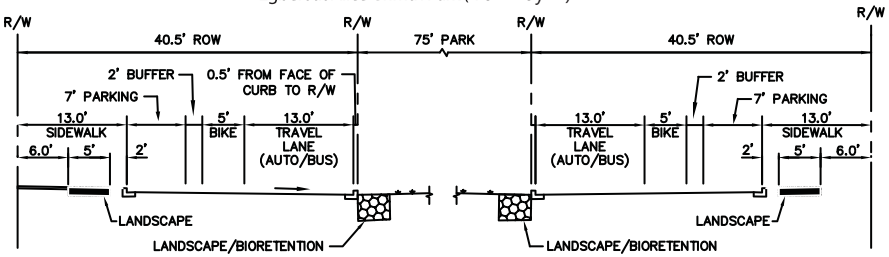
- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
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- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
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- PARKING (SP)
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- PARKS AND OPEN SPACE
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NOTE:
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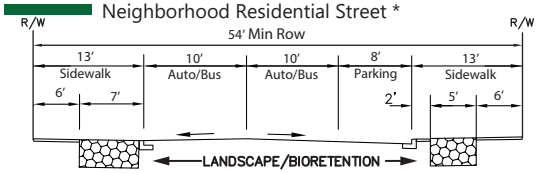
Egbert at Alice Griffith Park ("Parkway" *)①



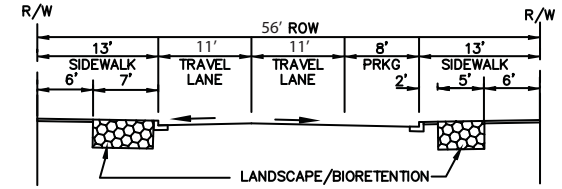
Egbert at Alice Griffith Park ("Parkway" *)①



Neighborhood Residential Street *



Neighborhood Residential Street *



Harney at Ingerson South ("Park Edge Street" *)

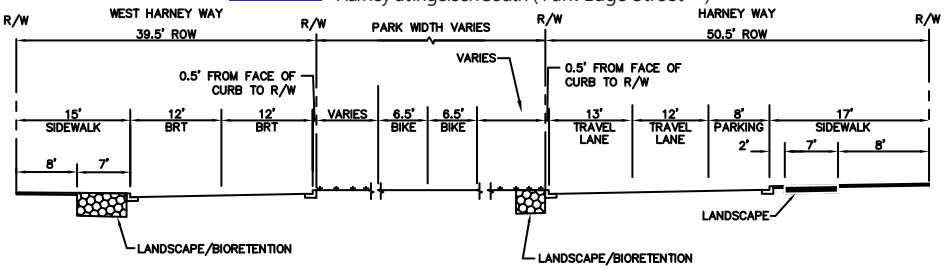
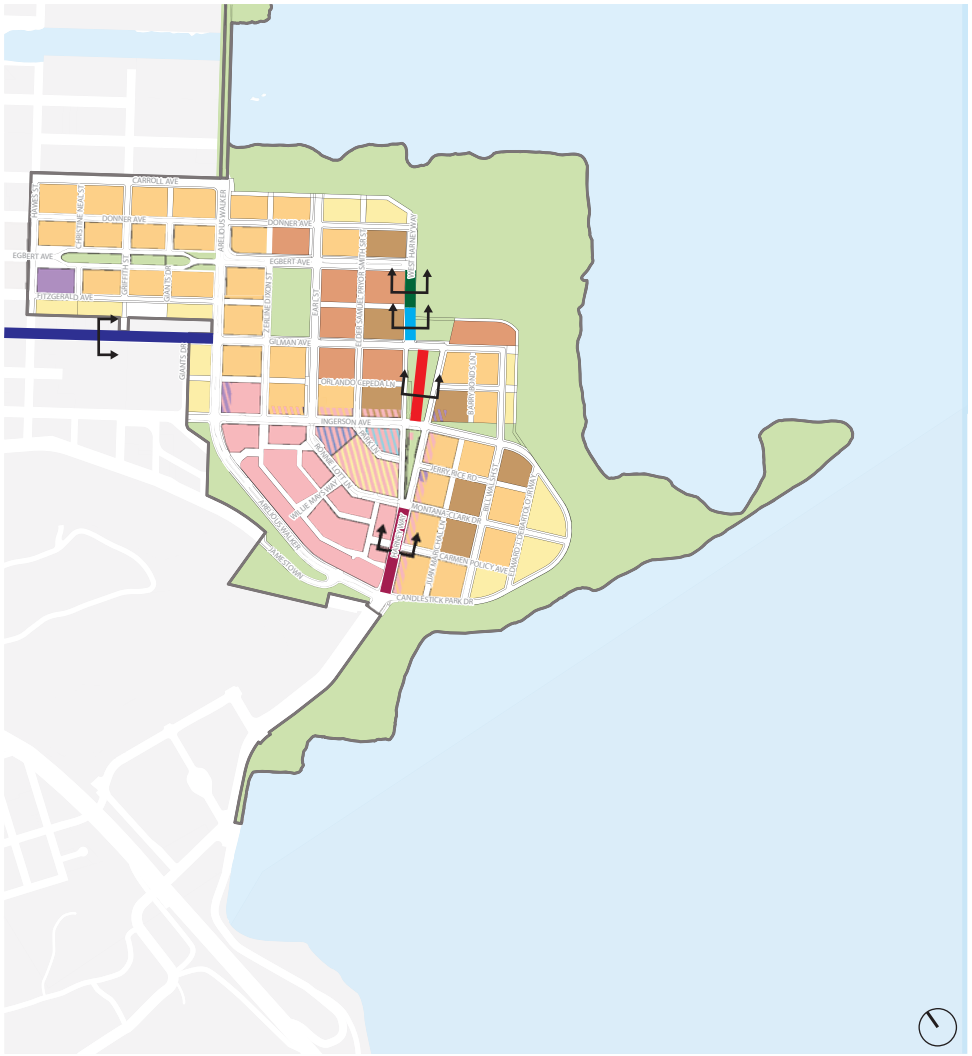


Figure 13

Candlestick Point Development: On-Site Street Network

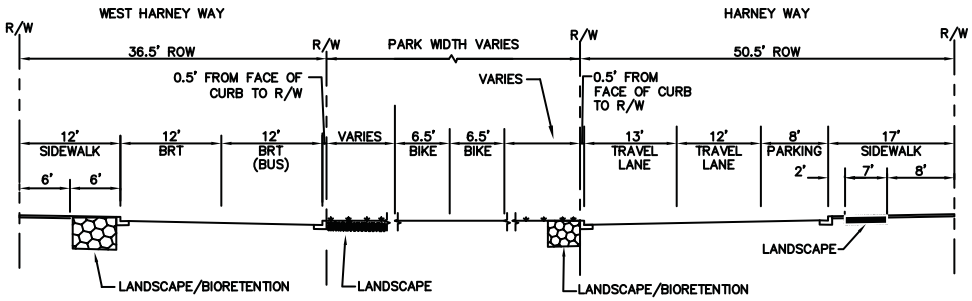


LAND USE

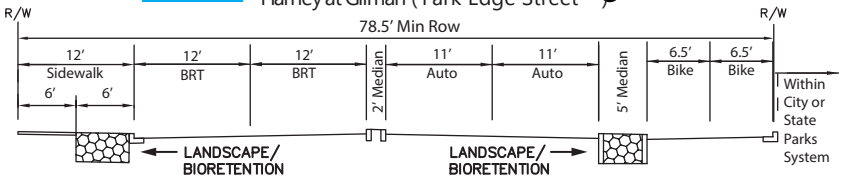
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- *PARKS AND OPEN SPACE*
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- *PERFORMANCE VENUE* (PV)

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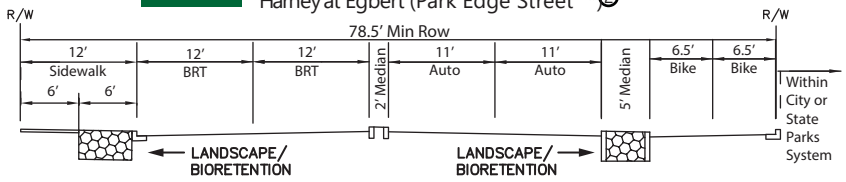
Harney at Ingerson North ("Park Edge Street" *)



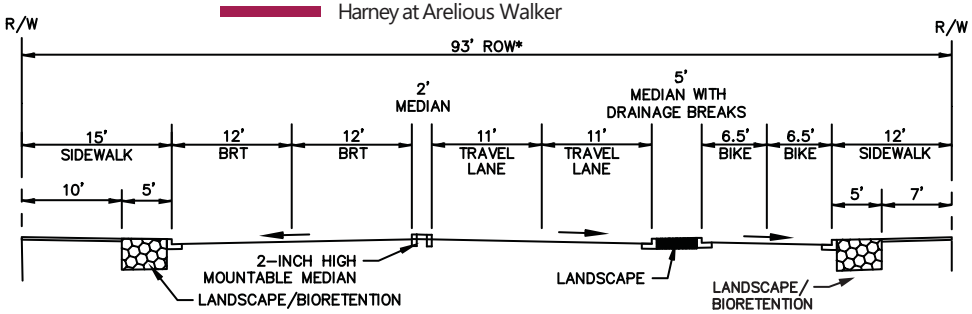
Harney at Gilman ("Park Edge Street" *)②



Harney at Egbert ("Park Edge Street" *)②



Harney at Arelious Walker



Gilman Avenue

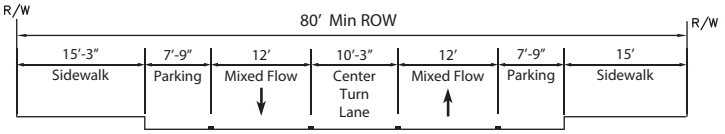
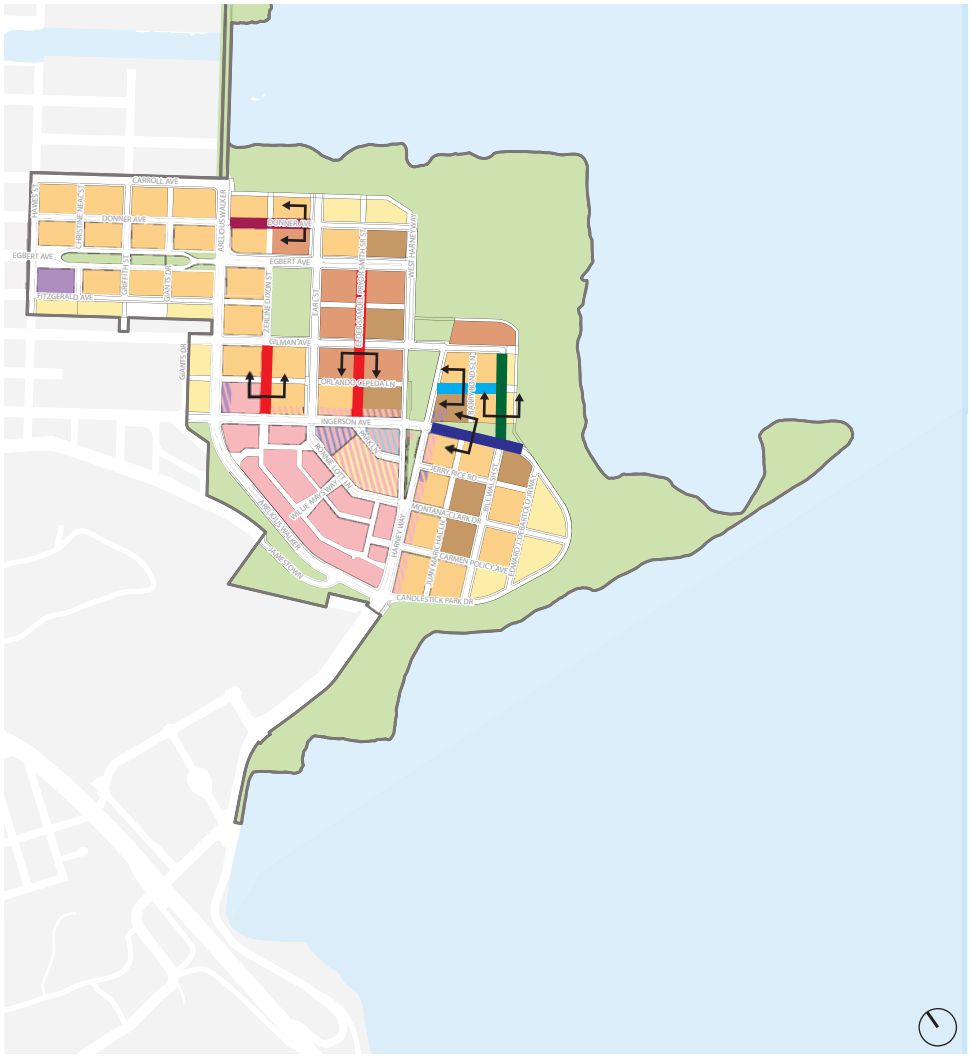


Figure 14

Candlestick Point Development: On-Site Street Network

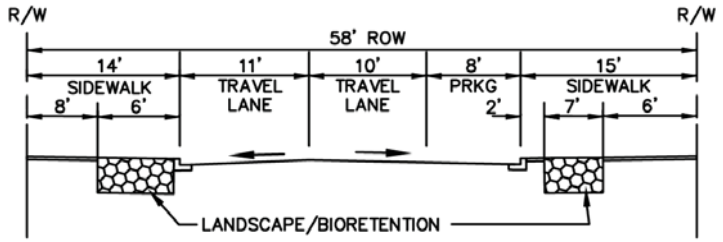


LAND USE

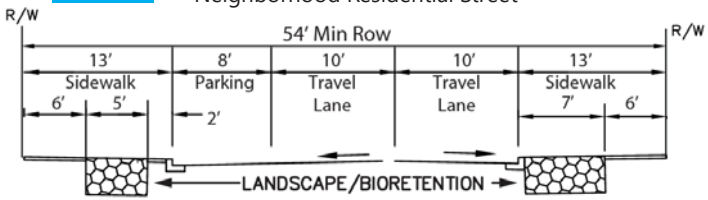
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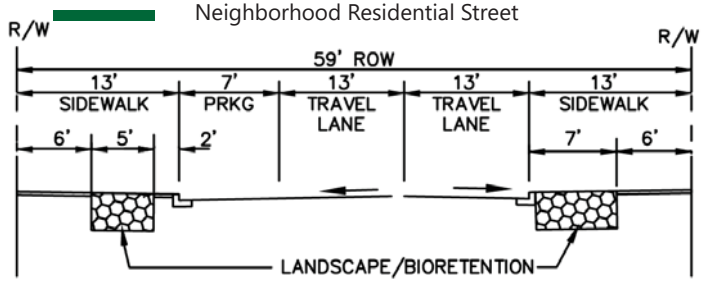
Neighborhood Residential Street



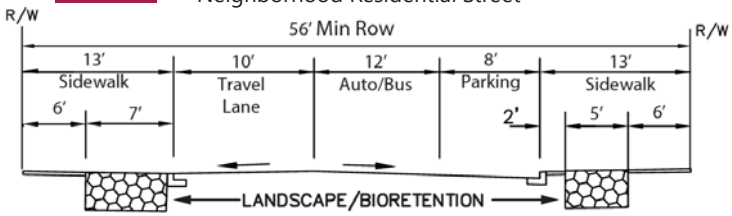
Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street

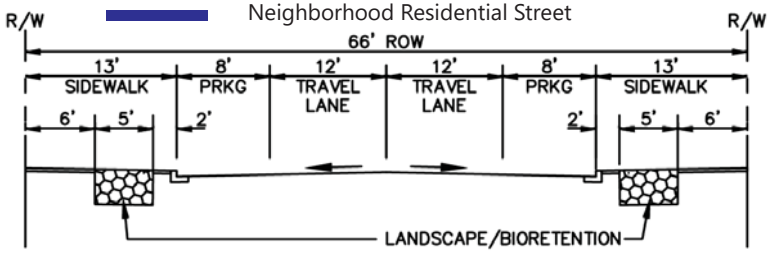
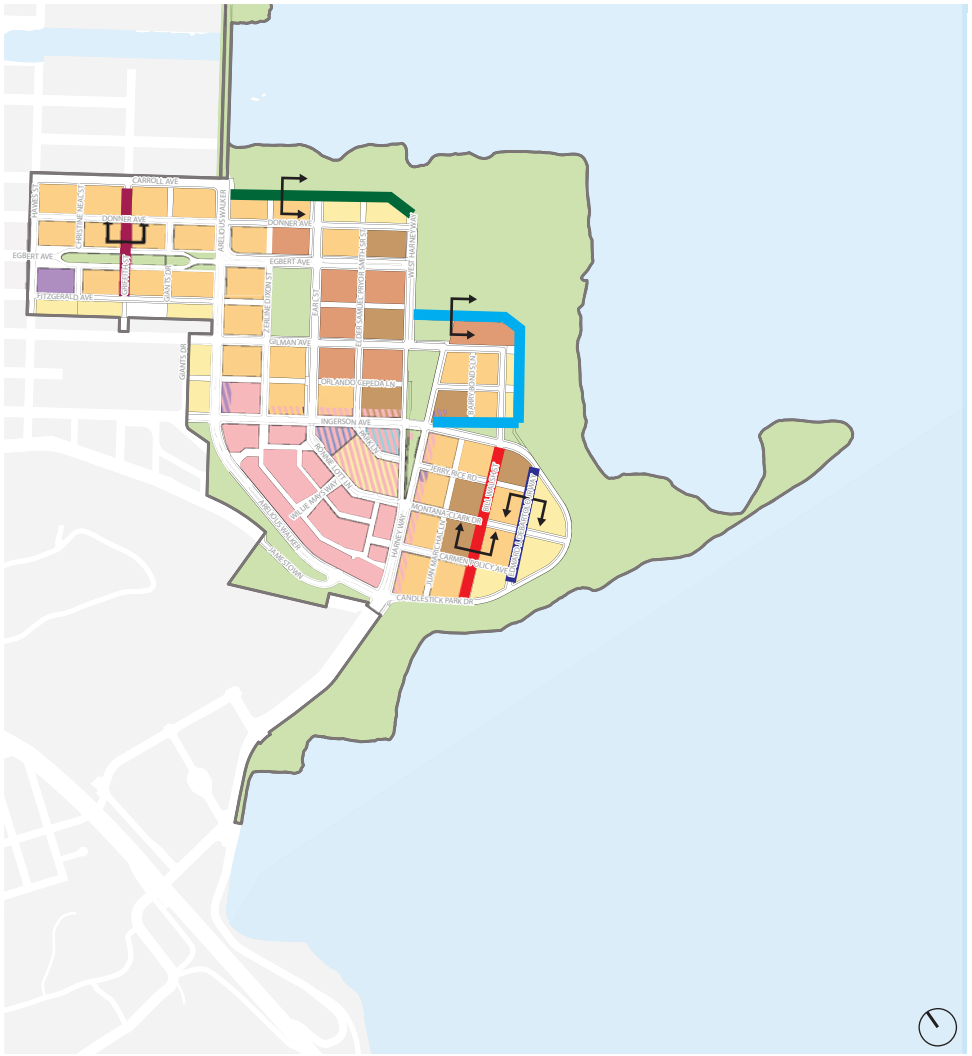


Figure 15

Candlestick Point Development: On-Site Street Network

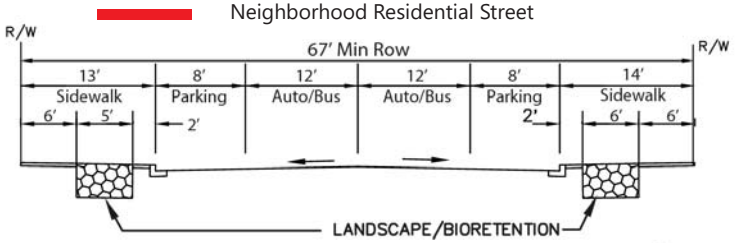


LAND USE

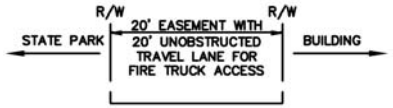
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
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- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

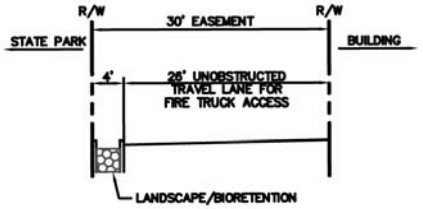
Neighborhood Residential Street



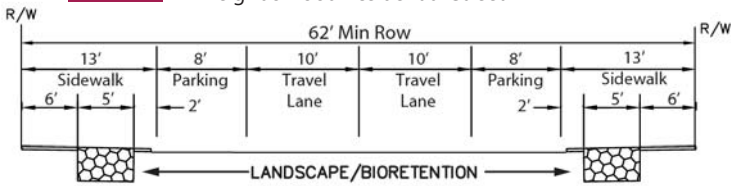
Shared Public Way - 20′ Min ROW



Shared Public Way - 30′ Min ROW



Neighborhood Residential Street



Neighborhood Residential Street

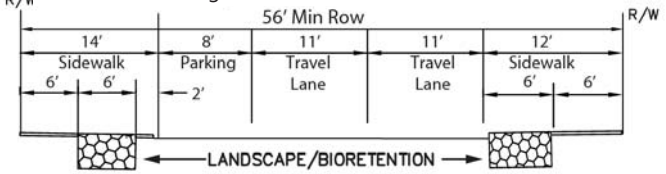
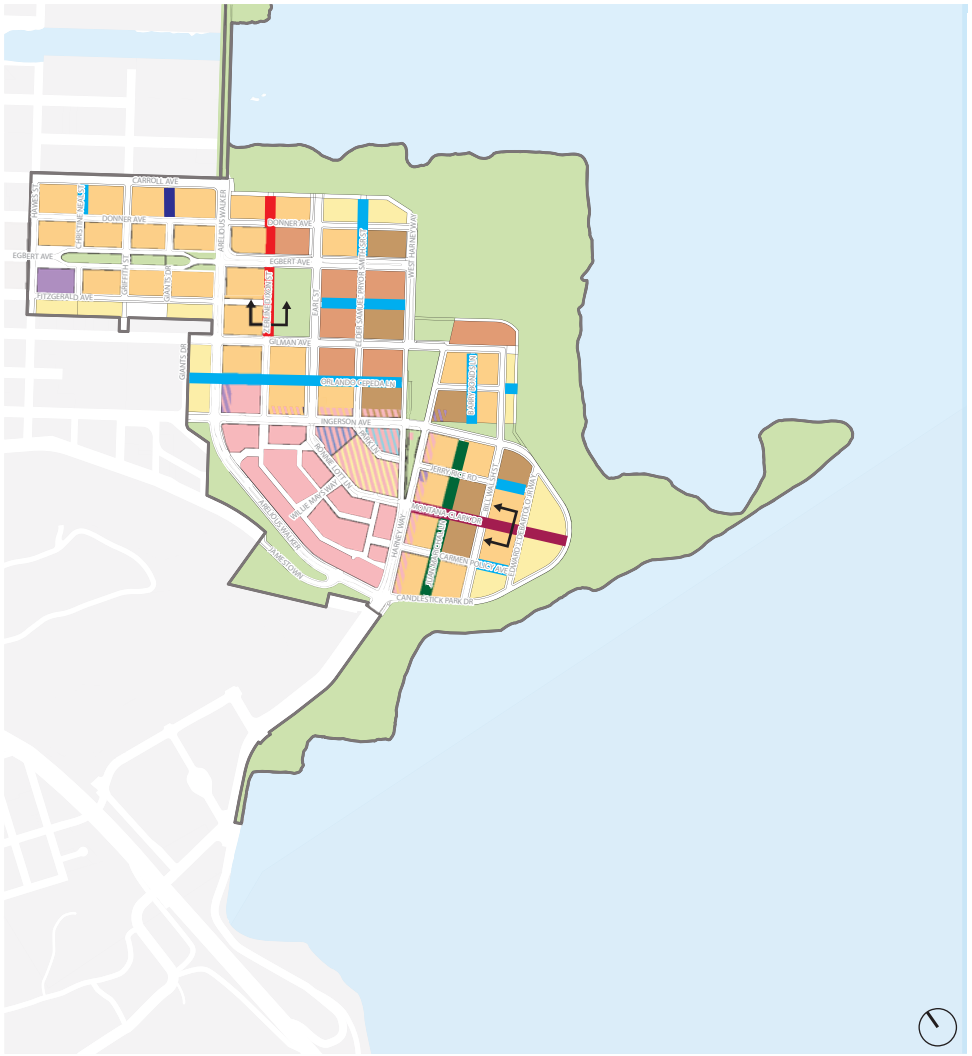


Figure 16

Candlestick Point Development: On-Site Street Network

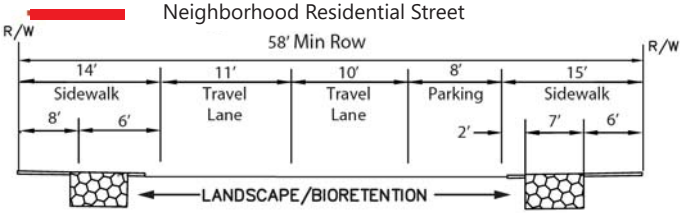


LAND USE

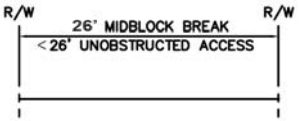
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
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- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
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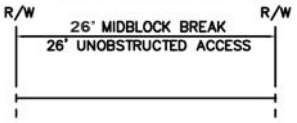
Neighborhood Residential Street



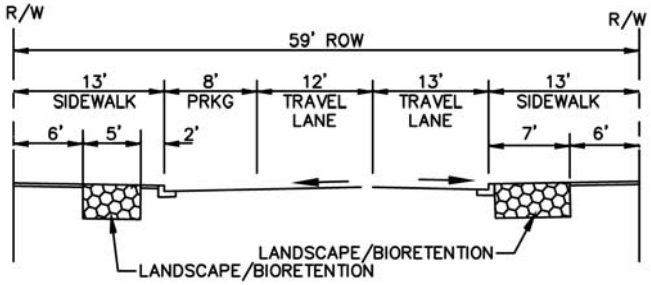
Mid-Block Break - 26' Min ROW



Mid-Block Break - 26' Min ROW



Neighborhood Residential Street



Mid-Block Break - 40' Min ROW

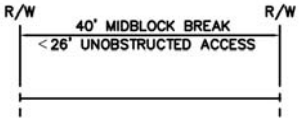
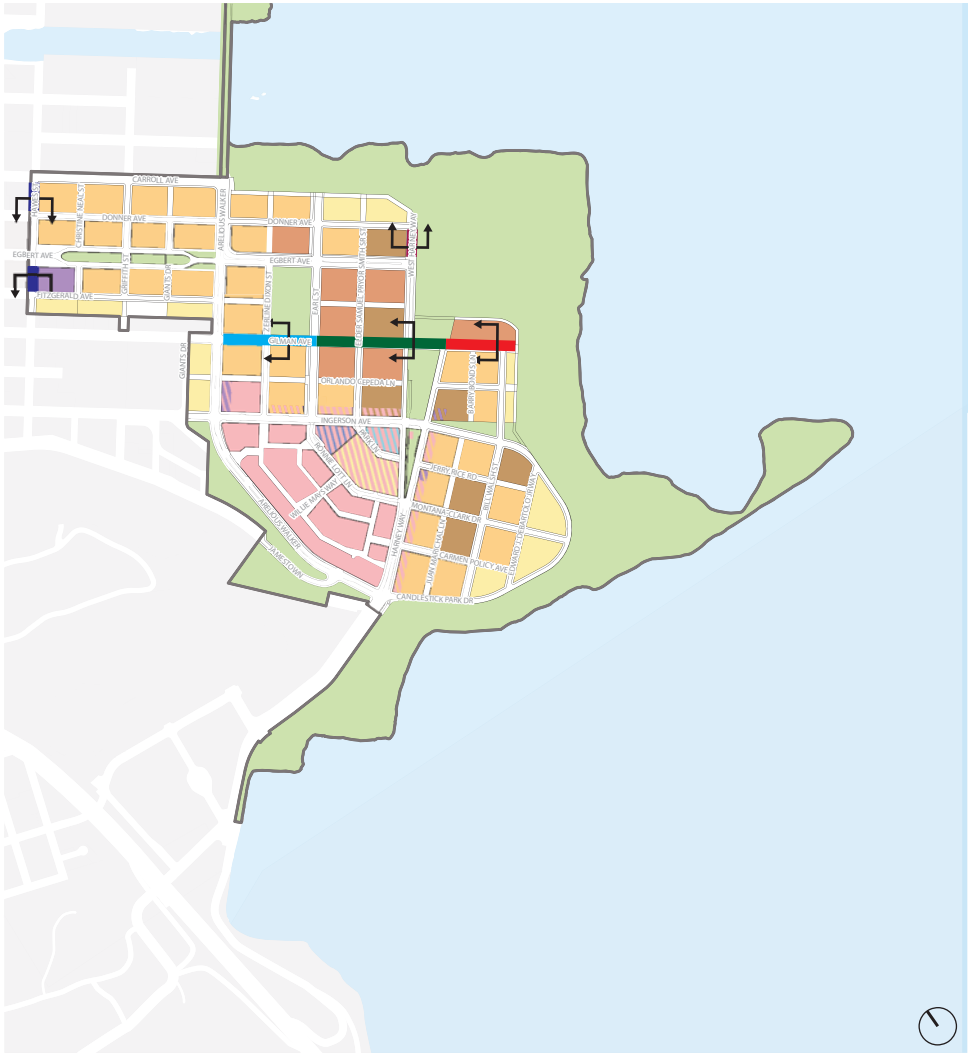


Figure 17

Candlestick Point Development: On-Site Street Network

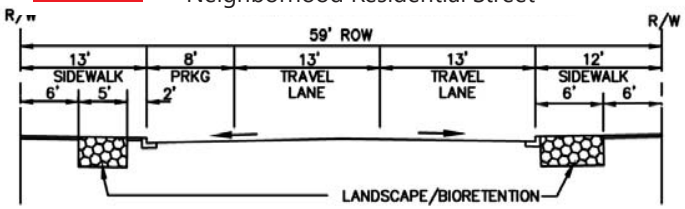


LAND USE

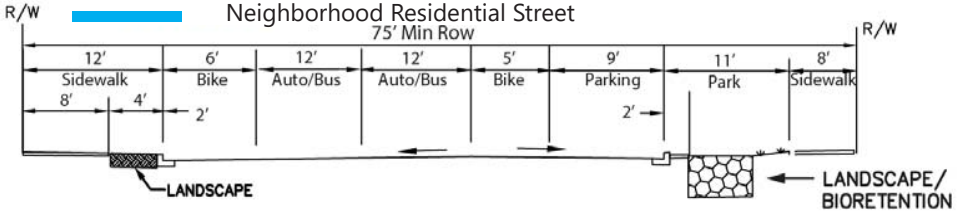
- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
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- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

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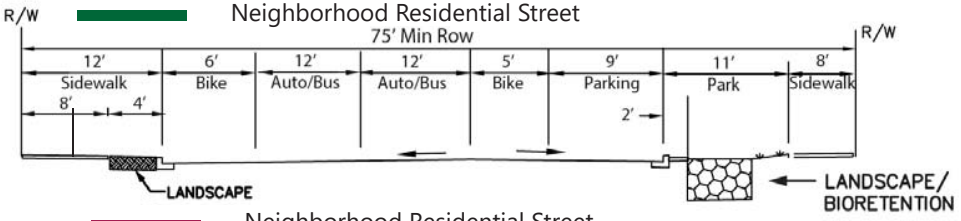
Neighborhood Residential Street



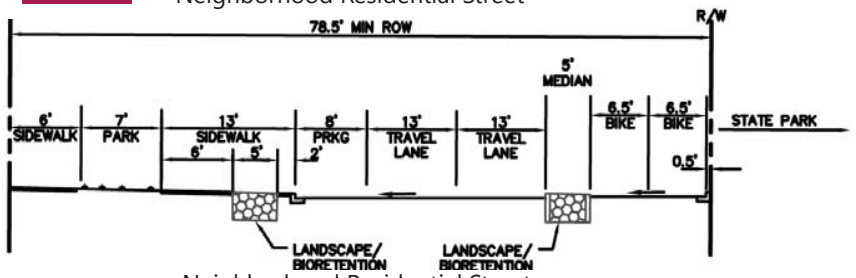
Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street

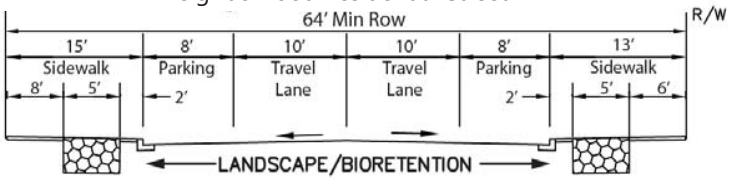
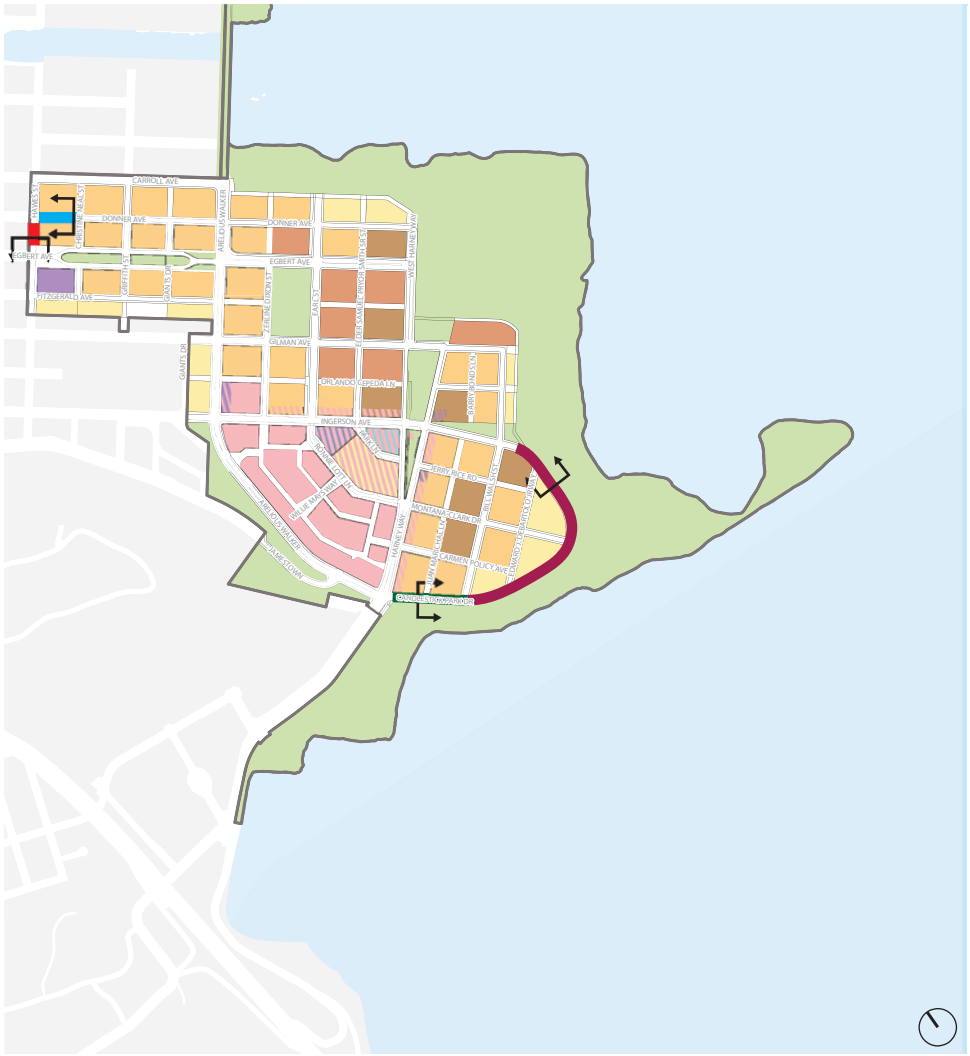


Figure 18

Candlestick Point Development: On-Site Street Network

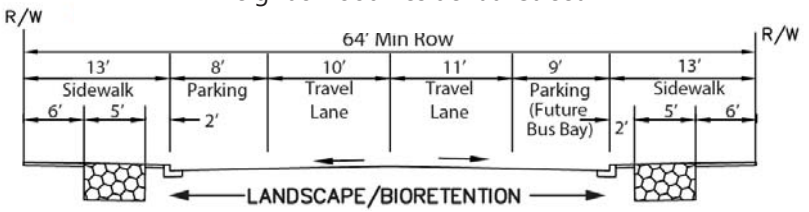


LAND USE

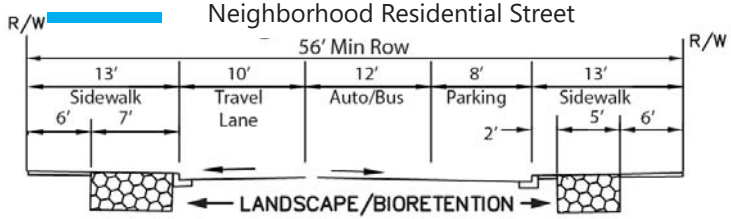
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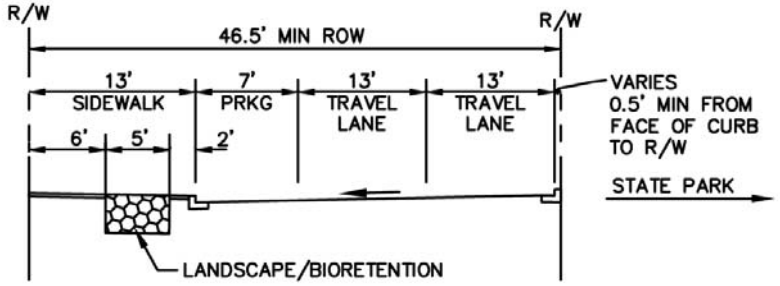
Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street

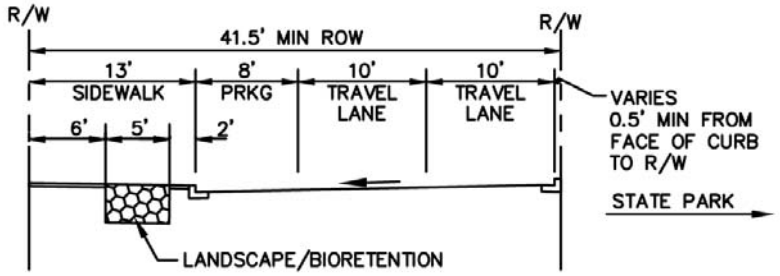
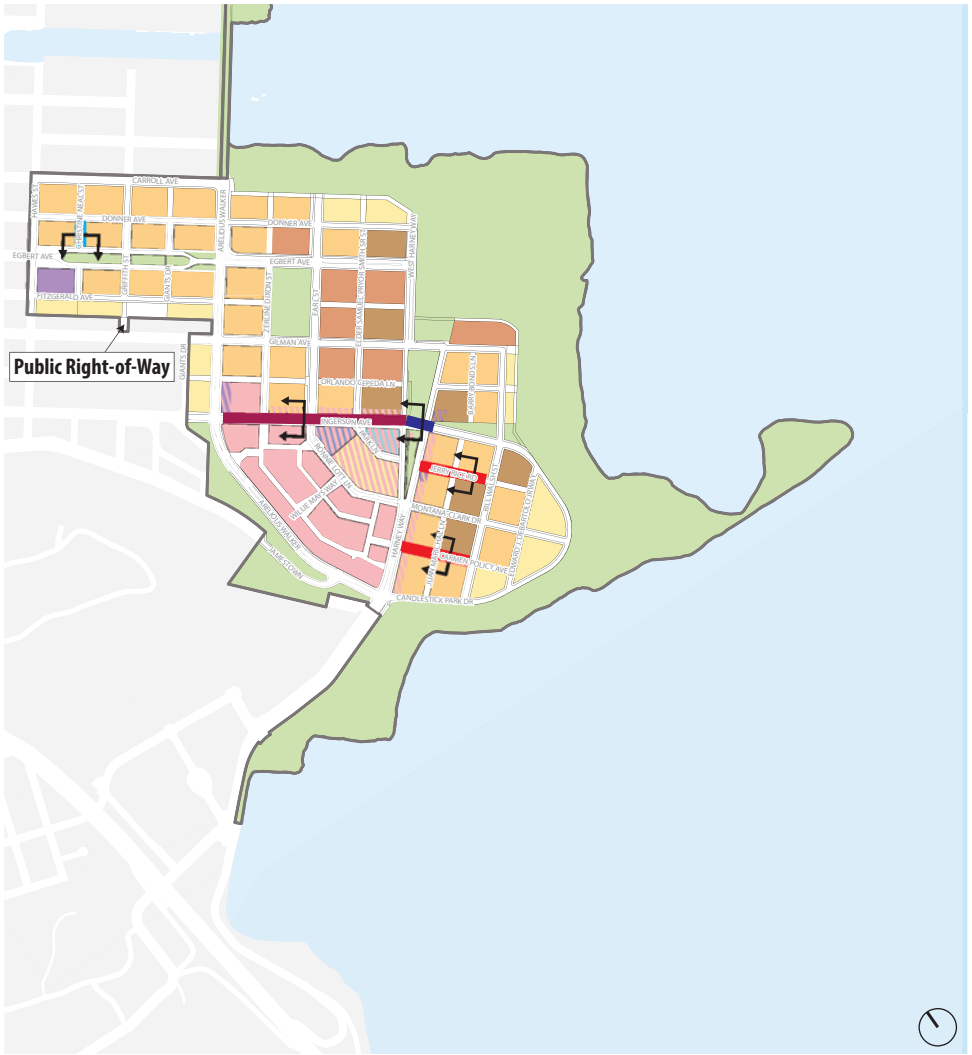


Figure 19

Candlestick Point Development: On-Site Street Network

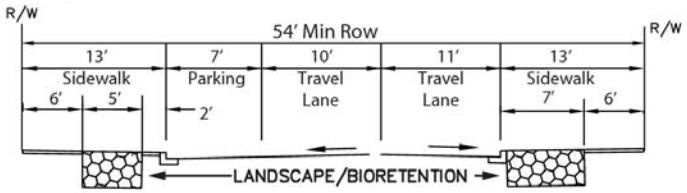


LAND USE

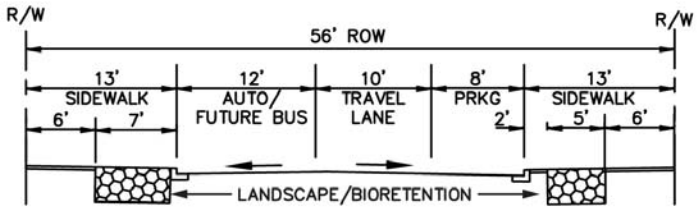
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- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
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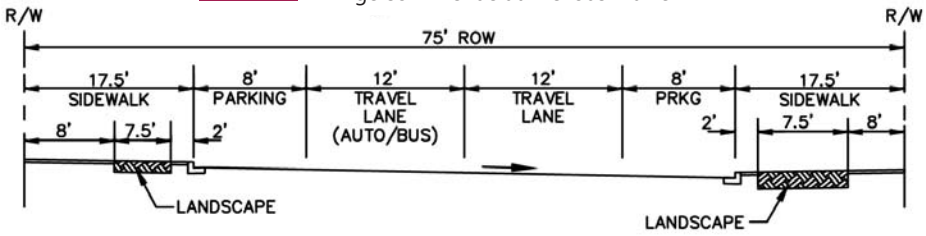
Neighborhood Residential Street



Neighborhood Residential Street



Ingerson Avenue at Arelious Walker



Ingerson Avenue at Harney Way

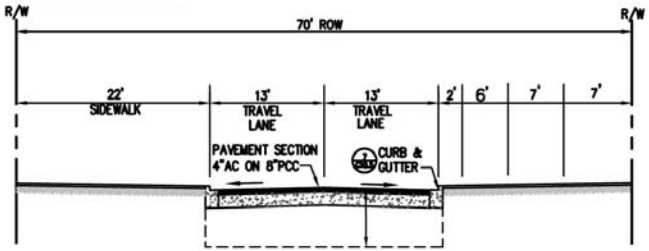
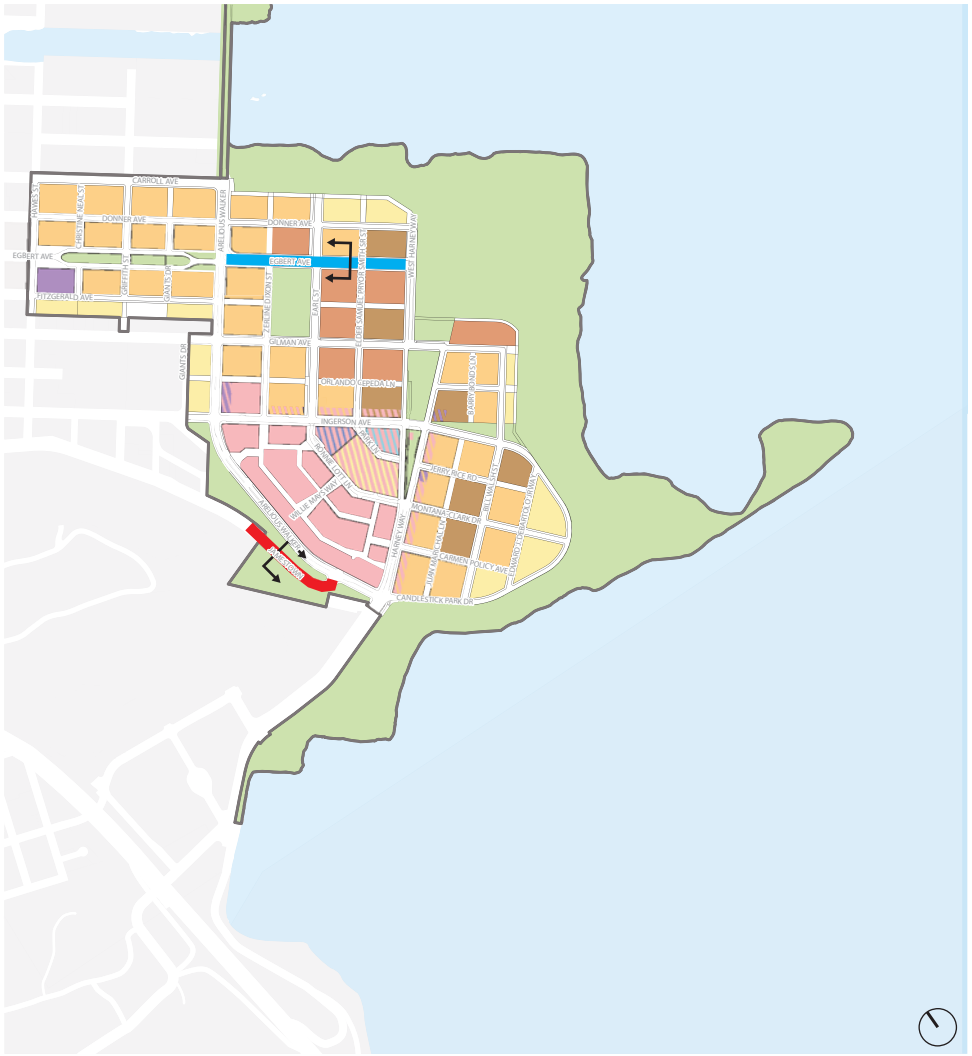
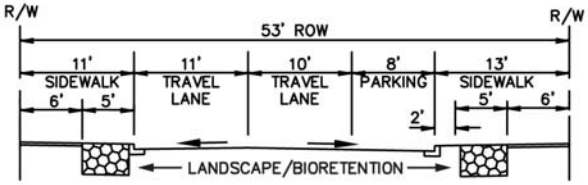


Figure 20

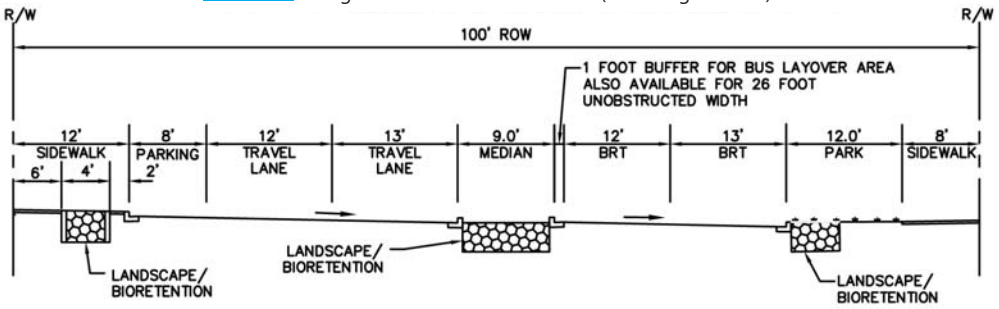
Candlestick Point Development: On-Site Street Network



Jamestown Avenue



Egbert at Arelious Walker East ("Park Edge Street")



LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
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Figure 21

Candlestick Point Development: On-Site Street Network

APPENDIX E

LOS Calculations

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:14:56                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1004 3rd St / Evans Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.586
Loss Time (sec):      12               Average Delay (sec/veh):       274.1
Optimal Cycle:       102               Level Of Service:                  F
******************************************************************************
Street Name:              3rd St                          Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Ovl              Ovl
Min. Green:    12   46    46    12   46    46     6   20    20    12   26    26
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     270 1214   427   789 1215    30    30  642    80   262  479   429
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  270 1214   427   789 1215    30    30  642    80   262  479   429
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   276 1239   436   805 1240    31    31  655    82   267  489   438
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  276 1239   436   805 1240    31    31  655    82   267  489   438
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  276 1239   436   805 1240    31    31  655    82   267  489   438
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.83  0.83  0.86 0.86  0.86  0.90 0.87  0.87  0.90 0.90  0.78
Lanes:       1.00 1.48  0.52  1.00 1.95  0.05  1.00 1.78  0.22  1.00 2.00  1.00
Final Sat.:  1641 2333   821  1641 3190    79  1718 2944   367  1718 3437  1476
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.53  0.53  0.49 0.39  0.39  0.02 0.22  0.22  0.16 0.14  0.30
Crit Moves:       ****        ****                   ****        ****
Green/Cycle: 0.12 0.45  0.57  0.12 0.45  0.51  0.06 0.20  0.31  0.12 0.25  0.37
Volume/Cap:  1.43 1.18  0.93  4.17 0.86  0.76  0.30 1.13  0.71  1.32 0.56  0.80
Uniform Del: 45.0 28.0  20.2  45.0 25.1  20.0  46.0 41.0  30.9  45.0 33.0  28.5
IncremntDel:219.6 87.5  10.5  1439  6.9   3.4   7.6 78.7   4.1 175.3  2.6  11.4
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  264.6  116  30.7  1484 32.0  23.4  53.5  120  35.0 220.3 35.6  39.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 264.6  116  30.7  1484 32.0  23.4  53.5  120  35.0 220.3 35.6  39.9
LOS by Move:    F    F     C     F    C     C     D    F     C     F    D     D
HCM2kAvgQ:     18   42    24    99   18    16     1   17    10    19    8    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

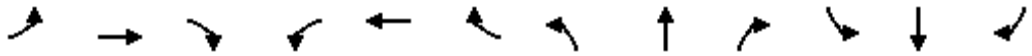
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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1006 3rd St / Palou Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         2.469
Loss Time (sec):      12               Average Delay (sec/veh):       402.7
Optimal Cycle:       102               Level Of Service:                  F
*******************************************************************************
Street Name:              3rd St                          Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted         Permitted         Permitted
Rights:           Include           Include           Include           Include
Min. Green:    15   69    69     0   49    49    21   21    21    21   21    21
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    0  1  0  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40 1618   332   291 1287    73   149  234    40   189  185   116
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40 1618   332   291 1287    73   149  234    40   189  185   116
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    41 1651   339   297 1313    74   152  239    41   193  189   118
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   41 1651   339   297 1313    74   152  239    41   193  189   118
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   41 1651   339   297 1313    74   152  239    41   193  189   118
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.77  0.77  0.42 0.42  0.42  0.21 0.21  0.21  0.53 0.53  0.63
Lanes:       1.00 1.66  0.34  0.35 1.56  0.09  0.35 0.56  0.09  0.51 0.49  1.00
Final Sat.:  1718 2427   498   282 1245    71   138  217    37   512  501  1190
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.68  0.68  1.05 1.05  1.05  1.10 1.10  1.10  0.38 0.38  0.10
Crit Moves:  ****                ****               ****
Green/Cycle: 0.15 0.63  0.63  0.48 0.48  0.48  0.25 0.25  0.25  0.25 0.25  0.25
Volume/Cap:  0.16 1.08  1.08  2.20 2.20  2.20  4.31 4.31  4.31  1.48 1.48  0.39
Uniform Del: 38.0 19.0  19.0  26.5 26.5  26.5  38.0 38.0  38.0  38.0 38.0  31.4
IncremntDel:  1.4 47.8  47.8 542.4  542 542.4  1514 1514  1514 234.9  235   3.7
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   39.4 66.8  66.8 568.9  569 568.9  1552 1552  1552 272.9  273  35.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.4 66.8  66.8 568.9  569 568.9  1552 1552  1552 272.9  273  35.2
LOS by Move:    D    E     E     F    F     F     F    F     F     F    F     D
HCM2kAvgQ:      1   41    41    86   86    86    55   55    55    28   28     3
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

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HCM Signalized Intersection Capacity Analysis
26: Third Street & Gilman Avenue

03/30/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	752	20	49	512	144	39	1503	60	100	898	183
Future Volume (vph)	140	752	20	49	512	144	39	1503	60	100	898	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1843		1770	1863	1583	1770	3519		1770	3449	
Flt Permitted		0.59		0.25	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1091		469	1863	1583	1770	3519		1770	3449	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	143	767	20	50	522	147	40	1534	61	102	916	187
RTOR Reduction (vph)	0	1	0	0	0	34	0	3	0	0	17	0
Lane Group Flow (vph)	0	929	0	50	522	113	40	1592	0	102	1086	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		2			6	3	7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)		49.0		49.0	49.0	55.0	2.4	30.0		6.0	33.6	
Effective Green, g (s)		49.0		49.0	49.0	55.0	2.4	30.0		6.0	33.6	
Actuated g/C Ratio		0.49		0.49	0.49	0.55	0.02	0.30		0.06	0.34	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		534		229	912	949	42	1055		106	1158	
v/s Ratio Prot					0.28	0.01	0.02	c0.45		0.06	c0.31	
v/s Ratio Perm		c0.85		0.11		0.06						
v/c Ratio		1.74		0.22	0.57	0.12	0.95	1.51		0.96	0.94	
Uniform Delay, d1		25.5		14.6	18.1	10.8	48.7	35.0		46.9	32.2	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		340.6		0.5	0.9	0.1	119.7	234.1		74.9	15.2	
Delay (s)		366.1		15.0	18.9	10.9	168.5	269.1		121.8	47.4	
Level of Service		F		B	B	B	F	F		F	D	
Approach Delay (s)		366.1			17.0			266.6			53.7	
Approach LOS		F			B			F			D	

Intersection Summary			
HCM 2000 Control Delay	190.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	141.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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--------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1029 Harney Way / Jamestown Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.594
Loss Time (sec):      12               Average Delay (sec/veh):        21.9
Optimal Cycle:        48               Level Of Service:                  C
********************************************************************************
Street Name:            Harney Way                      Jamestown Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include           Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    0  0  0  1  0    0  1  0  0  2    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     566  363     0     0  473    70    90    0   410     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  566  363     0     0  473    70    90    0   410     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   578  370     0     0  483    71    92    0   418     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  578  370     0     0  483    71    92    0   418     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  578  370     0     0  483    71    92    0   418     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  1.00  1.00 0.96  0.96  0.93 1.00  0.73  1.00 1.00  1.00
Lanes:       2.00 1.00  0.00  0.00 0.87  0.13  1.00 0.00  2.00  0.00 1.00  0.00
Final Sat.:  3432 1862     0     0 1594   236  1773    0  2786     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.20  0.00  0.00 0.30  0.30  0.05 0.00  0.15  0.00 0.00  0.00
Crit Moves:  ****                 ****        ****
Green/Cycle: 0.28 0.79  0.00  0.00 0.51  0.51  0.09 0.00  0.37  0.00 0.00  0.00
Volume/Cap:  0.59 0.25  0.00  0.00 0.59  0.59  0.59 0.00  0.41  0.00 0.00  0.00
Uniform Del: 30.9  2.7   0.0   0.0 17.3  17.3  43.9  0.0  23.3   0.0  0.0   0.0
IncremntDel:  1.0  0.1   0.0   0.0  1.0   1.0   6.1  0.0   0.3   0.0  0.0   0.0
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Delay/Veh:   31.9  2.8   0.0   0.0 18.3  18.3  50.0  0.0  23.6   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.9  2.8   0.0   0.0 18.3  18.3  50.0  0.0  23.6   0.0  0.0   0.0
LOS by Move:    C    A     A     A    B     B     D    A     C     A    A     A
HCM2kAvgQ:      9    3     0     0   12    12     4    0     6     0    0     0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.121
Loss Time (sec):      12               Average Delay (sec/veh):        87.2
Optimal Cycle:       100               Level Of Service:                  F
******************************************************************************
Street Name:             Crisp Rd                         Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  0  1! 0  0    1  0  0  1  0    1  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   90   434    10  180   170    50  793    10   253  331    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20   90   434    10  180   170    50  793    10   253  331    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20   92   443    10  184   173    51  809    10   258  338    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20   92   443    10  184   173    51  809    10   258  338    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20   92   443    10  184   173    51  809    10   258  338    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.84 0.84  0.84  0.92 0.92  0.92  0.90 0.95  0.95  0.96 0.96  0.96
Lanes:       0.06 0.28  1.66  0.03 0.50  0.47  1.00 0.99  0.01  1.27 0.71  0.02
Final Sat.:    97  437  2643    48  871   822  1718 1783    22  2309 1287    39
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21  0.17  0.21 0.21  0.21  0.03 0.45  0.45  0.11 0.26  0.26
Crit Moves:  ****                ****             ****        ****
Green/Cycle: 0.19 0.19  0.19  0.19 0.19  0.19  0.05 0.40  0.40  0.10 0.45  0.45
Volume/Cap:  1.12 1.12  0.89  1.12 1.12  1.12  0.58 1.12  1.12  1.12 0.58  0.58
Uniform Del: 40.6 40.6  39.7  40.6 40.6  40.6  46.4 29.8  29.8  45.0 20.3  20.3
IncremntDel: 78.1 78.1  15.4  86.6 86.6  86.6   9.3 71.9  71.9  76.5  0.8   0.8
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  118.7  119  55.1 127.2  127 127.2  55.7  102 101.6 121.6 21.1  21.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 118.7  119  55.1 127.2  127 127.2  55.7  102 101.6 121.6 21.1  21.1
LOS by Move:    F    F     E     F    F     F     E    F     F     F    C     C
HCM2kAvgQ:     18   18    11    20   20    20     2   36    36    12   11    11
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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HCM Signalized Intersection Capacity Analysis
1: Arelious Walker & Gilman Avenue

03/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	160	322	10	89	149	261	392	10	122	341	345
Future Volume (vph)	251	160	322	10	89	149	261	392	10	122	341	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.83	1.00	0.99		1.00	0.87	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1471	1770	1863	1322	1770	3502		1770	2834	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1471	1770	1863	1322	1770	3502		1770	2834	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	264	168	339	11	94	157	275	413	11	128	359	363
RTOR Reduction (vph)	0	0	148	0	0	134	0	2	0	0	194	0
Lane Group Flow (vph)	264	168	191	11	94	23	275	422	0	128	528	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			30			10			10
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	18.8	28.8	53.6	3.8	13.8	13.8	24.8	30.3		14.1	19.6	
Effective Green, g (s)	18.8	28.8	53.6	3.8	13.8	13.8	24.8	30.3		14.1	19.6	
Actuated g/C Ratio	0.20	0.30	0.56	0.04	0.15	0.15	0.26	0.32		0.15	0.21	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	350	564	829	70	270	192	462	1116		262	584	
v/s Ratio Prot	c0.15	0.09	0.06	0.01	c0.05		c0.16	0.12		0.07	c0.19	
v/s Ratio Perm			0.07			0.02						
v/c Ratio	0.75	0.30	0.23	0.16	0.35	0.12	0.60	0.38		0.49	0.90	
Uniform Delay, d1	35.9	25.4	10.4	44.1	36.6	35.3	30.7	25.1		37.1	36.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.9	0.3	0.1	1.1	0.8	0.3	5.6	0.2		1.4	17.3	
Delay (s)	44.8	25.7	10.5	45.1	37.3	35.6	36.3	25.3		38.6	54.1	
Level of Service	D	C	B	D	D	D	D	C		D	D	
Approach Delay (s)		25.6			36.6			29.6			51.7	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1046 Innes Ave/Fitch St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.487
Loss Time (sec):       8               Average Delay (sec/veh):         5.0
Optimal Cycle:        31               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    39    0    60    30 1144     0     0 1046    42
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    39    0    60    30 1144     0     0 1046    42
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    40    0    61    31 1167     0     0 1067    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    40    0    61    31 1167     0     0 1067    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    40    0    61    31 1167     0     0 1067    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.88 1.00  0.88  0.81 0.81  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.39 0.00  0.61  0.05 1.95  0.00  0.00 1.92  0.08
Final Sat.:     0    0     0   661    0  1016    79 3007     0     0 3284   132
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.06  0.39 0.39  0.00  0.00 0.32  0.32
Crit Moves:                   ****                  ****
Green/Cycle: 0.00 0.00  0.00  0.12 0.00  0.12  0.80 0.80  0.00  0.00 0.80  0.80
Volume/Cap:  0.00 0.00  0.00  0.49 0.00  0.49  0.49 0.49  0.00  0.00 0.41  0.41
Uniform Del:  0.0  0.0   0.0  40.9  0.0  40.9   3.4  3.4   0.0   0.0  3.1   3.1
IncremntDel:  0.0  0.0   0.0   1.8  0.0   1.8   0.2  0.2   0.0   0.0  0.1   0.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  42.7  0.0  42.7   3.5  3.5   0.0   0.0  3.2   3.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  42.7  0.0  42.7   3.5  3.5   0.0   0.0  3.2   3.2
LOS by Move:    A    A     A     D    A     D     A    A     A     A    A     A
HCM2kAvgQ:      0    0     0     4    0     4     7    7     0     0    6     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #1047 Innes Ave/Earl St
******************************************************************************
Average Delay (sec/veh):      1.3       Worst Case Level Of Service: C[ 24.2]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    80    40 1103     0     0  888    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    80    40 1103     0     0  888    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    82    41 1126     0     0  906    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    20    0    82    41 1126     0     0  906    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8  6.5   6.9   4.2 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.3 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1556 2118   458   916 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   104   50   550   722 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    99   47   550   722 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.21 0.00  0.15  0.06 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  288 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  1.5 xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 24.2 xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     B    *     *     *    *     *
ApproachDel:    xxxxxx             24.2           xxxxxx           xxxxxx
ApproachLOS:         *                C                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1048 Middle Point Rd / Evans Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.153
Loss Time (sec):      10               Average Delay (sec/veh):        64.2
Optimal Cycle:       100               Level Of Service:                  E
******************************************************************************
Street Name:         Middle Point Rd                     Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    1  0  0  1  0    0  1  1  0  1    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     130  130    10   527  190    30    80 1497   160    20  964   309
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  130  130    10   527  190    30    80 1497   160    20  964   309
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   133  133    10   538  194    31    82 1528   163    20  984   315
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  133    10   538  194    31    82 1528   163    20  984   315
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  133    10   538  194    31    82 1528   163    20  984   315
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.64 0.64  0.64  0.68 0.96  0.96  0.68 0.68  0.81  0.74 0.74  0.81
Lanes:       0.48 0.48  0.04  1.00 0.86  0.14  0.10 1.90  1.00  0.04 1.96  1.00
Final Sat.:   589  589    45  1290 1576   249   131 2460  1537    57 2754  1537
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.23  0.23  0.42 0.12  0.12  0.62 0.62  0.11  0.36 0.36  0.21
Crit Moves:                   ****                  ****
Green/Cycle: 0.36 0.36  0.36  0.36 0.36  0.36  0.54 0.54  0.54  0.54 0.54  0.54
Volume/Cap:  0.62 0.62  0.62  1.15 0.34  0.34  1.15 1.15  0.20  0.66 0.66  0.38
Uniform Del: 26.3 26.3  26.3  31.9 23.2  23.2  23.1 23.1  11.9  16.6 16.6  13.4
IncremntDel:  2.8  2.8   2.8  90.9  0.3   0.3  77.5 77.5   0.1   1.1  1.1   0.3
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   29.1 29.1  29.1 122.8 23.6  23.6 100.6  101  12.0  17.7 17.7  13.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  29.1 29.1  29.1 122.8 23.6  23.6 100.6  101  12.0  17.7 17.7  13.7
LOS by Move:    C    C     C     F    C     C     F    F     B     B    B     B
HCM2kAvgQ:      8    8     8    29    5     5    43   43     3    12   12     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1054 Ingalls St. / Palou Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.773
Loss Time (sec):       8               Average Delay (sec/veh):        21.7
Optimal Cycle:        59               Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30  177    97    68  150    60    80  697    20    56  380    54
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30  177    97    68  150    60    80  697    20    56  380    54
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    31  181    99    69  153    61    82  711    20    57  388    55
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31  181    99    69  153    61    82  711    20    57  388    55
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31  181    99    69  153    61    82  711    20    57  388    55
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.89 0.89  0.89  0.70 0.70  0.70  0.86 0.86  0.86  0.80 0.80  0.80
Lanes:       0.10 0.58  0.32  0.24 0.54  0.22  0.10 0.87  0.03  0.11 0.78  0.11
Final Sat.:   166  981   538   326  720   288   164 1427    41   174 1180   168
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.18  0.18  0.21 0.21  0.21  0.50 0.50  0.50  0.33 0.33  0.33
Crit Moves:                     ****             ****
Green/Cycle: 0.28 0.28  0.28  0.28 0.28  0.28  0.64 0.64  0.64  0.64 0.64  0.64
Volume/Cap:  0.67 0.67  0.67  0.77 0.77  0.77  0.77 0.77  0.77  0.51 0.51  0.51
Uniform Del: 32.2 32.2  32.2  33.4 33.4  33.4  12.6 12.6  12.6   9.4  9.4   9.4
IncremntDel:  3.7  3.7   3.7   9.8  9.8   9.8   3.6  3.6   3.6   0.4  0.4   0.4
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   35.9 35.9  35.9  43.1 43.1  43.1  16.2 16.2  16.2   9.8  9.8   9.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  35.9 35.9  35.9  43.1 43.1  43.1  16.2 16.2  16.2   9.8  9.8   9.8
LOS by Move:    D    D     D     D    D     D     B    B     B     A    A     A
HCM2kAvgQ:      9    9     9    10   10    10    18   18    18     8    8     8
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1055 Keith St. / Palou Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.583
Loss Time (sec):       8               Average Delay (sec/veh):         8.9
Optimal Cycle:        37               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   50    10    20   60    20    29  767    20    10  490    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   50    10    20   60    20    29  767    20    10  490    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    31   51    10    20   61    20    30  783    20    10  500    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31   51    10    20   61    20    30  783    20    10  500    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31   51    10    20   61    20    30  783    20    10  500    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.78 0.78  0.78  0.88 0.88  0.88  0.92 0.92  0.92  0.93 0.93  0.93
Lanes:       0.33 0.56  0.11  0.20 0.60  0.20  0.04 0.94  0.02  0.02 0.94  0.04
Final Sat.:   494  823   165   336 1007   336    62 1649    43    34 1670    68
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.06  0.06  0.06 0.06  0.06  0.47 0.47  0.47  0.30 0.30  0.30
Crit Moves:       ****                          ****
Green/Cycle: 0.11 0.11  0.11  0.11 0.11  0.11  0.81 0.81  0.81  0.81 0.81  0.81
Volume/Cap:  0.58 0.58  0.58  0.57 0.57  0.57  0.58 0.58  0.58  0.37 0.37  0.37
Uniform Del: 42.6 42.6  42.6  42.5 42.5  42.5   3.3  3.3   3.3   2.5  2.5   2.5
IncremntDel:  5.5  5.5   5.5   4.4  4.4   4.4   0.6  0.6   0.6   0.2  0.2   0.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   48.1 48.1  48.1  47.0 47.0  47.0   3.9  3.9   3.9   2.6  2.6   2.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  48.1 48.1  48.1  47.0 47.0  47.0   3.9  3.9   3.9   2.6  2.6   2.6
LOS by Move:    D    D     D     D    D     D     A    A     A     A    A     A
HCM2kAvgQ:      4    4     4     4    4     4     8    8     8     4    4     4
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1004 3rd St / Evans Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.647
Loss Time (sec):      12               Average Delay (sec/veh):       250.5
Optimal Cycle:       102               Level Of Service:                  F
******************************************************************************
Street Name:              3rd St                          Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Ovl              Ovl
Min. Green:    12   46    46    12   46    46     6   20    20    12   26    26
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     260 1472   309   599 1541    20    40  459   250   480  621   841
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  260 1472   309   599 1541    20    40  459   250   480  621   841
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   265 1502   315   611 1572    20    41  468   255   490  634   858
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  265 1502   315   611 1572    20    41  468   255   490  634   858
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  265 1502   315   611 1572    20    41  468   255   490  634   858
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.84  0.84  0.86 0.86  0.86  0.90 0.84  0.84  0.90 0.90  0.78
Lanes:       1.00 1.65  0.35  1.00 1.97  0.03  1.00 1.29  0.71  1.00 2.00  1.00
Final Sat.:  1641 2642   555  1641 3233    42  1718 2065  1125  1718 3437  1476
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.57  0.57  0.37 0.49  0.49  0.02 0.23  0.23  0.29 0.18  0.58
Crit Moves:       ****        ****                   ****        ****
Green/Cycle: 0.14 0.45  0.57  0.12 0.43  0.49  0.06 0.20  0.34  0.12 0.25  0.37
Volume/Cap:  1.14 1.26  1.00  3.17 1.14  1.00  0.40 1.16  0.67  2.42 0.72  1.56
Uniform Del: 43.8 28.0  22.0  45.0 29.2  26.2  46.3 41.0  28.9  45.0 34.7  32.0
IncremntDel:101.8  123  21.1 988.4 72.0  23.0  11.6 87.7   3.3 655.1  5.2 261.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  145.6  151  43.1  1033  101  49.2  57.8  129  32.2 700.1 39.9 293.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 145.6  151  43.1  1033  101  49.2  57.8  129  32.2 700.1 39.9 293.1
LOS by Move:    F    F     D     F    F     D     E    F     C     F    D     F
HCM2kAvgQ:     12   52    31    70   37    27     1   18    10    51   11    65
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

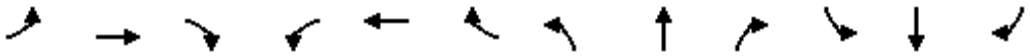
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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1006 3rd St / Palou Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         6.647
Loss Time (sec):      12               Average Delay (sec/veh):      1307.9
Optimal Cycle:       102               Level Of Service:                  F
******************************************************************************
Street Name:              3rd St                          Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted         Permitted         Permitted
Rights:           Include           Include           Include           Include
Min. Green:    15   69    69     0   49    49    21   21    21    21   21    21
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    0  1  0  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     110 1593   278   135 2052   160    73  335   120   300  421   240
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  110 1593   278   135 2052   160    73  335   120   300  421   240
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   112 1626   284   138 2094   163    74  342   122   306  430   245
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  112 1626   284   138 2094   163    74  342   122   306  430   245
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  112 1626   284   138 2094   163    74  342   122   306  430   245
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.77  0.77  0.39 0.39  0.39  0.07 0.07  0.07  0.33 0.33  0.63
Lanes:       1.00 1.70  0.30  0.11 1.75  0.14  0.14 0.63  0.23  0.42 0.58  1.00
Final Sat.:  1718 2498   436    86 1304   102    18   82    29   257  361  1190
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.65  0.65  1.61 1.61  1.61  4.19 4.19  4.19  1.19 1.19  0.21
Crit Moves:  ****                 ****            ****
Green/Cycle: 0.15 0.63  0.63  0.48 0.48  0.48  0.25 0.25  0.25  0.25 0.25  0.25
Volume/Cap:  0.44 1.04  1.04  3.34 3.34  3.34 16.4516.45 16.45  4.67 4.67  0.81
Uniform Del: 39.7 19.0  19.0  26.5 26.5  26.5  38.0 38.0  38.0  38.0 38.0  35.6
IncremntDel:  5.6 31.2  31.2  1058 1058  1058  7012 7012  7012  1665 1665  20.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   45.3 50.2  50.2  1084 1084  1084  7050 7050  7050  1703 1703  55.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  45.3 50.2  50.2  1084 1084  1084  7050 7050  7050  1703 1703  55.8
LOS by Move:    D    D     D     F    F     F     F    F     F     F    F     E
HCM2kAvgQ:      3   35    35   146  146   146    80   80    80    93   93     8
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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HCM Signalized Intersection Capacity Analysis
26: Third Street & Gilman Avenue

03/30/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	959	130	60	652	221	81	1312	60	266	1810	230
Future Volume (vph)	167	959	130	60	652	221	81	1312	60	266	1810	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1825		1770	1863	1583	1770	3516		1770	3479	
Flt Permitted		0.38		0.17	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		703		324	1863	1583	1770	3516		1770	3479	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	170	979	133	61	665	226	83	1339	61	271	1847	235
RTOR Reduction (vph)	0	4	0	0	0	34	0	4	0	0	10	0
Lane Group Flow (vph)	0	1278	0	61	665	192	83	1397	0	271	2072	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		2			6	3	7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)		48.0		48.0	48.0	55.0	4.0	30.0		7.0	33.0	
Effective Green, g (s)		48.0		48.0	48.0	55.0	4.0	30.0		7.0	33.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.55	0.04	0.30		0.07	0.33	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		337		155	894	949	70	1054		123	1148	
v/s Ratio Prot					0.36	0.01	0.05	c0.40		0.15	c0.60	
v/s Ratio Perm		c1.82		0.19		0.11						
v/c Ratio		3.79		0.39	0.74	0.20	1.19	1.32		2.20	1.80	
Uniform Delay, d1		26.0		16.7	21.0	11.4	48.0	35.0		46.5	33.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1263.5		1.6	3.4	0.1	166.1	152.9		567.1	365.7	
Delay (s)		1289.5		18.3	24.4	11.5	214.1	187.9		613.6	399.2	
Level of Service		F		B	C	B	F	F		F	F	
Approach Delay (s)		1289.5			21.0			189.4			423.9	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	486.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	180.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1029 Harney Way / Jamestown Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.944
Loss Time (sec):      12               Average Delay (sec/veh):        36.1
Optimal Cycle:       100               Level Of Service:                  D
******************************************************************************
Street Name:            Harney Way                      Jamestown Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include           Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    0  0  0  1  0    0  1  0  0  2    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     492  956     0     0  972    60    90    0   712     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  492  956     0     0  972    60    90    0   712     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   502  976     0     0  992    61    92    0   727     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  502  976     0     0  992    61    92    0   727     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  502  976     0     0  992    61    92    0   727     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  1.00  1.00 0.97  0.97  0.93 1.00  0.73  1.00 1.00  1.00
Lanes:       2.00 1.00  0.00  0.00 0.94  0.06  1.00 0.00  2.00  0.00 1.00  0.00
Final Sat.:  3432 1862     0     0 1740   107  1773    0  2786     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.52  0.00  0.00 0.57  0.57  0.05 0.00  0.26  0.00 0.00  0.00
Crit Moves:  ****                 ****                    ****
Green/Cycle: 0.15 0.76  0.00  0.00 0.60  0.60  0.12 0.00  0.28  0.00 0.00  0.00
Volume/Cap:  0.94 0.69  0.00  0.00 0.94  0.94  0.43 0.00  0.94  0.00 0.00  0.00
Uniform Del: 41.8  6.1   0.0   0.0 18.3  18.3  40.7  0.0  35.4   0.0  0.0   0.0
IncremntDel: 25.8  1.5   0.0   0.0 15.4  15.4   1.4  0.0  20.1   0.0  0.0   0.0
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Delay/Veh:   67.6  7.6   0.0   0.0 33.7  33.7  42.1  0.0  55.5   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  67.6  7.6   0.0   0.0 33.7  33.7  42.1  0.0  55.5   0.0  0.0   0.0
LOS by Move:    E    A     A     A    C     C     D    A     E     A    A     A
HCM2kAvgQ:     12   16     0     0   35    35     3    0    17     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

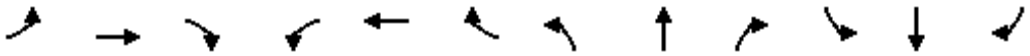
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--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.207
Loss Time (sec):      12               Average Delay (sec/veh):        98.6
Optimal Cycle:       100               Level Of Service:                  F
********************************************************************************
Street Name:             Crisp Rd                        Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  0  1! 0  0    1  0  0  1  0    1  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  160   326    10  170   110   150  466    10   600  732    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  160   326    10  170   110   150  466    10   600  732    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20  163   333    10  173   112   153  476    10   612  747    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  163   333    10  173   112   153  476    10   612  747    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20  163   333    10  173   112   153  476    10   612  747    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.86  0.86  0.93 0.93  0.93  0.90 0.95  0.95  0.96 0.96  0.96
Lanes:       0.06 0.47  1.47  0.03 0.59  0.38  1.00 0.98  0.02  1.28 0.70  0.02
Final Sat.:    95  760  2405    61 1034   669  1718 1765    38  2336 1265    35
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21  0.14  0.17 0.17  0.17  0.09 0.27  0.27  0.26 0.59  0.59
Crit Moves:  ****                ****        ****                    ****
Green/Cycle: 0.18 0.18  0.18  0.14 0.14  0.14  0.07 0.29  0.29  0.28 0.49  0.49
Volume/Cap:  1.21 1.21  0.78  1.21 1.21  1.21  1.21 0.94  0.94  0.94 1.21  1.21
Uniform Del: 41.1 41.1  39.2  43.0 43.0  43.0  46.3 34.9  34.9  35.3 25.5  25.5
IncremntDel:113.4  113   5.8 125.1  125 125.1 146.0 26.2  26.2  12.6  102 101.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  154.5  154  45.0 168.1  168 168.1 192.3 61.2  61.2  47.9  127 127.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 154.5  154  45.0 168.1  168 168.1 192.3 61.2  61.2  47.9  127 127.2
LOS by Move:    F    F     D     F    F     F     F    E     E     D    F     F
HCM2kAvgQ:     21   21     9    18   18    18     8   16    16    19   58    58
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

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HCM Signalized Intersection Capacity Analysis
1: Arelious Walker & Gilman Avenue

03/30/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	437	421	10	230	183	332	514	10	220	718	201
Future Volume (vph)	225	437	421	10	230	183	332	514	10	220	718	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.81	1.00	0.99		1.00	0.93	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1430	1770	1863	1285	1770	3506		1770	3181	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1430	1770	1863	1285	1770	3506		1770	3181	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	460	443	11	242	193	349	541	11	232	756	212
RTOR Reduction (vph)	0	0	158	0	0	160	0	2	0	0	22	0
Lane Group Flow (vph)	237	460	285	11	242	33	349	550	0	232	946	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			30			10			10
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	19.4	35.6	59.8	4.1	20.3	20.3	24.2	23.6		38.7	38.1	
Effective Green, g (s)	19.4	35.6	59.8	4.1	20.3	20.3	24.2	23.6		38.7	38.1	
Actuated g/C Ratio	0.16	0.30	0.50	0.03	0.17	0.17	0.20	0.20		0.32	0.32	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	552	766	60	315	217	356	689		570	1009	
v/s Ratio Prot	0.13	c0.25	0.07	0.01	c0.13		c0.20	0.16		0.13	c0.30	
v/s Ratio Perm			0.12			0.03						
v/c Ratio	0.83	0.83	0.37	0.18	0.77	0.15	0.98	0.80		0.41	0.94	
Uniform Delay, d1	48.7	39.4	18.5	56.3	47.6	42.5	47.7	45.9		31.7	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.6	10.4	0.3	1.5	10.7	0.3	43.0	6.4		0.5	15.4	
Delay (s)	66.3	49.8	18.8	57.8	58.3	42.8	90.7	52.4		32.2	55.2	
Level of Service	E	D	B	E	E	D	F	D		C	E	
Approach Delay (s)		41.2			51.6			67.2			50.7	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1046 Innes Ave/Fitch St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.608
Loss Time (sec):       8               Average Delay (sec/veh):         5.6
Optimal Cycle:        39               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    52    0    60    80 1086     0     0 1403    60
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    52    0    60    80 1086     0     0 1403    60
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    53    0    61    82 1108     0     0 1432    61
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    53    0    61    82 1108     0     0 1432    61
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    53    0    61    82 1108     0     0 1432    61
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.89 1.00  0.89  0.64 0.64  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.46 0.00  0.54  0.14 1.86  0.00  0.00 1.92  0.08
Final Sat.:     0    0     0   784    0   904   166 2253     0     0 3276   140
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.07 0.00  0.07  0.49 0.49  0.00  0.00 0.44  0.44
Crit Moves:                   ****                  ****
Green/Cycle: 0.00 0.00  0.00  0.11 0.00  0.11  0.81 0.81  0.00  0.00 0.81  0.81
Volume/Cap:  0.00 0.00  0.00  0.61 0.00  0.61  0.61 0.61  0.00  0.00 0.54  0.54
Uniform Del:  0.0  0.0   0.0  42.4  0.0  42.4   3.6  3.6   0.0   0.0  3.3   3.3
IncremntDel:  0.0  0.0   0.0   5.7  0.0   5.7   0.6  0.6   0.0   0.0  0.2   0.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  48.0  0.0  48.0   4.2  4.2   0.0   0.0  3.5   3.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  48.0  0.0  48.0   4.2  4.2   0.0   0.0  3.5   3.5
LOS by Move:    A    A     A     D    A     D     A    A     A     A    A     A
HCM2kAvgQ:      0    0     0     4    0     4     8    8     0     0    9     9
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #1047 Innes Ave/Earl St
******************************************************************************
Average Delay (sec/veh):      3.7       Worst Case Level Of Service: F[ 76.7]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    70   130  909     0     0 1253    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    70   130  909     0     0 1253    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    71   133  928     0     0 1279    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    20    0    71   133  928     0     0 1279    20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8  6.5   6.9   4.2 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.3 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2018 2482   649  1299 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    51   29   412   513 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    40   21   412   513 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.51 0.00  0.17  0.26 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  14.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  134 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  3.8 xxxxx   1.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 76.7 xxxxx  14.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     B    *     *     *    *     *
ApproachDel:    xxxxxx             76.7           xxxxxx           xxxxxx
ApproachLOS:         *               F                *                *
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1048 Middle Point Rd / Evans Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.959
Loss Time (sec):      10               Average Delay (sec/veh):        30.3
Optimal Cycle:       100               Level Of Service:                  C
******************************************************************************
Street Name:         Middle Point Rd                     Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    1  0  0  1  0    0  1  1  0  1    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     130  140    10   378  260    80    30  990   240    20 1662   581
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  130  140    10   378  260    80    30  990   240    20 1662   581
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   133  143    10   386  265    82    31 1010   245    20 1696   593
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  143    10   386  265    82    31 1010   245    20 1696   593
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  143    10   386  265    82    31 1010   245    20 1696   593
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.46 0.46  0.46  0.69 0.95  0.95  0.66 0.66  0.81  0.84 0.84  0.81
Lanes:       0.46 0.50  0.04  1.00 0.76  0.24  0.06 1.94  1.00  0.02 1.98  1.00
Final Sat.:   405  436    31  1316 1374   423    74 2442  1537    38 3168  1537
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.33 0.33  0.33  0.29 0.19  0.19  0.41 0.41  0.16  0.54 0.54  0.39
Crit Moves:       ****                                          ****
Green/Cycle: 0.34 0.34  0.34  0.34 0.34  0.34  0.56 0.56  0.56  0.56 0.56  0.56
Volume/Cap:  0.96 0.96  0.96  0.86 0.57  0.57  0.74 0.74  0.29  0.96 0.96  0.69
Uniform Del: 32.2 32.2  32.2  30.7 26.9  26.9  16.6 16.6  11.6  21.0 21.0  15.9
IncremntDel: 40.9 40.9  40.9  15.1  1.2   1.2   2.1  2.1   0.2  12.9 12.9   2.4
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   73.1 73.1  73.1  45.7 28.1  28.1  18.8 18.8  11.8  33.8 33.8  18.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  73.1 73.1  73.1  45.7 28.1  28.1  18.8 18.8  11.8  33.8 33.8  18.3
LOS by Move:    E    E     E     D    C     C     B    B     B     C    C     B
HCM2kAvgQ:     13   13    13    14    9     9    14   14     4    32   32    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1054 Ingalls St. / Palou Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.962
Loss Time (sec):       8               Average Delay (sec/veh):        36.7
Optimal Cycle:       100               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  221    69    77  228   100    80  498    30   110  712    70
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  221    69    77  228   100    80  498    30   110  712    70
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20  226    70    79  233   102    82  508    31   112  727    71
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  226    70    79  233   102    82  508    31   112  727    71
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20  226    70    79  233   102    82  508    31   112  727    71
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.91 0.91  0.91  0.74 0.74  0.74  0.76 0.76  0.76  0.81 0.81  0.81
Lanes:       0.06 0.72  0.22  0.19 0.56  0.25  0.13 0.82  0.05  0.12 0.80  0.08
Final Sat.:   112 1236   386   269  796   349   190 1183    71   189 1225   120
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.18  0.18  0.29 0.29  0.29  0.43 0.43  0.43  0.59 0.59  0.59
Crit Moves:                     ****                                  ****
Green/Cycle: 0.30 0.30  0.30  0.30 0.30  0.30  0.62 0.62  0.62  0.62 0.62  0.62
Volume/Cap:  0.60 0.60  0.60  0.96 0.96  0.96  0.70 0.70  0.70  0.96 0.96  0.96
Uniform Del: 29.6 29.6  29.6  34.2 34.2  34.2  12.9 12.9  12.9  18.1 18.1  18.1
IncremntDel:  1.9  1.9   1.9  33.7 33.7  33.7   2.5  2.5   2.5  20.6 20.6  20.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   31.6 31.6  31.6  67.9 67.9  67.9  15.4 15.4  15.4  38.7 38.7  38.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.6 31.6  31.6  67.9 67.9  67.9  15.4 15.4  15.4  38.7 38.7  38.7
LOS by Move:    C    C     C     E    E     E     B    B     B     D    D     D
HCM2kAvgQ:      9    9     9    18   18    18    13   13    13    25   25    25
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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MITIG8 - Proposed Project-VFri Mar 30, 2018 08:25:53                 Page 1-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1055 Keith St. / Palou Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.588
Loss Time (sec):       8               Average Delay (sec/veh):         7.6
Optimal Cycle:        37               Level Of Service:                 A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   40    10    10   50    20    59  588    30    10  822    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   40    10    10   50    20    59  588    30    10  822    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    31   41    10    10   51    20    60  600    31    10  839    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31   41    10    10   51    20    60  600    31    10  839    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31   41    10    10   51    20    60  600    31    10  839    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.78 0.78  0.78  0.92 0.92  0.92  0.83 0.83  0.83  0.94 0.94  0.94
Lanes:       0.37 0.51  0.12  0.12 0.63  0.25  0.09 0.87  0.04  0.01 0.97  0.02
Final Sat.:   553  738   184   217 1087   435   137 1368    70    21 1726    42
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.06  0.06  0.05 0.05  0.05  0.44 0.44  0.44  0.49 0.49  0.49
Crit Moves:       ****                                           ****
Green/Cycle: 0.09 0.09  0.09  0.09 0.09  0.09  0.83 0.83  0.83  0.83 0.83  0.83
Volume/Cap:  0.59 0.59  0.59  0.50 0.50  0.50  0.53 0.53  0.53  0.59 0.59  0.59
Uniform Del: 43.4 43.4  43.4  43.1 43.1  43.1   2.7  2.7   2.7   2.9  2.9   2.9
IncremntDel:  6.5  6.5   6.5   2.4  2.4   2.4   0.4  0.4   0.4   0.6  0.6   0.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   49.9 49.9  49.9  45.4 45.4  45.4   3.1  3.1   3.1   3.6  3.6   3.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  49.9 49.9  49.9  45.4 45.4  45.4   3.1  3.1   3.1   3.6  3.6   3.6
LOS by Move:    D    D     D     D    D     D     A    A     A     A    A     A
HCM2kAvgQ:      3    3     3     3    3     3     6    6     6     8    8     8
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

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MITIG8 - Proposed Project-VWed Mar 28, 2018 10:40:14                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.857
Loss Time (sec):      12               Average Delay (sec/veh):        33.1
Optimal Cycle:        93               Level Of Service:                  C
******************************************************************************
Street Name:             Crisp Rd                        Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  1  0  0  1    1  0  0  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   90   437    10  180   170    50  796    10   260  340    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20   90   437    10  180   170    50  796    10   260  340    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20   92   446    10  184   173    51  812    10   265  347    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20   92   446    10  184   173    51  812    10   265  347    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20   92   446    10  184   173    51  812    10   265  347    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.82 0.82  0.79  0.97 0.97  0.83  0.90 0.95  0.95  0.90 0.98  0.98
Lanes:       0.06 0.27  1.67  0.05 0.95  1.00  1.00 0.99  0.01  2.00 0.97  0.03
Final Sat.:    92  416  2504    97 1741  1583  1718 1783    22  3432 1802    53
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.22 0.22  0.18  0.11 0.11  0.11  0.03 0.46  0.46  0.08 0.19  0.19
Crit Moves:       ****                             ****        ****
Green/Cycle: 0.26 0.26  0.26  0.26 0.26  0.26  0.08 0.53  0.53  0.09 0.54  0.54
Volume/Cap:  0.86 0.86  0.69  0.41 0.41  0.43  0.36 0.86  0.86  0.86 0.36  0.36
Uniform Del: 35.3 35.3  33.5  30.8 30.8  30.9  43.3 20.1  20.1  44.8 13.2  13.2
IncremntDel: 10.9 10.9   2.6   0.6  0.6   0.7   1.5  7.7   7.7  20.3  0.2   0.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   46.2 46.2  36.1  31.4 31.4  31.6  44.9 27.8  27.8  65.2 13.4  13.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  46.2 46.2  36.1  31.4 31.4  31.6  44.9 27.8  27.8  65.2 13.4  13.4
LOS by Move:    D    D     D     C    C     C     D    C     C     E    B     B
HCM2kAvgQ:     13   13     9     5    5     5     1   22    22     7    6     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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MITIG8 - Proposed Project-VWed Mar 28, 2018 10:45:09                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1047 Innes Ave/Earl St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.745
Loss Time (sec):      10               Average Delay (sec/veh):        17.6
Optimal Cycle:        61               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    80    40 1107     0     0  888    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    80    40 1107     0     0  888    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    82    41 1130     0     0  906    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    20    0    82    41 1130     0     0  906    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    20    0    82    41 1130     0     0  906    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.87 1.00  0.87  0.90 0.90  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.20 0.00  0.80  0.07 1.93  0.00  0.00 1.98  0.02
Final Sat.:     0    0     0   329    0  1315   120 3310     0     0 3392    38
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.06  0.34 0.34  0.00  0.00 0.27  0.27
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.08 0.00  0.08  0.46 0.82  0.00  0.00 0.36  0.36
Volume/Cap:  0.00 0.00  0.00  0.74 0.00  0.74  0.74 0.42  0.00  0.00 0.74  0.74
Uniform Del:  0.0  0.0   0.0  44.8  0.0  44.8  22.3  2.6   0.0   0.0 28.1  28.1
IncremntDel:  0.0  0.0   0.0  19.7  0.0  19.7   2.0  0.1   0.0   0.0  2.5   2.5
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  64.5  0.0  64.5  24.3  2.7   0.0   0.0 30.6  30.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  64.5  0.0  64.5  24.3  2.7   0.0   0.0 30.6  30.6
LOS by Move:    A    A     A     E    A     E     C    A     A     A    C     C
HCM2kAvgQ:      0    0     0     5    0     5    17    5     0     0   14    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.852
Loss Time (sec):      12               Average Delay (sec/veh):        36.0
Optimal Cycle:        91               Level Of Service:                  D
********************************************************************************
Street Name:             Crisp Rd                        Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  1  0  0  1    1  0  0  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  160   345    10  170   110   150  496    10   624  764    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  160   345    10  170   110   150  496    10   624  764    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20  163   352    10  173   112   153  506    10   637  780    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  163   352    10  173   112   153  506    10   637  780    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20  163   352    10  173   112   153  506    10   637  780    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.84 0.84  0.81  0.96 0.96  0.83  0.90 0.95  0.95  0.90 0.98  0.98
Lanes:       0.06 0.44  1.50  0.06 0.94  1.00  1.00 0.98  0.02  2.00 0.97  0.03
Final Sat.:    89  712  2299   102 1729  1583  1718 1768    36  3432 1807    47
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.23  0.15  0.10 0.10  0.07  0.09 0.29  0.29  0.19 0.43  0.43
Crit Moves:       ****                          ****                    ****
Green/Cycle: 0.27 0.27  0.27  0.27 0.27  0.27  0.10 0.37  0.37  0.24 0.51  0.51
Volume/Cap:  0.85 0.85  0.57  0.37 0.37  0.26  0.85 0.77  0.77  0.77 0.85  0.85
Uniform Del: 34.6 34.6  31.5  29.7 29.7  28.7  44.0 27.8  27.8  35.4 21.4  21.4
IncremntDel: 10.8 10.8   0.8   0.5  0.5   0.3  30.3  5.6   5.6   4.6  7.6   7.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   45.5 45.5  32.4  30.2 30.2  29.1  74.3 33.3  33.3  40.0 29.0  29.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  45.5 45.5  32.4  30.2 30.2  29.1  74.3 33.3  33.3  40.0 29.0  29.0
LOS by Move:    D    D     C     C    C     C     E    C     C     D    C     C
HCM2kAvgQ:     14   14     7     5    5     3     5   14    14    11   24    24
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

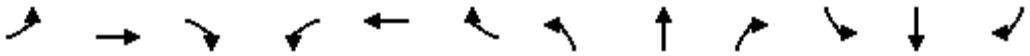
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MITIG8 - Proposed Project-VWed Mar 28, 2018 10:52:23                 Page 1-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1047 Innes Ave/Earl St
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.860
Loss Time (sec):      10               Average Delay (sec/veh):        21.5
Optimal Cycle:        89               Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    70   130  960     0     0 1301    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    70   130  960     0     0 1301    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    71   133  980     0     0 1328    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    20    0    71   133  980     0     0 1328    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    20    0    71   133  980     0     0 1328    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.87 1.00  0.87  0.90 0.90  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.22 0.00  0.78  0.24 1.76  0.00  0.00 1.97  0.03
Final Sat.:     0    0     0   366    0  1282   407 3009     0     0 3378    52
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.06  0.33 0.33  0.00  0.00 0.39  0.39
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.06 0.00  0.06  0.38 0.84  0.00  0.00 0.46  0.46
Volume/Cap:  0.00 0.00  0.00  0.86 0.00  0.86  0.86 0.39  0.00  0.00 0.86  0.86
Uniform Del:  0.0  0.0   0.0  46.3  0.0  46.3  28.6  2.0   0.0   0.0 24.3  24.3
IncremntDel:  0.0  0.0   0.0  46.4  0.0  46.4   6.1  0.1   0.0   0.0  5.1   5.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  92.7  0.0  92.7  34.7  2.1   0.0   0.0 29.4  29.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  92.7  0.0  92.7  34.7  2.1   0.0   0.0 29.4  29.4
LOS by Move:    A    A     A     F    A     F     C    A     A     A    C     C
HCM2kAvgQ:      0    0     0     5    0     5    19    5     0     0   22    22
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

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```

HCM Signalized Intersection Capacity Analysis
1: Arelious Walker & Gilman Avenue

03/30/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	306	295	10	161	128	232	360	10	154	503	141
Future Volume (vph)	158	306	295	10	161	128	232	360	10	154	503	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.84	1.00	1.00	0.69	1.00	1.00	0.68	1.00	0.93	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1327	1770	1863	1085	1770	1863	1074	1770	1675	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1327	1770	1863	1085	1770	1863	1074	1770	1675	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	322	311	11	169	135	244	379	11	162	529	148
RTOR Reduction (vph)	0	0	154	0	0	113	0	0	7	0	9	0
Lane Group Flow (vph)	166	322	157	11	169	23	244	379	4	162	668	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			30			10			10
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	14.2	31.4	52.7	2.8	20.0	20.0	21.3	39.3	39.3	28.5	46.5	
Effective Green, g (s)	14.2	31.4	52.7	2.8	20.0	20.0	21.3	39.3	39.3	28.5	46.5	
Actuated g/C Ratio	0.12	0.26	0.44	0.02	0.17	0.17	0.18	0.33	0.33	0.24	0.39	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	209	487	632	41	310	180	314	610	351	420	649	
v/s Ratio Prot	c0.09	c0.17	0.04	0.01	c0.09		c0.14	0.20		0.09	c0.40	
v/s Ratio Perm			0.07			0.02			0.00			
v/c Ratio	0.79	0.66	0.25	0.27	0.55	0.12	0.78	0.62	0.01	0.39	1.03	
Uniform Delay, d1	51.5	39.6	21.2	57.6	45.8	42.6	47.1	34.1	27.2	38.4	36.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.5	3.4	0.2	3.5	2.0	0.3	17.1	2.0	0.0	0.6	43.2	
Delay (s)	69.9	42.9	21.4	61.1	47.8	42.9	64.2	36.0	27.2	39.0	80.0	
Level of Service	E	D	C	E	D	D	E	D	C	D	E	
Approach Delay (s)		40.1			46.1			46.7			72.1	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:51:20                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1032 Ingalls St / Carroll Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.978
Loss Time (sec):      12               Average Delay (sec/veh):        52.7
Optimal Cycle:       100               Level Of Service:                  D
******************************************************************************
Street Name:            Ingalls St                      Carrol Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Permitted        Permitted
Rights:         WideBypass       WideBypass         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  1  0  1  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17  160    17   646  156    10     9  325    18    42  306   394
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  160    17   646  156    10     9  325    18    42  306   394
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    17  163    17   659  159    10     9  332    18    43  312   402
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   17  163    17   659  159    10     9  332    18    43  312   402
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   17  163    17   659  159    10     9  332    18    43  312   402
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.94 0.94  0.94  0.91 0.91  0.91  0.85 0.85  0.85  0.78 0.78  0.78
Lanes:       0.09 0.82  0.09  0.80 0.19  0.01  0.05 1.85  0.10  0.12 0.88  1.00
Final Sat.:   156 1468   156  1382  334    21    83 2988   165   178 1299  1478
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.11  0.48 0.48  0.48  0.11 0.11  0.11  0.24 0.24  0.27
Crit Moves:       ****        ****                                       ****
Green/Cycle: 0.11 0.11  0.11  0.49 0.49  0.49  0.28 0.28  0.28  0.28 0.28  0.28
Volume/Cap:  0.98 0.98  0.98  0.98 0.98  0.98  0.40 0.40  0.40  0.86 0.86  0.98
Uniform Del: 44.2 44.2  44.2  25.1 25.1  25.1  29.3 29.3  29.3  34.3 34.3  35.8
IncremntDel: 56.6 56.6  56.6  25.4 25.4  25.4   0.3  0.3   0.3   8.9  8.9  26.8
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  100.8  101 100.8  50.5 50.5  50.5  29.6 29.6  29.6  43.2 43.2  62.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 100.8  101 100.8  50.5 50.5  50.5  29.6 29.6  29.6  43.2 43.2  62.6
LOS by Move:    F    F     F     D    D     D     C    C     C     D    D     E
HCM2kAvgQ:     10   10    10    32   32    32     5    5     5    14   14    18
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

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APPENDIX F

Auto and Transit Trip Generation by Year and

Transit Phasing Comparison

Candlestick Point

DRAFT CONSTRUCTION SCHEDULE
3/23/2018

Major Phase	Sub Phase	Block	Use	Entitlement Statistics			Horizontal Duration		Vertical Duration		
				SQ FT	UNITS	PARKING	START	FINISH	START[1]	Finish A[2]	Finish B[3]
1 CP	**CP-1**	AG1, AG2, AG4, AG5	Apartment		337	337	**2014**	**2017**	**2015**		**2020**
			Alice Griffith		209						
			OCII		128						
	CP-2	CPC 1, 2, 3	Apartment	0	419	419			2020	2022	2023
			Inclusionary		43						
		FAC, CP-2 HOTEL	Hotel	150,000	0	55					
			Regional Retail	635,000	0	1,715					
			Office	150,000		150			2020	2022	2022
			Community Use	1,000	0	1					
			FAC	75,000	0	667					
				1,011,000	**419**	**3,006**	**2016**	**2019**	**2020**	**2022**	**2023**
		Bayview Hillside OS	Park				2019	2021			
		Jamestown Walker	Street				2019	2021			
		Harney Way 1	Park				2019	2021			
		Wedge Park 1	Park				2019	2021			
		Gilman Ave	Street				2019	2021			
		Last Port	Park				2019	2022			
		The Neck	Park				2019	2022			
							2019	**2022**			
	CP-3	CPN1A, CPN2A, CPN11A	Apartment	0	843	843			2020	2021	2024
			OCII		120						
			Inclusionary		73						
		CPN2A, CPN10A, CPN11A	Neighborhood Retail	62,500	0	63			2019	2021	2023
				62,500	**843**	**906**	**2016**	**2019**	**2019**	**2021**	**2024**
		Wedge Park 2A	Park				**2019**	**2022**			
	CP-4	CPS6A, CPS8A, CPS9A	Apartment	0	489	489			2019	2021	2023
			OCII		110						
			Inclusionary		38						
		CPS6A, CPS8A, CPS9A, CPS11A	Neighborhood Retail	62,500	0	63			2019	2021	2023
			Community Use	5,000	0	3					
				67,500	**489**	**554**	**2016**	**2019**	**2019**	**2021**	**2023**
	CP-5	AG6, AG13	Apartment	0	351	351	2018	2021	2024	2026	2027
			Alice Griffith		47						
			OCII		180						
			Inclusionary		13						
			Community Use	41,000	0	21					
				41,000	**351**	**372**	**2018**	**2021**	**2024**	**2026**	**2027**
		AG Neighborhood P1	Park				**2022**	**2023**			
2 CP	**CP-6**	8B, 9B, 10A, 10B, 11B	Apartment	**0**	**522**	**522**	**2020**	**2023**	**2022**	**2024**	**2028**
			Inclusionary		29						
			Workforce		237						
		Harney Way 2	Park				**2021**	**2023**			
	CP-7	AG17, AG19, AG20	Apartment	**0**	**408**	**408**	**2021**	**2024**	**2026**	**2028**	**2030**
			Inclusionary		41						
		Ingerson Ave	Street				2023	2024			
		Jamestown Ave	Street				2023	2024			
		AG Neighborhood 2	Park				2023	2024			
		Ing/Thom/Carl/Grifth	Street				2024	2025			
							2021	**2025**			
	CP-8	CPS6B, CPS 8B	Apartment	**0**	**567**	**567**	**2021**	**2024**	**2022**		**2028**
			OCII		165						
			Inclusionary		41						
		Mini Wedge Park 1	Park				**2024**	**2026**			
	CP-9	CPS12A, CPS12B, CPS71A	Apartment		**122**	**122**	**2022**	**2025**	**2024**	**2026**	**2030**
			Inclusionary		12						
		The Heart of Park	Park				2024	2026			
		The Point	Park				2024	2026			
							2024	**2026**			
	CP-10	CPS4A, CPS5	Apartment	0	323	323	2023	2026	2027	2029	2034
			Inclusionary		33						
			Community Use	3,000	0	2					
				3,000	**323**	**325**	**2023**	**2026**	**2027**	**2029**	**2034**
		Mini Wedge 2	Park				**2026**	**2027**			
3 CP	**CP-11**	CPN1B, CPN2B	Apartment	**0**	**240**	**240**	**2024**	**2027**	**2026**		**2029**
			OCII		130						
			Workforce		110						
		Earl Blvd Park 1 & 2	Street				**2016**	**2027**			
	CP-12	CPN10B, CPN11B	Apartment	**0**	**188**	**188**	**2024**	**2027**	**2025**	**2027**	**2027**
			Inclusionary		19						
		Wedge Park 2B	Park				**2028**	**2029**			
	CP-13	CPS1, CPS2A, CPS2B, CPS3	Apartment	**0**	**589**	**589**	**2025**	**2028**	**2026**	**2028**	**2029**
			OCII		90						
			Inclusionary		51						
		The Last Rubble	Park				2027	2029			
		Wind Meadow	Park				2027	2029			
							2027	**2029**			
	CP-14	CPN 3A, 3B	Apartment	**0**	**234**	**234**	**2026**	**2029**	**2027**	**2029**	**2029**
			Inclusionary		24						
		CP Neighborhood Park	Park				**2028**	**2029**			
	CP-15	CPN8A, CPN8B, CPN9A, CPN9B	Apartment		**629**	**629**	**2026**	**2029**	**2027**	**2029**	**2035**
			Inclusionary		64						
		Wedge Park 3	Park				2030	2031			
		Bayview Gardens	Park				2030	2031			
							2030	**2031**			
	CP-16	CPN4B, CPN 5A	Apartment	**0**	**477**	**477**	**2027**	**2030**	2028	2030	2030
			OCII		110						
			Inclusionary		15						
			Workforce		220						
		Earl Blvd Park 3	Park				2030	2031			
		Grasslands S1	Park				2032	2033			
							2030	**2033**			
	CP-17	CNP8A, CPN6B, CPN7B	Podium/Townhome	**0**	**480**	**480**	**2027**	**2030**	**2028**	**2030**	**2033**
			Inclusionary		37						
			Workforce		120						
		Grasslands S2	Park				**2032**	**2033**			
	UNALLOCATED		Performance Venue	**0**	0	0					
			TOTAL	**1,185,000**	**7,218**	**9,954**					
		USE SUBTOTAL	Artist Studio	0	0						
			Community Use	50,000	0						
			FAC/Performance Venue	75,000	0						
			Hotel	150,000	0						
			Marina	0	0						
			Neighbourhood Retail/Maker Space	125,000	0						
			Office	150,000	0						
			Regional Retail	635,000	0						
			School/Institution	0	0						
			Residential	0	7,218						
				1,185,000	**7,218**						

[1] Earliest Start Date

[2] Earliest Closing Start Date

[3] Last Closing Start Date

[4] Entitled 150,000 SF, however Business Plan projects 130,000 SF for Hotel

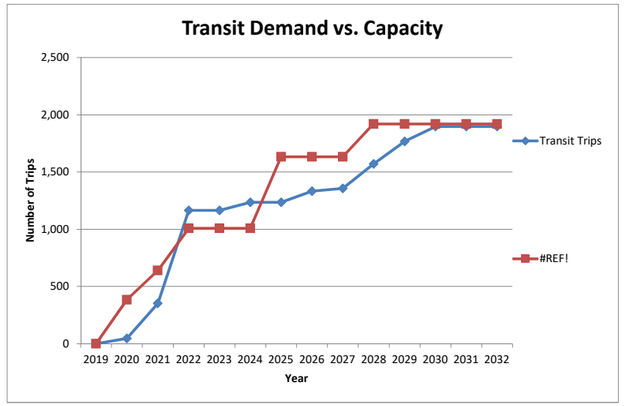
[5] 46,000 SF of PAC allocated to CP-3. Performance Venue entitlement (29,000 SF) is currently unallocated.

[6] Entitled 131,000 SF, however Business Plan projects 129,188 SF for Neighborhood Retail with balance to be relocated elsewhere within CP

[7] Entitled for 2,630 parking spaces

ASSUMPTIONS
Horizontal duration includes abatement, demolition, grading and horizontal infrastructure
Vertical duration includes foundation, piles, structure, rough in, interior and exterior finishes, through full occupancy
Shoreline construction will be done concurrently with adjacent park improvements

Candlestick Point Transit Trips by Year



Average Trip Generation Rate Calculation					
Land Uses	Size	Transit Trips	Auto Trips	Transit Rate	Vehicle Rate
Residential (DU)	6962	946	2,094	0.14	0.30
Arena (office)	25	30	61	1.20	2.45
FAC (seats)	0	0	0	0.00	0.00
Retail (ksf)	760	742	2,617	0.98	3.44
Hotel (rooms)	220	35	75	0.16	0.34
Office (ksf)	150	69	140	0.46	0.94
Community Facilities (ksf)	50	38	77	0.75	1.53
Parks (acres)	97	2	4	0.02	0.04

Land Use (By Year)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Check	
Residential (DU)		337	1,332	419		522		473	188	1,564	1,426	957			7218	256	includes AC
PAC Office (ksf)				25											25	0	
FAC (seats)				0											0	0	
Retail (ksf)			125	635											760	0	
Hotel (rooms)				220											220	0	
Community Facilities (ksf)			5	1				41			3				50	0	
Office (ksf)				150											150	0	
Parks (acres)								97							97	0	

Source: Draft Construction Schedule provided by FivePoint. "Vertical Duration, Finish A" was used as the year of implementation. (See "CP Phasing" tab)

Land Use (Cumulative)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	337	1669	2088	2088	2610	2610	3083	3271	4835	6261	7218	7218	7218
PAC Office (ksf)	0	0	0	25	25	25	25	25	25	25	25	25	25	25
PAC (seats)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail (ksf)	0	0	125	760	760	760	760	760	760	760	760	760	760	760
Hotel (rooms)	0	0	0	220	220	220	220	220	220	220	220	220	220	220
Community Facilities (ksf)	0	0	5	6	6	6	6	47	47	47	50	50	50	50
Office (ksf)	0	0	0	150	150	150	150	150	150	150	150	150	150	150
Parks (acres)	0	0	0	0	0	0	0	97	97	97	97	97	97	97

Transit Trips (Cumulative)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	46	227	284	284	355	355	419	444	657	851	981	981	981
PAC Office (ksf)	0	0	0	30	30	30	30	30	30	30	30	30	30	30
PAC (seats)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail (ksf)	0	0	122	742	742	742	742	742	742	742	742	742	742	742
Hotel (rooms)	0	0	0	35	35	35	35	35	35	35	35	35	35	35
Community Facilities (ksf)	0	0	4	5	5	5	5	35	35	35	38	38	38	38
Office (ksf)	0	0	0	69	69	69	69	69	69	69	69	69	69	69
Parks (acres)	0	0	0	0	0	0	0	2	2	2	2	2	2	2
Total	**0**	**46**	**353**	**1,165**	**1,165**	**1,236**	**1,236**	**1,332**	**1,357**	**1,570**	**1,767**	**1,897**	**1,897**	**1,897**

Vehicle Trips (Cumulative)

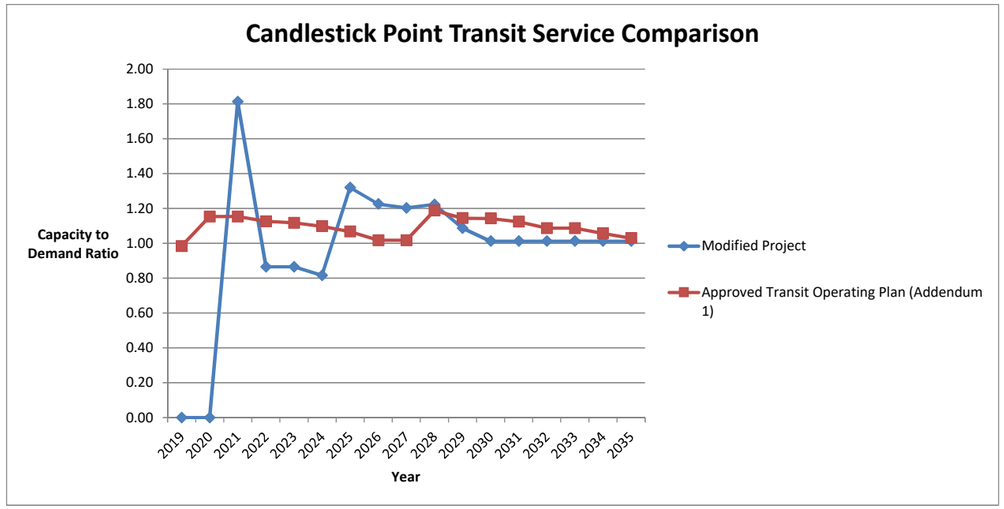
Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	101	502	628	628	785	785	927	984	1,454	1,883	2,171	2,171	2,171
PAC Office (ksf)	0	0	0	61	61	61	61	61	61	61	61	61	61	61
PAC (seats)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail (ksf)	0	0	430	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617
Hotel (rooms)	0	0	0	75	75	75	75	75	75	75	75	75	75	75
Community Facilities (ksf)	0	0	8	9	9	9	9	72	72	72	77	77	77	77
Office (ksf)	0	0	0	140	140	140	140	140	140	140	140	140	140	140
Parks (acres)	0	0	0	0	0	0	0	4	4	4	4	4	4	4
Total	**0**	**101**	**940**	**3,530**	**3,530**	**3,687**	**3,687**	**3,896**	**3,953**	**4,423**	**4,857**	**5,145**	**5,145**	**5,145**
	0%	2%	18%	69%	69%	72%	72%	76%	77%	86%	94%	100%	100%	100%

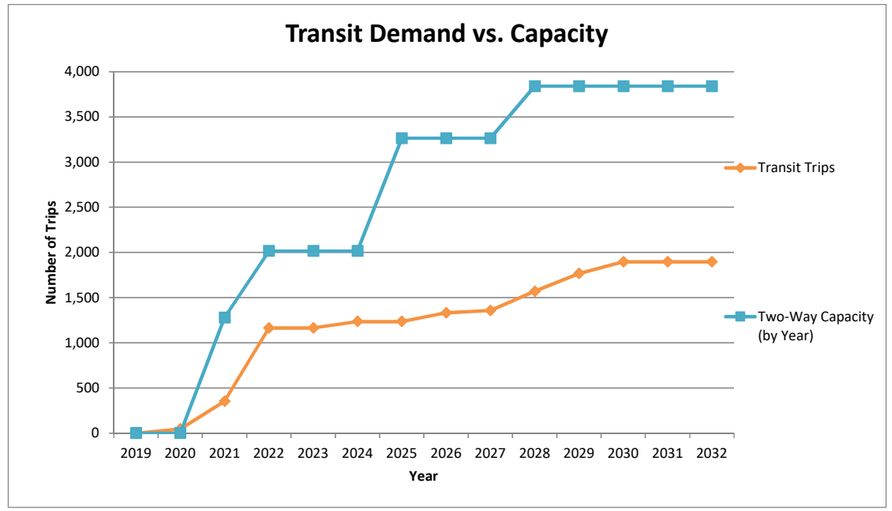
Transit Capacity (One-way)

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	0	384	640	1008	1008	1008	1632	1632	1632	1920	1920	1920	1920	1920

** Although no changes are proposed for the 29 Sunset in 2020, the development slated to occur in 2020 is in Alice Griffith and is adequately served by the existing service on the 29 Sunset, and therefore, caapcity is provided to that develoment.*

Candlestick Point
Transit Phasing Plan (2018)





Proposed Transit Phasing (2018)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Candlestick Point	**Begin Candlestick Point Express (CPX)**	15	256			256														
		10	384				384	384	384	384	384	384	384	384	384	384	384	384	384	384
	Extend 29-Sunset	10	384			384	384	384	384											
		5	768							768	768	768	768	768	768	768	768	768	768	768
	New Shuttle (30 pax @ 7.5 min freq)	7.5	240				240	240	240											
	Begin/Extend 28L/BRT	8	480							480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	0	0	640	1008	1008	1008	1632	1632	1632	1920	1920	1920	1920	1920	1920	1920	1920
			Estimated Transit Demand (by Year)	0	46	353	1,165	1,165	1,236	1,236	1,332	1,357	1,570	1,767	1,897	1,897	1,897	1,897	1,897	1,897
			Capacity-to-Demand Ratio	#DIV/0!	0.00	1.81	0.87	0.87	0.82	1.32	1.23	1.20	1.22	1.09	1.01	1.01	1.01	1.01	1.01	1.01
			Two-Way Capacity (by Year)	0	0	1280	2016	2016	2016	3264	3264	3264	3840	3840	3840	3840	3840	3840	3840	3840

Old Transit Phasing (December 2013)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Candlestick Point	**Begin Candlestick Point Express (CPX)**	15	256		256	256	256	256	256	256	256	256	256	256						
		10	384												384	384	384	384	384	384
	Extend 29-Sunset	10	384																	
		5	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768
	Extend 56-Rutland	20	135	135	135	135	135													
	Extra Bus		45	45	45	45	45													
	New Shuttle (30 pax @ 7.5 min freq)	7.5	240	240	240	240	240													
	Begin/Extend 28L/BRT	8	480					480	480	480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	1188	1444	1444	1444	1504	1504	1504	1504	1504	1792	1792	1920	1920	1920	1920	1920	1920
			Estimated Transit Demand (by Year)	1,207	1,252	1,252	1,282	1,346	1,370	1,409	1,478	1,478	1,508	1,566	1,680	1,708	1,766	1,766	1,816	1,865
			Capacity-to-Demand Ratio	0.98	1.15	1.15	1.13	1.12	1.10	1.07	1.02	1.02	1.19	1.14	1.14	1.12	1.09	1.09	1.06	1.03

Hunters Point

DRAFT CONSTRUCTION SCHEDULE

3/23/2018

Major Phase	Sub Phase	Block	Use	Entitlement Statistics			Horizontal Duration			Vertical Duration				
				SQ FT	UNITS	PARKING	Start		Finish	Start[1]		Finish A[2]		Finish B[3]
1 HP	**HP-1**	37, 38	Apartment	0	450	450				2020	-	2022	;	2023
			Inclusionary		45									
		1, 2, 3, 36, 40, 44	R&D	1,967,655	0	2,558				2021	-	2023	;	2026
		4, 5, 36, 37, 38, 40, 43, 44	Artist Studio	255,000	0	128				2017	-	2019	;	2019
			Neighborhood Retail/Maker Space	183,000	0	549				2020		2021		2025
		3	School	65,000	0	9				2022	-	2024	;	2024
			Community Facility: Fire Station	0	0	0				2024	-	2026		2026
		1	Parking Garage							2020	-	2022	;	2024
		35, 43	Recycled Water Treatment Plan	0	0	0				2019	-	2024	;	2024
				2,470,655	**450**	**3,693**	**2019**	**-**	**2024**	**2017**	**-**	**2019**	**;**	**2026**
		Shipyard Hillside OS	Park				2022	-	2023					
		Green Room	Park				2022	-	2023					
							2022	**-**	**2023**					
	HP-2	6, 7, 9, 8, 10, 11, 12	Apartment	0	799	799				2020	-	2022	;	2024
			OCII		130									
			Inclusionary		67									
		Northside Park	Neighborhood Retail/Maker Space	500	0	2				2024	-	2025	;	2025
				500	**799**	**801**	**2019**	**-**	**2023**	**2020**	**-**	**2022**	**;**	**2025**
		Northside Park	Park				2023	-	2024					
		Innes Ave	Street				2023	-	2024					
		Horne Blvd 1	Street				2023	-	2024					
							2023	**-**	**2024**					
2 HP	**HP-3**	13, 15, 16, 17, 18, 19, 20	Apartment	0	754	754				2023	-	2025	;	2026
			OCII		90									
			Inclusionary		58									
			Workforce		100									
			Parking Garage	0	0	0				2023	-	2025	;	2026
				0	**754**	**754**	**2021**	**-**	**2024**	**2023**	**-**	**2025**	**;**	**2026**
		Waterfront Prom N	Park				2024	-	2025					
		YS Bridge	Bridge				2020	-	2025					
							2024	**-**	**2025**					
	HP-4	31	Apartment	0	150	150				2024	-	2025	;	2025
			Inclusionary		15									
		21, 32, 33	R&D	1,101,745	0	1,432				2026	-	2028	;	2030
		30	Hotel	120,000	0	44				2027	-	2029	;	2029
		21, 31, Water Room	Neighborhood Retail/Maker Space	44,500	0	134				2023	-	2025	;	2029
			Regional Retail	100,000		300				2023	-	2025		2028
		32	Parking Garage							2027	-	2029	;	2029
		Marina South	Slips	0	0	90								
				1,366,245	**150**	**2,150**	**2021**	**-**	**2025**	**2023**	**-**	**2025**	**;**	**2030**
		Palou Ave					2028	-	2030					
		Park: Community SFC					2029	-	2032					
		Wr Room/DD4/Bridge	Park				2026	-	2027					
		Waterfront Prom SP	Park				2026	-	2027					
		Waterfront R&E Park	Park				2026	-	2027					
		Regun Crane Pier	Park				2026	-	2027					
							2025	**-**	**2032**					
3 HP	**HP-5**	23	Apartment	0	317	317				2026	-	2029	;	2029
			Inclusionary		32									
		25, 26, 27, 28, 29	R&D	1,195,600	0	1,554				2028	-	2029	;	2031
		22, 24, 27, 28, 29, Heritage Park	Neighborhood Retail/Maker Space	51,500	0	155				2024	-	2026	;	2030
		22, 27, 28, 29	Regional Retail	0	0	0								
		22, 24	Parking Garage							2024	-	2026	;	2026
		Marina North	Slips	0	0	90								
				1,247,100	**317**	**2,116**	**2023**	**-**	**2027**	**2024**	**-**	**2026**	**;**	**2031**
		Heritage Park	Park				2030	-	2031					
		Waterfront Prom NP	Park				2031	-	2034					
							2030	**-**	**2034**					
	HP-6	45, 46, 47, 48, 49, 50, 51, 52, 53	Apartment		984	984				2026	-	2028	;	2030
			OCII		135									
			Inclusionary		76									
			Workforce		105									
		45, 46	Neighborhood Retail/Maker Space	21,500	0	65				2025	-	2029	;	2029
		54	Community Use	50,000	0	25				2025	-	2027		2027
		55	Institution	345,000	0	20				2025	-	2026		2026
				416,500	**984**	**1,094**	**2023**	**-**	**2028**	**2025**	**-**	**2026**	**;**	**2030**
		Maintenance Yard	Park				2031	-	2033					
		Grassland EP	Park				2031	-	2032					
		Multiuse OS	Park				2030	-	2031					
							2030	**-**	**2033**					
			TOTAL	**5,501,000**	**3,454**	**10,607**								
		USE SUBTOTAL	Artist Studio	255,000	0	128								
			Community Use	50,000		25								
			FAC/Performance Venue	0	0	0								
			Hotel	120,000	0	44								
			Marina	0	0	180								
			Neighborhood Retail/Maker Space	301,000	0	903								
			R&D	4,265,000	0	5,545								
			Regional Retail	100,000	0	300								
			School/Institution	410,000	0	29								
			Residential	0	3,454	3,454								
			OCII		355									
			Inclusionary		293									
			Workforce		205									
				5,501,000	**3,454**	**10,607**								

[1] Earliest Start Date

[2] Earliest Closing Start Date

[3] Last Closing Start Date

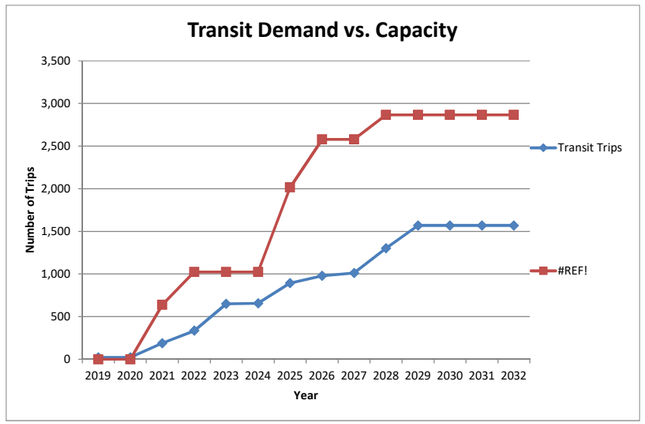
ASSUMPTIONS

Horizontal duration includes abatement, demolition, grading and horizontal infrastructure

Vertical duration includes foundation, piles, structure, rough in, interior and exterior finishes, through full occupancy

Shoreline construction will be done concurrently with adjacent park improvements

Hunters Point Transit Trips by Year



Average Trip Generation Rate Calculation					
Land Uses	Size	Transit Trips	Auto Trips	Transit Rate	Auto Rate
Residential (DU)	3454	406	900	0.12	0.26
Community Facilities (ksf)	50	32	66	0.65	1.33
Hotel (rooms)	175	21	53	0.12	0.31
Retail/Maker Space (ksf)	401	363	1207	0.90	3.01
R&D (ksf)	4265	674	1388	0.16	0.33
School (students)	1035	47	117	0.05	0.11
Parks (acres)	238	4	7	0.02	0.03
Artist Studio (ksf)	15	23	48	1.56	3.18

Land Use (By Year)

Land Use \ Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Check
Residential (DU)				1249			904			984	317				3454	0
Community Facilities (ksf)									50						50	0
Hotel (rooms)											175				175	0
Retail (ksf)			183				145	52			22				401	0
R&D (ksf)					1968					1102	1196				4265	0
School						164		871							1035	0
Parks (acres)					238										238	0
Artist Studio (ksf)	15														15	0

Source: Draft Construction Schedule provided by FivePoint. "Vertical Duration, Finish A" was used as the year of implementation. (See "HP Phasing" tab)

Land Use (Cumulative)

Land Use \ Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	0	0	1249	1249	1249	2153	2153	2153	3137	3454	3454	3454	3454
Community Facilities (ksf)	0	0	0	0	0	0	0	0	50	50	50	50	50	50
Hotel (rooms)	0	0	0	0	0	0	0	0	0	0	175	175	175	175
Retail (ksf)	0	0	183	183	183	183	328	379.5	379.5	379.5	401	401	401	401
R&D (ksf)	0	0	0	0	1968	1968	1968	1968	1968	3070	4266	4266	4266	4266
School	0	0	0	0	0	164.0854	164.0854	1035	1035	1035	1035	1035	1035	1035
Parks (acres)	0	0	0	0	238	238	238	238	238	238	238	238	238	238
Artist Studio (ksf)	15	15	15	15	15	15	15	15	15	15	15	15	15	15

Transit Trips (Cumulative)

Land Use \ Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	0	0	147	147	147	253	253	253	369	406	406	406	406
Community Facilities (ksf)	0	0	0	0	0	0	0	0	32	32	32	32	32	32
Hotel (rooms)	0	0	0	0	0	0	0	0	0	0	21	21	21	21
Retail (ksf)	0	0	166	166	166	166	297	343	343	343	363	363	363	363
R&D (ksf)	0	0	0	0	311	311	311	311	311	485	674	674	674	674
School	0	0	0	0	0	7	7	47	47	47	47	47	47	47
Parks (acres)	0	0	0	0	4	4	4	4	4	4	4	4	4	4
Artist Studio (ksf)	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Total	**23**	**23**	**189**	**336**	**651**	**658**	**895**	**981**	**1,013**	**1,303**	**1,570**	**1,570**	**1,570**	**1,570**

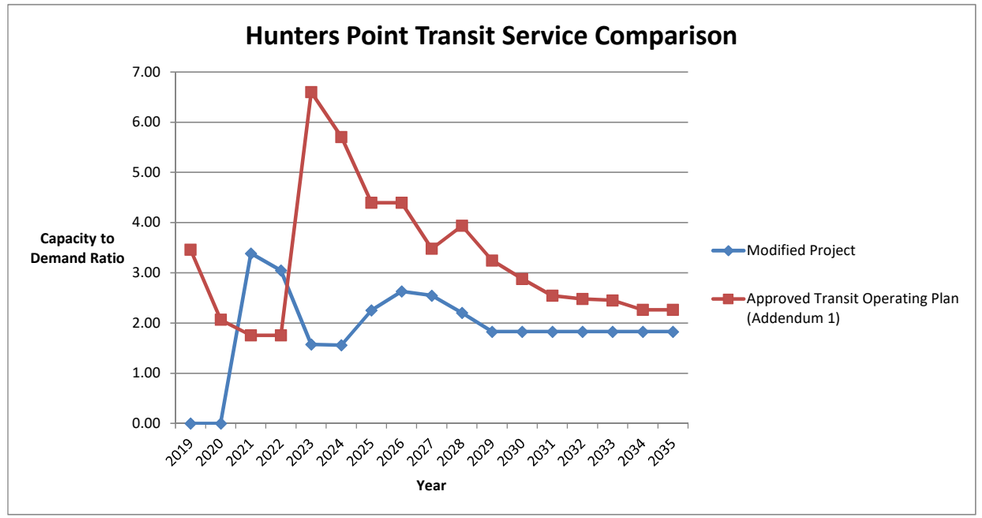
Auto Trips (Cumulative)

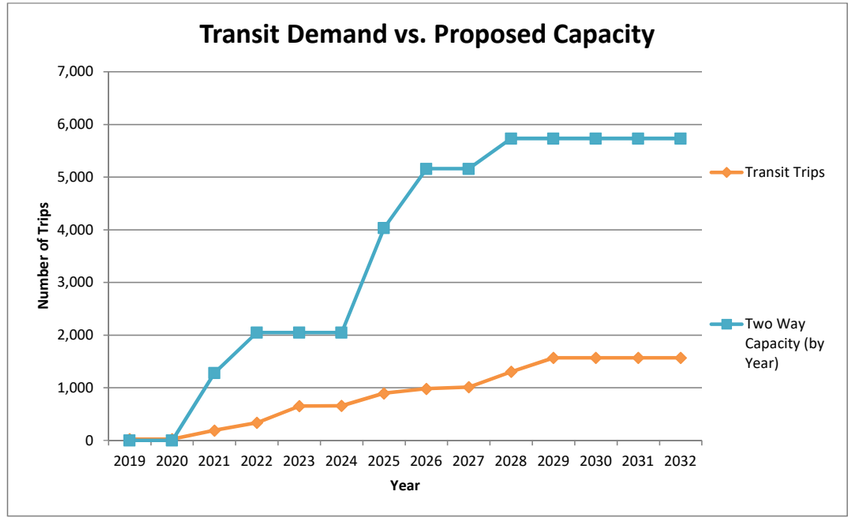
Land Use \ Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	0	0	325	325	325	561	561	561	817	900	900	900	900
Community Facilities (ksf)	0	0	0	0	0	0	0	0	66	66	66	66	66	66
Hotel (rooms)	0	0	0	0	0	0	0	0	0	0	53	53	53	53
Retail (ksf)	0	0	551	551	551	551	987	1,142	1,142	1,142	1,207	1,207	1,207	1,207
R&D (ksf)	0	0	0	0	641	641	641	641	641	999	1,389	1,389	1,389	1,389
School	0	0	0	0	0	19	19	117	117	117	117	117	117	117
Parks (acres)	0	0	0	0	7	7	7	7	7	7	7	7	7	7
Artist Studio (ksf)	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Total	**48**	**48**	**599**	**924**	**1,572**	**1,591**	**2,263**	**2,516**	**2,582**	**3,196**	**3,787**	**3,787**	**3,787**	**3,787**

Transit Capacity (One-way)

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	0	0	640	1024	1024	1024	2016	2579	2579	2867	2867	2867	2867	2867

Hunters Point
Transit Phasing Plan (2018)





Proposed Transit Phasing (2018)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Hunters Point	**Begin Hunters Point Express (HPX)**	20	192			192	192	192	192											
		10	384							384										
		6	740								740	740	740	740	740	740	740	740	740	740
	Extend 23-Monterey	20	192			192	192	192	192											
	Extend 23-Monterey	15	256							256										
	Extend 24-Divisadero/23-Montery	10	384								384	384	384	384	384	384	384	384	384	384
		7.5	512																	
	Extend 48-Quintara (Replace 19)	15	256			256	256	256	256											
		10	384							384	384	384	384	384	384	384	384	384	384	384
	Extend 44-O'Shaughnessy	10	384				384	384	384											
		7.5	512							512										
		6.5	591								591	591	591	591	591	591	591	591	591	591
Candlestick Point	**Begin/Extend 28L/BRT**	8	480							480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	0	0	640	1024	1024	1024	2016	2579	2579	2867	2867	2867	2867	2867	2867	2867	2867
			Estimated Transit Demand (by Year)	23	23	189	336	651	658	895	981	1,013	1,303	1,570	1,570	1,570	1,570	1,570	1,570	1,570
			Capacity-to-Demand Ratio	0.00	0.00	3.39	3.05	1.57	1.56	2.25	2.63	2.55	2.20	1.83	1.83	1.83	1.83	1.83	1.83	1.83
			Two Way Capacity (by Year)	0	0	1280	2048	2048	2048	4032	5158	5158	5734	5734	5734	5734	5734	5734	5734	5734

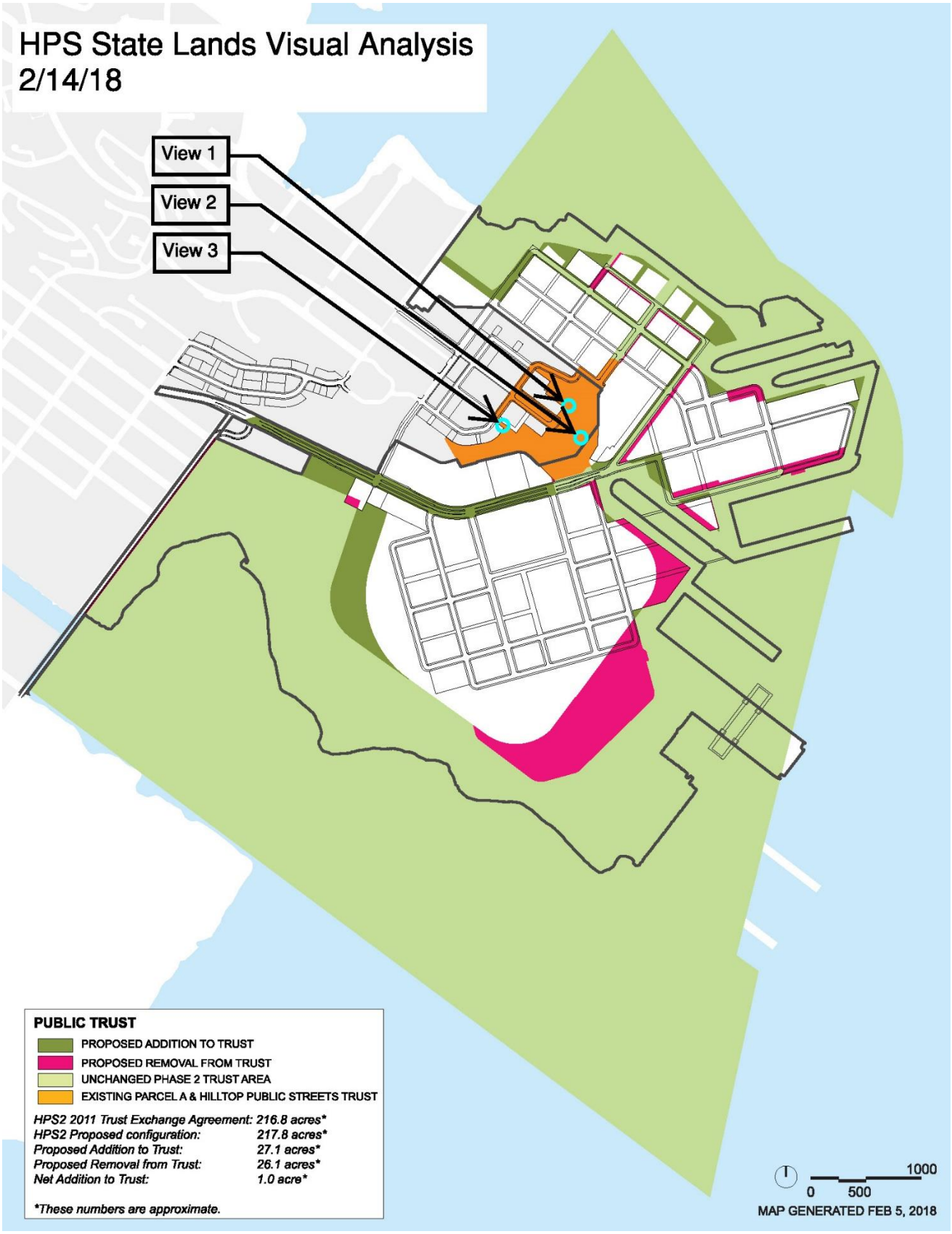
Old Transit Phasing (December 2013)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Hunters Point	**Begin Hunters Point Express (HPX)**	20	192					192												
		12	320						320	320	320	320	320	320	320	320	320	320	320	320
	Extend 23-Monterey	15	256					256	256	256	256	256	256							
	Extend 24-Divisadero	10	384											384						
		7.5	512												512	512	512	512	512	512
	Extend 48-Quintara	15	256	256	256	256	256	256												
		10	384						384	384	384	384	384	384	384	384	384	384	384	384
	Extend 44-O'Shaughnessy	7.5	512					512												
		6.5	591						591	591	591	591	591	591	591	591	591	591	591	591
Candlestick Point	**Begin/Extend 28L/BRT**	8	480					480	480	480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	256	256	256	256	1696	2031	2031	2031	2031	2319	2447	2575	2575	2575	2575	2575	2575
			Estimated Transit Demand (by Year)	74	124	146	146	257	356	462	462	584	589	754	895	1013	1039	1051	1139	1139
			Capacity-to-Demand Ratio	3.46	2.06	1.75	1.75	6.60	5.71	4.40	4.40	3.48	3.94	3.25	2.88	2.54	2.48	2.45	2.26	2.26

Appendix E

Public Trust View Corridors Visual Simulations

ESA



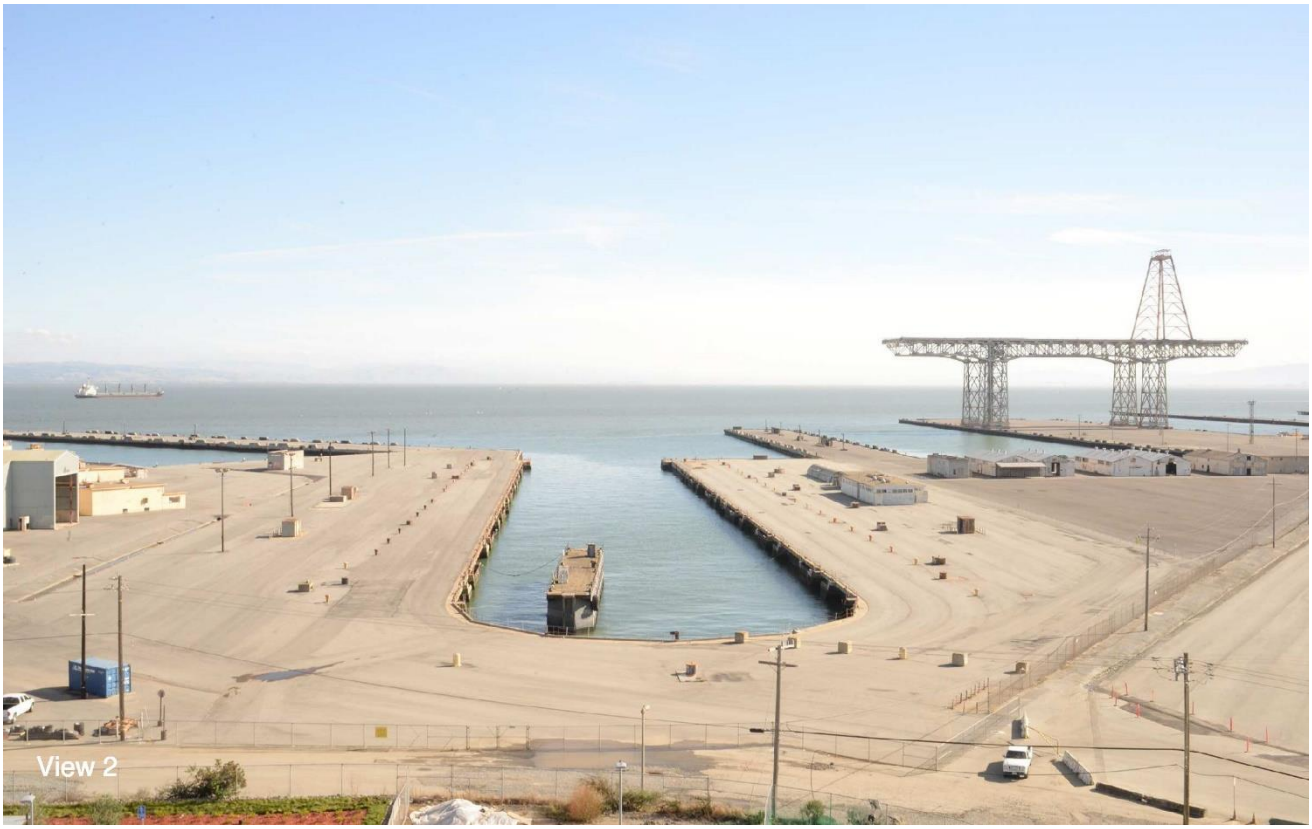
State Lands Visual Analysis Map



View 1: Existing



View 1: Proposed



View 2: Existing



View 2: Proposed. [The bridges and seating plan are illustrative only (for environmental review purposes). No final designs have been prepared.]



View 3: Existing



View 3: Proposed

Appendix F1

Air Quality Construction Methods Memorandum

ESA

RAMBOLL

ENVIRONMENT
& HEALTH

MEMO

Date	**March 6, 2018**
To	**Jose Campos,** **Office of Community Investment and Infrastructure** **Joy Navarette** **Planning Department, City and County of San Francisco**
From	**Michael Keinath** **Sarah Manzano**
Subject	**Air Quality Analysis and Health Risk Assessment for the Refinements to the Candlestick Point-Hunter Point Shipyard Phase II Development Plan**

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INTRODUCTION

In 2009, Ramboll, known at the time as ENVIRON International Corporation, performed four ambient air quality (AAQ) human health risk assessments (HHRA) as part of the Environmental Impact Report (EIR) for the proposed Candlestick Point – Hunters Point Shipyard Phase II Development Plan (herein referred to as "Project"; also known as San Francisco Planning Department Case Number 2007.0946E). The EIR for the Project was certified in July 2010 and since that time the Project proponent, FivePoint, formerly Lennar Urban, and the City and County of San Francisco, have been working to implement the Project plan. However, during that time, the Project has been modified to include revisions to proposed land uses, adjusted locations for two high-rise towers, redesign of parks and open spaces, refinements to the street network, additional water taxi infrastructure and two pedestrian bridges, and revisions to the utility network. As such, the phasing of the Project and the uses for particular parcels has changed from what was originally evaluated in 2009. A map showing this revised phasing is presented as Attachment A. To reflect this new phasing, TRC prepared a Construction Workers and Equipment Phasing Plan for the Project dated 02/26/2018 (included as Attachment B).

Ramboll has conducted a construction HHRA of the revised phasing plan (designated herein as the "2018 Phasing Plan") to determine if the modified project would result in any new significant impacts not identified in the EIR or substantially increase the severity of an impact. Because the major changes to construction occur on the Hunters Point Shipyard section of the Project, the construction HHRA is focused only on this portion of the Project. The 2018 Project Modification Variant reduces the land use of CP and thus would reduce construction impacts. Therefore, construction at CP was not evaluated quantitatively.

Section III.H.4 of the EIR identified the construction thresholds of significance for toxic air contaminants as:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 1 x 10^{-5} (10 in one million)
- Ground level concentrations of non-carcinogenic air contaminants/pollutants resulting in a HI greater than 1 for the MEI

As discussed in Impact AQ-2 of the EIR, all impacts were determined to be less than Significant with Mitigation, namely Mitigation Measures AQ 2.1 and 2.2, listed below:

- MM AQ 2.1 Implement Emission Control Device Installation on Construction. To reduce DPM [diesel particulate matter] emissions during Project construction, the Project Applicant shall require construction equipment used for the Project to utilize emission control technology such that 50% of the fleet will meet US EPA Tier 2 standards outfitted with California ARB [Air Resources Board] Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) during the first two years of construction activities, increasing to 75% of the fleet in the third year and 100% of the fleet starting in the fourth year and for the duration of the Project.
- MM AQ 2.2 Implement Accelerated Emission Control Device Installation on Construction Equipment Used for Alice Griffith Parcels. In addition to mitigation measure MM AQ 2.1, in order to minimize the potential impacts to residents living in Alice Griffith from the construction activities in that area, the Project Applicant will require that all construction equipment used in the Alice Griffith parcels (CP01 though CP06) would utilize equipment which meets the US EPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) throughout the entire duration of construction activities on those parcels.

Below we describe the methods used in this screening level HHRA to determine whether the proposed modifications to the Project Phasing Schedule would result in any new significant impact on air quality beyond those identified in the FEIR or substantially increase the severity of a significant impact.

APPROACH

Other than modifications detailed below, for this updated HHRA, Ramboll followed the methods outlined in Section III.H Air Quality of the EIR. As discussed there, the methods used to analyze the human health effects from emissions of DPM associated with Project construction equipment were developed consistent with Bay Area Air Quality Management District (BAAQMD), California Environmental Protection Agency (Cal/EPA), and United States Environmental Protection Agency (USEPA) risk assessment guidance. The analysis incorporates conservative (i.e., health protective) methodologies for the following: (1) the estimation of emissions, (2) the calculation of airborne concentrations of DPM during construction activities at receptor locations, and (3) the estimation of excess lifetime cancer risks and non-cancer health effects or hazard indices (HIs).

Revised Construction Phasing

As discussed earlier, TRC prepared an updated construction phasing schedule (dated 02/26/2018) which included phase duration, construction equipment list and usage, number of construction workers, and number of construction truck trips for:

- Hunter's Point Shipyard
- Candlestick Point
- Development of Shoreline of Hunter's Point Shipyard and Candlestick Point
- Field management for the construction of Hunter's Point Shipyard and Candlestick Point

Emissions Calculation

Emissions from off-road construction equipment associated with Project development as identified by TRC were calculated using the same equipment horsepower, load factor, and emission factors as used in the EIR. Emission factors were developed based on ARB's 2007 In-Use Off-road Equipment Inventory Model, consistent with the EIR.[1] Construction began in 2013, rather than in 2010 as assumed in the original analysis. Therefore, implementation of MM AQ-2.1 has been adjusted to reflect the current construction schedule assuming that the Project would require construction equipment used for the Project to utilize emission control technology such that 50% of the fleet will meet US EPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) during the first two years of construction activities (2014 and 2015), increasing to 75% of the fleet in the third year (2016), and 100% of the fleet starting in the fourth year (2017) and for the remaining duration of the Project. Since the 2018 Phasing Plan occurs after this phase-in period, it is assumed that 100% of the construction equipment meets US EPA Tier 2 standards outfitted with California ARB Level 3 VDECS. Greenhouse gas (GHG) emissions from off-road trucks were excluded from the total construction GHG emissions in the 2010 EIR. Therefore, GHG emissions from off-road trucks were not included in calculating the total construction GHG emissions in this analysis.

Emissions from on-road mobile sources, particularly the running, idling, and starting emissions from worker commute trips and haul truck trips making deliveries and removing materials, were calculated using the same emission factors as were used in the 2010 EIR. The emission factors were developed based on ARB's EMFAC2007 model.[2] The worker vehicles were assumed to be 50% light duty vehicles (LDA) and 50% light duty trucks (25% LDT1 and 25% LDT2). The haul trucks were assumed to be 100% medium heavy-duty trucks (MHDT). These are the same assumptions used in the 2010 EIR. The distance that the workers and haul trucks would travel along the hauling roads was assumed to be the same as the 2010 EIR. Since the distance that the workers and hauling trips originating from the Field Management phase was unknown, Ramboll assumed an average travel distance based on the length of the other haul roads. Idling and starting emissions from on-road activity were allotted to the construction parcels. Running emissions from on-road activity were attributed to the hauling roads.

Air Dispersion Modeling

The air dispersion models (using the USEPA AERMOD, version 16216) were run for the revised emissions as a method of comparing the impact of the revised phasing plan to the previously modeled receptor locations (as before, ground level receptors were assumed). The modeled receptor grid is presented in Attachment C and is the same grid used for the 2010 EIR. However, some locations that were analyzed as worker exposure in the EIR were analyzed as residential exposure as these locations will be developed into residential areas. Conversely, some locations analyzed as residents in the EIR were instead analyzed as workers because there are no plans to develop these locations into residential areas. Residential exposure assumptions are more conservative because residents are assumed to be exposed to all the construction emissions. A 20 meter by 20 meter grid of volume sources was developed for the revised construction emissions, with emissions within each parcel evenly distributed throughout the volume sources. The models used the same meteorological and terrain data as were used in the 2010 EIR. Mobile source starting and idling emissions associated with each parcel development were modeled along with the construction off-road equipment emissions through the volume sources. On-road mobile running emissions which occur off-site were not

[1] http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

[2] http://www.arb.ca.gov/msei/categories.htm#onroad_motor_vehicles

modeled considering the running emissions are likely to be lower due to cleaner engines as a result of the construction beginning in 2017, 7 years later than that assumed in the 2010 EIR.

Health Risk Assessment

The HHRA was conducted in the same way described in the EIR, including the assumption that all PM_{10} from diesel fueled construction equipment was assumed to be DPM. For this screening level update, the cancer risk was calculated using the total construction DPM emissions. The adult was assumed to be exposed to all 15 years of construction activity. To be conservative, the child was also assumed to be exposed to all construction as a child. Since the release of the FEIR, the Office of Environmental Health Hazards Assessment (OEHHA) released new guidance on how to estimate health impacts from toxic air contaminants. However, in order to compare to the EIR, this new guidance was not taken into account. The risk assessment methods used for the EIR were also used for this addendum.

RESULTS

The modified Project with the new phasing schedule, beginning four years later than that assumed in the EIR and with the application of mitigation measures MM AQ-2.1 and 2.2, approved in the EIR, results in an excess cancer risk at the maximally exposed sensitive receptor location of less than 3 in a million and would not exceed the threshold of >10.0 in 1 million. The non-cancer impacts would be less than the Chronic Hazard Index (HI) threshold of >1 at the maximally exposed individual location. With mitigation, the results for the modified Project are below the significance thresholds for determining whether construction activities would expose sensitive receptors to substantial levels of DPM.

Attachment D compares the results of the 2018 Project Modification Variant compared to the results for Hunters Point Shipyard in the 2010 EIR. As shown in the table, impacts from the 2018 Project Modification Variant are lower than that of the 2010 EIR. Because the construction impacts from Hunter's Point Shipyard have decreased and construction at Candlestick Point is similar to or lower than what was analyzed previously, the combined impact of Hunter's Point Shipyard and Candlestick Point construction is expected to be lower than reported in the 2010 EIR.

Implementation of the modified construction schedule would not result in any new significant effects related to emissions of DPM beyond those identified in the EIR or a substantial increase in the severity of a significant impact because:

1. The construction will begin eight years later than what was assumed in the EIR. All equipment is required to be 100% Tier 2 plus DPF.
2. The shift of a substantial portion of emissions from the perimeter of the site near sensitive locations to the center near the large hill. For example, the location of the residential MEI moved from a point along Innes Avenue near the perimeter of the site to a point along the hillside closer to the center of the site.

Therefore, no new mitigation measures would be required.

ATTACHMENT A:
PROJECT OVERVIEW



RAMBOLL ENVIRON

Project Overview
Candlestick Point-Hunters Point Shipyard Phase II Development Plan
San Francisco, California

ATTACHMENT A

DRAFTED BY:

DATE: 11/29/2017

PROJECT: 1690001656



RAMBOLL ENVIRON

DRAFTED BY:

DATE: 11/29/2017

Project Overview
Candlestick Point-Hunters Point Shipyard Phase II Development Plan
San Francisco, California

ATTACHMENT

A

PROJECT: 1690001656

ATTACHMENT B:
CONSTRUCTION WORKERS AND EQUIPMENT PHASING PLAN

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2017	0	Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	5	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
2018	1	Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	6	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
2019	2	Site Preparation	Abatement	HP-01	2	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-02	3	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1) Water Truck			26	20	16	8	13
				HP-01 WWTP	1	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-01	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-02	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
			Grading & Infrastructure	HP-01 (Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HPS-01A (Geothermal)	10	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
2020	3	Site Preparation	Abatement	HP-01	4	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
			Demolition	HP-01	10	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-02	3	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
			Grading & Infrastructure	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(4) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	44	35	32	16	22
				HP-02	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(2) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	34	26	13	7	17
				HP-02 (Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-01 WWTP	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	16	8	18
				HP-03(Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-04 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
				HP-01 (Geothermal)	4	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	12	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	10	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-03	2	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18) Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2021	4	Site Preparation	Abatement	HP-04	3	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-03 (Roadway-YSB Connection)	2	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
				HP-01 Parks (Shipyard Hillside OS & Green Room)	1	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-03	4	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-04	6	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-03 (Roadway-YSB Connection)	3	(2) Man Lifts, (2)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (2)Water Trucks, (1) Crane			25	20	24	16	13
			Grading & Infrastructure	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	8	6	18
				HP-03	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	40	32	24	12	20
				HP-04(Surchage)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-04 (Geothermal)	4	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
				HP-02	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	10	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-02	5	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
			Abatement	HP-03	4	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-04	2	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-01 Parks (Shipyard Hillside OS & Green Room)	3	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-03	4	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-04	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-01 Parks (Shipyard Hillside OS & Green Room)	3	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Dozer, (1)Loaders, (1)Water Trucks	(1) Crane		20	16	8	4	10

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Major Phase Indicator

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2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2022	5	Site Preparation	Grading & Infrastructure	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	8	6	18
				HP-03	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	38	26	8	4	19
				HP-04	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(2) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	40	30	32	16	20
				HP-04 (Geothermal)	4	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
				HP-03 (Roadway-YSB Connection)	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	16	8	18
				HP-01 Parks (Shipyard Hillside OS & Green Room)	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(2) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	44	35	16	8	22
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
				HP-02	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	20	16	16	8	10
				HP-01 Parks (Shipyard Hillside OS & Green Room)	2	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	10	8	8	4	5
			Interior and Exterior Finishes	HP-01	12	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-02	8	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-01 Parks (Shipyard Hillside OS & Green Room)	2	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
			Abatement	HP-05	5	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-06	3	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	1	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-03	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-05	5	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-06	4	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	3	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Dozer, (1)Loaders, (1)Water Trucks	(1) Crane		20	16	8	4	10

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Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2023	6	Site Preparation	Grading & Infrastructure	HP-01	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	8	6	18
				HP-03	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	38	26	8	4	19
				HP-04	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	36	28	8	6	18
				HP-05	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(3) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	42	33	32	16	21
				HP-05(Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-06(Surcharge)	2	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	7	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	16	8	18
				Deep Soil Mixing	6	(2) Drill Rigs, (1) Bobcat, (1) Loader, (2) Support Trucks, (1) Water Truck, (1) Dump Truck			16	12	8	4	8
				HP-06 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-03	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	40	32	16	8	20
				HP-04	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	12	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-03	3	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			20	16	8	4	10
				HP-04	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
		Roadway	Improvements	HP-03 (YS Bridge)	8	(1)Excavators, (2)Loaders, (2) Off Road Dump Truck, (1) Dozer, (4) barges, (4) Cranes, (1) Drill Rig, (1)Water Truck	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck, (1) Pile Driver	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (2) Pump Trucks	78	62	24	16	39
				HP-02 (Innes Ave)	10	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers	30	24	12	8	15
		Site Preparation	Abatement	HP-05	4	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	1	(1) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		10	8	8	4	5
			Demolition	HP-05	5	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	3	(1) Man Lifts, (1)Excavator, (1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks		(1) Crane	18	14	8	4	9
			Grading & Infrastructure	HP-05	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	36	28	16	8	18
				HP-06	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(4) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	44	35	32	16	22

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Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2024	7			HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	6		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
				HP-06 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-03	12	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-04	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-05	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	2	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	1	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck		18	14	16	8	9
			Interior and Exterior Finishes	HP-03	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			20	16	8	4	10
				HP-04	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-05	8	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	6	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	10		(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader	15	12	8	4	8
		Roadway	Improvements	HP-03 (YS Bridge)	8	(1)Excavators, (2)Loaders, (2) Off Road Dump Truck, (1) Dozer, (4) barges, (4) Cranes, (1) Drill Rig, (1)Water Truck	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck, (1) Pile Driver	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (2) Pump Trucks	78	62	24	16	39
				HP-02 (Innes Ave.)	6	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers	30	24	12	8	15
		Site Preparation	Demolition	HP-05	3	(2) Man Lifts, (2)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (2)Water Trucks, (1) Crane			25	20	24	16	13
			Grading & Infrastructure	HP-05	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	36	28	16	8	18
				HP-06	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	38	30	8	6	19
				HP-06 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
				HP-03 (Roadway-YSB Connection)	6	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	5		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
				HP-03	9	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10

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						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2025	8	Building Construction	Foundation Piles/Structure/ Rough-In	HP-04	4	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-05	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-06	12	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-03	6	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-04	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-05	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-06	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	12		(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift	18	12	8	4	9
		Roadway	Improvements	HP-03 (YS Bridge)	8	(1)Excavators, (2)Loaders, (2) Off Road Dump Truck, (1) Dozer, (4) barges, (4) Cranes, (1) Drill Rig, (1)Water Truck	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck, (1) Pile Driver	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (2) Pump Trucks	78	62	24	16	39
2026	9	Site Preparation	Abatement	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	4	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	16	8	7
			Demo	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	8	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks		(1) Crane	20	16	24	16	10
			Grading	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	9		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-05	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-06	11	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-03	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-05	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-06	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,		25	20	8	4	13
		Site Preparation	Demo	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	2	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks		(1) Crane	20	16	24	16	10

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						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2027	10	Site Preparation	Grading	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	6		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-04 Bridges	5	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
			Interior and Exterior Finishes	HP-06	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-04 Bridges	5	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,		25	20	8	4	13
2028	11	Roadway	Improvements	HP-04 Palou Ave.	6	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers	30	24	12	8	15
2029	12	Site Preparation	Abatement	HP-04 Parks (Community SFC)	4	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	16	8	7
			Demo	HP-04 Parks (Community SFC)	8	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
2030	13	Site Preparation	Abatement	HP-06 Parks (Grassland EP, Multiuse OS)	7		(1) Water Truck		13	10	16	8	7
			Demo	HP-05 Parks (Heritage Park, WF Prom NP)	7	(1) Man Lifts, (1)Excavator, (1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks			15	12	8	4	8
				HP-06 Parks (Grassland EP, Multiuse OS)	6	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
			Grading	HP-04 Parks (Community SFC)	7	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1) Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
				HP-05 Parks (Heritage Park, WF Prom NP)	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	24	16	13
			Interior and Exterior Finishes	HP-04 Parks (Community SFC)	9	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
2031	14	Site Preparation	Abatement	HP-06 Parks (Maint. Yard)	4	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	16	8	7
			Demo	HP-05 Parks (Heritage Park, WF Prom NP)	2	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	24	16	13
				HP-06 Parks (Grassland EP, Multiuse OS)	4	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
				HP-06 Parks (Maint. Yard)	4	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
			Grading	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1)Water Truck	Soil stabilizer, (1)	25	20	24	16	13
				HP-06 Parks (Maint. Yard)	2	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1) Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
		Building Construction	Interior and Exterior Finishes	HP-06 Parks (Maint. Yard)	3	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
		Site Preparation	Demo	HP-06 Parks (Grassland EP, Multiuse OS)	5	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2032	15		Grading	HP-06 Parks (Grassland EP, Multiuse OS)	9	(2)Excavators, (4)Loaders, (2)Bobcat, (4) Off Road Dump Truck, (2)Water Truck		(1) Barge	40	32	140	120	20
		Building Construction	Interior and Exterior Finishes	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		15	12	8	4	8
				HP-06 Parks (Grassland EP, Multiuse OS)	3	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
2033	16	Building Construction	Interior and Exterior Finishes	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		15	12	8	4	8
				HP-06 Parks (Grassland EP, Multiuse OS)	8	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
2034	17	Building Construction	Interior and Exterior Finishes	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		15	12	8	4	8

CPHPSII Project - Construction Workers and Equipment for Field Managment by Year (Revision Date: 2/26/2018)
Prepared by TRC for EIR analysis

Construction Phase	Yearly Average Duration (months)	Daily Construction Workers		Daily Construction Truck Trips [1]			Construction Equipment [3]	Construction Equipment [3]	Construction Equipment [3]
		Max. Number of workers	Avg. Number of workers	Max. Number of truck trips	Avg. Number of truck trips	Number of on site equipment	Full Time	1/2 Time	1/4 Time
Field Management 2014	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2015	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2016	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2017	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2018	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2019	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2020	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2021	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2022	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2023	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2024	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2025	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2026	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2027	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2028	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2029	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2030	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2031	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2032	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2033	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2034	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	

Note:
1. Number of truck trips making deliveries, and number of truck trips required for materials removal, see assumptions for trip details.
2. Back up equipment is kept onsite to minimize downtime if a piece of equipment breaks down and needs replacement. Typically this equipment will not be used on a day to day basis.
3. It should be assumed that all Man Lifts referenced in the "Construction Equipment" columns will be propane or electric powered.
4. Hunters Point and Candlestick Point will each utilize a new dedicated crushing plant located near the Bay. The crushing plants will be comprised of 1 loader, 1 hammer, 1 screener, 1 crusher and an adjacent batch plant. Each crushing plant will operate ½ time.

(2) = Number of pieces of specified equipment.

Assumptions

Max. number of round trips to 8 total trips
Each truck will be able to carry 20 tons of material
Personal vehicle trips to and from the construction site were not included in the truck trip calculations and are estimated to be 1 trip for every 2 workers as incentives will be offered for use of mass transit and car/van pooling.
Import fill will be brought onto the site through two primary modes; Trucks (60%) and Barge (40%).
Quantities do not account for concurrent remediation work occurring at Hunters Point Shipyard.

CPHPSII Project - Construction Workers and Equipment for Shoreline Improvements by Construction Phase (Revision Date: 2/26/18)
Prepared by TRC for EIR analysis

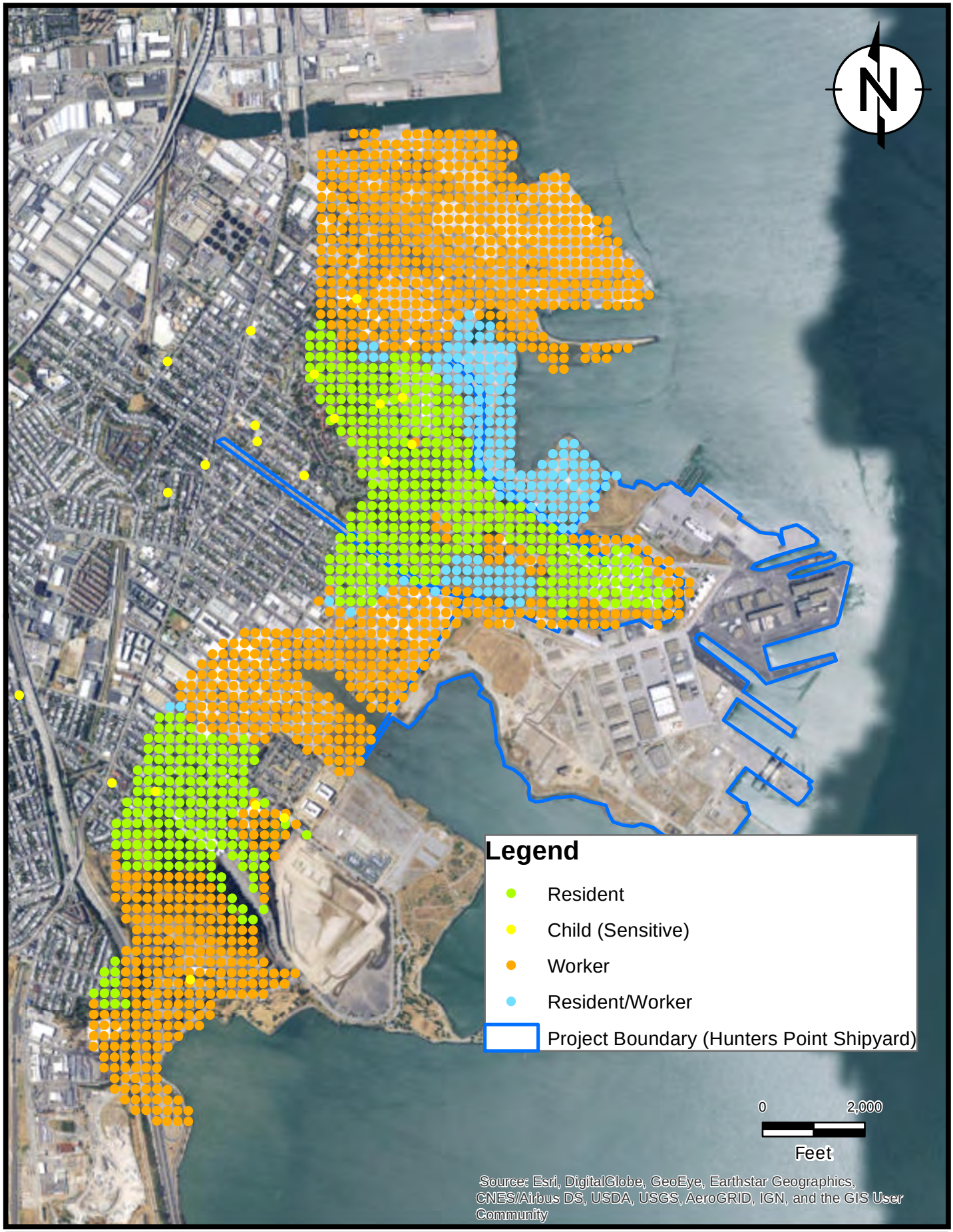
	Yearly Average Duration (months)	Daily Construction Workers		Daily Construction Truck Trips [1]	Daily Construction Truck Trips [1]	Yearly Barge Trips		Construction Equipment [2,3]	Construction Equipment [2]	Construction Equipment [2]
		Max. Number of workers	Avg. Number of workers	Max. Number of truck trips	Avg. Number of truck trips	Number of Round Trips	Number of on site equipment	Full Time	1/2 Time	1/4 Time
Hunters Point Shipyard										
2019 Shoreline										
HP-02 (Outfalls A, B, and H)	6	21	18	0	0	6	5	(1) Floating Platforms, (1) Bobcat	(1) Cranes, (1)Barge, (1) Bobcat	
2020 Shoreline										
HP-01 (Outfalls D and E)	6	21	18	0	0	6	5	(1) Floating Platforms, (1) Bobcat	(1) Cranes, (1)Barge, (1) Bobcat	
2021 Shoreline										
2022 Shoreline										
2023 Shoreline										
2024 Shoreline										
Demolition and Improvements (Waterfront Prom N)	8	21	18	0	0	6	2	(1) Floating Platforms, (1) Bobcat		
2025 Shoreline										
Demolition and Improvements (Waterfront Prom N)	6	21	18	0	0	6	5	(1) Floating Platforms, (1) Bobcat	(1) Cranes, (1)Barge, (1) Bobcat	
2026 Shoreline										
Demolition and Improvements (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	7	21	18	0	0	15	9	(2) Floating Platforms, (2) Cranes, (2) Excavator, (2) Bobcat	(1)Barge	
2027 Shoreline										
Demolition and Improvements (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	6	21	18	0	0	15	9	(2) Floating Platforms, (2) Cranes, (2) Excavator, (2) Bobcat	(1)Barge	
2030 Shoreline										
Demolition and Improvements (Heritage Park, Waterfront Prom NP)	6	21	18	0	0	20	7	(2) Floating Platforms, (2) Cranes, (1) Excavator, (2) Bobcat	(1)Barge	
2031 Shoreline										
Demolition and Improvements (Heritage Park, Waterfront Prom NP)	6	21	18	0	0	20	7	(2) Floating Platforms, (2) Cranes, (1) Excavator, (2) Bobcat	(1)Barge	
2032 Shoreline										
Demolition and Improvements (Grassslands Ecology Park, Multiuse Open Space)	7	21	18	0	0	10	7	(2) Floating Platforms, (2) Cranes, (1) Excavator, (2) Bobcat	(1)Barge	
Candlestick Point										
2021 Shoreline										
Improvements (Last Port + The Neck)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2025 Shoreline										
Improvements (The Point + The Heart of the Park)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2027 Shoreline										
Improvements (The Last Rubble and Wind Meadow)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2030 Shoreline										
Improvements (Bayview Gardens)	2	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2032 Shoreline										
Improvements (Grasslands S1, Grasslands S2)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge

Note:
1. Number of truck trips making deliveries, and number of truck trips required for materials removal, see assumptions for trip details.
2. The construction equipment in this table identifies what will be required in addition to the equipment already onsite performing infrastructure work.
3. It should be assumed that all Floating Platforms referenced in the "Construction Equipment" columns will be propane or electric powered.
(2) = Number of pieces of specified equipment.

Assumptions

Each truck will be able to carry 15 cy of material
Each barge will be able to carry 2500 tons of material
Hunters Point Shipyard import fill will be brought on site by barge (100%)
Candlestick Point import fill will be brought on site by barge (50%), and sourced on site (50%).
Quantities do not account for work performed by Navy.

ATTACHMENT C:
RECEPTOR LOCATIONS



RAMBOLL ENVIRON

DRAFTED BY:

DATE: 12/7/2017

Receptor Locations
Candlestick Point-Hunters Point Shipyard Phase II Development Plan
San Francisco, California

ATTACHMENT C

PROJECT 1690001656

ATTACHMENT D:
SUMMARY OF CANCER RISKS AT THE MAXIMALLY EXPOSED INDIVIDUALS

Attachment D
Summary of Cancer Risks[1] at the Maximally Exposed Individuals (MEI)[2]
Candlestick Point - Hunters Point Shipyard Phase II Development Plan
San Francisco, California

Project Analysis	School Child	Offsite Worker	Resident			
			Adult		Child	
			High End	Average	High End	Average
2010 EIR	2.34E-07	3.82E-06	1.64E-06	1.47E-06	3.15E-06	2.45E-06
2017 Addendum	2.12E-07	3.48E-06	8.76E-07	7.86E-07	1.69E-06	1.31E-06

Notes:

1. Cancer risks were estimated using the following equation:

Riskinh =Ci x CF x IFinh x CPFi x ASF

Where:
Riskinh = Cancer Risk for the Inhalation Pathway (unitless)
Ci = Annual Average Air Concentration for Chemical "i" (µg/m3)
CF = Conversion Factor (mg/µg)
IFinh = Intake Factor for Inhalation (m3/kg-day)
CPFi = Cancer Potency Factor for Chemical "i" (mg/kg-day)-1
ASF = Age Sensitivity Factor (unitless)

2. Latitude/Longitude coordinates of the MEI (same location for 2010 EIR and 2017 Addendum unless otherwise specified):

School Child: 37.717974, -122.387394
Offsite Worker: 37.721275, -122.382757
Resident (2010 EIR): 37.731126, -122.370760
Resident (2017 Addendum): 37.727501, -122.366819

Appendix F2

Air Quality Operational Emissions Data

ESA

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ENVIRONMENT
& HEALTH

MEMO

To **Jose Campos,**
Office of Community Investment and Infrastructure
Joy Navarette
Planning Department, City and County of San Francisco

From **Michael Keinath**
Sarah Manzano

Subject **OPERATIONAL AIR QUALITY AND GREENHOUSE GAS EMISSIONS AND $PM_{2.5}$ CONCENTRATION EVALUATIONS FOR CANDLESTICK POINT- HUNTERS POINT SHIPYARD PHASE II, SAN FRANCISCO, CALIFORNIA**

Date March 30, 2018

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Ramboll US Corporation (Ramboll) conducted an evaluation of criteria air pollutant (CAP) and greenhouse gas (GHG) emissions and $PM_{2.5}$ concentration associated with the operation of Candlestick Point – Hunters Point Shipyard Phase II, San Francisco, California (the "Project") in support of Addendum #5 to the Environmental Impact Report (EIR 2007.0946E). This memorandum provides background and a description of the emissions evaluation methodology and results for the operation of the Project.

PROJECT BACKGROUND

The Candlestick Point (CP) – Hunters Points Shipyard II (HPS2) project is located along the southeastern waterfront in San Francisco, and covers an area of approximately 702 acres. The HPS2 site includes residences, hotels, offices, schools, retail/shared amenities, parks and open spaces, a marina and structured parking land uses. The CP site includes a performance venue, residences, hotel, retail/shared amenities and structured parking lots. The project land use summary for CP and HPS2 is presented in **Tables 1a** and **1b** respectively.

OPERATIONAL EMISSIONS METHODOLOGY AND RESULTS

Ramboll primarily utilized the California Emission Estimator Model version 2016.3.2 (CalEEMod®)[1] to assist in quantifying the criteria pollutant and greenhouse gas emissions for Project operational phases. Emissions associated with the construction phase for HPS2 were estimated separately and described in a separate memorandum. CalEEMod® provides a simple platform to calculate emissions from a land use project. It calculates both the daily maximum and annual average emissions for criteria pollutants and greenhouse gases. The model also provides default values for water, wastewater, solid waste, energy use, and mobile and area sources.

Criteria air pollutants and greenhouse gas emissions for Project operation were estimated from mobile sources, areas sources, and energy usage, while emissions of greenhouse gases were estimated for water use and solid waste in addition. Consistent with the FEIR, emissions of Reactive Organic Gases (ROG) and Nitrogen

[1] CAPCOA. 2017. California Emissions Estimator Model. Version 2016.3.2. Available at: http://www.caleemod.com/.

Oxides (NO_x) were calculated under summer conditions and emissions of Particulate Matter PM_{10} and $PM_{2.5}$ were calculated under winter conditions. CalEEMod® does not calculate emissions for public lighting or transit service, so greenhouse gas emissions from these categories were added directly from the 2010 FEIR. This is conservative, as lighting and transit are likely to be more efficient than when the 2010 FEIR was published.

Operational emissions were based on land use specific CalEEMod® default values for building energy use and consumer products. The carbon intensity of electricity was based on the projected electricity intensity in 2030, based on the State's Renewables Portfolio Standard (RPS) target of 50 percent in 2030, using the average of PG&E's 2013, 2014, and 2015 emissions data as a base, as shown in **Table 2**. All default woodstoves and wood-fired fireplaces in CalEEMod® were assumed to be replaced by natural gas fireplaces.[2]

Daily mobile trip rate totals were obtained from a traffic study by Fehr & Peers[3] for both CP and HPS2. Total trip rates were allocated to specific land uses using the ratio of CalEEMod® default trip rates for each land use. The Saturday and Sunday total trip rates were calculated using the same ratio as CalEEMod® default weekday to weekend trip rates. Trip rates are shown in **Table 3**. Trip lengths for CAP and GHG emissions for CP and HPS2 were consistent with the trip lengths in the 2010 FEIR for CAP emissions and GHG emissions, respectively.[4] CalEEMod® land use specific default values were used for other mobile source parameters such as trip purposes, vehicle emission factors, and fleet mix.

Water demand for each land use class was obtained from the 2010 FEIR where available. Water demand was allocated between indoor and outdoor usage using CalEEMod default percentages. When water demand from a specific land use was not available from the 2010 FEIR, CalEEMod® default demand was used. Similarly, solid waste generation rate for each land use class was obtained from the 2010 FEIR or CalEEMod® defaults, as shown in Attachment A.[5]

The proposed site also includes 10,000 new trees within the project boundary that will sequester carbon, consistent with the EIR. As discussed in the 2010 FEIR, planting 10,000 new trees in the project site will result in a sequestration of 7,000 tonnes of CO_2 over a 20 year active growing period. Consistent with the 2010 FEIR, this reduction was conservatively not included in the sum of GHG emissions, but was provided for informational purposes.

The average daily emissions estimated due to Project operations for CAP and GHGs are summarized in **Table 4** and **Table 5**, respectively. The estimated emissions sources include area sources (landscaping equipment, consumer products, and architectural coatings), building energy use, mobile sources (vehicle trips from workers, customers, residents, hotel guests, and delivery vehicles), emissions from water usage and solid waste disposal, and emissions from transit and public lighting.

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[2] BAAQMD. 2008. Regulation 6, Rule 3, Particulate Matter and Visible Emissions: Wood-Burning Devices. July. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Particulate%20Matter/rg0603.ashx

[3] Trip generation rates are project specific and were provided by the Project Applicant. Total daily trips were calculated by summing the AM and PM peak trips and multiplying by 5, based on the methodology described by the Fehr and Peers.

[4] Trip lengths were obtained from the Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, Appendix H1, PBS&J Air Quality Model Input/Output July 2009 for CAP emissions and from the Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, GHG Appendix S (Table 3-20) for GHG emissions.

[5] CalEEMod® default water and solid waste generation rates were used for different types of schools and hotels for Hunters Point Shipyard Phase II since these land uses were not modelled in the EIR.

$PM_{2.5}$ CONCENTRATION FROM TRAFFIC

Ramboll also analyzed the change in $PM_{2.5}$ concentration from traffic for the 2017 Modified Project Variant by scaling results from the 2010 FEIR by the change in traffic volume and emission factor. Figure 4-3 of Attachment IV of Appendix H3 of the 2010 FEIR shows the roadways and receptors modelled.

Traffic volumes for the 2017 Modified Project Variant were provided by Fehr and Peers and compared against traffic volumes analyzed in the 2010 FEIR for each roadway. AADT generally increased along Innes and Palou Avenue, but AADT generally decreased on Third Street and Gilman Avenue. $PM_{2.5}$ concentrations from the 2010 FEIR were scaled by the percent change in traffic volumes. The changes ranged from a 15% decrease in traffic volumes to a 29% increase in traffic volumes.

$PM_{2.5}$ concentrations were also scaled by the change in emission rates. Since the 2010 FEIR, exhaust emissions of $PM_{2.5}$ have decreased as a result of emissions control requirements. Fleet wide average emission rates for exhaust, tirewear and brakewear were obtained from ARB's EMission FACtor model, EMFAC2014, for year 2030 and compared against emission rates used in the 2010 FEIR. The $PM_{2.5}$ concentrations from the 2010 FEIR were also scaled by this percent change in emission rates, which was a 17% reduction in emissions.

After the scaling, the maximum $PM_{2.5}$ concentration from Project traffic was 0.211 µg/m^3. This location is on Innes Avenue, near the intersection with Arelious Walker and is on the roadway segment with the maximum percent increase in AADT.

The background $PM_{2.5}$ concentration at this location was obtained from the City of San Francisco's modelling for the Community Risk Reduction Plan (CRRP). The modeling is documented in *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*.[6] The background concentration is 8.6 µg/m^3.

When the Project traffic $PM_{2.5}$ concentration is combined with background $PM_{2.5}$ concentration, the total $PM_{2.5}$ concentration at this location is 8.8 µg/m^3. However, this is a conservative addition because we understand the modelling for the CRRP included impacts from the traffic volumes from the 2010 FEIR.

[6] BAAQMD. 2012. *The San Francisco Community Risk Reduction Plan*: Technical Support Documentation. December.

TABLES

Table 1a
CalEEMod® Land Uses for Candlestick Point
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Actual Land Use[1]	Land Use Type	Land Use Subtype[2]	Unit Amount	Size Metric	Lot Acreages (acres)[3]
Additional On - Street parking	Parking	Parking Lot	1,360	spaces	6.04
Community Use	Recreational	Health Club	50	ksf	0.57
FAC/Performance Venue	Recreational	Arena	75	ksf	11.90
Hotel	Recreational	Hotel	150	ksf	3.62
Neighborhood Retail	Retail	Strip Mall	125	ksf	1.42
Parking - Commercial (Structured)	Parking	Unenclosed parking structure	2,189	spaces	9.72
Parking - Residential (Structured)	Parking	Enclosed parking structure	7,218	spaces	32.06
Parks and Open Space	Recreational	City Park	112	acres	112.4
Regional Retail	Retail	Regional Shopping Center	635	ksf	7.82
Research & Development/Office	Commercial	Research and Development	150	ksf	1.70
Residential	Residential	Apartment Mid-rise	7,218	DU	93.75
Total acreage					**281.0**

Notes:

[1] Land uses associated with 2018 Modified Project Variant.

[2] Land uses as defined in CalEEMod®. When an exact mapping of a land use was not available in CalEEMod® relative to the project land use type, a category with similar emission characteristics was chosen.

[3] Non-default land acreage is based on a total acreage of 281 acres from EIR. CalEEMod® default acres (expect acreage for Parks and Open Spaces) are scaled down so that total land acreage adds up to this number.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel

DU - dwelling units

ksf - thousand square feet

Table 1b
CalEEMod® Land Uses for Hunters Point Shipyard Phase II
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Actual Land Use[1]	Land Use Type	Land Use Subtype[2]	Unit Amount	Size Metric	Lot Acreages (acres)[3]
Additional On - Street parking	Parking	Parking Lot	1,487	spaces	7.1
Artist Studio	Commercial	General Office Building	255	ksf	3.1
Community Use	Recreational	Health Club	50	ksf	0.6
Hotel	Recreational	Hotel	120	ksf	3.1
Neighborhood Retail and Maker Space	Retail	Strip Mall	301	ksf	3.7
Parking - Commercial (Structured)	Parking	Unenclosed parking structure	7,119	spaces	34.1
Parking - Residential (Structured)	Parking	Enclosed parking structure	3,454	spaces	16.5
Parks and Open Space	Recreational	City Park	249	acres	249.0
Research & Development/Office	Commercial	Research & Development	4,265	ksf	52.1
Regional Retail	Retail	Regional Shopping Center	100	ksf	1.2
Residential	Residential	Apartment Mid-rise	3,454	DU	48.3
School/Institution	Educational	High School	28	ksf	0.5
School/Institution	Educational	Junior High School	345	ksf	1.5
School/Institution	Educational	Junior College	37	ksf	0.2
Total acreage					**421.0**

Notes:

[1] Land uses associated with 2018 Modified Project Variant.

[2] Land uses as defined in CalEEMod®. When an exact mapping of a land use was not available in CalEEMod® relative to the project land use type, a category with similar emission characteristics was chosen.

[3] Non-default land acreage is based on a total acreage of 421 acres from EIR. CalEEMod® defaults are scaled down so that total land acreage adds up to this number.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel

DU - dwelling units

ksf - thousand square feet

Table 2
PG&E Electricity Intensity Factor Derivations
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

	2013[1,2]	2014[1,3]	2015[1,4]	Average[5]	Units
CO_2 Intensity Factor per Total Energy Delivered	427.3	434.9	405.0	422.4	lbs CO_2/MWh delivered
% of Total Energy From Renewables	22.5%	27%	29.5%	26.3%	
CO_2 Intensity Factor per Total Non-Renewable Energy[6]	551	596	574	573.4	lbs CO_2/MWh delivered
Estimated Intensity Factor for Total Energy Delivered[7,8]					
2030 RPS (50%)[9]	275.7	297.9	287.2	286.7	lbs CO_2/MWh delivered
	278.2	300.5	289.8	289.3	lbs CO_2e/MWh delivered

Notes:

[1] Total CO_2 emission factor from The Climate Registry. Available at: https://www.theclimateregistry.org/our-members/cris-public-reports/. Accessed: October 2017.

[2] Percent of total energy from eligible renewables is from the PGE 2014 Corporate Responsibility Report. Available at: http://www.pgecorp.com/corp_responsibility/reports/2014/PGE_CRSR_2014.pdf.

[3] Percent of total energy from eligible renewables is from the PGE 2015 Corporate Responsibility Report. Available at: http://www.pgecorp.com/corp_responsibility/reports/2015/PGE_CRSR_2015.pdf.

[4] Percent of total energy from eligible renewables is from the PGE 2016 Corporate Responsibility Report. Available at: http://www.pgecorp.com/corp_responsibility/reports/2016/PGE_CRSR_Environment.pdf.

[5] This average uses the most recent three years of data available.

[6] The emissions metric presented here is calculated based on the total CO_2 intensity factor divided by the percent of energy delivered from non-renewable sources.

[7] The intensity factor for total energy delivered is estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO_2 emissions per total non-renewable energy metric calculated above. The estimate provided here and the energy reports issued by PGE assume that renewable energy sources do not result in any CO_2 emissions.

[8] Global Warming Potentials (GWP) are based on the IPCC Fourth Assessment Report. CH_4 and N_2O emission factors are from the CalEEMod version 2016.3.2 defaults for PGE, and are conservatively assumed not to change from these estimates. As more renewable energy is integrated into the electricity grid, these intensity factors will also decrease.

[9] Emission factor presented here is based on a 50% projected RPS target for 2030 consistent with SB 350. Available at: http://www.energy.ca.gov/sb350/. Accessed: October 2017.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CARB - California Air Resources Board
CO_2 - carbon dioxide
GHG - greenhouse gases
lbs - pounds
MWh - megawatt-hour
RPS - Renewable Portfolio Standards
PGE - Pacific Gas & Electric
SB - Senate Bill
USEPA - US Environmental Protection Agency

RAMBOLL

Table 3
Adjusted Trip Rates for Project Operation
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Phase	CalEEMod® Land Use Subtype	Units	Size Metric	Percent of Trips in Phase Group[1]	Adjusted Total Trips[2]			Trip rate (/size/day)		
					Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
CP	Apartment Mid-rise	7,218	DU	56%	20,222	19,431	17,819	2.75	2.64	2.43
	Arena	75	ksf	1%	338	338	338	4.43	4.43	4.43
	City Park	112	acres	0%	89	1,077	793	0.78	9.42	6.93
	Enclosed parking structure	7,218	spaces	0%	0	0	0	0.00	0.00	0.00
	Health Club	50	ksf	2%	694	23	563	13.63	0.46	11.06
	Hotel	150	rooms	2%	757	759	551	3.38	3.39	2.46
	Parking Lot	1,360	spaces	0%	0	0	0	0.00	0.00	0.00
	Research and Development	150	ksf	1%	512	120	70	3.36	0.79	0.46
	Regional Shopping Center	635	ksf	31%	11,423	13,368	6,752	17.7	20.68	10.45
	Strip Mall	125	ksf	6%	2,334	2,214	1,076	18.3	17.40	8.46
	Unenclosed parking structure	2,189	spaces	0%	0	0	0	0.00	0.00	0.00
	Total[3]	-	-	100%	36,370	37,331	27,963	-	-	-
HPS Phase II	Apartment Mid-rise	3,454	DU	27%	9,354	8,989	8,243	2.71	2.60	2.39
	City Park	249	acres	1%	192	2,310	1,700	0.77	9.27	6.82
	Enclosed parking structure	3,454	spaces	0%	0	0	0	0.00	0.00	0.00
	General Office Building	255	ksf	3%	1,145	255	109	4.49	1.00	0.43
	Health Club	50	ksf	2%	671	425	544	13.41	8.50	10.89
	High School	300	students	1%	209	75	31	0.70	0.25	0.10
	Hotel	175	rooms	2%	582	584	424	3.33	3.34	2.42
	Junior College	400	students	1%	200	68	0	0.50	0.17	0.00
	Junior High School	1,012	students	2%	668	0	0	0.66	0.00	0.00
	Parking Lot	1,487	spaces	0%	0	0	0	0.00	0.00	0.00
	Regional Shopping Center	100	ksf	5%	1,739	2,035	1,028	17.39	20.35	10.28
	Research & Development	4,265	ksf	41%	14,087	3,300	1,928	3.30	0.77	0.45
	Strip Mall	301	ksf	16%	5,433	5,153	2,504	18.05	17.12	8.32
	Unenclosed parking structure	7,119	spaces	0%	0	0	0	0.00	0.00	0.00
	Total[3]	-	-	100%	34,280	23,194	16,511	-	-	-

Notes:

[1] CalEEMod® default weekday trip generation rates for each land use were used to allocate the Project-specific total trips among each land use for modeling.

[2] Adjusted total weekday trips are calculated by multiplying the percent of trips in each phase group by the total trips for that phase group. Saturday and Sunday trip rates are adjusted based on the the ratio of default Saturday and Sunday to weekday CalEEMod® default total trips.

[3] Trip generation rates were provided by the Project Applicant. Total daily trips were calculated by summing the AM and PM peak trips and multiplying by 5.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
DU - dwelling unit
ksf - thousand square feet
CP - Candlestick Point
HPS - Hunters Point Shipyard

Table 4
Operational CAP Emissions
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Operational Emissions for Project, Buildout (2032)[1]															
Category	HPS Phase II[2]					CP[2]					Total Project - HPS Phase II + CP[2]				
	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
	(lb/day)					(lb/day)					(lb/day)				
Area[3]	176	3	33	6.2	6.2	178	7	68	12.9	12.9	354	10	100	19.1	19.1
Natural Gas Use	4.6	41.3	31.5	3.2	3.2	2.3	20.1	10.3	1.6	1.6	6.9	61	42	4.8	4.8
Mobile[4]	33	131	354	184	50	34	137	366	189	51	67	268	720	373	102
Total	**213**	**176**	**418**	**193**	**59**	**215**	**164**	**444**	**203**	**66**	**428**	**340**	**862**	**397**	**125**
Emissions from EIR[5]	255	119	947	424	81	666	265	2,276	1,029	197	921	384	3,223	1,453	278
										Exceeds EIR?	**No**	**No**	**No**	**No**	**No**

Notes:

[1] Operational emissions calculated with CalEEMod® version 2016.3.2.

[2] 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. Emissions from fireplaces during summer are not included for ROG and NOx emissions since the EIR does not report hearth emissions in summer.

[3] For consumer products, ROG emissions were calculated based on the average emissions factor for the City of San Francisco. San Francisco's ROG emissions from consumer products was 5.30 tons (Ref:https://www.arb.ca.gov/app/emsinv/emssumcat.php). San Francisco's square footage was 703,541,231 square feet (Ref: 2011 Land Use data). Therefore, the emission factor was updated as follows: (5.30 tons/day * 2000 lbs/ton)/703,541,231 sq. ft. = 1.51 x 10-5 lbs/(sq. ft.-day).

[4] Trip rates for Candlestick Point and Hunters Point are based on a study by F&P. The total daily trip rates were calculated based on CalEEMod® default trip generation rates. Trip lengths for CAP emissions are from the EIR AQ section (Appendix H1).

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

Abbreviations:

AQ - Air Quality
CAP - criteria air pollutant
CO - Carbon monoxide
CP - Candlestick Point
EIR- Environmental Impact Report
F&P - Fehr and Peers
HPS - Hunters Point Shipyard
lb/day - pounds per day
NOx - nitrogen oxides
PM_{10} - particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ - particulate matter less than 2.5 micrometers in diameter
ROG - reactive organic gases

References:

BAAQMD. 2017. California Environmental Quality Act Air Quality Guidelines. May. Available online at: www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

Table 5
Operational GHG Emissions
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

GHG Emissions[1]	HPS Phase II	CP	Total Project - HPS Phase II + CP
Category	CO_2e (MT/yr)		
Area	2,268	4,739	7,008
Natural Gas Use	8,348	4,230	12,578
Electricity Use	9,266	7,850	17,115
Mobile	29,111	32,153	61,264
Water Use	719	426	1,145
Waste Disposal	4,651	4,491	9,141
Public Lighting[2]	227	651	878
Transit Service[2]	865	865	1,730
Total	**55,455**	**55,405**	**110,859**
GHG Emissions from EIR[3]	52,842	101,798	154,639
Exceeds EIR?			**No**

Notes:

[1] Operational emissions calculated with CalEEMod® version 2016.3.2.

[2] Emissions from public lighting and transit service are not calculated in CalEEMod®. These emissions were conservatively included from the Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, GHG Appendix S. Public lighting emissions are from Table 3-28 therein, while transit service emissions are from Table 3-36.

[3] GHG emissions from Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, Section III.S Greenhouse Gas Emissions, Table III.S-4 (2009) and from GHG Appendix S, Table 3-36.

Abbreviations:

CP - Candlestick Point
CO2e - Carbon dioxide equivalent
EIR - Environmental Impact Report
GHG - greenhouse gas
HPS - Hunters Point Shipyard
MT - metric ton
yr - year

ATTACHMENT A
CalEEMod® Output

Candlestick Point - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	150.00	1000sqft	1.70	150,000.00	0
Enclosed Parking Structure	7,218.00	Space	32.06	2,887,200.00	0
Parking Lot	1,360.00	Space	6.04	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.72	875,600.00	0
Arena	75.00	1000sqft	11.90	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.57	50,000.00	0
Hotel	220.00	Room	3.62	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.75	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.82	635,000.00	0
Strip Mall	125.00	1000sqft	1.42	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	3.44	1.70
tblLandUse	LotAcreage	64.96	32.06
tblLandUse	LotAcreage	12.24	6.04
tblLandUse	LotAcreage	19.70	9.72
tblLandUse	LotAcreage	24.11	11.90
tblLandUse	LotAcreage	1.15	0.57
tblLandUse	LotAcreage	7.33	3.62
tblLandUse	LotAcreage	189.95	93.75
tblLandUse	LotAcreage	14.58	7.82
tblLandUse	LotAcreage	2.87	1.42
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	11.40	164.25
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.64
tblVehicleTrips	ST_TR	10.71	4.43
tblVehicleTrips	ST_TR	22.75	9.42
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.39
tblVehicleTrips	ST_TR	49.97	20.68
tblVehicleTrips	ST_TR	1.90	0.79
tblVehicleTrips	ST_TR	42.04	17.40

tblVehicleTrips	SU_TR	5.86	2.43
tblVehicleTrips	SU_TR	10.71	4.43
tblVehicleTrips	SU_TR	16.74	6.93
tblVehicleTrips	SU_TR	26.73	11.06
tblVehicleTrips	SU_TR	5.95	2.46
tblVehicleTrips	SU_TR	25.24	10.45
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.46
tblVehicleTrips	WD_TR	6.65	2.75
tblVehicleTrips	WD_TR	10.71	4.43
tblVehicleTrips	WD_TR	1.89	0.78
tblVehicleTrips	WD_TR	32.93	13.63
tblVehicleTrips	WD_TR	8.17	3.38
tblVehicleTrips	WD_TR	42.70	17.67
tblVehicleTrips	WD_TR	8.11	3.36
tblVehicleTrips	WD_TR	44.32	18.34
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	73,754,092.08	7,774,500.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00

tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246
Total	**233.5490**	**323.3634**	**1,035.8497**	**2.8684**	**187.7460**	**19.0095**	**206.7555**	**50.3403**	**18.9285**	**69.2688**	**0.0000**	**403,029.1818**	**403,029.1818**	**11.7958**	**4.2020**	**404,576.2715**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246
Total	**233.5490**	**323.3634**	**1,035.8497**	**2.8684**	**187.7460**	**19.0095**	**206.7555**	**50.3403**	**18.9285**	**69.2688**	**0.0000**	**403,029.1818**	**403,029.1818**	**11.7958**	**4.2020**	**404,576.2715**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.82

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,777,500; Non-Residential Outdoor: 592,500; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246
Unmitigated	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	19,849.50	19,055.52	17539.74	53,265,026	53,265,026
Arena	332.25	332.25	332.25	654,038	654,038
City Park	87.67	1,058.81	778.93	699,951	699,951
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	681.50	23.00	553.00	993,795	993,795
Hotel	743.60	745.80	541.20	1,372,610	1,372,610
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,220.45	13,131.80	6635.75	19,210,480	19,210,480
Research & Development	504.00	118.50	69.00	977,469	977,469
Strip Mall	2,292.50	2,175.00	1057.50	3,268,020	3,268,020
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	35,711.47	36,640.68	27,507.37	80,441,390	80,441,390

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
NaturalGas Unmitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10171.2	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10.1712	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Unmitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	150.00	1000sqft	1.70	150,000.00	0
Enclosed Parking Structure	7,218.00	Space	32.06	2,887,200.00	0
Parking Lot	1,360.00	Space	6.04	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.72	875,600.00	0
Arena	75.00	1000sqft	11.90	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.57	50,000.00	0
Hotel	220.00	Room	3.62	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.75	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.82	635,000.00	0
Strip Mall	125.00	1000sqft	1.42	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	3.44	1.70
tblLandUse	LotAcreage	64.96	32.06
tblLandUse	LotAcreage	12.24	6.04
tblLandUse	LotAcreage	19.70	9.72
tblLandUse	LotAcreage	24.11	11.90
tblLandUse	LotAcreage	1.15	0.57
tblLandUse	LotAcreage	7.33	3.62
tblLandUse	LotAcreage	189.95	93.75
tblLandUse	LotAcreage	14.58	7.82
tblLandUse	LotAcreage	2.87	1.42
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	11.40	164.25
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.64
tblVehicleTrips	ST_TR	10.71	4.43
tblVehicleTrips	ST_TR	22.75	9.42
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.39
tblVehicleTrips	ST_TR	49.97	20.68
tblVehicleTrips	ST_TR	1.90	0.79
tblVehicleTrips	ST_TR	42.04	17.40

tblVehicleTrips	SU_TR	5.86	2.43
tblVehicleTrips	SU_TR	10.71	4.43
tblVehicleTrips	SU_TR	16.74	6.93
tblVehicleTrips	SU_TR	26.73	11.06
tblVehicleTrips	SU_TR	5.95	2.46
tblVehicleTrips	SU_TR	25.24	10.45
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.46
tblVehicleTrips	WD_TR	6.65	2.75
tblVehicleTrips	WD_TR	10.71	4.43
tblVehicleTrips	WD_TR	1.89	0.78
tblVehicleTrips	WD_TR	32.93	13.63
tblVehicleTrips	WD_TR	8.17	3.38
tblVehicleTrips	WD_TR	42.70	17.67
tblVehicleTrips	WD_TR	8.11	3.36
tblVehicleTrips	WD_TR	44.32	18.34
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	73,754,092.08	7,774,500.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00

tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484
Total	**230.6027**	**329.5926**	**1,039.0376**	**2.7907**	**187.7460**	**19.0126**	**206.7586**	**50.3403**	**18.9314**	**69.2717**	**0.0000**	**395,190.0375**	**395,190.0375**	**11.8906**	**4.2020**	**396,739.4952**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484
Total	**230.6027**	**329.5926**	**1,039.0376**	**2.7907**	**187.7460**	**19.0126**	**206.7586**	**50.3403**	**18.9314**	**69.2717**	**0.0000**	**395,190.0375**	**395,190.0375**	**11.8906**	**4.2020**	**396,739.4952**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.82

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,777,500; Non-Residential Outdoor: 592,500; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484
Unmitigated	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	19,849.50	19,055.52	17539.74	53,265,026	53,265,026
Arena	332.25	332.25	332.25	654,038	654,038
City Park	87.67	1,058.81	778.93	699,951	699,951
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	681.50	23.00	553.00	993,795	993,795
Hotel	743.60	745.80	541.20	1,372,610	1,372,610
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,220.45	13,131.80	6635.75	19,210,480	19,210,480
Research & Development	504.00	118.50	69.00	977,469	977,469
Strip Mall	2,292.50	2,175.00	1057.50	3,268,020	3,268,020
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	35,711.47	36,640.68	27,507.37	80,441,390	80,441,390

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
NaturalGas Unmitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10171.2	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10.1712	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Unmitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,265.00	1000sqft	52.10	4,265,000.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.50	1,381,600.00	0
Parking Lot	1,487.00	Space	7.10	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.10	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.30	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	97.91	52.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.50
tblLandUse	LotAcreage	13.38	7.10
tblLandUse	LotAcreage	64.07	34.10
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.30
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	324.11	4,670.18
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.50
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.35
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.12
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10

tblVehicleTrips	SU_TR	5.95	2.42
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.28
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.32
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.49
tblVehicleTrips	WD_TR	32.93	13.41
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.39
tblVehicleTrips	WD_TR	8.11	3.30
tblVehicleTrips	WD_TR	44.32	18.05
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,097,074,684.82	221,054,950.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00

tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948
Total	**222.2150**	**252.3535**	**701.8634**	**2.3997**	**182.9812**	**12.0916**	**195.0728**	**49.0627**	**12.0129**	**61.0756**	**0.0000**	**316,363.9876**	**316,363.9876**	**9.5240**	**2.7069**	**317,408.7556**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948
Total	**222.2150**	**252.3535**	**701.8634**	**2.3997**	**182.9812**	**12.0916**	**195.0728**	**49.0627**	**12.0129**	**61.0756**	**0.0000**	**316,363.9876**	**316,363.9876**	**9.5240**	**2.7069**	**317,408.7556**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 57.7

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,251,499; Non-Residential Outdoor: 2,750,500; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948
Unmitigated	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,360.34	8,980.40	8255.06	25,109,480	25,109,480
City Park	191.73	2,308.23	1698.18	1,526,867	1,526,867
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,144.95	255.00	109.65	2,096,224	2,096,224
Health Club	670.50	425.00	544.50	1,078,243	1,078,243
High School	210.00	75.00	30.00	433,060	433,060
Hotel	582.75	584.50	423.50	1,075,531	1,075,531
Junior College (2Yr)	200.00	68.00	0.00	392,334	392,334
Junior High School	667.92	0.00	0.00	1,075,852	1,075,852
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,739.00	2,035.00	1028.00	2,977,164	2,977,164
Research & Development	14,074.50	3,284.05	1919.25	27,284,592	27,284,592
Strip Mall	5,433.05	5,153.12	2504.32	7,744,217	7,744,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	34,274.74	23,168.30	16,512.46	70,793,563	70,793,563

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
NaturalGas Unmitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289.202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Unmitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,265.00	1000sqft	52.10	4,265,000.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.50	1,381,600.00	0
Parking Lot	1,487.00	Space	7.10	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.10	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.30	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	97.91	52.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.50
tblLandUse	LotAcreage	13.38	7.10
tblLandUse	LotAcreage	64.07	34.10
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.30
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	324.11	4,670.18
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.50
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.35
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.12
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10

tblVehicleTrips	SU_TR	5.95	2.42
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.28
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.32
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.49
tblVehicleTrips	WD_TR	32.93	13.41
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.39
tblVehicleTrips	WD_TR	8.11	3.30
tblVehicleTrips	WD_TR	44.32	18.05
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,097,074,684.82	221,054,950.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00

tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363
Total	**219.4182**	**258.4268**	**704.4297**	**2.3241**	**182.9812**	**12.0945**	**195.0757**	**49.0627**	**12.0157**	**61.0784**	**0.0000**	**308,734.0994**	**308,734.0994**	**9.6132**	**2.7069**	**309,781.0970**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363
Total	**219.4182**	**258.4268**	**704.4297**	**2.3241**	**182.9812**	**12.0945**	**195.0757**	**49.0627**	**12.0157**	**61.0784**	**0.0000**	**308,734.0994**	**308,734.0994**	**9.6132**	**2.7069**	**309,781.0970**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 57.7

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,251,499; Non-Residential Outdoor: 2,750,500; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363
Unmitigated	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,360.34	8,980.40	8255.06	25,109,480	25,109,480
City Park	191.73	2,308.23	1698.18	1,526,867	1,526,867
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,144.95	255.00	109.65	2,096,224	2,096,224
Health Club	670.50	425.00	544.50	1,078,243	1,078,243
High School	210.00	75.00	30.00	433,060	433,060
Hotel	582.75	584.50	423.50	1,075,531	1,075,531
Junior College (2Yr)	200.00	68.00	0.00	392,334	392,334
Junior High School	667.92	0.00	0.00	1,075,852	1,075,852
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,739.00	2,035.00	1028.00	2,977,164	2,977,164
Research & Development	14,074.50	3,284.05	1919.25	27,284,592	27,284,592
Strip Mall	5,433.05	5,153.12	2504.32	7,744,217	7,744,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	34,274.74	23,168.30	16,512.46	70,793,563	70,793,563

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
NaturalGas Unmitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289.202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Unmitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	150.00	1000sqft	1.70	150,000.00	0
Enclosed Parking Structure	7,218.00	Space	32.06	2,887,200.00	0
Parking Lot	1,360.00	Space	6.04	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.72	875,600.00	0
Arena	75.00	1000sqft	11.90	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.57	50,000.00	0
Hotel	220.00	Room	3.62	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.75	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.82	635,000.00	0
Strip Mall	125.00	1000sqft	1.42	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	3.44	1.70
tblLandUse	LotAcreage	64.96	32.06
tblLandUse	LotAcreage	12.24	6.04
tblLandUse	LotAcreage	19.70	9.72
tblLandUse	LotAcreage	24.11	11.90
tblLandUse	LotAcreage	1.15	0.57
tblLandUse	LotAcreage	7.33	3.62
tblLandUse	LotAcreage	189.95	93.75
tblLandUse	LotAcreage	14.58	7.82
tblLandUse	LotAcreage	2.87	1.42
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	11.40	164.25
tblVehicleTrips	CC_TL	7.30	9.10
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50

tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90

tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50
tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.64
tblVehicleTrips	ST_TR	10.71	4.43
tblVehicleTrips	ST_TR	22.75	9.42
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.39
tblVehicleTrips	ST_TR	49.97	20.68
tblVehicleTrips	ST_TR	1.90	0.79
tblVehicleTrips	ST_TR	42.04	17.40
tblVehicleTrips	SU_TR	5.86	2.43
tblVehicleTrips	SU_TR	10.71	4.43
tblVehicleTrips	SU_TR	16.74	6.93
tblVehicleTrips	SU_TR	26.73	11.06
tblVehicleTrips	SU_TR	5.95	2.46
tblVehicleTrips	SU_TR	25.24	10.45
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.46
tblVehicleTrips	WD_TR	6.65	2.75
tblVehicleTrips	WD_TR	10.71	4.43
tblVehicleTrips	WD_TR	1.89	0.78
tblVehicleTrips	WD_TR	32.93	13.63
tblVehicleTrips	WD_TR	8.17	3.38
tblVehicleTrips	WD_TR	42.70	17.67
tblVehicleTrips	WD_TR	8.11	3.36
tblVehicleTrips	WD_TR	44.32	18.34

tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	73,754,092.08	7,774,500.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885
Energy	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	11,986.2668	11,986.2668	0.8677	0.2399	12,079.4604
Mobile	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570
Waste						0.0000	0.0000		0.0000	0.0000	1,812.5733	0.0000	1,812.5733	107.1200	0.0000	4,490.5736
Water						0.0000	0.0000		0.0000	0.0000	57.3097	178.7647	236.0744	5.9043	0.1427	426.2161
Total	**37.6181**	**34.6916**	**129.4524**	**0.3979**	**39.1447**	**1.1631**	**40.3078**	**10.5303**	**1.1462**	**11.6765**	**1,869.8830**	**48,997.6725**	**50,867.5555**	**115.2781**	**0.4674**	**53,888.7955**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885
Energy	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	11,986.2668	11,986.2668	0.8677	0.2399	12,079.4604
Mobile	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570
Waste						0.0000	0.0000		0.0000	0.0000	1,812.5733	0.0000	1,812.5733	107.1200	0.0000	4,490.5736
Water						0.0000	0.0000		0.0000	0.0000	57.3097	178.7647	236.0744	5.9043	0.1427	426.2161
Total	**37.6181**	**34.6916**	**129.4524**	**0.3979**	**39.1447**	**1.1631**	**40.3078**	**10.5303**	**1.1462**	**11.6765**	**1,869.8830**	**48,997.6725**	**50,867.5555**	**115.2781**	**0.4674**	**53,888.7955**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.82

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,777,500; Non-Residential Outdoor: 592,500; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570
Unmitigated	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	19,849.50	19,055.52	17539.74	68,718,465	68,718,465
Arena	332.25	332.25	332.25	804,123	804,123
City Park	87.67	1,058.81	778.93	968,917	968,917
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	681.50	23.00	553.00	1,324,021	1,324,021
Hotel	743.60	745.80	541.20	1,840,645	1,840,645
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,220.45	13,131.80	6635.75	25,552,800	25,552,800
Research & Development	504.00	118.50	69.00	1,353,294	1,353,294
Strip Mall	2,292.50	2,175.00	1057.50	4,348,889	4,348,889
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	35,711.47	36,640.68	27,507.37	104,911,153	104,911,153

4.3 Trip Type Information

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
Arena	14.90	9.10	9.10	0.00	81.00	19.00	66	28	6
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,781.4658	7,781.4658	0.7871	0.1629	7,849.6724
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,781.4658	7,781.4658	0.7871	0.1629	7,849.6724
NaturalGas Mitigated	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	4,204.8009	4,204.8009	0.0806	0.0771	4,229.7880
NaturalGas Unmitigated	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	4,204.8009	4,204.8009	0.0806	0.0771	4,229.7880

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	3.7125e+006	0.0200	0.1820	0.1529	1.0900e-003		0.0138	0.0138		0.0138	0.0138	0.0000	198.1131	198.1131	3.8000e-003	3.6300e-003	199.2904
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4249**	**3.6772**	**1.8853**	**0.0232**		**0.2936**	**0.2936**		**0.2936**	**0.2936**	**0.0000**	**4,204.8009**	**4,204.8009**	**0.0806**	**0.0771**	**4,229.7880**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	3.7125e+006	0.0200	0.1820	0.1529	1.0900e-003		0.0138	0.0138		0.0138	0.0138	0.0000	198.1131	198.1131	3.8000e-003	3.6300e-003	199.2904
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4249**	**3.6772**	**1.8853**	**0.0232**		**0.2936**	**0.2936**		**0.2936**	**0.2936**	**0.0000**	**4,204.8009**	**4,204.8009**	**0.0806**	**0.0771**	**4,229.7880**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	1.134e+006	147.4710	0.0149	3.0900e-003	148.7636
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,781.4658**	**0.7871**	**0.1629**	**7,849.6724**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	1.134e+006	147.4710	0.0149	3.0900e-003	148.7636
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,781.4658**	**0.7871**	**0.1629**	**7,849.6724**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885
Unmitigated	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7888					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.4810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6090	0.6172	53.5638	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7625	87.7625	0.0840	0.0000	89.8617
Total	**31.3458**	**4.6083**	**55.2621**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9221**	**4,709.9221**	**0.1726**	**0.0847**	**4,739.4885**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7888					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.4810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6090	0.6172	53.5638	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7625	87.7625	0.0840	0.0000	89.8617
Total	**31.3458**	**4.6083**	**55.2621**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9221**	**4,709.9221**	**0.1726**	**0.0847**	**4,739.4885**

7.0 Water Detail

7.1 Mitigation Measures Water

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	236.0744	5.9043	0.1427	426.2161
Unmitigated	236.0744	5.9043	0.1427	426.2161

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	7.7745 / 0	7.9372	0.2539	6.1000e-003	16.1010
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**236.0744**	**5.9043**	**0.1427**	**426.2161**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	7.7745 / 0	7.9372	0.2539	6.1000e-003	16.1010
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**236.0744**	**5.9043**	**0.1427**	**426.2161**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,812.5733	107.1200	0.0000	4,490.5736
Unmitigated	1,812.5733	107.1200	0.0000	4,490.5736

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	164.25	33.3413	1.9704	0.0000	82.6016
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,812.5733**	**107.1200**	**0.0000**	**4,490.5736**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	164.25	33.3413	1.9704	0.0000	82.6016
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,812.5733**	**107.1200**	**0.0000**	**4,490.5736**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**

Hunters Point Shipyard Phase II - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,265.00	1000sqft	52.10	4,265,000.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.50	1,381,600.00	0
Parking Lot	1,487.00	Space	7.10	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.10	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.30	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates provided by F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR GHG section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00
tblConstructionPhase	NumDays	550.00	0.00

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	97.91	52.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.50
tblLandUse	LotAcreage	13.38	7.10
tblLandUse	LotAcreage	64.07	34.10
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.30
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	324.11	4,670.18
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10

tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50
tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27

tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.50
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.35
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.12
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.42
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.28
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.32
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.49
tblVehicleTrips	WD_TR	32.93	13.41
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.39

tblVehicleTrips	WD_TR	8.11	3.30
tblVehicleTrips	WD_TR	44.32	18.05
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,097,074,684.82	221,054,950.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221
Energy	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	17,484.0259	17,484.0259	1.0881	0.3444	17,613.8518
Mobile	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554
Waste						0.0000	0.0000		0.0000	0.0000	1,877.2097	0.0000	1,877.2097	110.9399	0.0000	4,650.7075
Water						0.0000	0.0000		0.0000	0.0000	101.3352	281.5309	382.8660	10.4366	0.2517	718.7718
Total	**37.5324**	**33.2115**	**97.3975**	**0.3729**	**35.4883**	**1.1017**	**36.5900**	**9.5467**	**1.0864**	**10.6331**	**1,978.5448**	**49,102.9802**	**51,081.5250**	**123.6434**	**0.6366**	**54,362.3086**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221
Energy	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	17,484.0259	17,484.0259	1.0881	0.3444	17,613.8518
Mobile	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554
Waste						0.0000	0.0000		0.0000	0.0000	1,877.2097	0.0000	1,877.2097	110.9399	0.0000	4,650.7075
Water						0.0000	0.0000		0.0000	0.0000	101.3352	281.5309	382.8660	10.4366	0.2517	718.7718
Total	**37.5324**	**33.2115**	**97.3975**	**0.3729**	**35.4883**	**1.1017**	**36.5900**	**9.5467**	**1.0864**	**10.6331**	**1,978.5448**	**49,102.9802**	**51,081.5250**	**123.6434**	**0.6366**	**54,362.3086**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 57.7

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,251,499; Non-Residential Outdoor: 2,750,500; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554
Unmitigated	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,360.34	8,980.40	8255.06	32,394,331	32,394,331
City Park	191.73	2,308.23	1698.18	2,113,585	2,113,585
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,144.95	255.00	109.65	2,902,056	2,902,056
Health Club	670.50	425.00	544.50	1,436,530	1,436,530
High School	210.00	75.00	30.00	655,660	655,660
Hotel	582.75	584.50	423.50	1,442,267	1,442,267
Junior College (2Yr)	200.00	68.00	0.00	511,625	511,625
Junior High School	667.92	0.00	0.00	1,614,901	1,614,901
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,739.00	2,035.00	1028.00	3,960,071	3,960,071
Research & Development	14,074.50	3,284.05	1919.25	37,775,169	37,775,169
Strip Mall	5,433.05	5,153.12	2504.32	10,305,547	10,305,547
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	34,274.74	23,168.30	16,512.46	95,111,743	95,111,743

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
General Office Building	14.90	9.50	9.10	33.00	48.00	19.00	77	19	4
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
High School	14.90	9.50	9.10	77.80	17.20	5.00	75	19	6
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	14.90	9.50	9.10	6.40	88.60	5.00	92	7	1
Junior High School	14.90	9.50	9.10	72.80	22.20	5.00	63	25	12
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,185.0296	9,185.0296	0.9291	0.1922	9,265.5388
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,185.0296	9,185.0296	0.9291	0.1922	9,265.5388
NaturalGas Mitigated	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	8,298.9963	8,298.9963	0.1591	0.1522	8,348.3130
NaturalGas Unmitigated	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	8,298.9963	8,298.9963	0.1591	0.1522	8,348.3130

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.05559e+008	0.5692	5.1745	4.3465	0.0311		0.3933	0.3933		0.3933	0.3933	0.0000	5,633.0169	5,633.0169	0.1080	0.1033	5,666.4911
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8386**	**7.5347**	**5.7533**	**0.0457**		**0.5794**	**0.5794**		**0.5794**	**0.5794**	**0.0000**	**8,298.9963**	**8,298.9963**	**0.1591**	**0.1521**	**8,348.3130**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.05559e+008	0.5692	5.1745	4.3465	0.0311		0.3933	0.3933		0.3933	0.3933	0.0000	5,633.0169	5,633.0169	0.1080	0.1033	5,666.4911
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8386**	**7.5347**	**5.7533**	**0.0457**		**0.5794**	**0.5794**		**0.5794**	**0.5794**	**0.0000**	**8,298.9963**	**8,298.9963**	**0.1591**	**0.1521**	**8,348.3130**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.22434e+007	4,193.0908	0.4241	0.0878	4,229.8443
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,185.0296**	**0.9291**	**0.1922**	**9,265.5388**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.22434e+007	4,193.0908	0.4241	0.0878	4,229.8443
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,185.0296**	**0.9291**	**0.1922**	**9,265.5388**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221
Unmitigated	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.4005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	25.0916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7811	0.2965	25.7538	1.3700e-003		0.1429	0.1429		0.1429	0.1429	0.0000	42.2353	42.2353	0.0408	0.0000	43.2553
Total	**31.4966**	**2.2063**	**26.5665**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0585**	**2,254.0585**	**0.0832**	**0.0406**	**2,268.2221**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.4005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	25.0916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7811	0.2965	25.7538	1.3700e-003		0.1429	0.1429		0.1429	0.1429	0.0000	42.2353	42.2353	0.0408	0.0000	43.2553
Total	**31.4966**	**2.2063**	**26.5665**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0585**	**2,254.0585**	**0.0832**	**0.0406**	**2,268.2221**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	382.8660	10.4366	0.2517	718.7718
Unmitigated	382.8660	10.4366	0.2517	718.7718

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	221.055 / 0	225.6810	7.2188	0.1733	457.8053
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**382.8660**	**10.4366**	**0.2517**	**718.7718**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	221.055 / 0	225.6810	7.2188	0.1733	457.8053
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**382.8660**	**10.4366**	**0.2517**	**718.7718**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,877.2097	110.9399	0.0000	4,650.7075
Unmitigated	1,877.2097	110.9399	0.0000	4,650.7075

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4670.18	948.0043	56.0255	0.0000	2,348.6406
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,877.2097**	**110.9399**	**0.0000**	**4,650.7075**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4670.18	948.0043	56.0255	0.0000	2,348.6406
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,877.2097**	**110.9399**	**0.0000**	**4,650.7075**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**

Appendix F3

Recycled Water Facility Location and Odor Control

ESA

Memorandum

Date: November 27, 2017
To: Mark Luckhardt - FivePoint
From: Andre Zinkevich, P.E & Zach Gallagher, P.E. - NSU

Re: Hunters Point Water Reclamation Plant Siting: Location and Odor Control

Mr. Luckhardt,

The purpose of this memorandum is to confirm that the proposed Hunters Point water reclamation facility **will not** have any objectionable or detectable odor at the perimeter of the facility that would be noticed by the public.

Natural Systems Utilities (NSU) can commit to controlling odor at our sites because we have completed this previously at many of our facilities over the past thirty (30) years. NSU operates over 200 onsite facilities from coast to coast. The facilities range in technology and requirements based on local codes and varying requirements for the intended uses. NSU has been heavily involved in guiding the San Francisco Public Utilities Commission (SFPUC) with their current local reuse ordinance and supplied our in-building water reuse practices as a reference during SFPUC code formation and adoption.

The proposed Hunters Point facility will most closely represent some of our east coast facilities like:

1. **Battery Park, NYC**: Six (6) complete water reuse systems located inside the buildings of high-end residential apartment complexes where odor cannot be present.
2. **Queset Commons, Easton MA**: Wastewater treatment plant for a mixed used development located directly adjacent to homes and commercial establishments.
3. **Gillette Stadium, Foxboro MA**: Onsite water reuse facility for the New England Patriots with the treatment facility located within the commercial district and immediately adjacent to surrounding restaurants.

Aerial images for these three examples have been included as **Attachment A** to illustrate how close the systems can be located to residential and commercial uses as long as the following principles are applied:

1. NSU encloses all unit processes in buildings and under covers
2. NSU collects gases in unit process tank head spaces
3. NSU does not digest or dewater sludge on site where odor is a concern
4. NSU provides carbon scrubbers or other suitable odor control units

Single page case studies have also been included as **Attachment B** and a video tour for the in building systems referenced above can be found at http://www.nsuwater.com/solutions/water-reuse/. These in-building systems have **been in operation for over 15 years now without a single odor complaint**. We are confident that the location proposed for the Hunters Point water reuse facility is appropriate and that odor can be adequately managed there.

Please let us know if you have questions or need additional information.

Regards,

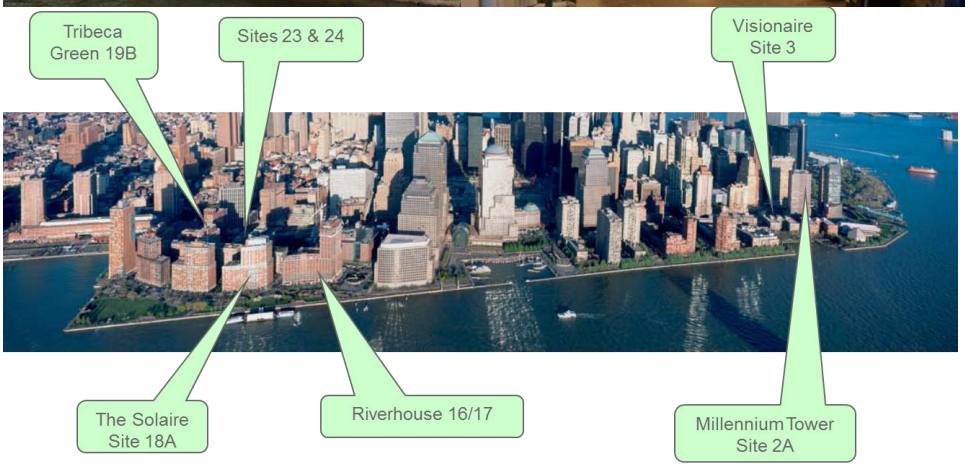
Andre Zinkevich & Zach Gallagher

Attachment A: Aerial Images

1. **Battery Park, NYC**
   - Wastewater System in Basement of luxury high-rise buildings
   - All unit processes are enclosed
   - No sludge processing
   - Tank headspace gas captured
   - Carbon odor control provided
   - In operation for over 15 years without a single odor complaint







2. **Queset Commons – North Easton, Massachusetts**

- Nearby homes and businesses
- All unit processes are enclosed
- No sludge processing
- Tank headspace gas captured
- Carbon odor control provided





3. **Gillette Stadium – Foxboro, MA**

- Onsite water reuse system for the New England Patriots
- Located within the stadium parking lot within the commercial district and adjacent to restaurants
- Carbon odor control provided
- In operation for over 15 years without a single odor complaint




Washington St
Patriot Pl
Bass Pro Dr
P8 Gate Gillette Stadium
Gillette Stadium: Lot 14
Gillette Stadium: Lot 13
Off Broadway Shoe Warehouse
Trader Joe's
Olive Garden Italian
Blue Fin Lounge
Bass Pro Shops
Mann Pond
Google

Attachment B: Case Studies

Battery Park City Water Reuse

New York City, NY

Battery Park City is a redevelopment area of 92 acres under the control of the Battery Park City Authority (BPCA) of New York City. Natural Systems Utilities (NSU) designed, built and currently operates six onsite water treatment and reuse systems serving Battery Park City.

The BPCA adopted a mission of sustainable urban development for the redevelopment of this land, including water reuse objectives, more advanced than LEED requirements. Currently, these six onsite water treatment and reuse systems service eight buildings:

- The Solaire
- Tribeca Green
- Millennium Tower
- The Visionaire
- Riverhouse
- Liberty Luxe
- Liberty View
- The Verdesian

Systems include treatment with hollow fiber micro-filtration membranes, ultraviolet light disinfection, and biological nitrogen removal to comply with New York City Department of Buildings direct water reuse standards. The total design flow for these systems is 165,000 gallons per day (gpd).

The Soliare

The first project in NYC to incorporate wastewater reuse was the Solaire Building, which began operation in 2003 The treated water is reused for flushing toilets in the 293-unit apartment building, cooling tower make-up and for green roof irrigation. The latest systems in Battery Park City also reuse water for laundry.

Achievements

These systems have consistently achieved greater than 50% water consumption reduction and a greater than 60% reduction in wastewater discharge (compared to similar base residential buildings in NYC). Water and wastewater savings are the direct result of wastewater reuse and water conservation. Battery Park City has been developed as a model for scaling water conservation and reuse projects in urban redevelopment and campus scale settings.



The Solaire:
Green roof (L) and Teardrop Park (R)

2 Clerico Lane, Building 1, Hillsborough, New Jersey 08844 | T: 908.359.5501 | F: 908.359.8286 | W: NSUwater.com

QUESET COMMONS

Easton, MA

Owner: Douglas A. King, Builders, Inc.

Wastewater Treatment Plant

Design-Build-Operate



Queset Commons is a new mixed use development also located in Easton, Massachusetts. The project is on a 68.7 acre property is within a designated smart growth zoning area, set back from the shoreline of Queset Pond. Existing uses adjacent to Queset Common and on land owned by DAKB include: a 99-unit "active adult apartment community"; and a 240-seat.

Proposed new uses in Queset Commons include: 197 residential units (a mix of condominiums and apartments); 116,000 square feet of retail and commercial space; and an 83-unit assisted living facility. These existing and proposed units will be served by a wastewater treatment facility that has been preliminary designed by AWM. Phase 1 of the project will have design flows of 76,000 gpd; phase 2 will have additional design flows of 24,000 gpd; and phase 3 will have design flows of an additional 50,000 gpd. DAKB has had the wastewater treatment plant building exterior designed by an architect to incorporate historic architect, H.H. Richardson's design elements, with expansion capacity to the total of 150,000 gpd design flow.

In July, 2013, NSU and DAKB executed a design-build agreement for final design and construction of the first phase of the project providing 76,000 gallons per day of wastewater reclamation capacity. Construction was completed in the summer of 2015, and NSU commenced operation and maintenance under a five-year operating agreement with DAKB, with initial flows limited to 50,000 gpd discharge to a single leachfield.

The Town of Easton has established the Queset Sewer District, which will collect up to 50,000 gpd of wastewater along public rights of way and convey it to the Queset Commons WWTP. The next step is the expansion of the plant and leachfield capacity to 100,000 gpd, which is scheduled to be completed prior to July 1, 2017, to allow for onsite treatment of the private and public wastewater and dispersal. The Town will operate the collection system and DAKB/NSU will operate the WWTP. The town will collect betterment and operating fees from the users of the municipal WWTP and pay DAKB for their share of the capital construction of the WWTP, another leachfield, and the town's share of the WWTP operating costs. DAKB will eventually increase WWTP and leachfield capacity to 150,000 gpd, when they need that last 50,000 gpd for the build out of the mixed-use smart-growth project.

ONSITE WATER REUSE SYSTEM

Gillette Stadium

Foxborough, Massachusetts

NSU designed, built, and currently operates the water reuse system for Gillette Stadium and Patriot Place; home of the New England Patriots Football Team.



Challenge

In 2001, during the design phases of the new stadium, it was determined that, due to the projected water usage required for the arena, the Town of Foxborough's water infrastructure would not be able to supply the required peak demand on game day. It was also apparent that the municipal wastewater treatment facility in place would not be able to handle the excess wastewater flow. Additional services necessary for the stadium and the Town of Foxborough included managing the water reuse system, repair and maintenance, customer services and capital planning.

Collaboration for Results

The municipality and the owner cooperated in the construction of a water reuse system that resolved both problems. NSU worked closely with the Town of Foxborough, the owner, an infrastructure engineering firm and the Massachusetts Department of Environmental Protection to ensure that the facility design exceeded the Town's, the Commonwealth's and the stadium's requirements and was constructed within budget and on schedule. The water reuse system was upgraded in 2007 to provide additional capacity. The current system includes: two pumping stations; force mains; almost 1,000,000 gallons of pre-treatment storage volume to capture the wastewater flows generated by fans; a 250,000 gallons per day membrane bioreactor (MBR) treatment plant that generates water suitable for reuse; a leachfield for replenishing groundwater when reuse water is not needed; and a 500,000 gallon elevated storage tank for reclaimed water. The recycled water is used for toilet flushing.

Sustainable Communities

The goal was to create a sustainable and environmentally friendly system to produce high-quality reuse water for the stadium's 68,000 fans during peak half-time flush periods – without creating additional demands on the community's existing infrastructure. The implemented system returns high-quality treated wastewater both to the stadium and the adjacent Patriot Place.

21 Father DeValles Blvd, Suite 107, Fall River, MA 02723 | T: 508.675.5755 | F: 508.675.5599 | W: nsuwater.com

Appendix F4

Water Recycling Facility Odor Control Measures

ESA

December 28, 2017

Mr. Daniel Hansen
FivePoint
1 Sansome Street, Suite 3200
San Francisco, CA 94104

Via electronic mail: Daniel.Hansen@fivepoint.com

Subject: **Hunters Point Odor Control Measures for Water Recycling Facility**

Dear Mr. Hansen,

Continuing on our discussions of managing odor at water recycling facilities, below, please find information on how each potential source of odor will be controlled to reduce odor impacts on the community at the proposed Hunters Point Water Recycling Facility.

1) General – The process tanks that can cause odors are those that are gravity tanks containing partially process wastewater where there is an air space above the tank. The primary odor control mechanism is a carbon scrubber system which works as follows.
   a) We enclose/cover process tanks
   b) The air in the area above the water line is captured via a suction blower capturing air from one or more unit processes
   c) Captured air is conveyed to a common granular activated carbon scrubber system
   d) In the scrubber system air enters a dry tank and passes through a carbon bed
   e) Carbon is periodically removed and replaced (usually once per year or as needed)
2) Screen Box: Screens garbage out
   a) Box is small and is enclosed
   b) Screenings so straight to a bag
   c) Air goes to Scrubber system
3) Equalization Tanks: Raw sewage
   a) Tank is covered
   b) Air goes to the scrubber system
4) Anoxic Tanks: This tank treats the fluid at a relatively low oxygen concentration
   a) The tank is mixed and covered
   b) Air goes to the scrubber system
5) Aeration and Membrane tanks. These tanks are process tanks that work by passing a lot of air through the water to activate the biological process and to scour membranes.
   a) We will cover the tanks
   b) Air goes to the scrubber system

6) Finished water tanks
   a) Not an odor issue
   b) We will enclose the tank
7) Sludge Processing. Waste activated sludge
   a) We will not process sludge on site
   b) Our plan is to waste sludge directly to the SFPUC sewer system

Please let me know if you have questions or need additional information.

Respectfully,



Andre Zinkevich, P.E.
Vice President
Natural Systems Utilities-CA, Inc.

Appendix G
Noise Data

ESA

Table G-1. Project Related Construction Equipment

Project Equipment[1]	*FTA Equipment*[2]	*Construction Activities Requiring Equipment*	*Typical Noise Level (dBA)*	
			50 Feet from Source[3]	*100 Feet from Source*[4]
Compactors	Compactor	Site Preparation, Building Construction, and Roadway Improvements	82	76
Cement Truck	Concrete Mixer	Building Construction	85	79
Pump Trucks	Concrete Pump	Building Construction, Roadway Improvements	82	76
Cranes	Crane, Mobile	Site Preparation, Building Construction, and Roadway Improvements	83	77
Dozers	Dozer	Site Preparation, Building Construction, and Roadway Improvements	85	79
Grader	Grader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Pavement Crusher	Grader	Roadway Improvements	85	79
Soil stabilizer	Grader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Loaders	Loader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Excavators	Loader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Rough Terrain Fork lift	Loader	Site Preparation and Building Construction	85	79
Asphalt Layer	Paver	Site Preparation, Building Construction, and Roadway Improvements	89	83
Pile Driver	Pile-driver (Impact)	Building Construction and Roadway Improvements	101	95
Drill Rig Truck	Drill Rig Truck[5]	Site Preparation (boreholes) and Roadway Improvements	79	73
Roller	Roller	Site Preparation, Building Construction, and Roadway Improvements	74	68
Man Lifts	Roller	Site Preparation and Building Construction	74	68
Bobcat	Roller	Site Preparation, Building Construction, and Roadway Improvements	74	68
Sweeper	Roller	Site Preparation and Building Construction	74	68
Scrapers	Scraper	Site Preparation and Building Construction	89	83
Dump Truck	Truck	Site Preparation	88	82
Off Road Dump Trucks	Truck	Site Preparation, Building Construction, and Roadway Improvements	88	82
Support Trucks	Truck	Site Preparation	88	82
Water Trucks	Truck	Site Preparation, Building Construction, and Roadway Improvements	88	82

SOURCE: Noise levels for FTA equipment from FTA, *Transit Noise and Vibration Guidance Handbook*, May 2006. Project equipment and activities from 2017 Modified Project Variant Construction Phasing, revised September 2017.

NOTES:

[1] Project equipment categories for 2017 Modified Project Variant construction.

[2] FTA equipment category with similar noise emissions to project equipment.

[3] Typical noise levels for Project equipment based on similar FTA equipment operating at 50 feet.

[4] Typical noise level at 100 feet calculated assuming 6 dBA reduction per doubling of distance.

[4] "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.

Table G-2. Construction-related Noise Results, by Activity and Area

Construction Activity[1]	Construction Project Area[2]	Max Construction-Related Noise Levels without Pile-Driving (dBA)		Max Construction-Related Noise Levels with Pile-Driving (dBA)	
		Off-site Receiver[3]	On-site Receiver[4]	Off-site Receiver[3,5]	On-site Receiver[4,5]
Abatement	HP-01	68	-	-	-
Abatement	HP-01 Parks	66	84	-	-
Abatement	Waste Water Treatment Plant	65	76	-	-
Abatement	HP-02	69	-	-	-
Abatement	HP-02 Parks	89	94	-	-
Abatement	HP-03	63	59	-	-
Abatement	HP-03 Parks	63	86	-	-
Abatement	HP-03 Roadway Improvements	79	60	-	-
Abatement	HP-04	60	64	-	-
Abatement	HP-04 Parks	61	87	-	-
Abatement	HP-05	59	65	-	-
Abatement	HP-06	67	76	-	-
Abatement	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Abatement	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-
Demolition	HP-01	68	-	-	-
Demolition	HP-01 Parks	66	84	-	-
Demolition	Waste Water Treatment Plant	65	76	-	-
Demolition	HP-02	69	-	-	-
Demolition	HP-02 Parks	89	94	-	-
Demolition	HP-03	63	60	-	-
Demolition	HP-03 Parks	63	86	-	-
Demolition	HP-03 Roadway Improvements	79	60	-	-
Demolition	HP-04	60	64	-	-
Demolition	HP-04 Parks	61	87	-	-
Demolition	HP-05	59	65	-	-
Demolition	HP-05 Parks	58	85	-	-
Demolition	HP-06	67	76	-	-
Demolition	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Demolition	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-
Foundation Piles/Structure/Rough-In	HP-01	71	51	-	-
Foundation Piles/Structure/Rough-In	HP-01 Parks	66	84	79	98
Foundation Piles/Structure/Rough-In	HP-02	69	61	82	75
Foundation Piles/Structure/Rough-In	HP-02 Parks	89	94	101	101
Foundation Piles/Structure/Rough-In	HP-03	63	79	76	92
Foundation Piles/Structure/Rough-In	HP-03 Parks	63	86	-	-
Foundation Piles/Structure/Rough-In	HP-04	60	76	73	89
Foundation Piles/Structure/Rough-In	HP-04 Bridges	56	77	70	90
Foundation Piles/Structure/Rough-In	HP-05	59	77	72	90
Foundation Piles/Structure/Rough-In	HP-06	69	79	-	-
Grading & Infrastructure	HP-01	71	49	-	-
Grading & Infrastructure	HP-01 Parks	69	87	-	-
Grading & Infrastructure	HP-01 Surcharge	64	14	-	-
Grading & Infrastructure	Waste Water Treatment Plant	67	79	-	-
Grading & Infrastructure	HP-02	72	-	-	-
Grading & Infrastructure	HP-02 Parks	91	96	-	-
Grading & Infrastructure	HP-03	66	62	-	-
Grading & Infrastructure	HP-03 Parks	63	86	-	-
Grading & Infrastructure	HP-03 Roadway Improvements	82	63	-	-
Grading & Infrastructure	HP-03 Surcharge	63	46	-	-
Grading & Infrastructure	HP-04	62	76	-	-
Grading & Infrastructure	HP-04 Geothermal	56	58	-	-
Grading & Infrastructure	HP-04 Parks	61	87	-	-
Grading & Infrastructure	HP-04 Surcharge	58	64	-	-
Grading & Infrastructure	HP-05	62	66	-	-
Grading & Infrastructure	HP-05 Parks	58	85	-	-
Grading & Infrastructure	HP-05 Surcharge	57	60	-	-
Grading & Infrastructure	HP-06	69	79	-	-
Grading & Infrastructure	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Grading & Infrastructure	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-

Table G-2. Construction-related Noise Results, by Activity and Area

Construction Activity[1]	*Construction Project Area*[2]	*Max Construction-Related Noise Levels without Pile-Driving (dBA)*		*Max Construction-Related Noise Levels with Pile-Driving (dBA)*	
		Off-site Receiver[3]	*On-site Receiver*[4]	*Off-site Receiver*[3,5]	*On-site Receiver*[4,5]
Grading & Infrastructure	HP-06 Surcharge	64	83	-	-
Grading & Infrastructure	HPS2 Site	86	58	-	-
Grading & Infrastructure	HP-06 Sports	51	57	-	-
Grading & Infrastructure	HPS-01A Geothermal	77	-	-	-
Roadway Improvements	HP-03 YS Bridge	56	71	69	85
Roadway Improvements	Innes Ave. Improvements	94	67	-	-
Roadway Improvements	Palou Ave. Improvements	91	55	-	-
Interior & Exterior Finishes	HP-01	68	71	81	84
Interior & Exterior Finishes	HP-01 Parks	66	84	-	-
Interior & Exterior Finishes	HP-02	69	61	-	-
Interior & Exterior Finishes	HP-02 Parks	89	94	-	-
Interior & Exterior Finishes	HP-03	63	79	-	-
Interior & Exterior Finishes	HP-03 Parks	63	86	-	-
Interior & Exterior Finishes	HP-04	60	76	73	89
Interior & Exterior Finishes	HP-04 Bridges	56	77	70	90
Interior & Exterior Finishes	HP-04 Parks	61	87	-	-
Interior & Exterior Finishes	HP-05	59	77	-	-
Interior & Exterior Finishes	HP-05 Parks	56	82	-	-
Interior & Exterior Finishes	HP-06	67	76	80	89
Interior & Exterior Finishes	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Interior & Exterior Finishes	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-

SOURCE: Noise levels for FTA equipment from FTA, *Transit Noise and Vibration Guidance Handbook* , May 2006. Project equipment activities and schedule from 2017 Modified Project Variant Construction Schedule and Resources, revised October 2017. Calculations by Ramboll, December 2017.

NOTES:

Noise levels were calculated at the nearest noise-sensitive receiving location assuming the top two loudest equipment (with and without pile driving) operate simultaneously.

[1] See Table G-1 for typical equipment associated with Site Preparation (Abatement, Demolition, and Grading), Building Construction (Foundation Piles/Structure/Rough-In and Interior & Exterior Finishes), and Roadway Improvements.

[2] Construction project areas based on the 2017 Modified Project Variant.

[3] Off-site noise-sensitive uses include existing residences and places of worship in the Bayview and Hunters Point neighborhoods.

[4] On-site noise-sensitive uses include future residential units, the hotel, and two schools proposed under the 2017 Modified Project Variant. A dash (-) indicates no on-site noise-sensitive use would be occupied during construction.

[5] Dashes (-) indicate sustained pile driving would not be utilized.

Table G-3. Traffic Volumes, Composition, and Speeds Assumed for Operational Impact Assessment

Roadway Segment	*Model Scenario*	*Total PM-Peak Period Traffic Volume (vph)*	*Traffic Composition (vph)*[1]				*Speed Limit (mph)*[2]
			LDV	*MDV*	*HDV*	*Bus*	
Palou Avenue east of 3rd Street	Existing	457	434	9	4	10	25
Gilman Avenue east of 3rd Street	Existing	431	412	9	4	6	25
Jamestown Ave north of Harney Way	Existing	204	198	4	2	0	35
Harney Way west of Jamestown Ave	Existing	146	142	3	1	0	40
Innes south of Earl Street	Existing	170	159	3	2	6	35
Palou Avenue east of 3rd Street	Existing + Project	1,483	1,423	29	15	16	25
Gilman Avenue east of 3rd Street	Existing + Project	2,353	2,277	47	23	6	25
Jamestown Ave north of Harney Way	Existing + Project	966	937	19	10	0	35
Harney Way west of Jamestown Ave	Existing + Project	2,607	2,529	52	26	0	40
Innes south of Earl Street	Existing + Project	2,057	1,982	41	20	14	35
Palou Avenue east of 3rd Street	Future Background	1,170	1,125	23	12	10	25
Gilman Avenue east of 3rd Street	Future Background	910	877	18	9	6	25
Jamestown Ave north of Harney Way	Future Background	940	912	19	9	0	35
Harney Way west of Jamestown Ave	Future Background	1,690	1,639	34	17	0	40
Innes south of Earl Street	Future Background	1,500	1,449	30	15	6	35
Palou Avenue east of 3rd Street	Future Background + Project	1,762	1,694	35	17	16	25
Gilman Avenue east of 3rd Street	Future Background + Project	2,247	2,174	45	22	6	25
Jamestown Ave north of Harney Way	Future Background + Project	1,392	1,350	28	14	0	35
Harney Way west of Jamestown Ave	Future Background + Project	3,197	3,101	64	32	0	40
Innes south of Earl Street	Future Background + Project	2,301	2,218	46	23	14	35
Onsite Bus Routes	Future Background + Project	0	0	0	0	14	30

SOURCE: Total Existing and Future Background PM-peak period traffic volumes from 2010 FEIR. Total Future Background + Project PM-peak period traffic volumes from 2017 Modified Project Variant Traffic Impact Analysis.

NOTES:

[1] Traffic composition assumes 97% light-duty vehicles (LDV), 2% medium duty vehicles (MDV), and 1% heavy duty vehicles (HDV). Buses based on existing and proposed transit revisions for the 2017 Modified Project Variant.

[2] Speed limits based on existing signage, assessed with Google Street View, December 2017.

Appendix H
Historic Resources Memorandum

ESA

ESA

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Historic Resources Memorandum

CP-HPS2 2010 FEIR Addendum 5: Potential Impacts Analysis for Dry Dock 4

December 26, 2017

As described on 2010 FEIR p. III.J-21, two historical resources are situated within the vicinity of the HPS Phase II 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 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, described below, would be potentially impacted by the proposed project under the Addendum 5 scope of work. However, the Project would include Preservation Guidelines for Dry Dock 4 that would ensure the proposed improvements would conform with the SOI Standards; therefore, potential impacts would be less than significant pursuant to CEQA.

District Description

This District description is based on a review of the National Register nomination form and HAER Report, and a site visit conducted by ESA's qualified architectural historian, Dr. Margarita Jerabek, on Thursday November 2, 2017.

The District is sited at the easternmost point of Hunters Point Shipyard and is generally bounded by Lockwood Street to the west, and Spear and Fisher Avenues to the south and southwest, respectively. The historic district includes 11 contributing buildings and structures constructed between 1901 and 1947 shown in Table 1 that are

present within the boundaries of the historic district. Remnants of capstans and bollards are present and the area has been paved with asphalt. Two concrete dry docks, sited parallel to one another, form the core of the historic district. Buildings 205, 204, and 207 are located between Dry Docks 2 and 3, while Building 140 is located on the north side of Dry Dock 3. Generally, the buildings contributing to the historic district are of concrete or brick construction, with gable roofs and concrete foundations and are designed in Neoclassical Revival style. The exception is Building 207, which is utilitarian in design.

Table 1 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 2, just south of Building 205, is a 750-foot-long, 89-foot-wide, and 28-foot-10-inch-deep graving dock. This dry dock is currently open to the bay; therefore, only approximately 6 feet of the dry-dock chamber was visible between the water line and dry-dock coping. The basin is sheathed in concrete, smooth around the bow and at the entrance (stern) end. The top five of twelve altars (steps in the wall of a dry dock) beneath the coping are currently visible.

A series of fourteen service galleries line each side of Dry Dock 2, just beneath the curb. Each gallery has a metal railing around the perimeter. Two sets of metal flush-mounted staircases on each wall descend into the water. A chain handrail consisting of posts with an eye at the top, and at mid-level support two chains, stretch around the dry dock, with breaks at access points.

Original capstans, some electric, some hand-operated, were replaced by the Navy, and remnants of the replacements remain around the perimeter of Dry Dock 2. Original crane tracks have been removed from the perimeter as well and/or pave over with asphalt. The floating caisson, a replacement built by Pacific Coast Engineering Company of Alameda in 1952, remains afloat at the bow end of the dry dock. Eight valves flood the dry dock through the caisson, and two valves flood the caisson to sink it in place. The caisson deck is enclosed by the same type of chain handrail around the perimeter of the dry dock. Cleats and capstans are also present on deck level of the caisson.

Dry Dock 3, also filled with water to about 6 feet beneath the coping, is larger, measuring 1,005 feet long, 114 feet wide and 39 feet 10 inches deep. It was constructed in 1916–1918. The basin is sheathed in concrete, smooth around the bow and at the entrance end. The top five of twelve altars beneath the coping are currently visible. A series of service galleries line each side of the dry dock just beneath the curb. Each gallery has a metal railing around the perimeter. Concrete staircases built into the chamber walls descend into the water. A chain handrail consisting of posts with an eye at the top, and at mid-level support two chains, and stretch around the dry dock, with breaks at access points. Remnants of crane tracks have been removed and/or paved over with asphalt. Original electrically driven capstans were present and operational around the perimeter of the dry dock until the Navy began replacing them in the 1940s.

Dry Dock 4 Description

The following description is summarized from the Hunters Point Naval Shipyard, Dry Dock 4, HAER documentation (HAER No. CA-181-A), on file in the Library of Congress.

Dry Dock 4 has a southeast to northwest orientation with the long centerline axis running in this direction. The entrance into the dry dock is at the southeast end, accomplished by removal of the caisson after flooding of the dock is completed. Dry Dock 4 was last certified for a maximum docking capacity of 91 ,400 long tons, as documented in the 1979 Facility Certification Report (FCR) for the dock.

Based upon original construction drawings, its dimensions are 1,092 feet long, 171 feet wide (at the coping), and 53 feet deep. The length is nominally measured from the face of the outer caisson seat along the dock centerline axis to the rounded northwesterly end at the coping face. As constructed, Dry Dock 4 is a fully relieved, reinforced concrete graving dock with integral flooding and dewatering systems. A utility tunnel and utility service galleries are located along both sides of the dock to provide utility services for ship-board and industrial uses.

Thirteen electrically powered capstans, built by Modern Engineering Company, are positioned around the dock, six on each side and one at the head (northwest end). The use of these capstans, bollards and fittings can be seen in some of the historic photographs.

The dock floor is typically a thin reinforced concrete slab with expansion joints at 48-foot centers, with the slab placed directly upon the serpentine bedrock. When originally constructed, longitudinal drainage gutters ran along each side of the floor and transverse bilge block bearers were spaced at 12-foot centers throughout most of the dock length. Although the bedrock beneath the floor does not readily conduct water, weep holes are provided through the floor to insure that excessive uplift pressures will not develop beneath the slab. These weep holes are 4-inch-diameter gravel filled drains capped with a thin layer of porous concrete and are typically spaced on a 12-foot by 12-foot grid pattern in the floor of the dock. The original construction drawings are somewhat unclear on the drainage construction, but it appears that transverse and longitudinal gravel filled trenches were cut into the bedrock to provide a collector system under the floor for these drains.

The lower, sloping portion of the dock walls (the section below the altar) is typically a thin reinforced concrete veneer over a steel reinforcing matt placed directly upon the surface of the serpentine rock. The slope is nominally 12 vertical increments to 3 horizontal increments. Uncapped weep holes at 12-foot centers are placed along the length of the dock walls at two levels and vertical expansion joints are spaced at 48-foot centers. The top of the lower wall section provides a continuous altar or walkway around the perimeter of the dock at 31.5 feet above the dock floor. The upper wall section, described below, is set back at this altar level by 7.25 feet.

The upper, vertical, portion of the dock wall (above the altar) is typically a counterfort retaining wall structure of reinforced concrete. Backfilled material has been placed behind the wall structures up to the level of adjacent paving.

Six large and six small utility service galleries are spaced along both sides of the dock and are integrally supported by the counterfort retaining structures. In addition, large electrical manholes are incorporated into the structure to strengthen the dock walls in the vicinities of the large galleries. Crane rail support struts (16-foot-8-inch spacing) tie the walls to a parallel crane rail beam, which in turn is anchored into the serpentine rock. Forty-foot-gauge portal crane trackage formerly ran on both sides of the dock at grade and trackage on each side of the dock was connected at the head end of the dock (trackage has been removed and the area covered with asphalt decking). Counterforts, located adjacent to the crane rail struts, are of 1-foot-6-inch-thick concrete except where thickened to accommodate vertical expansion joints. Weep holes are provided along the base of the upper wall sections, at 16-foot spacing, in order to drain the backfilled material to relieve the hydrostatic pressure on the wall structure.

PUMP ROOM: The pump room, flooding and dewatering chambers are located on the south side of the dry dock near the eastern end (entrance end) of the dock. Similar to the construction of the dock proper, serpentine rock was excavated to allow forming and placement of concrete. The pumps, sumps and chambers are located below the control room, where dewatering pump motors and all controls are located (no longer functional). Construction is essentially massive reinforced concrete formed integrally with the bedrock and the dock wall. The concrete roof structure is flush to grade and is constructed of a series of removable concrete sections, enabling pumps, motors and other large components to be removed by crane services.

CAISSON: This closure, constructed concurrently with Dry Dock 4, is a reversible, rectangular type floating caisson that can be positioned in either the inner or outer dry dock caisson seat. The Caisson still floats and is currently located within the Dry Dock. A rubber seal runs vertically on both ends of the caisson and across the bottom. Concrete ballast is placed within the ballast and trim tanks along the entire bottom. The Caisson is divided into six compartments by a watertight deck and two watertight bulkheads, these being the operating room, the center ballast tank and trim tanks. A draft range of 29.0 feet to 55.5 feet is achieved either by flooding the lower three compartments or dewatering these tanks with pumps mounted in the caisson. All equipment was controlled from the upper operating room, with communications provided by portable two-way radios. The basic construction is of structural steel plates and shapes with welded connections and seams. Shell plating varies in thickness from ⅜ inch to ⅞ inch. Horizontal girders are typically spaced 8 feet on center with intermediate breast hooks added at each end. The top deck, main deck and outer quarter panels of the typical girders are longitudinally stiffened plate girders, while the middle portions of the girders are trusses comprised of structural tee and angle shapes. Vertical (transverse) frames are made of bent plates and are spaced 2 feet on center with additional cross bracing spaced at 8-foot centers. Sacrificial zinc anode blocks are attached to the shell to provide cathodic corrosion protection. Four screened inlets exist for Caisson flooding; gate valves at these inlets have cast iron bodies. These were operated by reach rods that extend to floor stands located in the operating room. The valves for the two smaller 8-inch inlets were hand-operated while the valves for the two larger inlets were motorized. Two vertical propeller pumps were available to dewater ballast water from the central ballast tank and to provide redundancy for the ballast dewatering system. The pumps were 18-inch, 8,000-gallon-per-minute pumps powered by 75-horsepower motors. Discharge was by means of 18-inch motorized gate valves, Caisson electrical power—480 volts/3 phase/60 Hz—was obtained from a detachable umbilical cable that is connected to shore-side power connections, located on either side of the dock entrance, when the caisson is in place. A transformer was located within the Caisson to convert the 480-volt power to 120 volt /1-phase power for lighting and convenience outlets.

Modifications

a. Bilge block slots and drainage trenches in the floor of the dry dock were filled with concrete to the elevation of the original floor. Integral floor weep holes were also raised to this new elevation and capped with porous concrete. The date of this modification is uncertain.

b. In 1957, three steel pipe columns were placed in the south-side (port) utility tunnel in conjunction with the extension of the crane trackage on this side of the dock.

c. In 1972, six small (25 feet long) utility service galleries were constructed along the both sides of the dock to house fresh water services. Four of the original 12 service galleries were also lengthened.

d. Various modifications were made to the utility systems servicing the dock since built.

Most recently, additional salt water and electrical services were built (mid-1980s) to support docking of modern day, larger Navy surface ships.

These modifications did not significantly affect the primary characteristics of the dock itself.

Dry Dock 4 Significance

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 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 of 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.

The U.S. Navy was aware of a critical shortage of government controlled dry docks and had investigated sites within San Francisco Bay for a period of 40 years before Hunters Point was purchased. With the outbreak of World War II in the Pacific, the ability to service the U.S. Navy's large ships was severely hampered by the shortcomings of the existing Federally-owned dry docks on the Pacific Coast. Until Hunters Point was purchased by the Federal Government in 1939, the West Coast had federally-owned graving dry docks at Puget Sound Naval Ship Yard in Washington State and at Mare Island Naval Ship Yard in the San Francisco Bay. The Japanese attack on the United States Pacific Fleet at Pearl Harbor in the Hawaiian Islands in December of 1941 finally brought the United States into World War II. It also brought about the decision by the US Navy to purchase the dry docks and marine repair facilities from Bethlehem Steel Yard at Hunters Point and to initiate construction of what would become the largest graving dry dock on the West Coast of the United States (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994). To rectify the shortage of dry docks for deep draft ships on the West Coast, new graving dry docks were constructed; two at Puget Sound, one 998 feet and the other 1030 feet in length, and the largest, Dry Dock 4, at 1100 feet was constructed at

Hunters Point. The Hunters Point location provided a deep water access of 40 feet where the largest ships could enter, while the protected waters of the South San Francisco Bay offered excellent anchorage (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008).

The design of Dry Dock 4 was accomplished for the Navy's Bureau of Yards and Docks by renowned naval architect and engineer Hugo Frear. Construction was completed by the Pacific Bridge Company under Mr. Frear's supervision. The construction of Dry Dock 4 required moving five million cubic yards of earth. The 290-foot tall landmark, Point Avesadero, was leveled to fill the baylands bordering Hunters Point and create the dry land area on which the necessary shops and warehouses could be constructed. The removed earth was also used to construct a coffer dam around the site which permitted the construction of Dry Dock 4 to proceed on dry land. The Dry Dock at Puget Sound required over three years (1938-1942) to complete; by comparison, Dry Dock 4 at Hunters Point required less than nine months to complete. The dry dock was officially opened on June 19, 1943 while the former luxury liner Monterey (refitted for troop transport) was in the dock for service (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008).

The engineering feat represented by Dry Dock 4 was accomplished in a short period of time and required considerable on-site supervision by Mr. Frear and his associates. Mr. Frear also designed Dry Dock 3 at Hunters Point (1918) and many other naval structures at various shipyards in the United States and around the world. An engineer of international reputation, Frear joined the Union Iron Works in San Francisco as a draftsman in 1883, after graduation from Worchester Polytechnic Institute in Massachusetts, and went on to become chief naval designer. He later became Chief Naval Architect for Bethlehem Shipbuilding Corporation. He contributed significantly to the knowledge of naval engineering practices and advanced technology in the field through his innovative designs and related articles written about his work. Mr. Frear was awarded the prestigious title of Honorary Vice-President of the Society of Naval Architects and Marine Engineers in 1945. (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008; Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

Dry Dock 4 was placed into service in mid-1943 to repair and overhaul Navy ships, many of which were docked to repair battle damage during World War II. It was therefore a significant component of United States Navy facilities on the West Coast. The aircraft carrier USS Intrepid, one of the largest ships in the Pacific theater during World War II, was docked to repair battle damage to its hull and to receive general maintenance on three different occasions between 1942 and 1945. When not occupied by larger ships, two or more smaller ships could be simultaneously docked for servicing at the same time. This contributed significantly to the Navy's dominance in continually having a large numbers of ships committed to Pacific battle areas at any given time throughout World War II (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

After World War II, Dry Dock 4 was continuously used to dock a large variety of Navy capital ships, and in some instances those of foreign nations, for repair, overhaul, maintenance and conversion. For a brief period of time, Hunters Point Naval Shipyard and Mare Island Naval Shipyard operations were combined under a single operational command known as the San Francisco Bay Naval Shipyard. On November 19,1964, Secretary of Defense Robert S. McNamara announced the merger of Hunters Point Naval Shipyard and Mare Island Naval Shipyard which was accomplished in a command ceremony on May 11, 1965, making this the largest shipyard complex in the world. This relationship existed until January 31,1970, when both shipyards returned to autonomous operations. Hunters Point Naval Shipyard was subsequently formally decommissioned by the Navy, and Navy ship repair operations were terminated in 1974. The shipyard was leased by the Navy to Triple A Machine Shop in 1976 and operated as a private marine repair yard until termination of the lease by the Government in 1986. Dry Dock 4 was continuously operated by Triple A as the primary repair facility during this period. After 1974, title to all land and facilities was held for the Navy by the Supervisor of Shipbuilding,

Conversion and Repair, San Francisco Bay until transferred to Naval Station Treasure Island, as the Hunters Point Annex, in September, 1987 (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

In 1984, Mare Island Naval Shipyard personnel completed an in-depth study of Dry Dock 4 to determine the requirements to return the dry dock to a condition to support emergency dry docking of Navy nuclear surface ships. Improvements to salt water and electrical distribution utility services, previously mentioned in this report, were constructed shortly thereafter. Between November 1985 and August 1989, six separate dockings of Navy surface ships occurred, including dockings of the aircraft carriers USS Enterprise, USS Carl Vinson, the cruiser, USS Texas, and the cruiser, USS California. Upon termination of the lease to Triple A Machine Shop, title to Ex-Hunters Point Naval Shipyard and almost all facilities, passed to the Naval Station Treasure Island, with actual ownership of Dry Dock 4 and its associated facilities and utilities passing to Mare Island Naval Shipyard in 1987. After August 1989, no dockings of Navy ships occurred, and Dry Dock 4 was subsequently placed into an inactive status (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

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' long, 171' wide and 53' deep. Completed in June 1943, it includes a floating caisson and underground pump and control rooms, as described in greater detail above.
- The landscape 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 thirteen electrically powered capstans are also present around the perimeter, outside the location of the non-visible 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.

Non-visible 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 one 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.

Non-contributing 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

The CP-HPS project 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.

However, the 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, would be demolished. The 2010 FEIR found, therefore, that the project would result in a significant adverse impact to the District that would affect its eligibility for inclusion in the California Register, and two mitigation measures were included in the 2010 FEIR, provided below.

Addendum 5 Modifications

Addendum 5 of the CP-HPS2 2010 FEIR would include project modifications that may impact Dry Dock 4 including the addition of two pedestrian bridges over the dry dock, provision of water taxi service from Dry Dock 4, and creation of the Water Room Plaza surrounding the dry dock that would be programmed to serve as a central community gathering point and would have new seating.

The Water Room Bridge, a pedestrian and bicycle bridge, would be located in the western portion of Dry Dock 4. The Eastern Pedestrian Bridge, a pedestrian bridge, would be located in the eastern portion of Dry Dock 4, directly adjacent the entry point of the San Francisco Bay.

In addition, water taxi services to and from Hunters Point Shipyard would dock at a new landing at Dry Dock 4, and new infrastructure on land and water would be constructed to accommodate these services, as described in Section I, Project Description, of Addendum 5 to the CP-HPS2 2010 FEIR.

CEQA Impacts Analysis

The updated scope of work discussed in Addendum 5 includes new construction related to Dry Dock 4 that was not included in the Candlestick Point-Hunter's Point Shipyard Phase II (CP-HPS2) FEIR (2010). Previously, the only scope related to Dry Dock 4 in the 2010 FEIR was to repair the concrete and replace a fence. Under Addendum 5, new construction would occur in the vicinity of Dry Dock 4 including regrading of the site, construction of the Water Room Plaza with seating around Dry Dock 4, construction of two new pedestrian bridges over Dry Dock 4 including Water Room Bridge and Eastern Pedestrian Bridge, and installation of a water taxi ramp at Dry Dock 4. Although Dry Dock 4 would be retained intact under Addendum 5, 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 protect the historic integrity and significance of Dry Dock 4, Preservation Guidelines will inform the design process, 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 shall be guided by the guiding principles, standards for preservation, and preservation guidelines provided by Table 2 to ensure conformance with the SOI Standards.

Table 2 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:

Table 2 Dry Dock 4 Preservation Guidelines

- 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 SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[1] 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 scope of work for Addendum 5, 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. Therefore, potential impacts to historical resources would be less than significant.

The proposed project modifications included in Addendum 5 were 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.

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.

The proposed project discussed in the 2010 FEIR already changes the site and environment from a shipyard to a mixed-use housing development with associated public spaces. The Addendum 5 modifications related to Dry

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

Dock 4 including seating, two bridges and a water taxi landing would further change Dry Dock 4's historic purpose from a ship berth to a focal point of a large recreational landscape along the shoreline, which was proposed as part of the 2010 Project. The shipyard has been decommissioned and the Dry Dock has is not in use and is no longer in functional condition. In order to ensure its preservation, a new use that requires minimal change to the defining characteristics of the dry dock and its site and environment is, therefore, necessary. While the project plans are currently conceptual in nature, the Addendum 5 Preservation Guidelines would retain the existing character-defining features of Dry Dock 4 that are described above. Furthermore, the proposed treatment of the three dry docks under the CP-HPS2 project provide for the repair and retention of the historic elements that are consistent with Standard 1. Therefore, the modifications proposed under Addendum 5 would conform with Standard 1.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

While the project plans are currently conceptual in nature, the Addendum 5 Preservation Guidelines would ensure that proposed new use would retain the character-defining features of Dry Dock 4 that are described above. Furthermore, the proposed treatment of Dry Dock 4 under CP-HPS2, including the installation of weep holes, addition of rock/sand buttresses, and concrete repair in order to preserve the dry dock would be considered minor alterations that are necessary for the continued use of the dry dock and would retain and preserve their overall historic character. Likewise, the proposed modifications to Dry Dock 4 under Addendum 5 would be minor in nature and would involve minimal removal of materials for installation of the landing platform for the water taxi. The abutments for the two bridges would be placed away from the edge of Dry Dock 4, and the bridge and abutment construction process would not remove character-defining features or materials of the dry dock or its setting. The two bridge spans would not permanent and irreversibly alter character-defining features of the dry dock, and the open visual character of Dry Dock 4 and the spaces and spatial relationship between the water-filled dry dock and adjacent surrounding deck area (out to and including the bollards) would be retained. The installation of seating around the dry dock would occur on top of the land surface outside of the deck area so as not to remove any character defining materials or features. To preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting. The Addendum 5 modifications would respect the historic character of Dry Dock 4 and would avoid removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize the property and, therefore, would conform to Standard 2.

3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

The proposed changes that will be made to Dry Dock 4 under Addendum 5 would be modern in character and differentiated from the historic structure (see Standard 9 for more detailed analysis). No changes would be made that would create a false sense of historical development or add conjectural features. The proposed project modifications under Addendum 5 would conform to Standard 3.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

There are no changes to Dry Dock 4 that have acquired historic significance in their own right. The project modifications under Addendum 5 comply with Standard 4.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As discussed above under Standard 2, while the project plans are currently conceptual in nature, the Addendum 5 Preservation Guidelines shall ensure that the project would retain the character-defining features, materials, finishes and construction techniques or examples of craftsmanship of Dry Dock 4 that are described above. Furthermore, the proposed treatment of Dry Dock 4 under CP-HPS2, including the installation of weep holes, addition of rock/sand buttresses, and concrete repair of the dry-dock walls in order to preserve the dry dock would be considered minor alterations and repairs that are necessary for the continued use of the dry dock and would retain and preserve its overall historic character. The proposed modifications to Dry Dock 4 under Addendum 5 would be minor in nature and would involve minimal removal of materials for installation of the landing platform for the water taxi. The installation of seating around the dry dock would occur on top of the land surface so as not to remove any character defining materials or features. To preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting. The Addendum 5 modifications would respect and preserve the distinctive character of Dry Dock 4 and would conform to Standard 5.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

The preservation treatment of Dry Dock 4 is covered in the 2010 FEIR. The proposed treatments call for the repair of exposed dry-dock walls, including patching any concrete spalls, repairing and/or replacing exposed or corroded reinforcing bars, and repairing broken concrete. The treatments are all consistent with Standard 6 since they involve repairing, not replacing, deteriorated historic features. Where deteriorated beyond repair, the proposed treatments will replace materials in-kind, keeping the character of the dock walls consistent with the original design. Where parts of the concrete walls need to be replaced due to severe deterioration, the replacement surface will be similar in texture and color to the original concrete wall finish. No other repair or replacement of deteriorated historic fabric is included in Addendum 5. Therefore, the proposed treatments for Dry Dock 4 is consistent with Standard 6.

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.

The proposed modifications do not involve chemical or physical treatments to historic materials or abrasive surface cleaning that may potentially damage substances. Therefore, the proposed project complies with Standard 7.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

The proposed project modifications do not involve excavation that has not been previously analyzed in the 2010 FEIR. If standard procedures are followed in the case archaeological material would be encountered, the proposed project will be in compliance with Standard 8.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated

from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

As discussed above, the proposed modifications under Addendum 5 will not destroy historic materials, features, or spatial relationships that characterize the property. The proposed project would include new construction for the Water Room Plaza surrounding Dry Dock 4, as well as two bridges and a water taxi platform across/within the dry dock. The proposed modifications to Dry Dock 4 under Addendum 5 would be minor in nature and would involve minimal removal of materials for installation of the landing platform for the water taxi. The abutments for the two bridges would be placed away from the edge of Dry Dock 4 and the bridge and abutment construction process would not remove character-defining features or materials of the dry dock or its setting. The two bridge spans would not touch character-defining features of the dry dock and the open visual character of Dry Dock 5 and the spaces and spatial relationship between the water-filled dry dock and adjacent landscape would be retained. The installation of seating around the dry dock would occur on top of the land surface so as not to remove any character defining materials or features. To preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting.

The new construction would be contemporary/industrial in aesthetic and materials and would be differentiated from the historic dry dock. The project is in the conceptual design phase, so details of design and materials are yet unknown, but a design that is contemporary and industrial in aesthetic, utilitarian in the use of materials, and that does not obscure the character-defining features, spaces, spatial relationships or views of the dry dock, would protect the integrity of the dry dock and be considered compatible. The Addendum 5 Preservation Guidelines shall ensure that the integrity of the property and its environment would be protected. Therefore, the project complies with Standard 9.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The proposed project modifications under Addendum 5 would retain the essential form and integrity of Dry Dock 4 and, as discussed above, the new construction will be undertaken in a manner that if removed in the future, the integrity of Dry Dock 4 would be unimpaired. Addendum 5 would conform to Standard 10.

CP-HPS2 2010 FEIR Mitigation Measures

MM CP-1b.1: Mitigation to Minimize Impacts on Historic Resources at HPS Phase II. To reduce the adverse effect on historical resources, prior to any structural demolition and removal activities, the Project Applicant shall retain a professional who meets the Secretary of the of the Interior's Professional Qualifications Standards for Architectural History to prepare written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District, as identified in the report titled *Bayview Waterfront Plan Historic Resources Evaluation, Volume II: Draft Historic Resources Survey and Technical Report*, July 2009, prepared by Circa Historic Property Development.

The documentation for the property shall be prepared based on the National Park Services' (NPS) Historic American Building Survey (HABS) / Historic American Engineering Record (HAER) Historical Report Guidelines. This type of documentation is based on a combination of both HABS/HAER standards (Levels II and III) and NPS new policy for NR-NHL photographic documentation as outlined in the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion (March 2005).

The written historical data for this documentation shall follow HABS / HAER Level I standards. The written data shall be accompanied by a sketch plan of the property. Efforts should also be made to locate

original construction drawings or plans of the property during the period of significance. If located, these drawings should be photographed, reproduced, and included in the dataset. If construction drawings or plans cannot be located as-built drawings shall be produced.

Either HABS/HAER standard large format or digital photography shall be used. If digital photography is used, the ink and paper combinations for printing photographs must be in compliance with NR-NHL photo expansion policy and have a permanency rating of approximately 115 years. Digital photographs will be taken as uncompressed .TIF file format. The size of each image will be 1600x1200 pixels at 300 ppi (pixels per inch) or larger, color format, and printed in black and white. The file name for each electronic image shall correspond with the index of photographs and photograph label.

Photograph views for the dataset shall include *(a)* contextual views; *(b)* views of each side of each building and interior views, where possible; *(c)* oblique views of buildings; and *(d)* detail views of character-defining features, including features on the interiors of some buildings. All views shall be referenced on a photographic key. This photograph key shall be on a map of the property and shall show the photograph number with an arrow indicate the direction of the view. Historic photographs shall also be collected, reproduced, and included in the dataset.

All written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District shall be approved by the SFRA, in consultation with the ERO, prior to any demolition and removal activities.

MM CP-1b.2: Interpretive Displays Depicting History of HPS. Interpretive displays related to the history of HPS shall be installed at Heritage Park at Dry Dock Nos. 2 and 3. The number and type of displays shall be approved by the SFRA, in consultation with the ERO.

Appendix I

Transportation, Air Quality/ Greenhouse Gas Emissions, and Noise Analyses of the Transfer of Nonresidential Uses from HPS2 to CP

ESA

FEHR PEERS

April 5, 2018

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Office of Community Investment and Infrastructure (OCII)
1 South Van Ness Avenue, #5
San Francisco, CA 94103

Ms. Joy Navarrete
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Subject: DRAFT Supplement to Candlestick Point/Hunters Point Shipyard Phase II Redevelopment Plan Project EIR Addendum 5 – Transportation Assessment: R&D Relocation

Dear Jose and Joy:

As you know, the *Candlestick Point/Hunters Point Shipyard Phase II Redevelopment Plan Final EIR* (herein referred to simply as "EIR") was certified by the San Francisco Planning Commission and the San Francisco Redevelopment Commission in June 2010. The EIR analyzed the originally-proposed project (as described in Chapter II of the FEIR, hereinafter referred to as "FEIR Project"), several variants (as described in Chapter IV of the FEIR), and several alternatives (as described in Chapter VI of the FEIR). Since then, a number of refinements have been proposed to the FEIR Project through a series of addenda. Most recently, Addendum 4, which proposed modifications to the CP Design for Development, land use program, and transportation system changes was approved in 2016.

Currently, the Project team is preparing Addendum 5, which proposes some modifications to the Candlestick Point and at Hunters Point Shipyard (herein referred to as "CP" and "HPS," respectively) land use program, a revised transportation network and modified construction/phasing schedule at the Hunters Point Shipyard site. Fehr & Peers has completed analysis addressing the modified land use program and transportation network, which is described in a letter to OCII, dated April 4, 2018.

It is our understanding that the proposed modifications to the Project included in Addendum 5 allow for the flexibility to relocate up to 118,500 square feet of R&D/office uses from HPS to CP. Moving these uses across the site would increase trip generation in CP and reduce trip generation in HPS, compared to 2018 Modified Project Variant, as illustrated in **Table 1**.

TABLE 1: VEHICLE TRIP GENERATION COMPARISON WITH R&D RELOCATION							
Peak Hour / Site		**FEIR Variant 1 (R&D)**	**2018 Modified Project Variant**	**Difference from FEIR Variant 1 (R&D) to 2018 Modified Project Variant**	**2018 Modified Project Variant With Relocation of 118.5 ksf of R&D/Office from HPS to CP**	**Difference from FEIR Variant 1 (R&D) to 2018 Modified Project Variant with R&D/Office Relocation**	**Difference from 2018 Modified Project Variant to 2018 Modified Project Variant with R&D/Office Relocation**
AM Peak Hour	CP	2,310	2,264	-46	2,331	+21	+67
	HP	3,065	3,212	+147	3,169	+104	-43
	Total	**5,375**	**5,476**	**+101[1]**	**5,500**	**+125[1]**	**+24**
PM Peak Hour	CP	4,913	4,882	-31	4,970	+57	+88
	HP	3,134	3,644	+510	3,614	+480	-30
	Total	**8,047**	**8,526**	**+479[1]**	**8,584**	**+537[1]**	**+58**

Notes:

1. Increases in trips associated with the Modified Project include approximately 100 AM peak hour and 200 PM peak hour vehicle trips for 172 dwelling units and 71 ksf of retail space. These new trips would not affect the total amount of traffic in the area at Project buildout because they correspond to the number of units and commercial square footage approved but not built, and no longer planned to be built, as part of the adjacent HPS Phase 1 project; however, they do represent an increase in the number of trips that are considered a part of the Modified Project. Thus, although the Modified Project's contribution in traffic is expected to increase by approximately 100 to 480 vehicle trips in the AM and PM peak hours, respectively, the total traffic volume in the area is expected to be nearly identical to the FEIR in the AM peak hour and increase by approximately 280 trips in the PM peak hour, since the other vehicle trips were previously accounted for as part of Phase 1.

As shown, with the R&D/Office relocation, the CPHPS project would generate approximately 130 and 540 more trips in the AM and PM peak hour respectively, compared to FEIR Variant 1 (R&D). Compared to the 2018 Modified Project Variant, the relocation would decrease trips in HPS by 43 and increase trips in CP by 67 in the AM peak hour. In the PM peak hour, the relocation would decrease trips in HPS by 30 and increase trips in CP by 88.

Below is a discussion of the effects of the proposed changes on the impacts identified in the EIR.

IMPACT TR-1: ON-SITE AND OFF-SITE CONSTRUCTION IMPACTS

The relocation of R&D/Office form HPS to CP may result in a slight increase in construction activity in CP and a slight decrease in construction activity in HP; however, the amount of overall construction anticipated as part of the Modified Project is expected to be the same. Therefore, the relocation of R&D/Office from HPS to CP would not affect the conclusions of the analysis for the 2018 Modified Project and there would not be new or substantially more severe significant construction impacts.

IMPACTS TR-2 THROUGH TR-16: TRAFFIC IMPACTS TO REGIONAL AND LOCAL ROADWAY SYSTEM, STUDY INTERSECTIONS, AND FREEWAY FACILITIES

Consistent with the analysis completed for the 2018 Modified Project Variant summarized in Addendum 5, the 11 intersections closest to the project site were evaluated for conditions with the R&D/Office relocation. Analysis results, in terms of LOS, delay, and v/c ratios are presented in **Table 2**, below. As shown, the R&D/Office relocation results in little to no change compared to the 2018 Modified Project Variant. Intersections operating at LOS D or better, would continue to operate at LOS D or better and would not deteriorate to LOS E or F. Additionally, intersections operating at LOS E would continue to operate at LOS E. Since delay calculations are unreliable in over-capacity (i.e., LOS F) conditions using isolated intersection analysis, v/c ratios are included for those intersections operating at LOS F (greater than 80 seconds of delay). Most of the v/c ratios remain the same or are reduced when compared to the 2018 Modified Project Variant. One exception is the Gilman Avenue/Third Street intersection. The Gilman Avenue/Third Street intersection results in a v/c increase of 0.1 during the AM peak hour and 0.16 during the PM peak hour when compared to the 2018 Modified Project Variant; however, the intersection's v/c ratio is less than the v/c ratio reported under FEIR Variant 1 (R&D), and therefore, the 2018 Modified Project Variant either with or without the R&D/office relocation would result in better operations at this intersection than

analyzed in the FEIR. Therefore, since the R&D/Office relation results in about the same or better operations than the Modified Project or Variant 1 results, the relocation is not expected to generate any new impacts than those reported in the FEIR.

Of the 11 intersections, 2 included mitigation measures in the FEIR specific to FEIR Variant 1 (R&D): Crisp Road/Palou Avenue and Innes Avenue/Earl Street. As part of the 2018 Modified Project Variant analysis, some refinements to the mitigation measures at the Crisp/Palou intersection were identified. The mitigation measure at Innes Avenue/Earl Street from the FEIR was not changed as part of the 2018 Modified Project Variant analysis. The revised mitigation measure at Crisp Road/Palou Avenue and the original mitigation measure at Innes Avenue/Earl Street would continue to be required under conditions with the R&D/Office relocation. Results are presented in **Table 3**. As shown, with mitigations, the intersections will continue to operate at an acceptable LOS under conditions with the 2018 Modified Project Variant, either with or without the transfer of R&D/office from HPS to CP.

Therefore, because travel demand would be similar to that identified for the 2018 Modified Project Variant, there would be no changes to auto capacity associated with project refinements that result in additional or more severe significant impacts, and intersection LOS would be similar to that identified for the 2018 Modified Project Variant in Addendum 5. Thus, the R&D/Office Relocation would have similar impact conclusions for Impacts TR-2 through TR-16 and the FEIR mitigation measures plus refinements documented in the April 4, 2018 letter, will continue to apply.

TABLE 2: INTERSECTION OPERATIONS

Intersection[1]	FEIR Variant 1 (R&D)[2,3,4]				2018 Modified Project Variant[2,3]				2018 Modified Project Variant with 118.5 ksf of R&D/Office Relocated from HP to CP			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C
#4 – Evans / Third	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.65**	**>80 / F**	**1.58**	**>80 / F**	**1.65**
#6 – Palou / Third	**>80 / F**	**2.22**	**>80 / F**	**5.97**	**>80 / F**	**2.47**	**>80 / F**	**6.65**	**> 80 / F**	**2.47**	**>80 / F**	**6.64**
#9 – Gilman / Third[5]	**>80 / F**	**2.02**	**>80 / F**	**3.40**	**>80 / F**	**1.63**	**>80 / F**	**2.94**	**>80 / F**	**1.64**	**>80 / F**	**3.10**
#29 – Harney / Arelious Walker	25 / C	--	53 / D	--	22 / C	--	36 / D	--	22 / C	--	38 / D	--
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 / F**	**1.18**	**>80 / F**	**1.12**	**>80 / F**	**1.21**	**>80 / F**	**1.11**	**>80 / F**	**1.20**
#34 – Arelious Walker / Gilman[5]	30 / C	--	38 / D	--	36 / D	--	52 / D	--	37 / D	--	54 / D	--
#46 – Innes Ave / Fitch	5 / A	--	6 / A	--	5 / A	--	6 / A	--	5 / A	--	6 / A	--
#47 – Innes Ave / Earl	1 (21) / A (C)[5]	--	3 **(63)** / A **(F)** [6]	--	1 (24) / A (C)	--	4 **(77)** / A **(F)**	--	1 (23) / A (C)	--	4 **(73)** / A **(F)**	--
#48 – Middle Point / Evans / Jennings	**61 / E**	**1.17**	43 / D	--	**64 / E**	**1.15**	30 / C	--	**62 / E**	**1.14**	30 / C	--
#54 – Ingalls / Palou	23 / C	--	33 / C	--	22 / C	--	37 / D	--	22 / C	--	36 / D	--
#55 – Keith / Palou	9 / A	--	8 / A	--	9 / A	--	8 / A	--	9 / A	--	8 / A	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. Refer to Tables 45 and 46, on pp. 167-172 of the Project's Transportation Impact Study, included as Appendix D to the FEIR, for LOS results for FEIR Variant 1 (R&D).
5. The analysis of conditions with the Modified Project at Gilman / Third and Gilman / Arelious Walker was performed using a more detailed and sophisticated software, the Synchro platform, than what was used in the FEIR in order to capture unique features of those intersections. Analysis of Modified Project conditions at Gilman / Third also reflects updated lane configurations established by SFMTA subsequent to publication of the EIR.
6. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

TABLE 3: INTERSECTION OPERATIONS WITH MITIGATION

Intersection[1]	2018 Modified Project Variant[2,3]				2018 Modified Project Variant With Mitigation[2,3]				2018 Modified Project Variant with 118.5 ksf of R&D/Office Relocated from HP to CP[2,3]				2018 Modified Project Variant with 118.5 ksf of R&D/Office Relocated from HP to CP With Mitigation[2,3]			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 /F**	**1.21**	33 / C	0.86	36 / D	0.85	**>80 / F**	**1.11**	**>80 / F**	**1.20**	32 / C	0.84	34 / C	0.82
#47 – Innes Ave / Earl	1 (24) / A (C)[4]	--	4 (77) / A (F)[4]	--	18 / B	--	21 / C	--	1 (23) / A (C)	--	4 **(73)** / A **(F)**	--	17 / B	--	20 / C	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

IMPACTS TR-17 THROUGH TR-30: IMPACTS TO LOCAL AND REGIONAL TRANSIT OPERATIONS AND CAPACITY

Transit demand calculations were calculated for the R&D/Office relocation and are shown in **Table 4**. The Modified Project transit demand calculations are included for comparison purposes.

TABLE 4: FEIR VARIANT 1 (R&D) AND 2018 MODIFIED PROJECT VARIANT TRANSIT TRIP GENERATION

Peak Hour / Direction		2018 Modified Project Variant			2018 Modified Project Variant with R&D/Office Relocation			Difference from 2018 Modified Project Variant		
		CP	HP	Total	CP	HP	Total	CP	HP	Total
AM Peak Hour	Inbound	300	863	1,163	327	847	1,174	27	-16	11
	Outbound	642	513	1,155	643	510	1,153	1	-3	-2
	Total	**942**	**1,376**	**2,318**	**970**	**1,357**	**2,327**	**28**	**-19**	**9**
PM Peak Hour	Inbound	1,029	573	1,602	1,038	571	1,609	9	-2	7
	Outbound	833	998	1,831	866	985	1,851	33	-13	20
	Total	**1,861**	**1,571**	**3,433**	**1,904**	**1,556**	**3,460**	**43**	**-15**	**27**

As shown, the R&D/Office relocation would result in a transit ridership increase in CP and a decrease in HPS. Overall, the relocation would result in an increase of approximately 10 trips in the AM peak hour and 30 trips in the PM peak hour. Similar to the vehicle trip generation, the transit ridership would increase by less than 1 percent compared to the 2018 Modified Project Variant.

While the R&D/Office relocation would increase the number of transit trips, the proposed transit service is expected to be sufficient to serve the added demand because the increase is very small. Therefore, with the R&D/Office relocation, the transit capacity will be adequate and there will be no additional or substantially more severe significant transit impacts beyond those described in the FEIR and the 2018 Modified Project Variant assessment. .

IMPACT TR-31 THROUGH TR-34: BICYCLE AND PEDESTRIAN CIRCULATION

The relocation of R&D/office would not change the bicycle and pedestrian circulation of the street network proposed under the 2018 Modified Project Variant. Therefore, no new or substantially more severe significant impacts beyond those identified in the FEIR or the Addendum 5 analysis of

the 2018 Modified Project Variant would result from the relocation of R&D/Office. Thus, no additional mitigation measures are required.

IMPACTS TR-35 THROUGH TR-37: PARKING & LOADING

The relocation of R&D/office would result in a slight increase in parking supply and demand at CP and a slight reduction in supply and demand at HPS, compared to the 2018 Modified Project Variant. While the overall number of parking spaces for the entire site would decrease by approximately 35 spaces, the overall parking supply would continue to be within the range identified in the FEIR. The relocation of R&D/Office would not affect the loading requirements, which were concluded adequate in the FEIR. Though relocating R&D/office would shift some of the demand and supply from HP to CP; the amount of loading provided would follow the requirements and would continue to be adequate.

Therefore, the relocation of the R&D/Office is not expected change the conclusions stated in the Addendum 5 Modified Project, such that the relocation would not result in any new significant impacts to parking and loading, and no new mitigation measures would be required.

IMPACTS TR-38 THROUGH TR-55: STADIUM IMPACTS

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

IMPACT TR-51 THROUGH TR-55: ARENA IMPACTS

The R&D/Office relocation would slightly increase traffic generation at CP. As a result, there could be slightly more congestion during special events at the arena. However, as noted earlier, the overall increase in traffic at CP associated with the relocation would be quite small, and thus, not likely to create any new or substantially more severe significant impacts associated with events at the arena compared to what was described in the FEIR, and therefore no additional mitigation measures are required.

IMPACT TR-56: AIR TRAFFIC IMPACTS

The relocation of R&D/Office would contain the same overall land uses and general development plan, thus, would not change the conclusions regarding air traffic. The relocation would not create any new significant impacts with respect to air traffic and no additional mitigation measures are required.

IMPACT TR-57: HAZARDS DUE TO DESIGN FEATURES

The R&D/Office relocation is not expected to change the Project's transportation infrastructure; however, any changes would be designed in accordance with City standards and would be revised and approved by the City. Therefore, the relocation would not result in any new significant impacts to design features and no mitigation measures would be required.

IMPACT TR-58: EMERGENCY ACCESS

The EIR 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 R&D/Office relocation would not affect the transportation infrastructure. Therefore, no new significant impacts to emergency access have been identified and no mitigation measures are required.

Please contact us with questions or comments.

Sincerely,

FEHR & PEERS

Chris Mitchell, PE
Principal

Sarah Chan, PE TE
Senior Transportation Engineer

SF08-0407

RAMBOLL

ENVIRONMENT
& HEALTH

MEMO

Date	**April 5, 2018**
To	**Jose Campos,** **Office of Community Investment and Infrastructure** **Joy Navarette,** **Planning Department, City and County of San Francisco**
From	**Michael Keinath** **Sarah Manzano** **Kevin Warner**
Subject	**Supplement to Candlestick Point-Hunter Point Shipyard Phase II Development Plan Air Quality and Noise Analyses for R&D Relocation**

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INTRODUCTION

In 2009, the Final Environmental Impact Report (FEIR) for the proposed Candlestick Point – Hunters Point Shipyard Phase II Development Plan (herein referred to as "Project" was published (San Francisco Planning Department Case Number 2007.0946E). The FEIR for the Project was certified in July 2010 and since that time the Project proponent, FivePoint, formerly Lennar Urban, and the City and County of San Francisco, have been working to implement the Project plan. A number of refinements have been proposed to the Project that have been analyzed through a series of addenda.

Currently, the Project has been modified to include revisions to proposed land uses, adjusted locations for two high-rise towers, redesign of parks and open spaces, refinements to the street network, additional water taxi infrastructure and two pedestrian bridges, and revisions to the utility network. The proposed modified land uses are referred to as the 2018 Modified Project Variant. Ramboll US Corporation (Ramboll) analyzed air quality, greenhouse gas, and environmental noise analyses of the 2018 Modified Project Variant in support of Addendum 5.

Ramboll understands that the Project proponent would like the flexibility to move some 2018 Modified Project Variant R&D uses from Hunters Point Shipyard (HPS) to Candlestick Point (CP), though not increase the total square footage on Candlestick Point by more than 10% of total area (or roughly 118,500 square feet of R&D uses). The memorandum addresses the expected impact of these R&D relocation on air quality, greenhouse gas, and noise.

AIR QUALITY AND GREENHOUSE GAS

Air quality and greenhouse gas construction impacts (Impact AQ-1, AQ-2, and AQ-3 and GC-1) are not expected to change. Also, the Project will still be required to comply with mitigation measures MM HZ-15, MM AQ-2.1, and MM AQ-2.2.

The relocation of 118,500 square feet of R&D land use would result in an overall increase in square footage at CP, and decrease overall square footage at HPS. However, the increase in square footage at CP is not expected to change construction impacts. The addition of the R&D space and associated construction would be in the commercial area of CP. The health risk assessment showed that health impacts from construction were significantly below thresholds; increase in R&D at CP could result in a maximum increase of 10%.

Impact from operational mass emissions (Impact AQ-4 and GC-1) is not expected to change. Table 1 shows the comparison of emissions from the 2018 Modified Project Variant with the R&D transfer to the 2010 Project. This incorporates trip information provided by Fehr and Peers. As shown in the table, emissions from all pollutants are lower than was estimated in the 2010 FEIR.

TABLE 1 EMISSIONS COMPARISON

	2010 Project (Operational Emissions for project, Build-Out 2030)[a]				*Addendum 5 with R&D (Operational Emissions for 2018 Modified Project Variant, Build-Out 2034)*[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	218	168	208	67
HPS2	255	119	424	81	211	174	191	59
Project Site Total	***921***	***384***	***1,453***	***278***	***429***	***342***	***399***	***126***

Operational emissions for the 2018 Modified Project Variant with R&D transfer were calculated using the same methodology as was used in Addendum 5 and described in our memorandum Operational Air Quality and Greenhouse Gas Emissions and PM2.5 Concentration Evaluations, dated March 30, 2018

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.

Impacts from operational CO and $PM_{2.5}$ concentrations (Impact AQ-5 and AQ-7) are not expected to change. Fehr and Peers provided traffic volumes that incorporate the transfer in land uses. With the movement of the R&D land use to CP, there would be a slight increase in traffic on Gilman Avenue while traffic volumes on all other streets would decrease compared to Addendum 5.

In Addendum 5, the $PM_{2.5}$ and CO concentrations near Gilman Avenue would be below thresholds. Traffic is expected to increase on Third Street by 0.4% compared to the traffic volumes analyzed in Addendum 5. This slight increase in traffic would not increase traffic above thresholds.

The decrease in traffic along the other roads would decrease the $PM_{2.5}$ and CO concentrations when compared to Addendum 5. Thus, the impacts from $PM_{2.5}$ and CO concentrations would not change from what was discussed in Addendum 5.

It is our understanding that the CP R&D land uses would not emit toxic air contaminants (TAC) beyond typical office use, so would not affect Impact AQ-6. TAC emissions from offices are not generally analyzed for TACs. However, MM AQ-6.1 and MM AQ-6.2 would apply to CP if TAC emitting sources were located in CP.

These land use modifications do not add new odor generating sources, and so would not change Impact AQ-8. These modifications also do not change any aspect of the project that would affect consistency with the Clean Air Plan's goals, and would not change Impact AQ-9.

This R&D relocation is not expected to change the conclusions of air quality or greenhouse gas impact statements.

ENVIRONMENTAL NOISE

The relocation of 118,500 square feet of R&D would result in minimal changes to traffic along area roadways resulting in minimal changes in traffic noise, between 0 dBA and 0.2 dBA when compared with the 2018 Modified Project Variant. These very small changes in traffic noise levels are acoustically insignificant and would not affect the conclusions of Impact statement NO-6 regarding project-related traffic noise impacts or cumulative traffic noise impacts (i.e., both would remain significant and unavoidable).

Regarding noise from construction activities or during operation of the Project, the proposed relocation of R&D land use would have a negligible effect. That is, relocation of the R&D land use would result in noise impact statements and conclusions that are identical to the 2018 Modified Project Variant.

SUMMARY

In summary, moving roughly 118,500 square feet of R&D from HPS to CP would not create additional significant impacts or more substantially severe impacts to the air quality, greenhouse gas, and noise analysis.

Attachments:

A: CalEEMod® Flies

ATTACHMENT A
CALEEMOD® FLIES

Candlestick Point - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	268.50	1000sqft	3.02	268,500.00	0
Enclosed Parking Structure	7,218.00	Space	31.81	2,887,200.00	0
Parking Lot	1,360.00	Space	5.99	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.65	875,600.00	0
Arena	75.00	1000sqft	11.81	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.56	50,000.00	0
Hotel	220.00	Room	3.59	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.01	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.76	635,000.00	0
Strip Mall	125.00	1000sqft	1.41	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	6.16	3.02
tblLandUse	LotAcreage	64.96	31.81
tblLandUse	LotAcreage	12.24	5.99
tblLandUse	LotAcreage	19.70	9.65
tblLandUse	LotAcreage	24.11	11.81
tblLandUse	LotAcreage	1.15	0.56
tblLandUse	LotAcreage	7.33	3.59
tblLandUse	LotAcreage	189.95	93.01
tblLandUse	LotAcreage	14.58	7.76
tblLandUse	LotAcreage	2.87	1.41
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	20.40	294.01
tblTripsAndVMT	VendorTripNumber	2,494.00	2,474.00
tblTripsAndVMT	WorkerTripNumber	9,507.00	9,469.00
tblTripsAndVMT	WorkerTripNumber	1,901.00	1,894.00

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.68
tblVehicleTrips	ST_TR	10.71	4.49
tblVehicleTrips	ST_TR	22.75	9.53
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.43

tblVehicleTrips	ST_TR	49.97	20.93
tblVehicleTrips	ST_TR	1.90	0.80
tblVehicleTrips	ST_TR	42.04	17.61
tblVehicleTrips	SU_TR	5.86	2.45
tblVehicleTrips	SU_TR	10.71	4.49
tblVehicleTrips	SU_TR	16.74	7.01
tblVehicleTrips	SU_TR	26.73	11.19
tblVehicleTrips	SU_TR	5.95	2.49
tblVehicleTrips	SU_TR	25.24	10.57
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.56
tblVehicleTrips	WD_TR	6.65	2.78
tblVehicleTrips	WD_TR	10.71	4.49
tblVehicleTrips	WD_TR	1.89	0.79
tblVehicleTrips	WD_TR	32.93	13.79
tblVehicleTrips	WD_TR	8.17	3.42
tblVehicleTrips	WD_TR	42.70	17.88
tblVehicleTrips	WD_TR	8.11	3.40
tblVehicleTrips	WD_TR	44.32	18.56
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	132,019,824.82	13,916,355.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00

tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081
Total	**236.5294**	**327.2043**	**1,044.7568**	**2.9118**	**192.0443**	**19.0964**	**211.1407**	**51.4928**	**19.0136**	**70.5063**	**0.0000**	**407,922.3880**	**407,922.3880**	**11.9592**	**4.2193**	**409,478.7265**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081
Total	**236.5294**	**327.2043**	**1,044.7568**	**2.9118**	**192.0443**	**19.0964**	**211.1407**	**51.4928**	**19.0136**	**70.5063**	**0.0000**	**407,922.3880**	**407,922.3880**	**11.9592**	**4.2193**	**409,478.7265**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.45

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,955,250; Non-Residential Outdoor: 651,750; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081
Unmitigated	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	20,066.04	19,344.24	17684.10	53,859,376	53,859,376
Arena	336.75	336.75	336.75	662,896	662,896
City Park	88.80	1,071.17	787.92	708,247	708,247
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	689.50	23.00	559.50	1,005,396	1,005,396
Hotel	752.40	754.60	547.80	1,388,900	1,388,900
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,353.80	13,290.55	6711.95	19,438,793	19,438,793
Research & Development	912.90	214.80	123.51	1,770,027	1,770,027
Strip Mall	2,320.00	2,201.25	1070.00	3,307,217	3,307,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	36,520.19	37,236.36	27,821.53	82,140,852	82,140,852

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
NaturalGas Unmitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18206.5	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18.2065	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Unmitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	268.50	1000sqft	3.02	268,500.00	0
Enclosed Parking Structure	7,218.00	Space	31.81	2,887,200.00	0
Parking Lot	1,360.00	Space	5.99	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.65	875,600.00	0
Arena	75.00	1000sqft	11.81	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.56	50,000.00	0
Hotel	220.00	Room	3.59	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.01	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.76	635,000.00	0
Strip Mall	125.00	1000sqft	1.41	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	6.16	3.02
tblLandUse	LotAcreage	64.96	31.81
tblLandUse	LotAcreage	12.24	5.99
tblLandUse	LotAcreage	19.70	9.65
tblLandUse	LotAcreage	24.11	11.81
tblLandUse	LotAcreage	1.15	0.56
tblLandUse	LotAcreage	7.33	3.59
tblLandUse	LotAcreage	189.95	93.01
tblLandUse	LotAcreage	14.58	7.76
tblLandUse	LotAcreage	2.87	1.41
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	20.40	294.01
tblTripsAndVMT	VendorTripNumber	2,494.00	2,474.00
tblTripsAndVMT	WorkerTripNumber	9,507.00	9,469.00
tblTripsAndVMT	WorkerTripNumber	1,901.00	1,894.00

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.68
tblVehicleTrips	ST_TR	10.71	4.49
tblVehicleTrips	ST_TR	22.75	9.53
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.43

tblVehicleTrips	ST_TR	49.97	20.93
tblVehicleTrips	ST_TR	1.90	0.80
tblVehicleTrips	ST_TR	42.04	17.61
tblVehicleTrips	SU_TR	5.86	2.45
tblVehicleTrips	SU_TR	10.71	4.49
tblVehicleTrips	SU_TR	16.74	7.01
tblVehicleTrips	SU_TR	26.73	11.19
tblVehicleTrips	SU_TR	5.95	2.49
tblVehicleTrips	SU_TR	25.24	10.57
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.56
tblVehicleTrips	WD_TR	6.65	2.78
tblVehicleTrips	WD_TR	10.71	4.49
tblVehicleTrips	WD_TR	1.89	0.79
tblVehicleTrips	WD_TR	32.93	13.79
tblVehicleTrips	WD_TR	8.17	3.42
tblVehicleTrips	WD_TR	42.70	17.88
tblVehicleTrips	WD_TR	8.11	3.40
tblVehicleTrips	WD_TR	44.32	18.56
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	132,019,824.82	13,916,355.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00

tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378
Total	**233.5187**	**333.5762**	**1,047.9954**	**2.8323**	**192.0443**	**19.0996**	**211.1439**	**51.4928**	**19.0166**	**70.5093**	**0.0000**	**399,904.1987**	**399,904.1987**	**12.0560**	**4.2193**	**401,462.9562**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378
Total	**233.5187**	**333.5762**	**1,047.9954**	**2.8323**	**192.0443**	**19.0996**	**211.1439**	**51.4928**	**19.0166**	**70.5093**	**0.0000**	**399,904.1987**	**399,904.1987**	**12.0560**	**4.2193**	**401,462.9562**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.45

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,955,250; Non-Residential Outdoor: 651,750; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378
Unmitigated	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	20,066.04	19,344.24	17684.10	53,859,376	53,859,376
Arena	336.75	336.75	336.75	662,896	662,896
City Park	88.80	1,071.17	787.92	708,247	708,247
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	689.50	23.00	559.50	1,005,396	1,005,396
Hotel	752.40	754.60	547.80	1,388,900	1,388,900
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,353.80	13,290.55	6711.95	19,438,793	19,438,793
Research & Development	912.90	214.80	123.51	1,770,027	1,770,027
Strip Mall	2,320.00	2,201.25	1070.00	3,307,217	3,307,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	36,520.19	37,236.36	27,821.53	82,140,852	82,140,852

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
NaturalGas Unmitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18206.5	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18.2065	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Unmitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	268.50	1000sqft	3.02	268,500.00	0
Enclosed Parking Structure	7,218.00	Space	31.81	2,887,200.00	0
Parking Lot	1,360.00	Space	5.99	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.65	875,600.00	0
Arena	75.00	1000sqft	11.81	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.56	50,000.00	0
Hotel	220.00	Room	3.59	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.01	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.76	635,000.00	0
Strip Mall	125.00	1000sqft	1.41	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	6.16	3.02
tblLandUse	LotAcreage	64.96	31.81
tblLandUse	LotAcreage	12.24	5.99
tblLandUse	LotAcreage	19.70	9.65
tblLandUse	LotAcreage	24.11	11.81
tblLandUse	LotAcreage	1.15	0.56
tblLandUse	LotAcreage	7.33	3.59
tblLandUse	LotAcreage	189.95	93.01
tblLandUse	LotAcreage	14.58	7.76
tblLandUse	LotAcreage	2.87	1.41
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	20.40	294.01
tblTripsAndVMT	VendorTripNumber	2,494.00	2,474.00
tblTripsAndVMT	WorkerTripNumber	9,507.00	9,469.00
tblTripsAndVMT	WorkerTripNumber	1,901.00	1,894.00

tblVehicleTrips	CC_TL	7.30	9.10
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90

tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50
tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.68
tblVehicleTrips	ST_TR	10.71	4.49
tblVehicleTrips	ST_TR	22.75	9.53
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.43
tblVehicleTrips	ST_TR	49.97	20.93
tblVehicleTrips	ST_TR	1.90	0.80
tblVehicleTrips	ST_TR	42.04	17.61
tblVehicleTrips	SU_TR	5.86	2.45
tblVehicleTrips	SU_TR	10.71	4.49
tblVehicleTrips	SU_TR	16.74	7.01
tblVehicleTrips	SU_TR	26.73	11.19
tblVehicleTrips	SU_TR	5.95	2.49
tblVehicleTrips	SU_TR	25.24	10.57
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.56
tblVehicleTrips	WD_TR	6.65	2.78
tblVehicleTrips	WD_TR	10.71	4.49
tblVehicleTrips	WD_TR	1.89	0.79
tblVehicleTrips	WD_TR	32.93	13.79
tblVehicleTrips	WD_TR	8.17	3.42

tblVehicleTrips	WD_TR	42.70	17.88
tblVehicleTrips	WD_TR	8.11	3.40
tblVehicleTrips	WD_TR	44.32	18.56
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	132,019,824.82	13,916,355.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907
Energy	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	12,259.2782	12,259.2782	0.8825	0.2452	12,354.4230
Mobile	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144
Waste						0.0000	0.0000		0.0000	0.0000	1,838.9129	0.0000	1,838.9129	108.6766	0.0000	4,555.8289
Water						0.0000	0.0000		0.0000	0.0000	59.2583	183.0866	242.3448	6.1049	0.1475	438.9359
Total	**38.1458**	**35.3924**	**131.1284**	**0.4062**	**39.9953**	**1.1794**	**41.1747**	**10.7591**	**1.1621**	**11.9212**	**1,898.1712**	**49,971.6101**	**51,869.7812**	**117.0763**	**0.4775**	**54,938.9928**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907
Energy	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	12,259.2782	12,259.2782	0.8825	0.2452	12,354.4230
Mobile	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144
Waste						0.0000	0.0000		0.0000	0.0000	1,838.9129	0.0000	1,838.9129	108.6766	0.0000	4,555.8289
Water						0.0000	0.0000		0.0000	0.0000	59.2583	183.0866	242.3448	6.1049	0.1475	438.9359
Total	**38.1458**	**35.3924**	**131.1284**	**0.4062**	**39.9953**	**1.1794**	**41.1747**	**10.7591**	**1.1621**	**11.9212**	**1,898.1712**	**49,971.6101**	**51,869.7812**	**117.0763**	**0.4775**	**54,938.9928**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.45

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,955,250; Non-Residential Outdoor: 651,750; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144
Unmitigated	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	20,066.04	19,344.24	17684.10	69,485,249	69,485,249
Arena	336.75	336.75	336.75	815,014	815,014
City Park	88.80	1,071.17	787.92	980,400	980,400
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	689.50	23.00	559.50	1,339,476	1,339,476
Hotel	752.40	754.60	547.80	1,862,490	1,862,490
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,353.80	13,290.55	6711.95	25,856,491	25,856,491
Research & Development	912.90	214.80	123.51	2,450,579	2,450,579
Strip Mall	2,320.00	2,201.25	1070.00	4,401,049	4,401,049
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	36,520.19	37,236.36	27,821.53	107,190,749	107,190,749

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
Arena	14.90	9.10	9.10	0.00	81.00	19.00	66	28	6
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,897.9679	7,897.9679	0.7989	0.1653	7,967.1956
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,897.9679	7,897.9679	0.7989	0.1653	7,967.1956
NaturalGas Mitigated	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	4,361.3103	4,361.3103	0.0836	0.0800	4,387.2274
NaturalGas Unmitigated	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	4,361.3103	4,361.3103	0.0836	0.0800	4,387.2274

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	6.64538e+006	0.0358	0.3258	0.2736	1.9500e-003		0.0248	0.0248		0.0248	0.0248	0.0000	354.6225	354.6225	6.8000e-003	6.5000e-003	356.7299
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4407**	**3.8209**	**2.0061**	**0.0240**		**0.3045**	**0.3045**		**0.3045**	**0.3045**	**0.0000**	**4,361.3103**	**4,361.3103**	**0.0836**	**0.0800**	**4,387.2274**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	6.64538e+006	0.0358	0.3258	0.2736	1.9500e-003		0.0248	0.0248		0.0248	0.0248	0.0000	354.6225	354.6225	6.8000e-003	6.5000e-003	356.7299
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4407**	**3.8209**	**2.0061**	**0.0240**		**0.3045**	**0.3045**		**0.3045**	**0.3045**	**0.0000**	**4,361.3103**	**4,361.3103**	**0.0836**	**0.0800**	**4,387.2274**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	2.02986e+006	263.9730	0.0267	5.5200e-003	266.2868
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,897.9679**	**0.7989**	**0.1653**	**7,967.1956**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	2.02986e+006	263.9730	0.0267	5.5200e-003	266.2868
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,897.9679**	**0.7989**	**0.1653**	**7,967.1956**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907
Unmitigated	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.8506					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.8076					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6091	0.6172	53.5649	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7646	87.7646	0.0840	0.0000	89.8639
Total	**31.7342**	**4.6084**	**55.2632**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9242**	**4,709.9242**	**0.1726**	**0.0847**	**4,739.4907**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.8506					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.8076					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6091	0.6172	53.5649	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7646	87.7646	0.0840	0.0000	89.8639
Total	**31.7342**	**4.6084**	**55.2632**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9242**	**4,709.9242**	**0.1726**	**0.0847**	**4,739.4907**

7.0 Water Detail

7.1 Mitigation Measures Water

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	242.3448	6.1049	0.1475	438.9359
Unmitigated	242.3448	6.1049	0.1475	438.9359

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	13.9164 / 0	14.2076	0.4545	0.0109	28.8208
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**242.3448**	**6.1049**	**0.1475**	**438.9359**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	13.9164 / 0	14.2076	0.4545	0.0109	28.8208
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**242.3448**	**6.1049**	**0.1475**	**438.9359**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,838.9129	108.6766	0.0000	4,555.8289
Unmitigated	1,838.9129	108.6766	0.0000	4,555.8289

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	294.007	59.6809	3.5270	0.0000	147.8568
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,838.9129**	**108.6766**	**0.0000**	**4,555.8289**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	294.007	59.6809	3.5270	0.0000	147.8568
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,838.9129**	**108.6766**	**0.0000**	**4,555.8289**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,146.50	1000sqft	51.10	4,146,500.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.70	1,381,600.00	0
Parking Lot	1,487.00	Space	7.20	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.40	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.70	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	95.19	51.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.70
tblLandUse	LotAcreage	13.38	7.20
tblLandUse	LotAcreage	64.07	34.40
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.70
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	315.10	4,540.42
tblTripsAndVMT	VendorTripNumber	3,820.00	3,839.00
tblTripsAndVMT	WorkerTripNumber	10,849.00	10,887.00
tblTripsAndVMT	WorkerTripNumber	2,170.00	2,177.00
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.51
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.37
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.13
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82

tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.43
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.29
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.33
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.50
tblVehicleTrips	WD_TR	32.93	13.42
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.40
tblVehicleTrips	WD_TR	8.11	3.31
tblVehicleTrips	WD_TR	44.32	18.06
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00

tblWater	IndoorWaterUseRate	2,038,808,952.08	214,913,095.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838
Total	**219.6653**	**250.2297**	**697.4994**	**2.3776**	**181.0342**	**12.0195**	**193.0537**	**48.5406**	**11.9416**	**60.4823**	**0.0000**	**313,634.7569**	**313,634.7569**	**9.4405**	**2.6896**	**314,672.2730**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838
Total	**219.6653**	**250.2297**	**697.4994**	**2.3776**	**181.0342**	**12.0195**	**193.0537**	**48.5406**	**11.9416**	**60.4823**	**0.0000**	**313,634.7569**	**313,634.7569**	**9.4405**	**2.6896**	**314,672.2730**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 58.3

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,073,749; Non-Residential Outdoor: 2,691,250; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838
Unmitigated	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,361.59	8,995.57	8249.46	25,115,682	25,115,682
City Park	191.81	2,308.80	1698.87	1,527,374	1,527,374
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,146.36	255.67	109.13	2,098,703	2,098,703
Health Club	671.07	425.30	544.72	1,079,084	1,079,084
High School	209.09	74.59	30.57	431,402	431,402
Hotel	582.73	584.15	424.39	1,075,649	1,075,649
Junior College (2Yr)	200.53	68.47	0.00	393,474	393,474
Junior High School	668.19	0.00	0.00	1,076,290	1,076,290
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,740.34	2,036.64	1028.71	2,979,454	2,979,454
Research & Development	13,705.92	3,211.00	1875.90	26,577,238	26,577,238
Strip Mall	5,437.16	5,157.45	2506.34	7,750,195	7,750,195
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	33,914.77	23,117.65	16,468.09	70,104,545	70,104,545

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
NaturalGas Unmitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

5.2 Energy by Land Use - NaturalGas

Mitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281.167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Unmitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,146.50	1000sqft	51.10	4,146,500.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.70	1,381,600.00	0
Parking Lot	1,487.00	Space	7.20	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.40	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.70	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	95.19	51.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.70
tblLandUse	LotAcreage	13.38	7.20
tblLandUse	LotAcreage	64.07	34.40
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.70
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	315.10	4,540.42
tblTripsAndVMT	VendorTripNumber	3,820.00	3,839.00
tblTripsAndVMT	WorkerTripNumber	10,849.00	10,887.00
tblTripsAndVMT	WorkerTripNumber	2,170.00	2,177.00
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.51
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.37
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.13
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82

tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.43
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.29
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.33
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.50
tblVehicleTrips	WD_TR	32.93	13.42
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.40
tblVehicleTrips	WD_TR	8.11	3.31
tblVehicleTrips	WD_TR	44.32	18.06
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00

tblWater	IndoorWaterUseRate	2,038,808,952.08	214,913,095.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474
Total	**216.8957**	**256.2383**	**700.0564**	**2.3027**	**181.0342**	**12.0224**	**193.0566**	**48.5406**	**11.9444**	**60.4850**	**0.0000**	**306,085.7119**	**306,085.7119**	**9.5289**	**2.6896**	**307,125.4366**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474
Total	**216.8957**	**256.2383**	**700.0564**	**2.3027**	**181.0342**	**12.0224**	**193.0566**	**48.5406**	**11.9444**	**60.4850**	**0.0000**	**306,085.7119**	**306,085.7119**	**9.5289**	**2.6896**	**307,125.4366**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 58.3

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,073,749; Non-Residential Outdoor: 2,691,250; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474
Unmitigated	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,361.59	8,995.57	8249.46	25,115,682	25,115,682
City Park	191.81	2,308.80	1698.87	1,527,374	1,527,374
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,146.36	255.67	109.13	2,098,703	2,098,703
Health Club	671.07	425.30	544.72	1,079,084	1,079,084
High School	209.09	74.59	30.57	431,402	431,402
Hotel	582.73	584.15	424.39	1,075,649	1,075,649
Junior College (2Yr)	200.53	68.47	0.00	393,474	393,474
Junior High School	668.19	0.00	0.00	1,076,290	1,076,290
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,740.34	2,036.64	1028.71	2,979,454	2,979,454
Research & Development	13,705.92	3,211.00	1875.90	26,577,238	26,577,238
Strip Mall	5,437.16	5,157.45	2506.34	7,750,195	7,750,195
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	33,914.77	23,117.65	16,468.09	70,104,545	70,104,545

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
NaturalGas Unmitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281.167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Unmitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,146.50	1000sqft	51.10	4,146,500.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.70	1,381,600.00	0
Parking Lot	1,487.00	Space	7.20	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.40	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.70	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates provided by F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR GHG section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00
tblConstructionPhase	NumDays	550.00	0.00

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	95.19	51.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.70
tblLandUse	LotAcreage	13.38	7.20
tblLandUse	LotAcreage	64.07	34.40
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.70
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7

tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	315.10	4,540.42
tblTripsAndVMT	VendorTripNumber	3,820.00	3,839.00
tblTripsAndVMT	WorkerTripNumber	10,849.00	10,887.00
tblTripsAndVMT	WorkerTripNumber	2,170.00	2,177.00
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10

tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50

tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.51
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.37
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.13
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.43
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.29
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.33
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.50
tblVehicleTrips	WD_TR	32.93	13.42
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33

tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.40
tblVehicleTrips	WD_TR	8.11	3.31
tblVehicleTrips	WD_TR	44.32	18.06
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,038,808,952.08	214,913,095.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00

tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199
Energy	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	17,211.0144	17,211.0144	1.0734	0.3391	17,338.8891
Mobile	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523
Waste						0.0000	0.0000		0.0000	0.0000	1,850.8691	0.0000	1,850.8691	109.3832	0.0000	4,585.4498
Water						0.0000	0.0000		0.0000	0.0000	99.3866	277.2090	376.5956	10.2360	0.2468	706.0520
Total	**37.0785**	**32.8437**	**96.6339**	**0.3689**	**35.1319**	**1.0885**	**36.2204**	**9.4508**	**1.0734**	**10.5242**	**1,950.2557**	**48,534.5140**	**50,484.7697**	**121.8605**	**0.6264**	**53,717.9630**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199
Energy	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	17,211.0144	17,211.0144	1.0734	0.3391	17,338.8891
Mobile	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523
Waste						0.0000	0.0000		0.0000	0.0000	1,850.8691	0.0000	1,850.8691	109.3832	0.0000	4,585.4498
Water						0.0000	0.0000		0.0000	0.0000	99.3866	277.2090	376.5956	10.2360	0.2468	706.0520
Total	**37.0785**	**32.8437**	**96.6339**	**0.3689**	**35.1319**	**1.0885**	**36.2204**	**9.4508**	**1.0734**	**10.5242**	**1,950.2557**	**48,534.5140**	**50,484.7697**	**121.8605**	**0.6264**	**53,717.9630**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 58.3

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,073,749; Non-Residential Outdoor: 2,691,250; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523
Unmitigated	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,361.59	8,995.57	8249.46	32,402,332	32,402,332
City Park	191.81	2,308.80	1698.87	2,114,288	2,114,288
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,146.36	255.67	109.13	2,905,488	2,905,488
Health Club	671.07	425.30	544.72	1,437,650	1,437,650
High School	209.09	74.59	30.57	653,151	653,151
Hotel	582.73	584.15	424.39	1,442,425	1,442,425
Junior College (2Yr)	200.53	68.47	0.00	513,112	513,112
Junior High School	668.19	0.00	0.00	1,615,558	1,615,558
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,740.34	2,036.64	1028.71	3,963,118	3,963,118
Research & Development	13,705.92	3,211.00	1875.90	36,795,846	36,795,846
Strip Mall	5,437.16	5,157.45	2506.34	10,313,502	10,313,502
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	33,914.77	23,117.65	16,468.09	94,156,470	94,156,470

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
General Office Building	14.90	9.50	9.10	33.00	48.00	19.00	77	19	4
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
High School	14.90	9.50	9.10	77.80	17.20	5.00	75	19	6
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	14.90	9.50	9.10	6.40	88.60	5.00	92	7	1
Junior High School	14.90	9.50	9.10	72.80	22.20	5.00	63	25	12
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,068.5275	9,068.5275	0.9173	0.1898	9,148.0155
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,068.5275	9,068.5275	0.9173	0.1898	9,148.0155
NaturalGas Mitigated	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	8,142.4869	8,142.4869	0.1561	0.1493	8,190.8736
NaturalGas Unmitigated	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	8,142.4869	8,142.4869	0.1561	0.1493	8,190.8736

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.02626e+008	0.5534	5.0307	4.2258	0.0302		0.3823	0.3823		0.3823	0.3823	0.0000	5,476.5075	5,476.5075	0.1050	0.1004	5,509.0517
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8228**	**7.3909**	**5.6325**	**0.0449**		**0.5684**	**0.5684**		**0.5684**	**0.5684**	**0.0000**	**8,142.4869**	**8,142.4869**	**0.1561**	**0.1493**	**8,190.8736**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.02626e+008	0.5534	5.0307	4.2258	0.0302		0.3823	0.3823		0.3823	0.3823	0.0000	5,476.5075	5,476.5075	0.1050	0.1004	5,509.0517
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8228**	**7.3909**	**5.6325**	**0.0449**		**0.5684**	**0.5684**		**0.5684**	**0.5684**	**0.0000**	**8,142.4869**	**8,142.4869**	**0.1561**	**0.1493**	**8,190.8736**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.13475e+007	4,076.5887	0.4124	0.0853	4,112.3211
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,068.5275**	**0.9173**	**0.1898**	**9,148.0155**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.13475e+007	4,076.5887	0.4124	0.0853	4,112.3211
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,068.5275**	**0.9173**	**0.1898**	**9,148.0155**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199
Unmitigated	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.3387					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	24.7650					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7810	0.2964	25.7527	1.3700e-003		0.1428	0.1428		0.1428	0.1428	0.0000	42.2332	42.2332	0.0408	0.0000	43.2530
Total	**31.1082**	**2.2063**	**26.5654**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0563**	**2,254.0563**	**0.0832**	**0.0406**	**2,268.2199**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.3387					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	24.7650					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7810	0.2964	25.7527	1.3700e-003		0.1428	0.1428		0.1428	0.1428	0.0000	42.2332	42.2332	0.0408	0.0000	43.2530
Total	**31.1082**	**2.2063**	**26.5654**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0563**	**2,254.0563**	**0.0832**	**0.0406**	**2,268.2199**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	376.5956	10.2360	0.2468	706.0520
Unmitigated	376.5956	10.2360	0.2468	706.0520

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	214.913 / 0	219.4106	7.0182	0.1685	445.0855
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**376.5956**	**10.2360**	**0.2468**	**706.0520**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	214.913 / 0	219.4106	7.0182	0.1685	445.0855
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**376.5956**	**10.2360**	**0.2468**	**706.0520**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,850.8691	109.3832	0.0000	4,585.4498
Unmitigated	1,850.8691	109.3832	0.0000	4,585.4498

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4540.42	921.6637	54.4688	0.0000	2,283.3829
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,850.8691**	**109.3832**	**0.0000**	**4,585.4498**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4540.42	921.6637	54.4688	0.0000	2,283.3829
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,850.8691**	**109.3832**	**0.0000**	**4,585.4498**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**