Appendix M

1993 Baseline Impacts Analysis

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Introduction to Appendix M

In this appendix, Alternatives 1, 2, 3, 4, and the No Action Alternative are addressed with respect to a 1993 baseline for the Transportation, Traffic, and Circulation; Air Quality and Greenhouse Gases; and Noise resources. The intent is to present analyses consistent with the *Final Environmental Impact Statement for the Disposal and Reuse of Hunters Point Shipyard* (2000 FEIS) and the original 1993 baseline to reflect the condition of the shipyard before it was closed and the environmental impacts of reuse relative to that condition.

As these analyses were prepared prior to the completion of the *Candlestick Point-Hunters Point Shipyard Phase II Final EIR* (FEIR) prepared by the City of San Francisco and SFRA (SFRA 2010); they do not include Alternatives 1A (Stadium Plan/No-Bridge Alternative) and 2A (Non-Stadium Plan/Housing and R&D Alternative), which were added to this SEIS subsequent to approval of the FEIR. However, these two additional alternatives would not affect the conclusions of the SEIS with regard to impacts or mitigation measures.

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Appendix M-1

Transportation, Traffic, and Circulation Resource

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Appendix M1. Transportation, Traffic, and Circulation Resource 1993 Baseline Impacts Analysis

M1.1 Future 2030 Baseline Land Use Assumptions

Table M1-1 summarizes the mix of land uses that represent the 1993 baseline assumptions for the future 2030 baseline conditions for HPS. The 2030 baseline [1993] condition includes operating conditions of HPS in 1993. A majority of the 1993 land uses consist of public-military and industrial. The 2030 baseline [1993] condition does not include buildout of Phase I[1] of the existing HPS Redevelopment Plan.

Table M1-1. 2030 Baseline [1993] Land Use Summary – HPS

Land Use		*1993 Baseline*
HPS		
Public - Military	(gsf)	644,830
Public	(gsf)	89,600
Industrial	(gsf)	324,450
Residential	(units)	--
Neighborhood Retail	(gsf)	--
Research & Development	(gsf)	--
Artists' Studios	(gsf)	181,370
Mixed Use	(gsf)	26,008
Cultural and Education	(gsf)	--
HPS Phase I		
Residential	(units)	- [1,2]
Neighborhood Retail	(gsf)	- [1,2]

Notes
1. HPS Phase I land uses included in HPS land use totals.
2. HPS Phase I Redevelopment land uses included in 2030 cumulative conditions.

Source: SFRA and Lennar Urban 1994.

In addition to the HPS baseline land use assumptions described above, several development proposals have recently been approved or are in environmental review in the project vicinity, which include the India Basin Development Plan, Hunters View Housing Development, Executive Park Development Plan, Visitacion Valley Redevelopment program, and Brisbane Baylands. Table M1-2 shows the land use assumptions for each development plan. The land uses for Candlestick Point are included in the table below, which are the existing land uses.

Table M1-2. 2030 Baseline [1993] Land Use Summary – Project Vicinity

Land Use	*Candlestick Point* [1]	*India Basin*	*Hunters View*	*Executive Park*	*Visitacion Valley*	*Brisbane Baylands*
Residential (units)	256	1,240	800	3,400	1,600	--
Neighborhood Retail (gsf)	--	100,000	6,400	88,500	39,500	--
Retail (gsf)	--	--	--	--	--	904,425
Regional Retail (gsf)	--	--	--	--	131,500	--
Big Box Retail (gsf)	--	--	--	--	--	668,100
Community Services (gsf)	--	--	21,600	--	25,000	--
Office (gsf)	--	1,365,000	--	320,000	--	3,781,525

[1] The portion of HPS not included as part of these alternatives (referred to as HPS Phase I Redevelopment) has already been disposed of by the Navy and is currently being developed as residential housing.

Table M1-2. 2030 Baseline [1993] Land Use Summary – Project Vicinity						
Land Use	***Candlestick Point*** [1]	***India Basin***	***Hunters View***	***Executive Park***	***Visitacion Valley***	***Brisbane Baylands***
Hotel/Extended Stay (gsf)	--	--	--	--	--	1,504,400
Warehousing & Distribution (gsf)	--	--	--	--	--	247,450
Research & Development (gsf)	--	--	--	--	--	601,600
Exhibition Center (gsf)	--	--	--	--	--	373,650
Auto Park (gsf)	--	--	--	--	--	200,000
Park (ac)	120	--	--	--	--	--
Existing Stadium (seats)	70,000	--	--	--	--	--
Note: 1.Existing land use. *Source*: San Francisco Redevelopment Agency, Lennar Urban, AECOM 2009.						

M1.2 1993 Impact Analysis

M1.2.1 Significance Factors

Significance factors against which impacts are assessed are derived from a number of sources including city policies and guidelines, state (Caltrans) standards, and other commonly applied measures that define acceptable levels of service.

Factors considered in determining whether an alternative would have significant impacts on transportation include the extent or degree to which the implementation of an alternative would affect conditions during construction or operations as discussed in the following sections.

M1.2.1.1 Construction

Factor 1 Construction impacts of the project would be significant if they would result in street or lane closures in the project vicinity due to construction vehicle traffic and roadway construction, delays in the flow of traffic, or would contribute to cumulative construction impacts in the project vicinity;

M1.2.1.2 Operations

Factor 2 **Intersections**. The project would have a significant adverse impact on traffic if the LOS at a signalized intersection would deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. In addition, the project would have a significant impact 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 unsignalized intersections are considered potentially significant if project-related traffic causes the LOS at the worst approach to deteriorate from LOS D or better to LOS E or LOS F and California MUTCD 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.

Freeway and Ramps. Operational impacts on freeway mainline segments and freeway on- and off-ramps would be significant if 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,

the project would have a significant impact if it would contribute substantially to congestion at unacceptable levels;

Factor 3 The project would have a significant impact 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;

Factor 4 The project would have a significant impact if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the project site and vicinity;

Factor 5 The project would have a significant impact if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the project site and vicinity;

Factor 6 Operation of the project would have a significant impact if it would result in inadequate emergency vehicle access; and/or

Factor 7 Operation of the project would have a significant impact if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within the proposed onsite 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.

M1.2.2 Impacts Relative to 1993 Baseline – Alternative 1: Stadium Plan Alternative

Overall impacts of the proposed action relative to the 1993 baseline would be comparable to the impacts assessed in the body of this SEIS relative to the 2007 baseline. The following analyses are therefore very similar to those included in the body of this SEIS for the 2007 baseline, although the impacts relative to the 1993 baseline are generally somewhat greater (that is, more intersections and roadway segments would experience significant project-induced transportation impacts because the project constitutes a larger share of the overall increase in traffic volumes when compared to the lower 1993 baseline). Figures M1.1.2-1 and M1.1.2-2 show the weekday and Sunday turning movements for the 1993 baseline condition.

M1.2.2.1 Summary of Impacts Relative to 1993 Baseline – Alternative 1

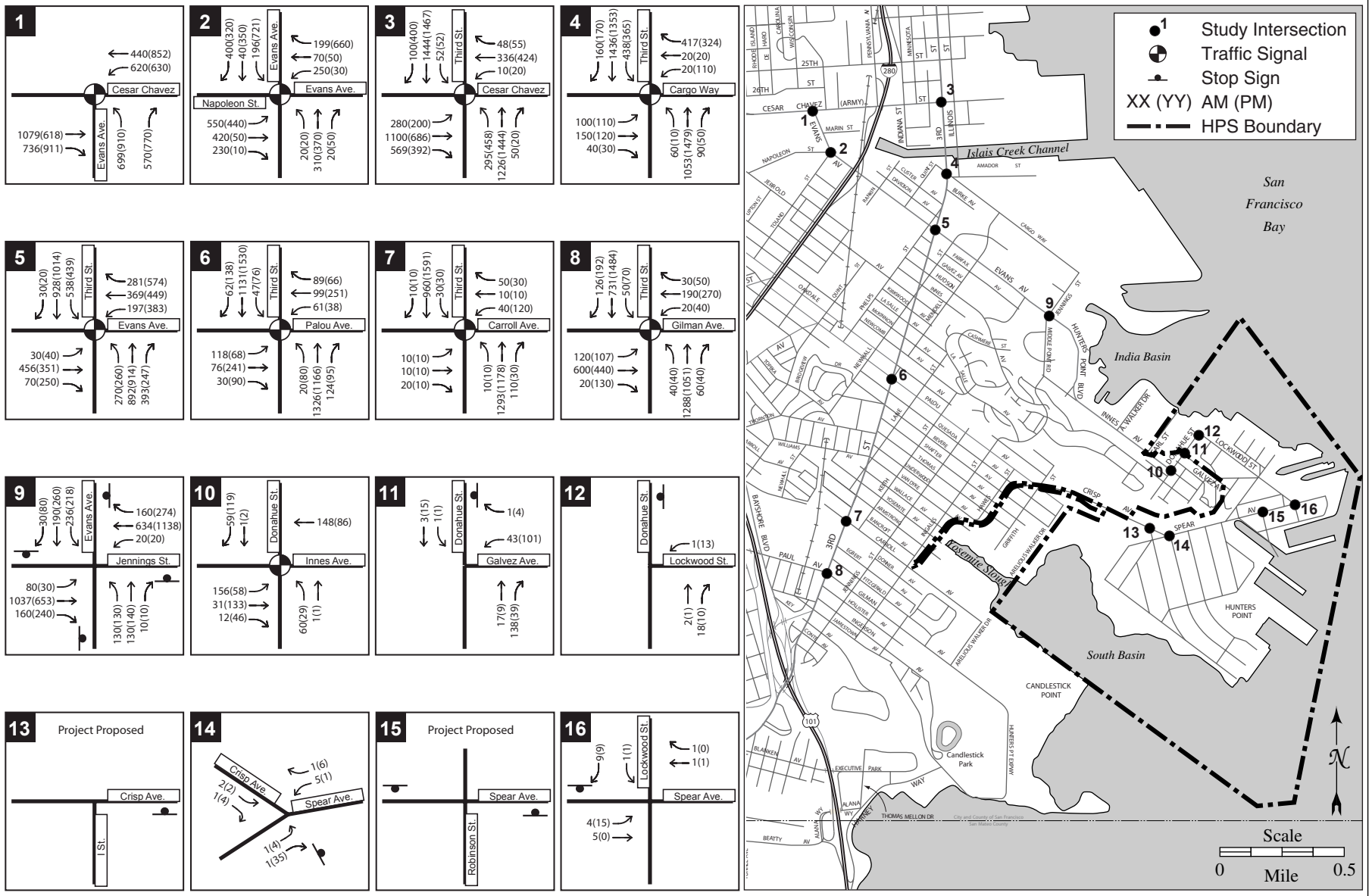
Table M1-1 summarizes of the impacts for Alternative 1 relative to 1993 baseline.

M1.2.2.2 Construction Impacts

Construction impacts of the proposed action would be similar to the description of construction impacts of the proposed action based on the 2007 baseline.

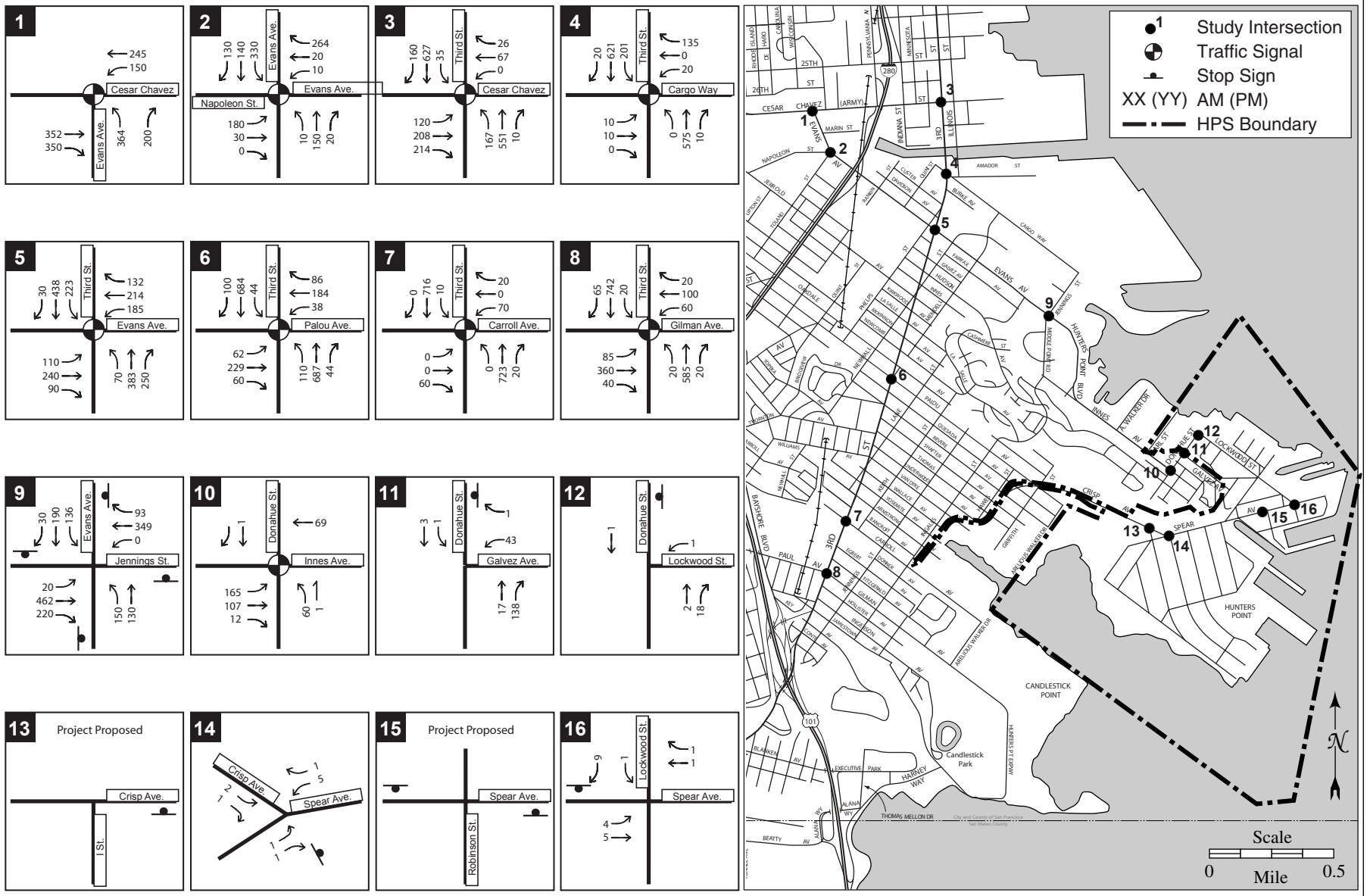
M1.2.2.2.1 Factor 1: Construction Vehicle Traffic and Roadway Impacts

Implementation of **Mitigation 1** would help minimize the proposed action's construction-related transportation impacts and the project's contribution to cumulative construction-related transportation impacts. However, some disruption and increased delays could still occur even with implementation of **Mitigation 1**, and it is possible that significant construction-related transportation impacts on local and regional roadways could still occur. Construction-related transportation impacts would therefore *remain significant and unavoidable* with mitigation.



Source: CHS, Hunters Point Shipyard Supplemental EIS

Figure M1.1.2-1. Future 2030 Baseline [1993] Weekday AM and PM Peak Hour Traffic Volumes



Source: CHS, Hunters Point Shipyard Supplemental EIS

Figure M1.1.2-2. Future 2030 Baseline [1993] Sunday PM Peak Hour Traffic Volumes

Table M1-3. Impact Summary Relative to 1993 Baseline – Alternative 1			
Description		***Impacts***	***Comments***
Construction Vehicle Traffic and Roadway Impacts (Factor 1)		◘ PI/CI	***Mitigation 1***
Increase in Traffic Volumes (Factor 2)			
Transportation Demand Management (TDM) Plan		◘ PI/CI	***Mitigation 2***
Intersection Impacts			
#1002	Third/Cesar Chavez	● PI/CI	No feasible mitigation
#1003	Third/Cargo	● PI/CI	No feasible mitigation
#1004	Third/Evans	● PI/CI	No feasible mitigation
#1006	Third/Palou	● PI/CI	No feasible mitigation
#1008	Third/Carroll	● PI	No feasible mitigation
#1009	Third/Paul/Gilman	● PI/CI	No feasible mitigation
#1016	Evans/Cesar Chavez	● PI/CI	No feasible mitigation
#1048	Jennings/Middle Point/Evans	○	
#1058	Evans/Napoleon/Toland	● PI/CI	No feasible mitigation
#110	Innes/Donahue	○	
#111	Donahue/Galvez	○	
#112	Donahue/Lockwood	○	
#113	Crisp/I (Outer Ring Rd)	○	
#114	Crisp/Spear (Inner Ring Rd)	○	
#115	Robinson St/Spear	⦿ PI	***Mitigation 4***
#116	Lockwood/Spear	○	
Freeway Segment			
US-101 NB, at the San Francisco County Line		○	
US-101 SB, at the San Francisco County Line		○	
San Francisco/Oakland Bay Bridge EB		○	
San Francisco/Oakland Bay Bridge WB		○	
I-280 NB, south of US-101		○	
I-280 SB, south of US-101		○	
Freeway Ramp Impacts			
US-101 NB Off-ramp to Third/Bayshore		● PI/CI	No feasible mitigation
US-101 NB On-ramp from Third/Bayshore		○	
US-101 NB Off-ramp to Bayshore/Cesar Chavez		○	
US-101 NB On-ramp from Bayshore/Cesar Chavez		● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Cesar Chavez		● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Bayshore/Third		○	
US-101 SB On-ramp from Bayshore/Third		● PI/CI	No feasible mitigation
I-280 NB Off-ramp to Cesar Chavez		○	
I-280 NB On-ramp from Indiana		● PI/CI	No feasible mitigation
I-280 SB Off-ramp to Pennsylvania		● PI/CI	No feasible mitigation
Transit Impacts (Factor 3)			
Final Transit Plan		⦿ PI/CI	***Mitigation 3***
Capacity Utilization Cordon Screenlines		⦿ PI/CI	***Mitigation 3***
Capacity Utilization Downtown Screenlines		○	
Capacity Utilization Regional Screenlines		○	
Transit Delays		◘ PI/CI	***Mitigations 5 and 6***
Bicycle Impacts (Factor 4)		○	
Pedestrian Impacts (Factor 5)		○	
Emergency Access (Factor 6)		○	
Loading Impacts (Factor 7)		○	

Table M1-3. Impact Summary Relative to 1993 Baseline – Alternative 1		
Description	***Impacts***	***Comments***
Stadium Football Games		
Traffic Impacts (Factor 2)	◘	***Mitigation 7***
Transit Impacts (Factor 3)	◘	***Mitigation 8***
Bicycle Impacts (Factor 4)	○	
Pedestrian Impacts (Factor 5)	○	
Emergency Access (Factor 6)	○	
Loading Impacts (Factor 7)	○	
Secondary Stadium Event – Weekday Evening		
Traffic Impacts (Factor 2)	◘	***Mitigation 9***
Transit Impacts (Factor 3)	◘	***Mitigation 10***
Bicycle Impacts (Factor 4)	○	
Pedestrian Impacts (Factor 5)	○	
Emergency Access (Factor 6)	○	
Loading Impacts (Factor 7)	○	
Arena Event – Weekday Evening		
Traffic Impacts (Factor 2)	○	
Transit Impacts (Factor 3)	○	
Bicycle Impacts (Factor 4)	○	
Pedestrian Impacts (Factor 5)	○	
Emergency Access (Factor 6)	○	
Loading Impacts (Factor 7)	○	

Notes:
● - Significant and unavoidable (no feasible mitigation)
◘ - Significant and unavoidable (with mitigation)
◉ - Significant and mitigable (not significant with mitigation)
○ - Not significant
PI – Project Impact; PI/CI – Project and Cumulative Impacts
Source: CHS Consulting Group, et al. 2009.

M1.2.2.3 Operational Impacts

Overall operation impacts of Alternative 1 relative to the 1993 baseline would be comparable to the impacts assessed relative to the 2007 baseline. The following analyses are therefore similar to those above for the 2007 baseline in the body of this SEIS.

M1.2.2.3.1 Factor 2: Increase in Traffic Volumes

Project Travel Demand Management Plan

Implementation of the proposed action 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 TDM Plan. The final TDM Plan being prepared in support of the project has not yet been formally approved;[2] therefore, **Mitigation 2** requires preparation, approval, and implementation of the final TDM Plan.

With implementation of **Mitigation 2**, alternative modes would be encouraged, the use of single-occupant vehicles would be discouraged, and the impact of additional vehicles generated by the proposed action would be lessened. As described in impact discussions below, the proposed action would still result in significant and unavoidable impacts on traffic and transit operations and would still make considerable

[2] A draft TDM has been prepared and is described in Section 4.1.1.2.3, Analytic Method.

contributions to cumulative impacts related to substantial increases in traffic. The project and project's contribution to traffic would *remain significant and unavoidable* with mitigation.

Intersection Traffic Impacts

Table M1-4 presents a comparison of the intersection level of service (LOS) analysis for 2030 baseline [1993] and 2030 cumulative conditions in addition to the impacts for the offsite and onsite study intersections for the weekday A.M./P.M. peak hours as well as the Sunday P.M. peak hour. The magnitude of the impact is based on the worst case. For example, if an intersection has significant and unavoidable impact in the A.M./P.M. peaks and no significant impact in the Sunday P.M. peak, the intersection would be considered to have a *significant and unavoidable* impact.

Table M1-4. Intersection LOS – 2030 Baseline [1993] and Alternative 1 Conditions

Intersection		*Peak*	*2030 Baseline [1993]*		*Alternative 1*			
			LOS[a]	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
City and County of San Francisco Streets								
#1002	Third/Cesar Chavez	A.M.	**F**	**>80/1.46**	**F**	**>80/1.63**	**7.2**	●
		P.M.	**F**	**>80/1.44**	**F**	**>80/1.76**	**7.8**	●
		Sun	C	29.7	**E**	**65.6/0.73**	--	● PI
#1003	Third/Cargo Way	A.M.	**F**	**>80/1.20**	**F**	**>80/1.90**	**8.6**	●
		P.M.	**F**	**>80/1.22**	**F**	**>80/1.74**	**8.9**	●
		Sun	C	27.0	C	30.0	--	○
#1004	Third/Evans	A.M.	**F**	**>80/1.15**	**F**	**>80/1.43**	**10.4**	●
		P.M.	**F**	**>80/1.19**	**F**	**>80/1.53**	**10.0**	●
		Sun	D	48.2	**E**	**58.8/0.87**	--	● PI
#1006	Third/Palou	A.M.	D	43.3	**F**	**>80/1.91**	--	● PI
		P.M.	**F**	**>80/1.49**	**F**	**>80/5.99**	**10.5**	●
		Sun	**E**	**77.7/0.68**	**F**	**>80/4.03**	**16.6**	●
#1008	Third/Carroll	A.M.	B	11.0	C	23.1	--	○
		P.M.	B	13.3	**E**	**74.8/0.93**	--	● PI
		Sun	B	10.0	**E**	**55.1/0.66**	--	● PI
#1009	Third/Paul/Gilman	A.M.	**F**	**>80/1.13**	**F**	**>80/2.00**	4.5	○NSC
		P.M.	**F**	**>80/1.25**	**F**	**>80/3.36**	4.1	○NSC
		Sun	**E**	**60.2/0.70**	**F**	**>80/1.89**	**6.1**	●
#1016	Evans/Cesar Chavez	A.M.	**F**	**>80/1.82**	**F**	**>80/1.91**	**5.8**	●
		P.M.	**F**	**>80/1.75**	**F**	**>80/1.84**	**5.4**	●
		Sun	B	16.9	B	19.1	--	○
#1048	Jennings/Middle Point/Evans	A.M.	B	19.6	C	27.7	--	○
		P.M.	C	22.3	C	31.5	--	○
		Sun	B	19.5	B	19.9	--	○
#1058	Evans/Napoleon/Toland	A.M.	**F**	**>80/1.16**	**F**	**>80/1.50**	**6.0**	●
		P.M.	**F**	**>80/1.52**	**F**	**>80/1.61**	**5.4**	●
		Sun	**E**	**59.8/0.50**	**E**	**59.9/0.57**	**9.2**	●
Hunters Point Shipyard Streets								
#110	Innes/Donahue	A.M.	C	24.4	A	9.6	--	○
		P.M.	B	19.9	A	8.0	--	○
		Sun	B	19.8	A	9.0	--	○
#111	Donahue/Galvez	A.M.	A	9.1	C	15.8	--	○
		P.M.	A	9.2	C	18.1	--	○
		Sun	A	9.1	B	11.9	--	○

Table M1-4. Intersection LOS – 2030 Baseline [1993] and Alternative 1 Conditions

Intersection		*Peak*	*2030 Baseline [1993]*		*Alternative 1*			
			LOS[a]	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
#112	Donahue/Lockwood	A.M.	A	8.6	A	9.2	--	○
		P.M.	A	8.6	A	9.5	--	○
		Sun	A	8.6	A	8.9	--	○
#113	Crisp/I (Outer Ring Rd)	A.M.	Proposed Intersection		C	16.8	--	○
		P.M.			C	15.9	--	○
		Sun			C	20.9	--	○
#114	Crisp/Spear (Inner Ring Rd)	A.M.	A	8.8	C	15.7	--	○
		P.M.	A	9.1	C	15.3	--	○
		Sun	A	8.8	C	16.8	--	○
#115	Robinson St/Spear	A.M.	Proposed Intersection		**F (SBL)**	**>50/0.66**	--	◉ PI
		P.M.			**F (SBL)**	**>50/1.24**	--	◉ PI
		Sun			C	17.0	--	○
#116	Lockwood/Spear	A.M.	A	8.9	C	16.9	--	○
		P.M.	A	9.1	B	14.6	--	○
		Sun	A	8.9	A	9.4	--	○

Notes:

LOS – level of service; v/c – volume-to-capacity; A.M. – A.M. Peak; P.M. – P.M. peak; Sun – Sunday Peak; NBL – northbound left turn; SBL – southbound left turn; EBL – eastbound left turn; WBL – westbound left turn; NSC – no significant contribution.

● - Significant and unavoidable (no feasible mitigation)

◉ - Significant and mitigable (not significant with mitigation)

○ - Not significant

a. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.

b. Delay in seconds per vehicle. For side street STOP-controlled intersections, delay and LOS presented for worst approach.

c. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

INTERSECTIONS WITH NOT SIGNIFICANT IMPACTS

The following intersections are expected to operate at acceptable levels of service; therefore, the impact would *not be significant* and no mitigation measures are proposed. The LOS is shown in Table M1-4.

#1048 Jennings St/Middle Point Rd/Evans Ave;

#110 Innes St/Donahue St;

#111 Donahue St/Galvez Ave;

#112 Donahue St/Lockwood St;

#113 Crisp Ave/I St;

#114 Crisp Ave/Spear Ave (Inner Ring Rd); and

#116 Lockwood St/Spear Ave.

INTERSECTIONS WITH PROJECT AND CUMULATIVE TRAFFIC IMPACTS

The results show that the following study intersections are projected to operate at unacceptable levels with Alternative 1 and would result in project-specific impacts or would contribute to significant cumulative impacts during at least one peak hour.

#1002 Third St/Cesar Chavez St – project and cumulative (*significant and unavoidable);*

#1003 Third St/Cargo Ave – project and cumulative (*significant and unavoidable);*

#1004 Third St/Evans Ave – project and cumulative (*significant and unavoidable);*

#1006 Third St/Palou Ave – project and cumulative (*significant and unavoidable);*

#1008 Third St/Carroll Ave – project-specific *(significant and unavoidable);*

#1009 Third St/Paul Ave/Gilman Ave – project and cumulative (*significant and unavoidable);*

#1016 Evans Ave/Cesar Chavez St – project and cumulative (*significant and unavoidable);*

#1058 Evans Ave/Napoleon St/Toland St – project and cumulative (*significant and unavoidable);* and

#115 Robinson St/Spear Ave – project-specific *(significant and mitigable).*

Implementation of Alternative 1 would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions. Impacts would be *significant and unavoidable*.

At intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions and would continue to operate at LOS E or LOS F under 2030 cumulative conditions, the increase in vehicle trips from 2030 baseline [1993] was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. Alternative 1 contributions were determined to be significant and no feasible mitigation measures were identified at the following intersections:

#1002 Third St/Cesar Chavez St;

#1003 Third St/Cargo Ave;

#1004 Third St/Evans Ave;

#1006 Third St/Palou Ave;

#1009 Third St/Paul Ave/Gilman Ave;

#1016 Evans Ave/Cesar Chavez St; and

#1058 Evans Ave/Napoleon St/Toland St.

The poor operating conditions would be due to the reasons discussed above, and improvements at these intersections are limited due to ROW constraints. Since no feasible mitigation measures were identified for the study intersections, the proposed action's traffic impacts and the proposed action's contribution to cumulative impacts at these study intersections would therefore be *significant and unavoidable*.

Alternative 1 would result in project-specific impacts at the intersection of Third St/Carroll Ave (#1008), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would be *significant and unavoidable*.

The degradation in LOS would primarily be due to project-related traffic increases along Third St and Carroll Ave. To accommodate additional ROW needed for additional lanes, Third St would need to be widened. This would require demolition of existing structures and substantial ROW acquisition and would not be sufficient to improve intersection operating conditions to acceptable levels. Due to the issues related to acquisition of additional ROW, mitigation was determined to be infeasible. Traffic impacts at this intersection under Alternative 1 conditions would *remain significant and unavoidable*.

Alternative 1 would have not significant project-specific impacts at the intersection of Robinson St/ Ave/Spear Ave (#115), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would not be significant. Implementation of **Mitigation 4** would minimize Alternative 1

transportation impacts. Traffic impacts at the intersection of Robinson St/Spear Ave would *not be significant with mitigation.*

Freeway Traffic Impacts

FREEWAY SEGMENT IMPACTS

Table M1-5 presents the results of the mainline LOS analysis and summarizes the mainline segment impacts for 2030 baseline [1993] and Alternative 1 conditions. In some cases, the mainline segments operate at acceptable levels with the addition of project traffic during specific peak periods. The increase in traffic due to Alternative 1 would result in increases in traffic volumes on the freeway segments that would cause the operations on all the study area freeway segments to deteriorate from the already LOS F conditions; however, the percent contribution of Alternative 1 traffic is not considered significant and does not significantly contribute to the traffic impacts. Because impacts would *not be significant*, no mitigation measures are proposed.

Table M1-5. Mainline Segment LOS and Segment Impacts – 2030 Baseline [1993] and Alternative 1 Conditions

Freeway Segment	*Peak*	*2030 Baseline [1993]*		*Alternative 1*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US-101, the SF County Line NB	A.M.	**F**	**>45**	**F**	**>45**	1.7	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.3	O NSC
	Sun	D	30.5	D	32.3	--	O
US-101, the SF County Line SB	A.M.	**F**	**>45**	**F**	**>45**	0.9	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.4	O NSC
	Sun	D	31.8	D	34.3	--	O
SF/Oakland Bay Bridge EB	A.M.	**F**	**>45**	**F**	**>45**	2.9	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.2	O NSC
	Sun	**F**	**>45**	**F**	**>45**	1.6	O NSC
SF/Oakland Bay Bridge WB	A.M.	**F**	**>45**	**F**	**>45**	0.9	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.7	O NSC
	Sun	**F**	**>45**	**F**	**>45**	1.3	O NSC
I-280, south of US-101 NB	A.M.	**F**	**>45**	**F**	**>45**	0.8	O NSC
	P.M.	D	33.2	D	33.3	--	O
	Sun	C	21.6	C	21.6	--	O
I-280, south of US-101 SB	A.M.	D	34.4	D	34.6	--	O
	P.M.	**F**	**>45**	**F**	**>45**	0.9	ONSC
	Sun	D	29.4	D	29.5	--	O

Notes:

SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.

● - Significant and unavoidable (no feasible mitigation)

⦿ - Significant and mitigable (not significant with mitigation)

O - Not significant

a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.

b. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

FREEWAY RAMP IMPACTS

Alternative 1 would result in significant impacts at freeway on- and off-ramp locations. Impacts would be *significant and unavoidable*.

Table M1-6 presents the results of the ramp junction merge (on-ramp) and diverge (off-ramp) analysis and summarizes the impacts for 2030 baseline [1993] and Alternative 1 conditions. Alternative 1 would

cause the ramp junctions to deteriorate from acceptable LOS D or better to LOS E or F conditions, or from LOS E to LOS F conditions and contribute cumulatively significant traffic increases resulting in significant traffic impacts at these locations:

- US-101 northbound off-ramp to Third St/Bayshore Blvd;
- US-101 northbound on-ramp from Bayshore Blvd/Cesar Chavez St;
- US-101 southbound off-ramp to Cesar Chavez St;
- US-101 southbound on-ramp from Bayshore Blvd/Third St;
- I-280 northbound on-ramp from Indiana St; and
- I-280 southbound off-ramp to Pennsylvania Ave.

Table M1-6. Ramp Junction Analysis and Impacts – 2030 Baseline [1993] and Alternative 1 Conditions

Ramp Location	*Peak*	*2030 Baseline [1993]*		*Alternative 1*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US-101 NB Off to Third/Bayshore	A.M.	D	31.5	D	32.6	--	○
	P.M.	**E**	**35.6**	**E**	**37.3**	**10.9**	●
	Sun	C	22.9	C	24.0	--	○
US-101 NB On from Third/Bayshore	A.M.	C	22.5	C	23.6	--	○
	P.M.	C	28.0	D	30.0	--	○
	Sun	C	22.0	C	22.4	--	○
US-101 NB Off to Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	2.5	○NSC
	P.M.	**E**	**39.5**	**E**	**40.7**	1.4	○NSC
	Sun	D	29.8	D	30.5	--	○
US-101 NB On from Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	2.8	○NSC
	P.M.	**F**	**>45**	**F**	**>45**	**6.8**	●
	Sun	D	31.5	**F**	**>45**	**5.7**	●
US-101 SB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	4.9	○NSC
	P.M.	**F**	**>45**	**F**	**>45**	**5.7**	●
	Sun	**F**	**>45**	**F**	**>45**	**5.6**	●
US-101 SB Off to Bayshore/Third	A.M.	**E**	**39.8**	**E**	**41.4**	0	○NSC
	P.M.	**E**	**36.1**	**E**	**37.3**	0	○NSC
	Sun	C	24.6	C	25.0	--	○
US-101 SB On from Bayshore/Third	A.M.	**F**	**>45**	**F**	**>45**	**10.2**	●
	P.M.	**F**	**>45**	**F**	**>45**	**11.8**	●
	Sun	C	23.7	C	26.0	--	○
I-280 NB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	0	○NSC
	P.M.	**F**	**>45**	**F**	**>45**	0	○NSC
	Sun	C	26.0	C	26.0	--	○
I-280 NB On from Indiana	A.M.	**F**	**>45**	**F**	**>45**	**11.5**	●
	P.M.	**F**	**>45**	**F**	**>45**	**15.6**	●
	Sun	C	25.3	C	25.8	--	○
I-280 SB Off to Pennsylvania	A.M.	**E**	**36.3**	**E**	**36.9**	**17.7**	●
	P.M.	**F**	**>45**	**F**	**>45**	**11.2**	●
	Sun	D	30.6	D	30.9	--	○

Notes:

SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.

● - Significant and unavoidable (no feasible mitigation)

⦿ - Significant and mitigable (not significant with mitigation)

○ - Not significant

a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.

b. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

Providing additional on-ramp lanes would simply increase the volume of traffic entering the freeway segment and may exacerbate the poor merging conditions. Widening US 101 and I-280 to provide additional capacity would not be feasible; thus, mitigation of these impacts has been determined to be infeasible. No feasible mitigation measures have been identified for the off-ramp locations for similar reasons.

Based on the discussion above, no feasible mitigation measures were identified; therefore, traffic impacts at the freeway ramp junctions under Alternative 1 would *remain significant and unavoidable*.

M1.2.2.3.2 Factor 3: Transit Impacts

The transit impact analysis for Alternative 1 relative to the 2007 baseline reported in the body of this SEIS applies to Alternative 1 relative to the 1993 baseline. Therefore, the same impacts and mitigation measures apply.

Final Transit Plan

As discussed in Alternative 1 relative to the 2007 baseline, although there is a plan for increased transit service to the study area, because the final Transit Plan has not been formally approved by SFMTA, **Mitigation 3** requires preparation, approval, and implementation of the final transit-operating plan. With implementation of the final Transit Plan (**Mitigation 3**), project-generated transit trips would be accommodated within the existing and proposed transit capacity; therefore, project impacts on transit capacity would *not be significant with mitigation*.

Ridership and Capacity Utilization at Study Area Cordons

The Alternative 1 transit capacity analysis relative to the 2007 baseline is representative of Alternative 1 relative to the 1993 baseline (*significant and mitigable*); **Mitigation 3** is required to ensure the final Transit Plan would be prepared and implemented. With implementation of the final Transit Plan (**Mitigation 3**), the study area impacts and the proposed action's contribution to cumulative impacts on transit capacity at the study area cordons would *not be significant with mitigation*.

Transit Capacity Utilization at Downtown Screenlines

As discussed in the Alternative 1 analysis relative to the 2007 baseline, impacts on transit capacity at the downtown screenlines would *not be significant*.

Transit Capacity and Utilization at Regional Screenlines

As discussed in the Alternative 1 analysis relative to the 2007 baseline, the cumulative impacts and the proposed action's contribution to cumulative impacts on regional transit capacity would not be significant.

Transit Operations Impacts

The transit delay conditions relative to the 1993 baseline would affect the same lines as with the 2007 baseline (*significant and unavoidable*); **Mitigations 5 and 6** would also apply to Alternative 1 relative to the 1993 baseline. Because a feasibility study of the improvements contemplated in **Mitigation 5** would be required, implementation of **Mitigation 5** is uncertain. Since implementation of **Mitigation 6** alone, without **Mitigation 5**, might not be sufficient to reduce the impacts to a not significant level, the project impacts would *remain significant and unavoidable* with mitigation.

M1.2.2.3.3 Factor 4: Bicycle Network and Circulation

During implementation of the proposed action, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would *not be significant*.

Alternative 1 (relative to the 1993 baseline) bicycle trips would be accommodated within the proposed street and network, and impacts on bicycle circulation would *not be significant*.

M1.2.2.3.4 Factor 5: Pedestrian Circulation

During implementation of the proposed action, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would *not be significant*.

Alternative 1 (relative to the 1993 baseline) would be accommodated within the proposed sidewalk and pedestrian network, and impacts on pedestrian circulation would *not be significant*.

M1.2.2.3.5 Factor 6: Emergency Access

Implementation of the proposed action would not result in significant impacts associated with a lack of routes to facilitate emergency access. Impacts would *not be significant*.

Alternative 1 (relative to the 1993 baseline) includes the construction of new roadways to facilitate emergency access. Existing emergency response routes would either be maintained in their existing locations or rerouted as necessary. All development would be designed in accordance with city standards, which include provisions that address emergency access (e.g., minimum street widths, minimum turning radii), and emergency vehicles would be able to utilize transit lanes when streets are congested. Therefore, project impacts on emergency access would *not be significant*.

M1.2.2.3.6 Factor 7: Loading Impacts

Implementation of the proposed action would not result in significant impacts associated with a lack of adequate supply of loading spaces. Impacts would *not be significant*.

Loading impacts assessment associated with Alternative 1 (relative to the 1993 baseline) is similar to the assessment completed for Alternative 1 (relative to the 2007 baseline). Impacts related to loading operations would *not be significant*, and no mitigation measures are proposed.

M1.2.2.3.7 Stadium Football Game Impacts

All stadium football game impacts associated with Alternative 1 (relative to the 1993 baseline) are the same as Alternative 1 (relative to the 2007 baseline).

M1.2.2.3.8 Stadium Secondary Event Impacts

All stadium secondary event impacts associated with Alternative 1 (relative to the 1993 baseline) are the same as Alternative 1 (relative to the 2007 baseline). **Mitigation 9** and **Mitigation 10** would apply.

M1.2.2.3.9 Arena Event Impacts

All arena event impacts associated with Alternative 1 (relative to the 1993 baseline) are the same as Alternative 1 (relative to the 2007 baseline). The arena is proposed to be constructed within Candlestick Point, which is not considered part of the proposed action; therefore, mitigation measures that would be

required due to impacts caused by or exacerbated by events at the arena would not be considered a project-related impact and would therefore be considered *not significant.*

M1.2.3 Impacts Relative to 1993 Baseline – Alternative 2: Non-Stadium Plan/Additional R&D Alternative

Overall impacts of Alternative 2 relative to the 1993 baseline would be comparable to the impacts assessed in the body of this SEIS relative to the 2007 baseline. The following analyses are therefore similar to those above for the 2007 baseline, although the impacts relative to the 1993 baseline are generally somewhat greater (that is, more intersections and roadway segments would experience significant project-induced transportation impacts because the project constitutes a larger share of the overall increase in traffic volumes when compared to the lower 1993 baseline).

M1.2.3.1 Summary of Impacts Relative to 1993 Baseline – Alternative 2

Table M1-7 summarizes of the impacts for Alternative 2 relative to 1993 baseline.

Table M1-7. Impact Summary – Alternative 2 (1993 baseline)

Description		*Impacts*	*Comments*
Construction Vehicle Traffic and Roadway Impacts (Factor 1)		◘ PI/CI	***Mitigation 1 (see note 1)***
Increase in Traffic Volumes (Factor 2)			
Transportation Demand Management (TDM) Plan		◘ PI/CI	***Mitigation 2 (see note 1)***
Intersection Impacts			
#1002	Third/Cesar Chavez	● PI/CI	No feasible mitigation
#1003	Third/Cargo	● PI/CI	No feasible mitigation
#1004	Third/Evans	● PI/CI	No feasible mitigation
#1006	Third/Palou	● PI/CI	No feasible mitigation
#1008	Third/Carroll	● PI	No feasible mitigation
#1009	Third/Paul/Gilman	● PI/CI	No feasible mitigation
#1016	Evans/Cesar Chavez	● PI/CI	No feasible mitigation
#1048	Jennings/Middle Point/Evans	● PI	No feasible mitigation
#1058	Evans/Napoleon/Toland	● PI/CI	No feasible mitigation
#110	Innes/Donahue	○	
#111	Donahue/Galvez	○	
#112	Donahue/Lockwood	○	
#113	Crisp/I (Outer Ring Rd)	○	
#114	Crisp/Spear (Inner Ring Rd)	○	
#115	Robinson St/Spear	◉ PI	***Mitigation 4 (see note 1)***
#116	Lockwood/Spear	◉ PI	***Mitigation 11 (see note 2)***
Freeway Segment			
US-101 NB, at the San Francisco County Line		○	
US-101 SB, at the San Francisco County Line		○	
San Francisco/Oakland Bay Bridge EB		○	
San Francisco/Oakland Bay Bridge WB		○	
I-280 NB, south of US-101		○	
I-280 SB, south of US-101		○	
Freeway Ramp Impacts			
US-101 NB Off-ramp to Third/Bayshore		● PI/CI	No feasible mitigation
US-101 NB On-ramp from Third/Bayshore		○	
US-101 NB Off-ramp to Bayshore/Cesar Chavez		○	
US-101 NB On-ramp from Bayshore/Cesar Chavez		● PI/CI	No feasible mitigation

Table M1-7. Impact Summary – Alternative 2 (1993 baseline)		
Description	***Impacts***	***Comments***
US-101 SB Off-ramp to Cesar Chavez	● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Bayshore/Third	○	
US-101 SB On-ramp from Bayshore/Third	● PI/CI	No feasible mitigation
I-280 NB Off-ramp to Cesar Chavez	○	
I-280 NB On-ramp from Indiana	● PI/CI	No feasible mitigation
I-280 SB Off-ramp to Pennsylvania	● PI/CI	No feasible mitigation
Transit Impacts (Factor 3)		
Final Transit Plan	◉ PI/CI	***Mitigation 3 (see note 1)***
Capacity Utilization Cordon Screenlines	◉ PI/CI	***Mitigation 3 (see note 1)***
Capacity Utilization Downtown Screenlines	○	
Capacity Utilization Regional Screenlines	○	
Transit Delays	◘ PI/CI	***Mitigations 5 and 6 (see note 1)***
Bicycle Impacts (Factor 4)	○	
Pedestrian Impacts (Factor 5)	○	
Emergency Access (Factor 6)	○	
Loading Impacts (Factor 7)	○	
Notes: ● - Significant and unavoidable (no feasible mitigation) ◘ - Significant and unavoidable (with mitigation) ◉ - Significant and mitigable (not significant with mitigation) ○ - Not significant PI – Project Impact; PI/CI – Project and Cumulative Impacts Note 1: See Alternative 1 impacts Note 2: See Alternative 2 impacts *Source:* CHS Consulting Group, et al., 2009.		

M1.2.3.2 Construction Impacts

Impacts to transportation resources associated with construction activities for Alternative 2 would be comparable to those for Alternative 1 because the construction methods and construction footprints would be similar, and construction activities would be subject to the same regulations and permit conditions that would apply to Alternative 1.

M1.2.3.2.1 Factor 1: Construction Vehicle Traffic and Roadway Impacts

Implementation of **Mitigation 1** would help minimize the proposed action's construction-related transportation impacts, and the project's contribution to cumulative construction-related transportation impacts. However, some disruption and increased delays could still occur even with implementation of **Mitigation 1**, and it is possible that significant construction-related transportation impacts on local and regional roadways could still occur. Construction-related transportation impacts would therefore *remain significant and unavoidable* with mitigation.

M1.2.3.3 Operational Impacts

Impacts to transportation resources from operation of Alternative 2 relative to the 1993 baseline would be similar to those discussed for Alternative 1 relative to the 1993 baseline (Section M1.2.2.3).

M1.2.3.3.1 Factor 2: Increase in Traffic Volumes

Project Travel Demand Management Plan

Implementation of the proposed action 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 TDM Plan. The final TDM Plan has not been formally approved yet; therefore, **Mitigation 2** requires preparation, approval, and implementation of the final TDM Plan.

With implementation of **Mitigation 2**, alternative modes would be encouraged, the use of single-occupant vehicles would be discouraged, and the impact of additional vehicles generated by the proposed action would be lessened. As described in impact discussions below, the proposed action would still result in significant and unavoidable impacts on traffic and transit operations and would still make considerable contributions to cumulative impacts related to substantial increases in traffic. The project and project's contribution to traffic would *remain significant and unavoidable* with mitigation.

Intersection Traffic Impacts

The study intersections that would require mitigation or have significant and unavoidable impacts due to the increase in traffic volumes with implementation of Alternative 1 relative to the 1993 baseline would also apply to Alternative 2 relative to the 1993 baseline. The intersection LOS in Table M1-8 shows the weekday A.M./P.M. peak hour intersection volumes and Sunday P.M. peak hour volumes.

Table M1-8. Intersection LOS – 2030 Baseline [1993] and Alternative 2 Conditions

Intersection		***Peak***	***2030 Baseline [1993]***		***Alternative 2***			
			LOS[a]	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
City and County of San Francisco Streets								
#1002	Third/Cesar Chavez	A.M.	**F**	**>80/1.46**	**F**	**>80/1.70**	**11.7**	●
		P.M.	**F**	**>80/1.44**	**F**	**>80/1.82**	**11.2**	●
		Sun	C	29.7	**F**	**>80/0.80**	--	● PI
#1003	Third/Cargo	A.M.	**F**	**>80/1.20**	**F**	**>80/1.98**	**13.5**	●
		P.M.	**F**	**>80/1.22**	**F**	**>80/1.83**	**12.4**	●
		Sun	C	27.0	D	36.2	--	○
#1004	Third/Evans	A.M.	**F**	**>80/1.15**	**F**	**>80/1.59**	**16.4**	●
		P.M.	**F**	**>80/1.19**	**F**	**>80/1.59**	**14.2**	●
		Sun	D	48.2	**E**	**63.3/0.92**	--	● PI
#1006	Third/Palou	A.M.	D	43.3	**F**	**>80/2.22**	--	● PI
		P.M.	**F**	**>80/1.49**	**F**	**>80/5.97**	**14.7**	●
		Sun	**E**	**77.7/0.68**	**F**	**>80/4.03**	**18.4**	●
#1008	Third/Carroll	A.M.	B	11.0	C	22.3	--	○
		P.M.	B	13.3	**E**	**78.3/0.95**	--	● PI
		Sun	B	10.0	**E**	**69.7/0.66**	--	● PI
#1009	Third/Paul/Gilman	A.M.	**F**	**>80/1.13**	**F**	**>80/2.02**	**6.4**	●
		P.M.	**F**	**>80/1.25**	**F**	**>80/3.40**	**5.5**	●
		Sun	**E**	**60.2/0.70**	**F**	**>80/1.84**	**6.1**	●
#1016	Evans/Cesar Chavez	A.M.	**F**	**>80/1.82**	**F**	**>80/1.96**	**9.4**	●
		P.M.	**F**	**>80/1.75**	**F**	**>80/1.86**	**7.8**	●
		Sun	B	16.9	B	19.5	--	○
#1048	Jennings/Middle Point/Evans	A.M.	B	19.6	**E**	**61.4/1.17**	--	● PI
		P.M.	C	22.3	D	42.7	--	--
		Sun	B	19.5	C	20.5	--	--
#1058	Evans/Napoleon/ Toland	A.M.	**F**	**>80/1.16**	**F**	**>80/1.53**	**9.5**	●
		P.M.	**F**	**>80/1.52**	**F**	**>80/1.65**	**7.7**	●

Table M1-8. Intersection LOS – 2030 Baseline [1993] and Alternative 2 Conditions								
Intersection		***Peak***	***2030 Baseline [1993]***		***Alternative 2***			
			LOS[a]	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
		Sun	**E**	**59.8/0.50**	**E**	**59.6/0.58**	**10.6**	●
Hunters Point Shipyard Streets								
#110	Innes/Donahue	A.M.	C	24.4	B	17.0	--	○
		P.M.	B	19.9	A	8.2	--	○
		Sun	B	19.8	A	8.3	--	○
#111	Donahue/Galvez	A.M.	A	9.1	**E (WBL)**	**35.1/(0.53)**	--	○
		P.M.	A	9.2	**E (WBL)**	**42.0/(0.74)**	--	○
		Sun	A	9.1	B	13.5	--	○
#112	Donahue/Lockwood	A.M.	A	8.6	A	9.5	--	○
		P.M.	A	8.6	B	10.3	--	○
		Sun	A	8.6	A	9.1	--	○
#113	Crisp /I (Outer Ring Rd)	A.M.	Proposed Intersection		D	24.5	--	○
		P.M.			C	19.6	--	○
		Sun			C	22.5	--	○
#114	Crisp/Spear (Inner Ring Rd)	A.M.	A	8.8	C	23.4	--	○
		P.M.	A	9.1	C	18.6	--	○
		Sun	A	8.8	C	18.8	--	○
#115	Robinson St/Spear	A.M.	Proposed Intersection		**F (SBL + SBT)**	**>50/ (2.97/1.72)**	--	⦿ PI
		P.M.			**F (SBL + SBT)**	**>50/ (5.24/1.73)**	--	⦿ PI
		Sun			D	26.7	--	○
#116	Lockwood/Spear	A.M.	A	8.9	**F (SBL)**	**>50/(1.42)**	--	⦿ PI
		P.M.	A	9.1	**E (SBL)**	**35.4/(0.27)**	--	⦿ PI
		Sun	A	8.9	B	10.6	--	○

Notes:

LOS – level of service; A.M. – A.M. Peak; P.M. – P.M. peak; Sun – Sunday Peak; NBL – northbound left turn; SBL – southbound left turn; SBT – southbound through; EBL – eastbound left turn; WBL – westbound left turn; NSC – no significant contribution; PI – project impact.

● - Significant and unavoidable (no feasible mitigation)

◘ - Significant and unavoidable (with mitigation)

⦿ - Significant and mitigable (not significant with mitigation)

○ - Not significant

a. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.

b. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach.

c. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

INTERSECTIONS WITH NOT SIGNIFICANT IMPACTS

Alternative 2 would not result in significant project and cumulative impacts at some of the study area intersections. Impacts would not be significant.

The following intersections are expected to operate at acceptable levels of service; therefore, the impact would *not be significant* and no mitigation measures are proposed.

#110 Innes St/Donahue St;

#112 Donahue St/Lockwood St;

#113 Crisp Ave/I St; and

#114 Crisp Ave/Spear Ave (Inner Ring Rd).

INTERSECTIONS WITH PROJECT AND CUMULATIVE TRAFFIC IMPACTS

The results show that the following study intersections are projected to operate at unacceptable levels with Alternative 2 and would result in project-specific impacts or would contribute to significant cumulative impacts during at least one peak hour.

#1002 Third St/Cesar Chavez St – project and cumulative *(significant and unavoidable);*
#1003 Third St/Cargo Ave – project and cumulative *(significant and unavoidable);*
#1004 Third St/Evans Ave – project and cumulative *(significant and unavoidable);*
#1006 Third St/Palou Ave – project and cumulative *(significant and unavoidable);*
#1008 Third St/Carroll Ave – project-specific *(significant and unavoidable);*
#1009 Third St/Paul Ave/Gilman Ave – project and cumulative *(significant and unavoidable);*
#1016 Evans Ave/Cesar Chavez St – project and cumulative *(significant and unavoidable);*
#1048 Jennings St/Middle Point Rd/Evans Ave – project-specific *(significant and unavoidable);*
#1058 Evans Ave/Napoleon St/Toland St – project and cumulative *(significant and unavoidable);*
#111 Donahue St/Galvez Ave – project-specific *(not significant);*
#115 Robinson St/Spear Ave – project-specific *(significant and mitigable);* and
#116 Lockwood St/Spear Ave – project-specific *(significant and mitigable).*

Alternative 2 would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions. Impacts would be *significant and unavoidable*.

At intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions and would continue to operate at LOS E or LOS F under 2030 cumulative conditions, the increase in vehicle trips from 2030 baseline [1993] were reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. Alternative 2 contributions were determined to be significant and no feasible mitigation measures were identified at the following intersections:

#1002 Third St/Cesar Chavez St;
#1003 Third St/Cargo Ave;
#1004 Third St/Evans Ave;
#1006 Third St/Palou Ave;
#1009 Third St/Paul Ave/Gilman Ave;
#1016 Evans Ave/Cesar Chavez St; and
#1058 Evans Ave/Napoleon St/Toland St.

Discussions on possible mitigation measures associated with these intersections are included with the Alternative 1 analysis. The Alternative 1 analysis concluded that due to the issues related to acquisition of additional ROW, mitigation was determined to be infeasible. Therefore, Alternative 2 traffic impacts and contribution to cumulative impacts at these study intersections would *remain significant and unavoidable.*

Alternative 2 would result in project-specific impacts at the intersection of Third St/Carroll Ave (#1008), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would be *significant and unavoidable*.

Based on the Alternative 1 discussion, no feasible mitigation measures were identified; therefore, traffic impacts at the intersection of Third St/Carroll St under Alternative 2 would *remain significant and unavoidable*.

Alternative 2 would result in project-specific impacts at the intersection of Jennings St/Middle Point Rd/Evans Ave (#1048). Impacts would be *significant and unavoidable.*

Under Alternative 2, the Evans Ave/Jennings St intersection would be signalized and re-striped to accommodate future travel patterns. The Evans Ave/Jennings St intersection would operate at LOS E in the A.M. peak hour, and the Alternative 2 would contribute considerably to the poor operating conditions. Additional capacity would be required in the eastbound and southbound directions to accommodate the additional vehicles generated by Alternative 2. Additional lanes would require substantial ROW acquisition to the north or south of Evans Ave and on Jennings St. ROW acquisition would not be possible, and no feasible mitigation measures were identified. Therefore, project-related impacts at Evans Ave/Jennings St would *remain significant and unavoidable.*

Alternative 2 would not result in significant project impacts at the intersection of Donahue St/Galvez Ave (#111). Impacts would *not be significant*.

Under Alternative 2, the operation of the unsignalized intersection of Donahue St/Galvez Ave would degrade from an acceptable level to LOS E during the weekday A.M./P.M. peak periods; however, the intersection does not meet warrants for the installation of a traffic signal. Therefore, the impact would *not be significant*, and no mitigation measures are proposed.

Alternative 2 would not result in significant project impacts at the intersection of Robinson St/Spear Ave (#115), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would *not be significant.*

To reduce the impacts to traffic, **Mitigation 4**, installation of a traffic signal at the intersection of Robinson St/Spear Ave shall be implemented. Implementation of **Mitigation 4** would minimize Alternative 2 transportation impacts. Traffic impacts at the intersection of Robinson St/Spear Ave would *not be considered significant with mitigation*.

Alternative 2 would not result in significant project impacts at the intersection of Lockwood St/Spear Ave (#116), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would not be significant.

To reduce the impacts to traffic and improve intersection operations to LOS D or better, **Mitigation 11**, installation of a traffic signal at the intersection of Lockwood St/Spear Ave, shall be implemented. With implementation of **Mitigation 11**, the impacts would *not be significant with mitigation.*

Freeway Traffic Impacts

FREEWAY SEGMENT IMPACTS

Alternative 2 would create impacts at similar freeway segment and freeway ramp junctions to Alternative 1, although the magnitude of impacts may be greater with Alternative 2 due to increased traffic generation compared to Alternative 1.

Table M1-9 presents the results of the mainline LOS analysis and summarizes the mainline segment impacts for 2030 baseline [1993] and Alternative 2 conditions. In some cases, the mainline segments operate at acceptable levels with the addition of project traffic during specific peak periods. The increase

in traffic due to Alternative 2 would result in increases in traffic volumes on the freeway segments that would cause the operations on all the study area freeway segments to deteriorate from the already LOS F conditions; however, the percent contribution of Alternative 2 traffic is not considered significant and does not significantly contribute to the traffic impacts. Because impacts would not be significant, no mitigation measures are proposed.

Table M1-9. Mainline Segment LOS and Segment Impacts – 2030 Baseline [1993] and Alternative 2 Conditions

Freeway Segment	*Peak*	*2030 Baseline [1993]*		*Alternative 2*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US 101, the SF County Line NB	A.M.	**F**	**>45**	**F**	**>45**	2.8	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.5	○ NSC
	Sun	D	30.5	D	32.3	--	○
US 101, the SF County Line SB	A.M.	**F**	**>45**	**F**	**>45**	1.0	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	2.0	○ NSC
	Sun	D	31.8	D	34.5	--	○
SF/Oakland Bay Bridge EB	A.M.	**F**	**>45**	**F**	**>45**	4.3	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.9	○ NSC
	Sun	**F**	**>45**	**F**	**>45**	1.9	○ NSC
SF/Oakland Bay Bridge WB	A.M.	**F**	**>45**	**F**	**>45**	1.0	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.0	○ NSC
	Sun	**F**	**>45**	**F**	**>45**	2.2	○ NSC
I-280, south of US 101 NB	A.M.	**F**	**>45**	**F**	**>45**	1.4	○ NSC
	P.M.	D	33.2	D	33.3	--	○
	Sun	C	21.6	C	21.6	--	○
I-280, south of US 101 SB	A.M.	D	34.4	D	34.6	--	○
	P.M.	**F**	**>45**	**F**	**>45**	1.3	○ NSC
	Sun	D	29.4	D	29.5	--	○

Notes:

SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.

● - Significant and unavoidable (no feasible mitigation)

⦿ - Significant and mitigable (not significant with mitigation)

○ - Not significant

a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.

b. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

Freeway Ramp Impacts

Alternative 2 would create similar significant traffic impacts to freeway ramp junctions as Alternative 1. Table M1-10 presents the results of the ramp junction merge (on-ramp) and diverge (off-ramp) analysis and summaries the impacts for 2030 baseline [1993] and Alternative 2 conditions. As described in the discussion of Alternative 1, no feasible mitigation measures have been identified for the freeway ramp junctions expected to experience significant impacts under Alternative 1 conditions. Therefore, traffic impacts at the freeway ramp junctions under Alternative 2 would *remain significant and unavoidable*.

Table M1-10. Ramp Junction Analysis and Segment Impacts – 2030 Baseline [1993] and Alternative 2 Conditions

Ramp Location	*Peak*	*2030 Baseline [1993]*		*Alternative 2*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US-101 NB Off to Third/Bayshore	A.M.	D	31.5	D	33.2	--	○
	P.M.	**E**	**35.6**	**E**	**37.4**	**12.2**	●
	Sun	C	22.9	C	24.0	--	○
US-101 NB On from Third/Bayshore	A.M.	C	22.5	C	24.4	--	○
	P.M.	C	28.0	D	30.0	--	○
	Sun	C	22.0	C	22.4	--	○
US-101 NB Off to Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	4.5	○ NSC
	P.M.	**E**	**39.5**	**E**	**40.8**	1.8	○ NSC
	Sun	D	29.8	D	30.6	--	○
US-101 NB On from Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	3.2	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	**9.5**	●
	Sun	D	31.5	**F**	**>45**	**8.9**	●
US-101 SB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	**8.0**	●
	P.M.	**F**	**>45**	**F**	**>45**	3.9	○ NSC
	Sun	**F**	**>45**	**F**	**>45**	**7.6**	●
US-101 SB Off to Bayshore/Third	A.M.	**E**	**39.8**	**E**	**41.9**	0	○ NSC
	P.M.	**E**	**36.1**	**E**	**37.3**	0	○ NSC
	Sun	C	24.6	C	25.1	--	○
US-101 SB On from Bayshore/Third	A.M.	**F**	**>45**	**F**	**>45**	**11.2**	●
	P.M.	**F**	**>45**	**F**	**>45**	**16.0**	●
	Sun	C	23.7	C	26.1	--	○
I-280 NB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	0	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	0	○ NSC
	Sun	C	26.0	C	26.0	--	○
I-280 NB On from Indiana	A.M.	**F**	**>45**	**F**	**>45**	**11.7**	●
	P.M.	**F**	**>45**	**F**	**>45**	**21.8**	●
	Sun	C	25.3	C	26.2	--	○
I-280 SB Off to Pennsylvania	A.M.	**E**	**36.3**	**E**	**37.5**	**27.2**	●
	P.M.	**F**	**>45**	**F**	**>45**	**12.1**	●
	Sun	D	30.6	D	31.1	--	○

Notes:
SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.
● - Significant and unavoidable (no feasible mitigation)
◘ - Significant and unavoidable (with mitigation)
⦿ - Significant and mitigable (not significant with mitigation)
○ - Not significant
a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.
b. Percent contribution of project traffic.
Source: CHS Consulting Group, et al. 2009.

M1.2.3.3.2 Factor 3: Transit Impacts

The transit impact analysis performed for Alternative 1 relative to the 2007 baseline applies to Alternative 2 relative to the 1993 baseline. Therefore, the same impacts and mitigation measures apply.

Final Transit Plan

As discussed in Alternative 1 relative to the 2007 baseline, although there is a plan for increased transit service to the study area, because the final Transit Plan has not been formally approved by SFMTA,

Mitigation 3 requires preparation, approval, and implementation of the final transit-operating plan. With implementation of the final Transit Plan (**Mitigation 3**), project-generated transit trips would be accommodated within the existing and proposed transit capacity; therefore, project impacts on transit capacity would *not be significant with mitigation*.

RIDERSHIP AND CAPACITY UTILIZATION AT STUDY AREA CORDONS

The Alternative 1 transit capacity analysis relative to the 2007 baseline is representative of Alternative 2 relative to the 1993 baseline (*significant and mitigable*); **Mitigation 3** is required to ensure the final Transit Plan will be prepared and implemented. With implementation of the final Transit Plan (**Mitigation 3**), the study area impacts and the proposed action's contribution to cumulative impacts on transit capacity at the study area cordons would *not be significant with mitigation*.

TRANSIT CAPACITY UTILIZATION AT DOWNTOWN SCREENLINES

As discussed in the Alternative 1 analysis relative to the 2007 baseline, impacts on transit capacity at the downtown screenlines would *not be significant*.

TRANSIT CAPACITY AND UTILIZATION AT REGIONAL SCREENLINES

As discussed in the Alternative 1 analysis relative to the 2007 baseline, the cumulative impacts and the proposed action's contribution to cumulative impacts on regional transit capacity would *not be significant.*

TRANSIT OPERATIONS IMPACTS

The transit delay conditions with Alternative 2 would affect the same lines as with Alternative 1 (relative to the 2007 baseline) (*significant and unavoidable***)**, **Mitigations 5 and 6** would also apply to Alternative 2 relative to the 1993 baseline. Because a feasibility study of the improvements contemplated in **Mitigation 5** would be required, implementation of **Mitigation 5** is uncertain. Since implementation of **Mitigation 6** alone, without **Mitigation 5**, might not be sufficient to reduce the impacts to below a significant level, the project impacts would *remain significant and unavoidable* with mitigation.

M1.2.3.3.3 Factor 4: Bicycle Network and Circulation

During implementation of the proposed action, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would *not be significant*.

Alternative 2 (relative to the 1993 baseline) bicycle trips would be accommodated within the proposed street and network, and impacts on bicycle circulation would *not be significant.*

M1.2.3.3.4 Factor 5: Pedestrian Circulation

During implementation of the proposed action, pedestrian facilities would be expanded to serve additional users. This would be a *beneficial* impact of the proposed action.

Alternative 2 would be accommodated within the proposed sidewalk and pedestrian network, and impacts on pedestrian circulation would *not be significant*.

M1.2.3.3.5 Factor 6: Emergency Access

Implementation of the proposed action would not result in significant impacts associated with a lack of routes to facilitate emergency access. Impacts would *not be significant*.

Alternative 2 (relative to the 1993 baseline) includes the construction of new roadways to facilitate emergency access. Existing emergency response routes would either be maintained in their existing locations or rerouted as necessary. All development would be designed in accordance with city standards, which include provisions that address emergency access (e.g., minimum street widths, minimum turning radii), and emergency vehicles would be able to utilize transit lanes when streets are congested. Therefore, project impacts on emergency access would *not be significant.*

M1.2.3.3.6 Factor 7: Loading Impacts

Implementation of the proposed action would not result in significant impacts associated with a lack of adequate supply of loading spaces. Impacts would *not be significant*.

The loading impacts assessment associated with Alternative 2 (relative to the 1993 baseline) would be similar to the assessment completed for Alternative 2 (relative to the 2007 baseline). Impacts related to loading operations would *not be significant,* and no mitigation measures are proposed

M1.2.4 Impacts Relative to 1993 Baseline – Alternative 3: Non-Stadium Plan/Additional Housing Alternative

Overall impacts of the proposed action relative to the 1993 baseline would be comparable to the impacts assessed above relative to the 2007 baseline. The following analyses are therefore similar to those above for the 2007 baseline, although the impacts relative to the 1993 baseline are generally greater.

M1.2.4.1 Summary of Impacts Relative to 1993 Baseline – Alternative 3

Table M1-11 provides a summary of the impacts for Alternative 3 relative to the 1993 baseline.

Table M1-11. Impact Summary – Alternative 3 (1993 baseline)

Description	*Impacts*	*Comments*
Construction Vehicle Traffic and Roadway Impacts (Factor 1)	◘ PI/CI	***Mitigation 1 (see note 1)***
Increase in Traffic Volumes (Factor 2)		
Transportation Demand Management (TDM) Plan	◘ PI/CI	***Mitigation 2 (see note 1)***
Intersection Impacts		
#1002 Third/Cesar Chavez	● PI/CI	No feasible mitigation
#1003 Third/Cargo	● PI/CI	No feasible mitigation
#1004 Third/Evans	● PI/CI	No feasible mitigation
#1006 Third/Palou	● PI/CI	No feasible mitigation
#1008 Third/Carroll	● PI	No feasible mitigation
#1009 Third/Paul/Gilman	● PI/CI	No feasible mitigation
#1016 Evans/Cesar Chavez	● PI/CI	No feasible mitigation
#1048 Jennings/Middle Point/Evans	○	
#1058 Evans/Napoleon/Toland	● PI/CI	No feasible mitigation
#110 Innes/Donahue	○	
#111 Donahue/Galvez	○	
#112 Donahue/Lockwood	○	
#113 Crisp/I (Outer Ring Rd)	○	
#114 Crisp/Spear (Inner Ring Rd)	○	
#115 Robinson St/Spear	◉ PI	***Mitigation 4 (see note 1)***
#116 Lockwood/Spear	○	

Table M1-11. Impact Summary – Alternative 3 (1993 baseline)		
Description	***Impacts***	***Comments***
Freeway Segment		
US-101 NB, at the San Francisco County Line	○	
US-101 SB, at the San Francisco County Line	○	
San Francisco/Oakland Bay Bridge EB	○	
San Francisco/Oakland Bay Bridge WB	○	
I-280 NB, south of US-101	○	
I-280 SB, south of US-101	○	
Freeway Ramp Impacts		
US-101 NB Off-ramp to Third/Bayshore	● PI/CI	No feasible mitigation
US-101 NB On-ramp from Third/Bayshore	○	
US-101 NB Off-ramp to Bayshore/Cesar Chavez	○	
US-101 NB On-ramp from Bayshore/Cesar Chavez	● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Cesar Chavez	● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Bayshore/Third	○	
US-101 SB On-ramp from Bayshore/Third	● PI/CI	No feasible mitigation
I-280 NB Off-ramp to Cesar Chavez	○	
I-280 NB On-ramp from Indiana	● PI/CI	No feasible mitigation
I-280 SB Off-ramp to Pennsylvania	● PI/CI	No feasible mitigation
Transit Impacts (Factor 3)		
Final Transit Plan	◉ PI/CI	***Mitigation 3 (see note 1)***
Capacity Utilization Cordon Screenlines	◉ PI/CI	***Mitigation 3 (see note 1)***
Capacity Utilization Downtown Screenlines	○	
Capacity Utilization Regional Screenlines	○	
Transit Delays	◘ PI/CI	***Mitigations 5 and 6 (see note 1)***
Bicycle Impacts (Factor 4)	○	
Pedestrian Impacts (Factor 5)	○	
Emergency Access (Factor 6)	○	
Loading Impacts (Factor 7)	○	

Notes:
● - Significant and unavoidable (no feasible mitigation)
◘ - Significant and unavoidable (with mitigation)
◉ - Significant and mitigable (not significant with mitigation)
○ - Not significant
PI – Project Impact; PI/CI – Project and Cumulative Impacts
Note 1: See Alternative 1 impacts.
Source: CHS Consulting Group, et al. 2009.

M1.2.4.2 Construction Impacts

Impacts to transportation resources associated with construction activities for Alternative 3 would be comparable to those for Alternative 1 because the construction methods and construction footprints would be similar, and construction activities would be subject to the same regulations and permit conditions that would apply to Alternative 1.

M1.2.4.2.1 Factor 1: Construction Vehicle Traffic and Roadway Impacts

Implementation of **Mitigation 1** would help minimize the proposed action's construction-related transportation impacts, and the project's contribution to cumulative construction-related transportation impacts. However, some disruption and increased delays could still occur even with implementation of **Mitigation 1**, and it is possible that significant construction-related transportation impacts on local and regional roadways could still occur. Construction-related transportation impacts would therefore *remain significant and unavoidable* with mitigation.

M1.2.4.3 Operational Impacts

Impacts to transportation resources from operation of Alternative 3 relative to the 1993 baseline would be similar to those discussed for Alternative 1 relative to the 1993 baseline (Section M1.2.2.3).

M1.2.4.3.1 Factor 2: Increase in Traffic Volumes

Project Travel Demand Management Plan

Implementation of the proposed action 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 TDM Plan. The final TDM Plan has not been formally approved yet; therefore, **Mitigation 2** requires preparation, approval, and implementation of the final TDM Plan.

With implementation of **Mitigation 2**, alternative modes would be encouraged, the use of single-occupant vehicles would be discouraged, and the impact of additional vehicles generated by the proposed action would be lessened. As described in impact discussions below, the proposed action would still result in significant and unavoidable impacts on traffic and transit operations and would still make considerable contributions to cumulative impacts related to substantial increases in traffic. The project and project's contribution to traffic would *remain significant and unavoidable* with mitigation.

Intersection and Freeway Impacts

The study intersections that would require mitigation or have significant and unavoidable impacts due to the increase in traffic volumes with implementation of Alternative 3 relative to the 1993 baseline would also apply to Alternative 3 relative to the 1993 baseline. The intersection LOS in Table M1-12 shows the weekday A.M./P.M. peak hour intersection volumes and the Sunday P.M. peak hour volumes.

Table M1-12. Intersection LOS – 2030 Baseline [1993] and Alternative 3 Conditions

Intersection		***Peak***	***2030 Baseline [1993]***		***Alternative 3***			
			LOS[a]	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
City and County of San Francisco Streets								
#1002	Third/Cesar Chavez	A.M.	**F**	**>80/1.46**	**F**	**>80/1.63**	**7.4**	●
		P.M.	**F**	**>80/1.44**	**F**	**>80/1.75**	**7.9**	●
		Sun	C	29.7	**F**	**>80/0.78**	--	● PI
#1003	Third/Cargo	A.M.	**F**	**>80/1.20**	**F**	**>80/1.90**	**8.8**	●
		P.M.	**F**	**>80/1.22**	**F**	**>80/1.74**	**9.0**	●
		Sun	C	27.0	C	33.3	--	○
#1004	Third/Evans	A.M.	**F**	**>80/1.15**	**F**	**>80/1.44**	**11.2**	●
		P.M.	**F**	**>80/1.19**	**F**	**>80/1.56**	**10.9**	●
		Sun	D	48.2	**E**	**66.5/0.91**	--	● PI
#1006	Third/Palou	A.M.	D	43.3	**F**	**>80/1.97**	--	● PI
		P.M.	**F**	**>80/1.49**	**F**	**>80/6.07**	**11.5**	●

Table M1-12. Intersection LOS – 2030 Baseline [1993] and Alternative 3 Conditions

Intersection		Peak	2030 Baseline [1993]		Alternative 3			
			LOS[a]	Delay[b] (v/c)	LOS	Delay (v/c)	%[c]	Impact
		Sun	**E**	**77.7/0.68**	**F**	**>80/2.51**	**16.0**	●
#1008	Third/Carroll	A.M.	B	11.0	B	18.6	--	○
		P.M.	B	13.3	**E**	**66.5/0.92**	--	● PI
		Sun	B	10.0	**E**	**60.3/0.65**	--	● PI
#1009	Third/Paul/Gilman	A.M.	**F**	**>80/1.13**	**F**	**>80/1.89**	4.9	○ NSC
		P.M.	**F**	**>80/1.25**	**F**	**>80/3.32**	4.7	○ NSC
		Sun	**E**	**60.2/0.70**	**F**	**>80/1.82**	**5.7**	●
#1016	Evans/Cesar Chavez	A.M.	**F**	**>80/1.82**	**F**	**>80/1.92**	**6.2**	●
		P.M.	**F**	**>80/1.75**	**F**	**>80/1.84**	**5.8**	●
		Sun	B	16.9	B	19.1	--	○
#1048	Jennings/Middle Point/Evans	A.M.	B	19.6	C	29.5	--	○
		P.M.	C	22.3	C	33.4	--	○
		Sun	B	19.5	C	20.3	--	○
#1058	Evans/Napoleon/ Toland	A.M.	**F**	**>80/1.16**	**F**	**>80/1.50**	**6.5**	●
		P.M.	**F**	**>80/1.52**	**F**	**>80/1.62**	**6.0**	●
		Sun	**E**	**59.8/0.50**	**E**	**59.9/0.58**	**9.7**	●
Hunters Point Shipyard Streets								
#110	Innes/Donahue	A.M.	C	24.4	A	9.4	--	○
		P.M.	B	19.9	A	7.6	--	○
		Sun	B	19.8	A	8.1	--	○
#111	Donahue/Galvez	A.M.	A	9.1	C	18.0	--	○
		P.M.	A	9.2	C	20.7	--	○
		Sun	A	9.1	B	13.0	--	○
#112	Donahue/Lockwood	A.M.	A	8.6	A	9.6	--	○
		P.M.	A	8.6	A	9.6	--	○
		Sun	A	8.6	A	9.0	--	○
#113	Crisp/I (Outer Ring Rd)	A.M.	Proposed Intersection		C	15.7	--	○
		P.M.			C	16.6	--	○
		Sun			C	19.0	--	○
#114	Crisp/Spear (Inner Ring Rd)	A.M.	A	8.8	C	15.0	--	○
		P.M.	A	9.1	C	15.9	--	○
		Sun	A	8.8	C	20.3	--	○
#115	Robinson St/Spear	A.M.	Proposed Intersection		**F (SBL)**	**>50/0.63**	--	⦿ PI
		P.M.			**F (SBL)**	**>50/1.58**	--	⦿ PI
		Sun			C	18.7	--	○
#116	Lockwood/Spear	A.M.	A	8.9	C	15.9	--	○
		P.M.	A	9.1	B	14.6	--	○
		Sun	A	8.9	A	9.4	--	○

Notes:

LOS – level of service; A.M. – A.M. Peak; P.M. – P.M. peak; Sun – Sunday Peak NBL – northbound left turn; SBL – southbound left turn; EBL – eastbound left turn; WBL – westbound left turn; NSC – no significant contribution; PI – project impact.

● - Significant and unavoidable (no feasible mitigation)

⦿ - Significant and mitigable (not significant with mitigation)

○ - Not significant

a. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.

b. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach.

c. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

INTERSECTIONS WITH NOT SIGNIFICANT IMPACTS

Alternative 3 would not result in significant project and cumulative impacts at some of the study area intersections. Impacts would *not be significant*.

The following intersections are expected to operate at acceptable levels of service; therefore, the impact would *not be significant* and no mitigation measures are proposed.

#1048 Jennings St/Middle Point Rd/Evans Ave;

#110 Innes St/Donahue St;

#111 Donahue St/Galvez Ave;

#112 Donahue St/Lockwood St;

#113 Crisp Ave/I St;

#114 Crisp Ave/Spear Ave (Inner Ring Rd); and

#116 Lockwood St/Spear Ave.

INTERSECTIONS WITH PROJECT AND CUMULATIVE TRAFFIC IMPACTS

The results show that the following study intersections are projected to operate at unacceptable levels with Alternative 3 and would result in project-specific impacts or would contribute to significant cumulative impacts during at least one peak hour.

#1002 Third St/Cesar Chavez St – project and cumulative *(significant and unavoidable);*

#1003 Third St/Cargo Ave – project and cumulative *(significant and unavoidable);*

#1004 Third St/Evans Ave – project and cumulative *(significant and unavoidable);*

#1006 Third St/Palou Ave – project and cumulative *(significant and unavoidable);*

#1008 Third St/Carroll Ave – project-specific *(significant and unavoidable);*

#1009 Third St/Paul Ave/Gilman Ave – project and cumulative *(significant and unavoidable);*

#1016 Evans Ave/Cesar Chavez St – project and cumulative *(significant and unavoidable);*

#1058 Evans Ave/Napoleon St/Toland St – project and cumulative *(significant and unavoidable);* and

#115 Robinson St/Spear Ave – project-specific *(significant and mitigable).*

Alternative 3 would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions. Impacts would be *significant and unavoidable*.

At intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions and would continue to operate at LOS E or LOS F under 2030 cumulative conditions, the increase in vehicle trips from 2030 baseline [1993] were reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. Alternative 3 contributions were determined to be significant and no feasible mitigation measures were identified at the following intersections:

#1002 Third St/Cesar Chavez St;

#1003 Third St/Cargo Ave;

#1004 Third St/Evans Ave;

#1006 Third St/Palou Ave;

#1009 Third St/Paul Ave/Gilman Ave;

#1016 Evans Ave/Cesar Chavez St; and

#1058 Evans Ave/Napoleon St/Toland St.

Discussions on possible mitigation measures associated with these intersections are included with the Alternative 1 analysis. The Alternative 1 analysis concluded that due to the issues related to acquisition of additional ROW, mitigation was determined to be infeasible. Therefore, Alternative 3 traffic impacts and contribution to cumulative impacts at these locations would *remain significant and unavoidable.*

Alternative 3 would result in project-specific impacts at the intersection of Third St/Carroll Ave (#1008), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would be *significant and unavoidable*.

Based on the Alternative 1 discussion, no feasible mitigation measures were identified; therefore, traffic impacts at the intersection of Third St/Carroll Ave under Alternative 3 would *remain significant and unavoidable*.

Alternative 3 would not result in significant project impacts at the intersection of Robinson St/Spear Ave (#115), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would *not be significant.*

To reduce the impacts to traffic, **Mitigation 4**, installation of a traffic signal at the intersection of Robinson St/Spear Ave shall be implemented. Implementation of **Mitigation 4** would minimize Alternative 3 transportation impacts. Traffic impacts at the intersection of Robinson St/Spear Ave would *not be significant with mitigation.*

Freeway Traffic Impacts

FREEWAY SEGMENT IMPACTS

Alternative 3 would create impacts at similar freeway segment and freeway ramp junctions to Alternative 1, although the magnitude of impacts may be greater with Alternative 3 due to increased traffic generation compared to Alternative 1 discussed.

Table M1-13 presents the results of the mainline LOS analysis and summarizes the mainline segment impacts for 2030 baseline [1993] and Alternative 3 conditions. In some cases, the mainline segments operate at acceptable levels with the addition of project traffic during specific peak periods. The increase in traffic due to Alternative 3 would result in increases in traffic volumes on the freeway segments that would cause the operations on all the study area freeway segments to deteriorate from the already LOS F conditions; however, the percent contribution of Alternative 3 traffic is not considered significant and does not significantly contribute to the traffic impacts. Because impacts would *not be significant*, no mitigation measures are proposed.

Table M1-13. Mainline Segment LOS and Segment Impacts – 2030 Baseline [1993] and Alternative 3 Conditions

Freeway Segment	*Peak*	*2030 Baseline [1993]*		*Alternative 3*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US 101, the SF County Line NB	A.M.	**F**	**>45**	**F**	**>45**	1.6	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.5	O NSC
	Sun	D	30.5	D	32.4	--	O
US 101, the SF County Line SB	A.M.	**F**	**>45**	**F**	**>45**	1.1	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.4	O NSC
	Sun	D	31.8	D	34.4	--	O
SF/Oakland Bay Bridge EB	A.M.	**F**	**>45**	**F**	**>45**	2.8	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.5	O NSC
	Sun	**F**	**>45**	**F**	**>45**	1.8	O NSC

Table M1-13. Mainline Segment LOS and Segment Impacts – 2030 Baseline [1993] and Alternative 3 Conditions

Freeway Segment	*Peak*	*2030 Baseline [1993]*		*Alternative 3*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
SF/Oakland Bay Bridge WB	A.M.	**F**	**>45**	**F**	**>45**	0.9	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.0	O NSC
	Sun	**F**	**>45**	**F**	**>45**	1.2	O NSC
I-280, south of US 101 NB	A.M.	**F**	**>45**	**F**	**>45**	0.7	O NSC
	P.M.	D	33.2	D	33.3	--	O
	Sun	C	21.6	C	21.6	--	O
I-280, south of US 101 SB	A.M.	D	34.4	D	34.6	--	O
	P.M.	**F**	**>45**	**F**	**>45**	0.8	O NSC
	Sun	D	29.4	D	29.5	--	O

Notes:
SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.
● - Significant and unavoidable (no feasible mitigation)
⦿ - Significant and mitigable (not significant with mitigation)
O - Not significant
a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.
b. Percent contribution of project traffic.
Source: CHS Consulting Group, et al. 2009.

FREEWAY RAMP IMPACTS

Alternative 3 would create similar significant traffic impacts to freeway ramp junctions as Alternative 1. Table M1-14 presents the results of the ramp junction merge (on-ramp) and diverge (off-ramp) analysis and summaries the impacts for 2030 baseline [1993] and Alternative 3 conditions. As described in the discussion of Alternative 1 impacts, no feasible mitigation measures have been identified for the freeway ramp junctions expected to experience significant impacts under Alternative 1 conditions. Therefore, traffic impacts at the freeway ramp junctions under Alternative 3 would *remain significant and unavoidable*.

Table M1-14. Ramp Junction Analysis and Segment Impacts – 2030 Baseline [1993] and Alternative 3 Conditions

Ramp Location	*Peak*	*2030 Baseline [1993]*		*Alternative 3*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US-101 NB Off to Third/Bayshore	A.M.	D	31.5	D	32.5	--	O
	P.M.	**E**	**35.6**	**E**	**37.4**	**12.7**	●
	Sun	C	22.9	C	24.1	--	O
US-101 NB On from Third/Bayshore	A.M.	C	22.5	C	23.5	--	O
	P.M.	C	28.0	D	30.0	--	O
	Sun	C	22.0	C	22.4	--	O
US-101 NB Off to Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	2.3	O NSC
	P.M.	**E**	**39.5**	**E**	**40.8**	1.4	O NSC
	Sun	D	29.8	D	30.6	--	O
US-101 NB On from Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	3.1	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	**6.5**	●
	Sun	D	31.5	**F**	**>45**	--	● PI
US-101 SB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	4.6	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	3.9	O NSC
	Sun	**F**	**>45**	**F**	**>45**	**7.4**	●
US-101 SB Off to Bayshore/Third	A.M.	**E**	**39.8**	**E**	**41.4**	0	O NSC

Table M1-14. Ramp Junction Analysis and Segment Impacts – 2030 Baseline [1993] and Alternative 3 Conditions

Ramp Location	*Peak*	*2030 Baseline [1993]*		*Alternative 3*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
	P.M.	**E**	**36.1**	**E**	**37.3**	0	○ NSC
	Sun	C	24.6	C	25.1	--	○
US-101 SB On from Bayshore/Third	A.M.	**F**	**>45**	**F**	**>45**	**11.5**	●
	P.M.	**F**	**>45**	**F**	**>45**	**11.9**	●
	Sun	C	23.7	C	25.9	--	○
I-280 NB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	0	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	0	○ NSC
	Sun	C	26.0	C	26.0	--	○
I-280 NB On from Indiana	A.M.	**F**	**>45**	**F**	**>45**	**12.6**	●
	P.M.	**F**	**>45**	**F**	**>45**	**15.1**	●
	Sun	C	25.3	C	26.0	--	○
I-280 SB Off to Pennsylvania	A.M.	**E**	**36.3**	**E**	**36.9**	**16.8**	●
	P.M.	**F**	**>45**	**F**	**>45**	**11.8**	●
	Sun	D	30.6	D	31.1	--	○

Notes:
SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution; PI – project impact.
● - Significant and unavoidable (no feasible mitigation)
⦿ - Significant and mitigable (not significant with mitigation)
○ - Not significant
a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.
b. Percent contribution of project traffic.
Source: CHS Consulting Group, et al. 2009.

M1.2.4.3.2 Factor 3: Transit Impacts

The transit impact analysis performed for Alternative 1 relative to the 2007 baseline applies to Alternative 3 relative to the 1993 baseline. Therefore, the same impacts and mitigation measures apply.

Final Transit Plan

As discussed in Alternative 1 relative to the 2007 baseline, although there is a plan for increased transit service to the study area, because the final Transit Plan has not been formally approved by SFMTA, **Mitigation 3** requires preparation, approval, and implementation of the final transit-operating plan. With implementation of the final Transit Plan (**Mitigation 3**), project-generated transit trips would be accommodated within the existing and proposed transit capacity; therefore, project impacts on transit capacity would *not be significant with mitigation*.

RIDERSHIP AND CAPACITY UTILIZATION AT STUDY AREA CORDONS

The Alternative 1 transit capacity analysis relative to the 2007 baseline is representative of Alternative 3 relative to the 1993 baseline; **Mitigation 3** is required to ensure the final Transit Plan will be prepared and implemented. With implementation of the final Transit Plan (**Mitigation 3**), the study area impacts and the proposed action's contribution to cumulative impacts on transit capacity at the study area cordons would *not be significant with mitigation*.

TRANSIT CAPACITY UTILIZATION AT DOWNTOWN SCREENLINES

As discussed in the Alternative 1 analysis relative to the 2007 baseline, impacts on transit capacity at the downtown screenlines would *not be significant*.

TRANSIT CAPACITY AND UTILIZATION AT REGIONAL SCREENLINES

As discussed in the Alternative 1 analysis relative to the 2007 baseline, the cumulative impacts and the proposed action's contribution to cumulative impacts on regional transit capacity would *not be significant.*

TRANSIT OPERATIONS IMPACTS

The transit delay conditions with Alternative 3 would affect the same lines as with Alternative 1 (relative to the 2007 baseline). **Mitigations 5 and 6** would also apply to Alternative 3 relative to the 1993 baseline. Because a feasibility study of the improvements contemplated in **Mitigation 5** would be required, implementation of **Mitigation 5** is uncertain. Since implementation of **Mitigation 6** alone, without **Mitigation 5**, might not be sufficient to reduce the impacts to a not significant level, the project impacts would *remain significant and unavoidable* with mitigation.

M1.2.4.3.3 Factor 4: Bicycle Network and Circulation

During implementation of the proposed action, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would not be significant. Alternative 3 (relative to the 1993 baseline) bicycle trips would be accommodated within the proposed street and network, and impacts on bicycle circulation would *not be significant*.

M1.2.4.3.4 Factor 5: Pedestrian Circulation

During implementation of the proposed action, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would *not be significant*. Alternative 3 would be accommodated within the proposed sidewalk and pedestrian network, and impacts on pedestrian circulation would *not be significant*.

M1.2.4.3.5 Factor 6: Emergency Access

Implementation of the proposed action would not result in significant impacts associated with a lack of routes to facilitate emergency access. Impacts would *not be significant*.

Alternative 3 (relative to the 1993 baseline) includes the construction of new roadways to facilitate emergency access. Existing emergency response routes would either be maintained in their existing locations or rerouted as necessary. All development would be designed in accordance with city standards, which include provisions that address emergency access (e.g., minimum street widths, minimum turning radii), and emergency vehicles would be able to utilize transit lanes when streets are congested. Therefore, project impacts on emergency access would *not be significant*.

M1.2.4.3.6 Factor 7: Loading Impacts

Implementation of the proposed action would not result in significant impacts associated with a lack of adequate supply of loading spaces. Impacts would *not be significant*.

Loading impacts assessment associated with Alternative 3 (relative to the 1993 baseline) is similar to the assessment completed for Alternative 3 (relative to the 2007 baseline). Impacts related to loading operations would *not be significant*, and no mitigation measures are proposed

M1.2.5 Impacts Relative to 1993 Baseline – Alternative 4: Non-Stadium Plan/Reduced Development Alternative

Overall impacts of Alternative 4 relative to the 1993 baseline would be comparable to the impacts assessed in the body of this SEIS relative to the 2007 baseline. The following analyses are therefore similar to those above for the 2007 baseline, although the impacts relative to the 1993 baseline are generally somewhat greater (that is, more intersections and roadway segments would experience significant project-induced transportation impacts because the project constitutes a larger share of the overall increase in traffic volumes when compared to the lower 1993 baseline).

M1.2.5.1 Summary of Impacts Relative to 1993 Baseline – Alternative 4

Table M1-15 provides a summary of the impacts for Alternative 4 relative to the 1993 baseline.

Table M1-15. Impact Summary – Alternative 4 (1993 baseline)

Description	*Impacts*	*Comments*
Construction Vehicle Traffic and Roadway Impacts (Factor 1)	◘ PI/CI	***Mitigation 1 (see note 1)***
Increase in Traffic Volumes (Factor 2)		
Transportation Demand Management (TDM) Plan	◘ PI/CI	***Mitigation 2 (see note 1)***
Intersection Impacts		
#1002 Third/Cesar Chavez	● PI/CI	No feasible mitigation
#1003 Third/Cargo	● PI/CI	No feasible mitigation
#1004 Third/Evans	● PI/CI	No feasible mitigation
#1006 Third/Palou	● PI/CI	No feasible mitigation
#1008 Third/Carroll	● PI	No feasible mitigation
#1009 Third/Paul/Gilman	● PI/CI	
#1016 Evans/Cesar Chavez	○	
#1048 Jennings/Middle Point/Evans	○	
#1058 Evans/Napoleon/Toland	● PI/CI	No feasible mitigation
#110 Innes/Donahue	○	
#111 Donahue/Galvez	○	
#112 Donahue/Lockwood	○	
#113 Crisp/I St (Outer Ring Rd)	○	
#114 Crisp/Spear (Inner Ring Rd)	○	
#115 Robinson St/Spear	⦿ PI	***Mitigation 4 (see note 1)***
#116 Lockwood/Spear	○	
Freeway Segment		
US-101 NB, at the San Francisco County Line	○	
US-101 SB, at the San Francisco County Line	○	
San Francisco/Oakland Bay Bridge EB	○	
San Francisco/Oakland Bay Bridge WB	○	
I-280 NB, south of US-101	○	
I-280 SB, south of US-101	○	
Freeway Ramp Impacts		
US-101 NB Off-ramp to Third/Bayshore	● PI/CI	No feasible mitigation
US-101 NB On-ramp from Third/Bayshore	○	
US-101 NB Off-ramp to Bayshore/Cesar Chavez	○	
US-101 NB On-ramp from Bayshore/Cesar Chavez	● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Cesar Chavez	● PI/CI	No feasible mitigation
US-101 SB Off-ramp to Bayshore/Third	○	
US-101 SB On-ramp from Bayshore/Third	● PI/CI	No feasible mitigation

Table M1-15. Impact Summary – Alternative 4 (1993 baseline)		
Description	***Impacts***	***Comments***
I-280 NB Off-ramp to Cesar Chavez	○	
I-280 NB On-ramp from Indiana	● PI/CI	No feasible mitigation
I-280 SB Off-ramp to Pennsylvania	● PI/CI	No feasible mitigation
Transit Impacts (Factor 3)		
Final Transit Plan	◉ PI/CI	***Mitigation 3 (see note 1)***
Capacity Utilization Cordon Screenlines	◉ PI/CI	***Mitigation 3 (see note 1)***
Capacity Utilization Downtown Screenlines	○	
Capacity Utilization Regional Screenlines	○	
Transit Delays	◘ PI/CI	***Mitigations 5 and 6 (see note 1)***
Bicycle Impacts (Factor 4)	○	
Pedestrian Impacts (Factor 5)	○	
Emergency Access (Factor 6)	○	
Loading Impacts (Factor 7)	○	

Notes:
● - Significant and unavoidable (no feasible mitigation)
◘ - Significant and unavoidable (with mitigation)
◉ - Significant and mitigable (not significant with mitigation)
○ - Not significant
PI – Project Impact; PI/CI – Project and Cumulative Impacts
Note 1: See Alternative 1 impacts.
Source: CHS Consulting Group, et al. 2009.

M1.2.5.2 Construction Impacts

Impacts to transportation resources associated with construction activities for Alternative 4 would be comparable to those for Alternative 1 because the construction methods and construction footprints would be similar, and construction activities would be subject to the same regulations and permit conditions that would apply to Alternative 1. However, Alternative 4 assumes a general reduction in development as compared to Alternative 1 (approximately a 30 percent reduction) and could result in slightly fewer impacts.

M1.2.5.2.1 Factor 1: Construction Vehicle Traffic and Roadway Impacts

Implementation of **Mitigation 1** would help minimize the proposed action's construction-related transportation impacts, and the project's contribution to cumulative construction-related transportation impacts. However, some disruption and increased delays could still occur even with implementation of **Mitigation 1**, and it is possible that significant construction-related transportation impacts on local and regional roadways could still occur. Construction-related transportation impacts would therefore *remain significant and unavoidable* with mitigation.

M1.2.5.3 Operational Impacts

Impacts to transportation from operation of Alternative 4 would be similar to those discussed for Alternative 1, with the exception that Alternative 4 operations would not include the Yosemite Slough bridge.

M1.2.5.3.1 Factor 2: Increase in Traffic Volumes

Project Travel Demand Management Plan

Alternative 4 would be similar to Alternative 1, except the reduced development alternative generates slightly fewer weekday peak hour vehicle trips. To minimize the potential for an increase in project-generated vehicles and the proposed action's contribution to significant cumulative impacts, implementation of a TDM Plan would be required. As discussed in the Alternative 1 analysis, the final TDM Plan has not yet been formally approved and **Mitigation 2** is required to ensure the final TDM Plan would be prepared and implemented.

With implementation of **Mitigation 2**, alternative modes would be encouraged, the use of single-occupant vehicles would be discouraged, and the impact of additional vehicles generated by the proposed action would be lessened. As described in impact discussions below, the proposed action would still result in significant and unavoidable impacts on traffic and transit operations and would still make considerable contributions to cumulative impacts related to substantial increases in traffic. The project and project's contribution to traffic would *remain significant and unavoidable* with mitigation.

Intersection Traffic Impacts

Most of the study intersections that would require mitigation or have significant and unavoidable impacts due to the increase in traffic volumes with implementation of Alternative 1 relative to the 1993 baseline would also apply to Alternative 4 relative to the 1993 baseline. The intersection LOS in Table M1-16 shows the weekday A.M./P.M. peak hour intersection volumes and the Sunday P.M. peak hour volumes.

Table M1-16. Intersection LOS – 2030 Baseline [1993] and Alternative 4 Conditions

Intersection		*Peak*	*2030 Baseline [1993]*		*Alternative 4*			
			LOS	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
City and County of San Francisco Streets								
#1002	Third/Cesar Chavez	A.M.	**F**	**>80/1.46**	**F**	**>80/1.61**	**5.7**	●
		P.M.	**F**	**>80/1.44**	**F**	**>80/1.70**	**6.1**	●
		Sun	C	29.7	D	53.2	--	○
#1003	Third/Cargo	A.M.	**F**	**>80/1.20**	**F**	**>80/1.84**	**6.8**	●
		P.M.	**F**	**>80/1.22**	**F**	**>80/1.68**	**7.0**	●
		Sun	C	27.0	C	27.7	--	○
#1004	Third/Evans	A.M.	**F**	**>80/1.15**	**F**	**>80/1.38**	**8.4**	●
		P.M.	**F**	**>80/1.19**	**F**	**>80/1.47**	**8.2**	●
		Sun	D	48.2	D	50.5	--	○
#1006	Third/Palou	A.M.	D	43.3	**F**	**>80/1.75**	**--**	● PI
		P.M.	**F**	**>80/1.49**	**F**	**>80/5.37**	**9.2**	●
		Sun	**E**	**77.7/0.68**	**F**	**>80/2.70**	**16.1**	●
#1008	Third/Carroll	A.M.	B	11.0	B	17.7	--	○
		P.M.	B	13.3	**E**	**55.9/0.86**	--	● PI
		Sun	B	10.0	D	40.2	--	○
#1009	Third/Paul/Gilman	A.M.	**F**	**>80/1.13**	**F**	**>80/1.82**	3.7	○ NSC
		P.M.	**F**	**>80/1.25**	**F**	**>80/2.87**	3.5	○ NSC
		Sun	**E**	**60.2/0.70**	**F**	**>80/1.67**	**5.6**	●
#1016	Evans/Cesar Chavez	A.M.	**F**	**>80/1.82**	**F**	**>80/1.90**	4.7	○ NSC
		P.M.	**F**	**>80/1.75**	**F**	**>80/1.83**	4.3	○ NSC
		Sun	B	16.9	B	18.9	--	○
#1048	Jennings/Middle Point/Evans	A.M.	B	19.6	C	24.4	--	○
		P.M.	C	22.3	C	27.1	--	○
		Sun	B	19.5	B	19.9	--	○

Table M1-16. Intersection LOS – 2030 Baseline [1993] and Alternative 4 Conditions

Intersection		*Peak*	*2030 Baseline [1993]*		*Alternative 4*			
			LOS	**Delay[b] (v/c)**	**LOS**	**Delay (v/c)**	**%[c]**	**Impact**
#1058	Evans/Napoleon/ Toland	A.M.	**F**	**>80/1.16**	**F**	**>80/1.48**	4.8	O NSC
		P.M.	**F**	**>80/1.52**	**F**	**>80/1.60**	4.3	O NSC
		Sun	**E**	**59.8/0.50**	**E**	**60.0/0.56**	**7.7**	●
Hunters Point Shipyard Streets								
#110	Innes/Donahue	A.M.	C	24.4	A	9.9	--	O
		P.M.	B	19.9	A	8.7	--	O
		Sun	B	19.8	A	9.6	--	O
#111	Donahue/Galvez	A.M.	A	9.1	B	13.6	--	O
		P.M.	A	9.2	B	14.3	--	O
		Sun	A	9.1	B	10.9	--	O
#112	Donahue/Lockwood	A.M.	A	8.6	A	9.1	--	O
		P.M.	A	8.6	A	9.2	--	O
		Sun	A	8.6	A	8.8	--	O
#113	Crisp/I (Outer Ring Rd)	A.M.	Proposed Intersection		C	14.5	--	O
		P.M.			C	14.6	--	O
		Sun			C	20.3	--	O
#114	Crisp/Spear (Inner Ring Rd)	A.M.	A	8.8	C	13.7	--	O
		P.M.	A	9.1	C	14.1	--	O
		Sun	A	8.8	C	16.0	--	O
#115	Robinson St/Spear	A.M.	Proposed Intersection		**E (SBL)**	**37.2/0.43**	--	⦿ PI
		P.M.			**F (SBL)**	**>50/0.76**	--	⦿ PI
		Sun			B	14.1	--	O
#116	Lockwood/Spear	A.M.	A	8.9	B	13.6	--	O
		P.M.	A	9.1	B	12.8	--	O
		Sun	A	8.9	A	9.1	--	O

Notes:

LOS – level of service; A.M. – A.M. Peak; P.M. – P.M. peak; Sun – Sunday Peak NBL – northbound left turn; SBL – southbound left turn; EBL – eastbound left turn; WBL – westbound left turn; NSC – no significant contribution; PI – project impact.

● - Significant and unavoidable (no feasible mitigation)

⦿ - Significant and mitigable (not significant with mitigation)

O - Not significant

a. Intersections operating at LOS E or LOS F conditions highlighted in bold and overall intersection volume-to-capacity (v/c) ratio is presented.

b. Delay in seconds per vehicle. For Side Street STOP-controlled intersections, delay and LOS presented for worst approach.

c. Percent contribution of project traffic.

Source: CHS Consulting Group, et al. 2009.

INTERSECTIONS WITH NON-SIGNIFICANT IMPACTS

Alternative 4 would not result in significant project and cumulative impacts at some of the study area intersections. Impacts would *not be significant*.

The following intersections are expected to operate at acceptable levels of service; therefore, the impact would *not be significant* and no mitigation measures are proposed.

#1048 Jennings St/Middle Point Rd/Evans Ave;

#110 Innes St/Donahue St;

#111 Donahue St/Galvez Ave;

#112 Donahue St/Lockwood St;

#113 Crisp Ave/I St;

#114 Crisp Ave/Spear Ave (Inner Ring Rd); and

#116 Lockwood St/Spear Ave.

INTERSECTIONS WITH PROJECT AND CUMULATIVE TRAFFIC IMPACTS

The results show that the following study intersections are projected to operate at unacceptable levels with Alternative 4 and would result in project-specific impacts or would contribute to significant cumulative impacts during at least one peak hour.

#1002 Third St/Cesar Chavez St – project and cumulative *(significant and unavoidable);*

#1003 Third St/Cargo Ave – project and cumulative *(significant and unavoidable);*

#1004 Third St/Evans Ave – project and cumulative *(significant and unavoidable);*

#1006 Third St/Palou Ave – project and cumulative *(significant and unavoidable);*

#1008 Third St/Carroll Ave – project-specific *(significant and unavoidable);*

#1009 Third St/Paul Ave/Gilman Ave – project and cumulative *(significant and unavoidable);*

#1016 Evans Ave/Cesar Chavez St – project-specific *(not significant);*

#1058 Evans Ave/Napoleon St/Toland St – project and cumulative *(significant and unavoidable);* and

#115 Robinson St/Spear Ave – project-specific *(significant and mitigable).*

Alternative 4 would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions. Impacts would be *significant and unavoidable*.

At intersections that would operate at LOS E or LOS F under 2030 baseline [1993] conditions and would continue to operate at LOS E or LOS F under 2030 cumulative conditions, the increase in vehicle trips from 2030 baseline [1993] were reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. Alternative 4 contributions were determined to be significant and no feasible mitigation measures were identified at the following intersections:

#1002 Third St/Cesar Chavez St;

#1003 Third St/Cargo Ave;

#1004 Third St/Evans Ave;

#1006 Third St/Palou Ave;

#1009 Third St/Paul Ave/Gilman Ave; and

#1058 Evans Ave/Napoleon St/Toland St.

Discussions on possible mitigation measures associated with these intersections are included with the Alternative 1 analysis. The Alternative 1 analysis concluded that due to the issues related to acquisition of additional ROW, mitigation was determined to be infeasible. Therefore, Alternative 4 traffic impacts and contribution to cumulative impacts at these locations would *remain significant and unavoidable.*

Alternative 4 would result in project-specific impacts at the intersection of Third St/Carroll Ave (#1008). Impacts would be significant and unavoidable. Based on the Alternative 1 discussion, no feasible mitigation measures were identified; therefore, traffic impacts at the intersection of Third St/Carroll Ave under Alternative 4 would *remain significant and unavoidable*.

Alternative 4 would not result in significant project and cumulative impacts at the intersection of Evans Ave/Cesar Chavez St (#1016) that would operate at LOS E or LOS F under 2030 baseline [1993] conditions. Impacts would *not be significant*.

The intersection of Evans Ave/Cesar Chavez St would operate at LOS E or LOS F under 2030 baseline [1993] conditions and would continue to operate at LOS E or LOS F under 2030 cumulative conditions. The increase in vehicle trips from 2030 baseline [1993] conditions caused by Alternative 4 was determined to be significant; however, Alternative 4 contributions were determined to not be significant. The poor operating conditions at this intersection would be due to traffic volume increases associated with other developments in the project vicinity. Since Alternative 4 would not contribute significantly to the poor operating conditions, project-related impacts would be *not significant*.

Alternative 4 would not result in significant project impacts at the intersection of Robinson St/Spear Ave (#115), which would operate at LOS E or LOS F under 2030 cumulative conditions. Impacts would not be significant. To reduce the impacts to traffic, **Mitigation 4**, installation of a traffic signal at the intersection of Robinson St/Spear Ave would be implemented. Implementation of **Mitigation 4** would minimize Alternative 4 transportation impacts. Traffic impacts at the intersection of Robinson St/Spear Ave would be *not significant with mitigation*.

Freeway Traffic Impacts

FREEWAY SEGMENT IMPACTS

Alternative 4 would contribute to significant cumulative traffic impacts at the study area freeway segments. Impacts would *not be significant*.

Alternative 4 would create impacts at similar freeway segments and freeway ramp junctions to Alternative 1, although the magnitude of impacts may be less with Alternative 4 due to decreased traffic generation compared to Alternative 1.

Table M1-17 presents the results of the mainline LOS analysis and summarizes the mainline segment impacts for 2030 baseline [1993] and Alternative 4 conditions. In some cases, the mainline segments operate at acceptable levels with the addition of project traffic during specific peak periods. The increase in traffic due to Alternative 4 would result in increases in traffic volumes on the freeway segments that would cause the operations on all the study area freeway segments to deteriorate from the already LOS F conditions; however, the percent contribution of Alternative 1 traffic is not considered significant and does not significantly contribute to the traffic impacts. Therefore, this cumulative impact would *not be significant*, and no mitigation measures are proposed.

Table M1-17. Mainline Segment LOS and Segment Impacts – 2030 Baseline [1993] and Alternative 4 Conditions

Freeway Segment	*Peak*	*2030 Baseline [1993]*		*Alternative 4*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US 101, the SF County Line NB	A.M.	**F**	**>45**	**F**	**>45**	1.4	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.1	O NSC
	Sun	D	30.5	D	31.1	1.9	O
US 101, the SF County Line SB	A.M.	**F**	**>45**	**F**	**>45**	0.7	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.2	O NSC
	Sun	D	31.8	D	34.1	1.5	O
SF/Oakland Bay Bridge EB	A.M.	**F**	**>45**	**F**	**>45**	2.4	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	1.1	O NSC
	Sun	**F**	**>45**	**F**	**>45**	1.3	O NSC

Table M1-17. Mainline Segment LOS and Segment Impacts – 2030 Baseline [1993] and Alternative 4 Conditions

Freeway Segment	*Peak*	*2030 Baseline [1993]*		*Alternative 4*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
SF/Oakland Bay Bridge WB	A.M.	**F**	**>45**	**F**	**>45**	0.7	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	0.7	O NSC
	Sun	**F**	**>45**	**F**	**>45**	1.1	O NSC
I-280, south of US 101 NB	A.M.	**F**	**>45**	**F**	**>45**	0.6	O NSC
	P.M.	D	33.2	D	33.3	0.5	O
	Sun	C	21.6	C	21.6	0.9	O
I-280, south of US 101 SB	A.M.	D	34.4	D	34.6	0.4	O
	P.M.	**F**	**>45**	**F**	**>45**	0.7	O NSC
	Sun	D	29.4	D	29.5	0.6	O

Notes:
SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.
● - Significant and unavoidable (no feasible mitigation)
⦿ - Significant and mitigable (not significant with mitigation)
O - Not significant
a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.
b. Percent contribution of project traffic.
Source: CHS Consulting Group, et al. 2009.

FREEWAY RAMP IMPACTS

Alternative 4 would result in significant impacts at freeway on- and off-ramp locations. Impacts would be *significant and unavoidable*.

Alternative 4 would create similar significant traffic impacts to freeway ramp junctions as Alternative 1. Table M1-18 presents the results of the ramp junction merge (on-ramp) and diverge (off-ramp) analysis and summaries the impacts for 2030 baseline [1993] and Alternative 4 conditions. As described in the discussion of Alternative 1 impacts, no feasible mitigation measures have been identified for the freeway ramp junctions expected to experience significant impacts under Alternative 1 conditions. Therefore, Alternative 4 contributions to deficient freeway operating conditions would be *significant and unavoidable*.

Table M1-18. Ramp Junction Analysis and Segment Impacts – 2030 Baseline [1993] and Alternative 4 Conditions

Ramp Location	*Peak*	*2030 Baseline [1993]*		*Alternative 4*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
US-101 NB Off to Third/Bayshore	A.M.	D	31.5	D	32.4	--	O
	P.M.	**E**	**35.6**	**E**	**37.1**	**9.3**	●
	Sun	C	22.9	C	23.3	--	O
US-101 NB On from Third/Bayshore	A.M.	C	22.5	C	23.5	--	O
	P.M.	C	28.0	D	29.8	--	O
	Sun	C	22.0	C	21.9	--	O
US-101 NB Off to Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	2.1	O NSC
	P.M.	**E**	**39.5**	**E**	**40.5**	1.4	O NSC
	Sun	D	29.8	D	29.7	--	O
US-101 NB On from Bayshore/Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	2.3	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	**5.8**	●
	Sun	D	31.5	D	32.7	--	O
US-101 SB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	4.2	O NSC
	P.M.	**F**	**>45**	**F**	**>45**	3.0	O NSC

Table M1-18. Ramp Junction Analysis and Segment Impacts – 2030 Baseline [1993] and Alternative 4 Conditions

Ramp Location	*Peak*	*2030 Baseline [1993]*		*Alternative 4*			
		LOS	**Density[a]**	**LOS**	**Density**	**%[b]**	**Impact**
	Sun	**F**	**>45**	**F**	**>45**	**5.3**	●
US-101 SB Off to Bayshore/Third	A.M.	**E**	**39.8**	**E**	**41.4**	0	○ NSC
	P.M.	**E**	**36.1**	**E**	**37.2**	0	○ NSC
	Sun	C	24.6	C	25.0	--	○
US-101 SB On from Bayshore/Third	A.M.	**F**	**>45**	**F**	**>45**	**8.3**	●
	P.M.	**F**	**>45**	**F**	**>45**	**10.1**	●
	Sun	C	23.7	C	25.7	--	○
I-280 NB Off to Cesar Chavez	A.M.	**F**	**>45**	**F**	**>45**	0	○ NSC
	P.M.	**F**	**>45**	**F**	**>45**	0	○ NSC
	Sun	C	26.0	C	26.0	--	○
I-280 NB On from Indiana	A.M.	**F**	**>45**	**F**	**>45**	**9.6**	●
	P.M.	**F**	**>45**	**F**	**>45**	**13.4**	●
	Sun	C	25.3	C	25.7	--	○
I-280 SB Off to Pennsylvania	A.M.	**E**	**36.3**	**E**	**36.8**	**15.4**	●
	P.M.	**F**	**>45**	**F**	**>45**	**9.1**	●
	Sun	D	30.6	D	30.9	--	○

Notes:
SF – San Francisco; NB – northbound; SB – southbound; EB – eastbound; WB – westbound; A.M. – A.M. Peak; P.M. – P.M. Peak; Sun – Sunday P.M. peak; NSC – no significant contribution.
● - Significant and unavoidable (no feasible mitigation)
⦿ - Significant and mitigable (not significant with mitigation)
○ - Not significant
a. Density of vehicles per segment measured in pc/mi/ln = passenger cars per mile per lane.
b. Percent contribution of project traffic.
Source: CHS Consulting Group, et al. 2009.

M1.2.5.3.2 Factor 3: Transit Impacts

The transit impact analysis performed for Alternative 1 relative to the 2007 baseline applies to Alternative 4 relative to the 1993 baseline. Therefore, the same impacts and mitigation measures apply.

Final Transit Plan

As discussed in Alternative 1 relative to the 2007 baseline, although there is a plan for increased transit service to the study area, because the final Transit Plan has not been formally approved by SFMTA, **Mitigation 3** requires preparation, approval, and implementation of the final transit-operating plan. With implementation of the final Transit Plan (**Mitigation 3**), project-generated transit trips would be accommodated within the existing and proposed transit capacity; therefore, project impacts on transit capacity would *not be significant with mitigation*.

RIDERSHIP AND CAPACITY UTILIZATION AT STUDY AREA CORDONS

The Alternative 1 transit capacity analysis relative to the 2007 baseline is representative of Alternative 4 relative to the 1993 baseline (*significant and mitigable*); **Mitigation 3** is required to ensure the final Transit Plan would be prepared and implemented. With implementation of the final Transit Plan (**Mitigation 3**), the study area impacts and the proposed action's contribution to cumulative impacts on transit capacity at the study area cordons would *not be significant with mitigation*.

TRANSIT CAPACITY UTILIZATION AT DOWNTOWN SCREENLINES

As discussed in the Alternative 1 analysis relative to the 2007 baseline, impacts on transit capacity at the downtown screenlines would *not be significant*.

TRANSIT CAPACITY AND UTILIZATION AT REGIONAL SCREENLINES

As discussed in the Alternative 1 analysis relative to the 2007 baseline, the cumulative impacts and the proposed action's contribution to cumulative impacts on regional transit capacity would *not be significant*.

TRANSIT OPERATIONS IMPACTS

The transit delay conditions with Alternative 4 would affect the same lines as with Alternative 1 (relative to the 2007 baseline) (*significant and unavoidable*); **Mitigations 5 and 6** would also apply to Alternative 4 relative to the 1993 baseline. Because a feasibility study of the improvements contemplated in **Mitigation 5** would be required, implementation of **Mitigation 5** is uncertain. Since implementation of **Mitigation 6** alone, without **Mitigation 5**, might not be sufficient to reduce the impacts to a not significant level, the project impacts would *remain significant and unavoidable* with mitigation.

Although the alternative BRT route around Yosemite Slough would be technically feasible, it would not be an optimal configuration for a BRT system. BRT service would provide direct, fast, and reliable travel in a dedicated ROW, typically with signal priority for BRT vehicles. When these elements are combined, the BRT service takes on a higher quality character than typical local bus service. The Yosemite Slough bridge would provide a dedicated ROW and most direct route between HPS and points to the west, including Candlestick point, the Bayshore Caltrain Station, and Balboa Park BART. Alternative 4 would not accommodate the BRT route on the bridge proposed with Alternative 1.

M1.2.5.3.3 Factor 4: Bicycle Network and Circulation

During implementation of the proposed action, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would *not be significant*.

Alternative 4 (relative to the 1993 baseline) bicycle trips would be accommodated within the proposed street and network, although there would not be a Yosemite Slough bicycle and pedestrian route; impacts on bicycle circulation would *not be significant*.

M1.2.5.3.4 Factor 5: Pedestrian Circulation

During implementation of the proposed action, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the proposed action. Impacts would *not be significant*.

Alternative 4 pedestrian trips would be accommodated within the proposed sidewalk and pedestrian network, although there would not be a Yosemite Slough bicycle and pedestrian route; impacts on pedestrian circulation would *not be significant*.

M1.2.5.3.5 Factor 6: Emergency Access

Implementation of the proposed action would not result in significant impacts associated with a lack of routes to facilitate emergency access. Impacts would not be significant.

Alternative 4 (relative to the 1993 baseline) includes the construction of new roadways to facilitate emergency access. Existing emergency response routes would either be maintained in their existing

locations or rerouted as necessary. All development would be designed in accordance with city standards, which include provisions that address emergency access (e.g., minimum street widths, minimum turning radii), and emergency vehicles would be able to utilize transit lanes when streets are congested. Therefore, project impacts on emergency access would *not be significant*.

M1.2.5.3.6 Factor 7: Loading Impacts

Implementation of the proposed action would not result in significant impacts associated with a lack of adequate supply of loading spaces. Impacts would *not be significant*.

Loading impacts assessment associated with Alternative 4 (relative to the 1993 baseline) is similar to the assessment completed for Alternative 4 (relative to the 2007 baseline). Impacts related to loading operations would *not be significant*, and no mitigation measures are proposed.

M1.2.6 Impacts Relative to 1993 Baseline – No Action Alternative

Under the No Action Alternative for the Transportation, Traffic, and Circulation resource impacts analysis, HPS would remain a closed federal property under caretaker status and would not be reused or redeveloped. Under this alternative, the Navy could continue the existing leases.

The No Action Alternative analysis relative to the 1993 baseline is presented below.

M1.2.6.1 Construction Impacts

Factor 1: Construction Vehicle Traffic and Roadway Impacts

The No Action Alternative would have *no significant impact* on construction, and no mitigation is proposed.

M1.2.6.2 Operational Impacts

M1.2.6.2.1 Factor 2: Increase in Traffic Volumes

The No Action Alternative would have *no significant impact* on intersections and freeway facilities, and no mitigation is proposed.

M1.2.6.2.2 Factor 3: Transit Impacts

The No Action Alternative would have *no significant impact* on local and regional transit capacity and on transit delay. No mitigation is proposed.

M1.2.6.2.3 Factor 4: Bicycle Network and Circulation

The No Action Alternative would have *no significant impact* on bicycle circulation, and no mitigation is proposed.

M1.2.6.2.4 Factor 5: Pedestrian Circulation

The No Action Alternative would have *no significant impact* on pedestrian circulation, and no mitigation is proposed.

M1.2.6.2.5 Factor 6: Emergency Access

The No Action Alternative would have *no significant impact* on emergency access, and no mitigation is proposed.

M1.2.6.2.6 Factor 7: Loading Impacts

The No Action Alternative would have *no significant impact* on loading operations, and no mitigation is proposed.

M1.2.7 Impacts Relative to 1993 Baseline – Overall

Table M1-19 summarizes the impacts for all the alternatives assuming the 2030 baseline (1993) condition.

Table M1-19. Overall Impact Summary (1993 baseline)

Description		***Alternative***				
		1	**2**	**3**	**4**	**No Action**
Construction Impacts (Factors 1 – 5)		◘	◘	◘	◘	○
Transportation Demand Management (TDM) Plan		◘	◘	◘	◘	○
Final Transit Plan		◉	◉	◉	◉	○
Traffic Impacts (Factor 1) – Intersections						
#1002	Third/Cesar Chavez	●	●	●	●	○
#1003	Third/Cargo	●	●	●	●	○
#1004	Third/Evans	●	●	●	●	○
#1006	Third/Palou	●	●	●	●	○
#1008	Third/Carroll	●	●	●	●	○
#1009	Third/Paul/Gilman	●	●	●	●	○
#1016	Evans/Cesar Chavez	●	●	●	○	○
#1048	Jennings/Middle Point/Evans	○	●	○	○	○
#1058	Evans/Napoleon/Toland	●	●	●	●	○
#110	Innes/Donahue	○	○	○	○	○
#111	Donahue/Galvez	○	○	○	○	○
#112	Donahue/Lockwood	○	○	○	○	○
#113	Crisp/I St (Outer Ring Rd)	○	○	○	○	○
#114	Crisp/Spear (Inner Ring Rd)	○	○	○	○	○
#115	Robinson St/Spear	◉	◉	◉	◉	○
#116	Lockwood/Spear	○	◉	○	○	○
Freeway Impacts (Factor 2) – Mainline						
US-101 NB, at the San Francisco County Line		○	○	○	○	○
US-101 SB, at the San Francisco County Line		○	○	○	○	○
San Francisco/Oakland Bay Bridge EB		○	○	○	○	○
San Francisco/Oakland Bay Bridge WB		○	○	○	○	○
I-280 NB, south of US-101		○	○	○	○	○
I-280 SB, south of US-101		○	○	○	○	○
Freeway Impacts (Factor 2) – Ramps						
US-101 NB Off-ramp to Third/Bayshore		●	●	●	●	○
US-101 NB On-ramp from Third/Bayshore		○	○	○	○	○
US-101 NB Off-ramp to Bayshore/Cesar Chavez		○	○	○	○	○
US-101 NB On-ramp from Bayshore/Cesar Chavez		●	●	●	●	○
US-101 SB Off-ramp to Cesar Chavez		●	●	●	●	○
US-101 SB Off-ramp to Bayshore/Third		○	○	○	○	○
US-101 SB On-ramp from Bayshore/Third		●	●	●	●	○
I-280 NB Off-ramp to Cesar Chavez		○	○	○	○	○
I-280 NB On-ramp from Indiana		●	●	●	●	○
I-280 SB Off-ramp to Pennsylvania		●	●	●	●	○
Transit (Factor 3) – Capacity Utilization Cordon Screenlines		◉	◉	◉	◉	○

Table M1-19. Overall Impact Summary (1993 baseline)					
Description	***Alternative***				
	1	**2**	**3**	**4**	**No Action**
Transit (Factor 3) – Capacity Utilization Downtown Screenlines	○	○	○	○	○
Transit (Factor 3) – Capacity Utilization Regional Screenlines	○	○	○	○	○
Transit (Factor 3) – Transit Delays	◘	◘	◘	◘	○
Bicycle Impacts (Factor 4)	○	○	○	○	○
Pedestrian Impacts (Factor 5)	○	○	○	○	○
Emergency Access (Factor 6)	○	○	○	○	○
Loading Impacts (Factor 7)	○	○	○	○	○
Stadium Football Games					
Traffic Impacts (Factors 1 - 2)	◘	--	--	--	--
Transit Impacts (Factor 3)	◘	--	--	--	--
Bicycle Impacts (Factor 4)	○	--	--	--	--
Pedestrian Impacts (Factor 5)	○	--	--	--	--
Emergency Access (Factor 6)	○	--	--	--	--
Loading Impacts (Factor 7)	○	--	--	--	--
Secondary Stadium Events					
Traffic Impacts (Factors 1 - 2)	◘	--	--	--	--
Transit Impacts (Factor 3)	◘	--	--	--	--
Bicycle Impacts (Factor 4)	○	--	--	--	--
Pedestrian Impacts (Factor 5)	○	--	--	--	--
Emergency Access (Factor 6)	○	--	--	--	--
Loading Impacts (Factor 7)	○	--	--	--	--
Arena Events					
Traffic Impacts (Factors 1 - 2)	○	--	--	--	--
Transit Impacts (Factor 3)	○	--	--	--	--
Bicycle Impacts (Factor 4)	○	--	--	--	--
Pedestrian Impacts (Factor 5)	○	--	--	--	--
Emergency Access (Factor 6)	○	--	--	--	--
Loading Impacts (Factor 7)	○	--	--	--	--

Notes:
● - Significant and unavoidable
◘ - Significant and unavoidable with mitigation
◉ - Not significant with mitigation
○ - Not significant
Source: CHS Consulting Group, et al. 2009.

Appendix M-2

Air Quality and GHG Resource

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Appendix M2. Air Quality and GHG Resource 1993 Baseline Impacts Analysis

The Navy has not operated stationary emission sources at HPS since 1974, and all Navy air permits have been terminated. Therefore, the Land Use Plan for the 1993 No Action Alternative (NAA) scenario in the *Final Environmental Impact Statement for the Disposal and Reuse of Hunters Point Shipyard* (2000 FEIS) (DoN 2000a) was used to estimate emissions. The air quality environment included light industrial, industrial, recreational, commercial, and public land uses (Hunters Point Shipyard Land Use Plan 1994). Air quality impacts were calculated for both stationary and mobile sources contributions.

The following presents the methods used to evaluate impacts due to criteria pollutants, toxic air contaminants (TACs), and greenhouse gases (GHGs) from proposed construction and operational emissions. Proposed operational impacts are compared to the project site baseline conditions using the NAA scenario evaluated in the 2000 FEIS.

M2.1 Methodology

The criteria identified in the Methodology subsection of Section 4.2.1, Air Quality and Greenhouse Gases (GHG) of this Supplemental Environmental Impact Statement (SEIS) were used to determine the significance of proposed air quality and GHGs impacts for purposes of National Environmental Policy Act (NEPA). Factors 1 and 2 are used to evaluate the effects of proposed both construction and operational emissions. Factors 3 through 5 only apply to operational emissions. The criteria pollutants significance thresholds rely on guidelines developed by the Bay Area Air Quality Management District (BAAQMD) for use by lead agencies to evaluate air quality impacts from projects and plans proposed in the San Francisco Bay Area Air Basin (BAAQMD 2010). These criteria are organized according to the BAAQMD's checklist and unless otherwise identified they follow the thresholds recommended by the BAAQMD.

In regard to the evaluation of GHG Significance Factor 1 as described in the GHGs subsection of Section 4.2.1.2.3, Air Quality and Greenhouse Gases, GHG emissions from each project alternative are compared to the U.S. GHG baseline inventory of 2008 (USEPA 2010b) as a means to determine their relative increases and contributions to climate change. In regard to the evaluation of GHG Significance Factor 2 as described in Section 4.2.1.2.3 for GHG, the analysis estimates GHG emissions for a NAA scenario and compares these emissions to each project alternative to show that proposed emissions would not conflict with local and state GHG reduction strategies.

The Analytic Method subsection of Section 4.2.1.2, Air Quality and Greenhouse Gases of this SEIS identifies the analytic methods used to evaluate impacts due to criteria pollutants, TACs, and GHGs from proposed construction and operational emissions. Proposed construction and operational impacts are compared to the project site baseline conditions, which equates to the 1993 NAA scenario evaluated in the 2000 FEIS.

M2.2 Alternative 1: Stadium Plan Alternative Impacts Relative to 1993 Baseline

M2.2.1 Construction Impacts

Construction impacts are assessed relative to the 1993 NAA baseline. Therefore, the difference of Alternative 1 and the 1993 baseline emissions are compared to Factors 1 and 2.

M2.2.1.1 Criteria and Toxic Air Pollutants

M2.2.1.1.1 Factor 1: Construction of Alternative 1 would not result in emissions that exceed BAAQMD significance criteria

Air quality impacts from proposed construction activities would occur from combustive emissions due to the use of fossil fuel-fired construction equipment, on-road trucks, and fugitive dust (PM_{10}/$PM_{2.5}$) emissions from earth-moving activities, the use of vehicles on bare soils, and demolition of structures. Data on equipment uses proposed for construction of Alternative 1 were used to estimate daily emissions. The sources of this are provided in several technical appendices of the *Candlestick Point-Hunters Point Shipyard Phase II Final Environmental Impact Report* (FEIR) including: (1) Appendix A5, *Updated Project Phasing Effect on Air Quality and Climate Change Analyses Candlestick Point-Hunters Point Shipyard Phase II Development Plan*, 26 April 2010; (2) Appendix H2, *Construction Workers and Equipment Resources*, 1 October 2009; (3) and Appendix S, *Climate Change Technical Report Candlestick Point Hunters Point Shipyard Phase II*, 22October 2009 (San Francisco Redevelopment Authority [SFRA] 2009). Table M2-1 summarizes the combustive emissions estimated for construction of Alternative 1 in comparison to the 1993 NAA operational baseline emissions. These data show that construction of Alternative 1 would not exceed any of the daily emissions significance thresholds and the impacts *would not be significant* as related to Factor 1.

Table M2-1. Average Daily Combustive Emissions Produced from Construction of Alternative 1

Activity	*Daily Emissions (Pounds per Day)*			
	ROG	*NO_x*	*PM_{10}*	*$PM_{2.5}$*
Average Construction Day	30	145	7	6
1993 NAA Baseline	17	169	0.4	0.3
Alternative 1 - 1993 NAA	**13**	**(26)**	**7**	**6**
BAAQMD Significance Threshold	**54**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**No**	**No**	**No**	**No**

Notes:
ROG = Reactive Organic Gases
NO_x = Nitrogen Oxides
PM_{10} = Repairable Particulate Matter
$PM_{2.5}$ = Fine Particulate Matter

Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.2.1.2 Environmental Controls

To minimize fugitive dust emissions during construction, the contractor would implement feasible dust control measures required by the *San Francisco Health Code* (Article 22B) and the BAAQMD. The contractor would document all proposed environmental controls in a project dust control plan (DCP) and would submit the DCP to the BAAQMD and city for approval prior to initiation of ground-disturbing activities at the project site. Also, as discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.1.1, Air Quality and Greenhouse Gases of this SEIS, 50 percent of the proposed construction equipment fleet would meet USEPA Tier 2 standards and would be outfitted with particulate matter controls.

M2.2.1.2.1 Factor 2: Construction of Alternative 1 would not expose sensitive receptors to substantial pollutant concentrations

Results of the human health risk assessment (HHRA) performed for Alternative 1 construction activities are discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.1.1 of this SEIS and are

based on the analysis completed in the EIR (San Francisco Redevelopment Agency [SFRA] 2010). The HHRA determined that the maximum excess lifetime cancer risk for off-site receptors produced by Alternative 1 construction activities would not exceed 3.81 per million, which is less than the cancer risk significance threshold of 10 per million. The HHRA determined that the maximum public non-cancer effects produced by Alternative 1 construction activities would not exceed a hazard index [HI] of 0.04, which is less than the HI significance threshold of 1.0. Incorporating the health impact reductions associated with netting out the 1993 NAA operational emissions would result in even lower health impacts than those presented above. As a result, the health impacts of construction emissions from Alternative 1 would *not be significant* as related to Factor 2, with implementation of the environmental control described in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.1.1, Air Quality and Greenhouse Gases and an approved DCP and asbestos dust mitigation plan (ADMP).

M2.2.1.3 GHGs

M2.2.1.3.1 Factor 1: Emissions of GHGs from the construction of Alternative 1 would not produce significant impacts to the environment

Table M2-2 summarizes the total GHG emissions that would occur from Alternative 1 construction. These data show that proposed construction equipment would emit a total of 63,854 metric tons (mt) of carbon dioxide equivalent (CO_2e) emissions over a construction period of 16 years, or an average of 3,991 mt CO_2e/year.

Table M2-2. Alternative 1 Construction – Total CO_2e Emissions

Location	*Construction Equipment*	*Worker Commuting*	*Hauling*	*Total GHG Emissions*
Hunters Point Shipyard	42,895	2,734	18,226	*63,854*

Source: SFRA 2009.

The annual GHG emissions for the 1993 NNA baseline are estimated at 1,405 mt CO_2e/year (DoN 2000a). When the reduction in GHG emissions associated with the 1993 NAA baseline are taken into consideration, the net annual GHG emissions from construction of Alternative 1 would be approximately 2,586 mt CO_2e /year. Since GHG emissions from Alternative 1 construction would equate to such a minimal amount of the total annual U.S. GHG emissions, they would not substantially contribute to global climate change. Therefore, GHG emissions from construction of Alternative 1 would result in *not significant impacts* to the environment as related to Factor 1.

M2.2.1.3.2 Factor 2: Construction of Alternative 1 would not conflict with adopted plans or policies to reduce emissions of GHGs

The California Air Resources Board (ARB) implements regulations that limit the idling of diesel-powered on- and off-road vehicles and equipment (Title 13 of the CCR, Section 2480 and 2485) and they would limit GHG emissions from these proposed construction sources. The Early Action Measures (EAMs) pursuant to Assembly Bill (AB) 32 took effect on 1 January 2010 and they include additional emission reduction measures for diesel trucks and off-road equipment. The AB 32 Scoping Plan also outlines various emission reduction strategies needed to achieve the 2020 GHG emissions cap. The project-construction contractors would implement these applicable control strategies. Therefore, construction of Alternative 1 would not conflict with the goals of the state or the city to reduce emissions of GHG. This would result in impacts to climate change that would *not be significant* as related to Factor 2.

M2.2.2 Operational Impacts

M2.2.2.1 Criteria and Toxic Air Pollutants

M2.2.2.1.1 Factor 1: Operation of Alternative 1 would exceed BAAQMD emissions significance thresholds

The proposed operations would generate criteria pollutant emissions from on-site area sources (such as the combustion of natural gas for space and water heating and the combustion of other fuels for building and grounds maintenance equipment) and vehicles that access the project site. Area source emissions were based on the land-use designations and magnitudes identified in Section 2.5 of this SEIS. The transportation analysis provided in Section 4.1, Transportation, Traffic, and Circulationof this SEIS estimates that the operation of Alternative 1 would generate 27,400 average daily trips (ADT) of vehicles. Table M2-3 summarizes the daily emissions that would be produced from the operation of Alternative 1 in comparison to the 1993 NAA baseline from the 2000 FEIS (DoN 2000a). The 1993 NAA baseline data are from the 2000 FEIS. These data show that on-road vehicles are the main contributors to all pollutant levels, with the exception of area sources, which would produce the majority of Reactive Organic Gas (ROG) emissions. Table M2-3 shows that in comparison to the 1993 NAA baseline, net emissions from the operation of Alternative 1 would exceed the BAAQMD daily emissions thresholds for ROG, nitrogen oxides (NO_x), PM_{10} and $PM_{2.5}$.

Table M2-3. Daily Operational Emissions for Alternative 1 - Year 2030 (Pounds per Day)

Scenario/Emission Source	***ROG***	***CO***	***NO_x***	***PM_{10}***	***$PM_{2.5}$***
Alternative 1					
Area Sources	168	30	53	1	1
Motor Vehicles	83	880	99	411	77
Total Alternative 1	***251***	***911***	***152***	***412***	***79***
1993 No Action Alternative (NAA)					
Area Sources	8	10	6	0.02	0.02
Motor Vehicles	9	159	21	0.34	0.31
Total 1993 NAA	***17***	***169***	***28***	***0.36***	***0.33***
Alternative 1 - 1993 NAA =	**234**	**742**	**124**	**411**	**79**
BAAQMD Significance Threshold	**54**	**N/A**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**Yes**	**N/A**	**Yes**	**Yes**	**Yes**

Notes:
ROG = Reactive Organic Gases PM_{10} = Repairable Particulate Matter CO = carbon monoxide
NO_x = Nitrogen Oxides $PM_{2.5}$ = Fine Particulate Matter
Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.2.2.2 Environmental Controls

By design, Alternative 1 incorporates features that minimize motor vehicle trips and energy use in buildings. As a result, there are no additional feasible environmental controls identified at this time that would further reduce operational emissions. Therefore, residual impacts to ROG, NO_x, PM_{10}, and $PM_{2.5}$ emission levels from the operation of Alternative 1 would be *significant* as related to Factor 1.

M2.2.2.2.1 Factor 2: Operation of Alternative 1 would not expose nearby receptors to substantial pollutant concentrations

Based on the land-use types proposed by Alternative 1, substantial TACs emissions would likely only occur within areas designated for R&D uses. As discussed in Section 4.2.1.2.2 of this SEIS, the following presents an estimate of the impact of TACs emissions from Alternative 1 using the results of the HHRA performed in the EIR for Alternative 2 (SFRA 2009). Alternative 2 would generate the highest amount of TACs from any project alternative. Therefore, health risks due to the operation of Alternative 1 would be less than those identified for Alternative 2.

The results of the HHRA would be comparable to the impacts assessed in the EIR relative to the 1993 NAA baseline. This is the case since there were minor differences in the amounts of TACs emitted from the project site based on the 1993 NAA baseline. Therefore, netting out these baseline emissions from the emissions assessed in the HHRA would result in nearly identical residual health impacts.

Alternative 1 proposes half the R&D land use and consequently results in half the emissions of TACs compared to the Alternative 2 (worst-case) scenario evaluated in the HHRA. The results of the HHRA determined that operational emissions of TACs from Alternative 2 would not exceed the BAAQMD significance thresholds of 10 per million for cancer risk or an HI of 1.0 for non-cancer effects for any receptor type (*Candlestick Point-Hunters Pont Shipyard Phase II Draft Environmental Impact Report* (DEIR), Volume V, Appendix H3, Attachment III [SFRA 2009]). Therefore, the health impacts associated with the operation of Alternative 1 would not exceed the health risk significance thresholds, when taking into consideration the reduction in health risk from the 1993 NAA baseline. Thus, the operation of Alternative 1 would result in *not significant impacts* as related to Factor 2.

Due to the large number of potential R&D facilities with sources of toxic air contaminant (TAC) emissions and their proximity to adjacent receptors, unmitigated impacts could potentially exceed either the cancer risk or HI significance thresholds. Therefore, implementation of the following environmental controls would ensure that the operation of Alternative 1 would not produce significant impacts to public health as related to Factor 2.

M2.2.2.3 Environmental Controls

Implementation of the environmental controls identified in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases of this SEIS would ensure that operation of Alternative 1 would not produce significant impacts to public health as related to Factor 2.

M2.2.2.3.1 Factor 2: Vehicle emissions ($PM_{2.5}$) due to the Operation of Alternative 1 would not exceed San Francisco Department of Public Health (DPH) thresholds or produce significant health impacts to nearby receptors

Operations associated with implementation of Alternative 1 would increase vehicle trips and associated emissions along local roadways. These vehicle emissions could expose residents who live in proximity to these roads to adverse health effects. As discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases, the results of the analysis completed in the EIR determined that vehicular emissions from 78,109 ADT would not expose residential receptors along roadways in proximity to the project site to annual $PM_{2.5}$ concentrations in excess of DPH's 0.2 micrograms per cubic meter ($\mu g/m^3$) threshold (SFRA 2009).

Alternative 1 would generate substantially less traffic (27,400 ADT), therefore resulting in lower $PM_{2.5}$ emissions. Therefore, the ambient impact of $PM_{2.5}$ emissions generated by Alternative 1 traffic, when

taking into consideration the reduction from netting out the 1993 NAA baseline, would not exceed the DPH annual $PM_{2.5}$ significance threshold of 0.2 µg/m^3. As a result, residual impacts from traffic generated by Alternative 1 *would not be significant* to public health impacts as related to Factor 2.

M2.2.2.3.2 Factor 3: Operation of Alternative 1 would not contribute to an exceedance of an ambient air quality standard

Emissions of carbon monoxide (CO) from traffic generated by Alternative 1 would impact local ambient CO levels. As discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases of this SEIS, the following presents estimates of these CO impacts based on the California Line Source Dispersion Model (CALINE4) dispersion modeling analysis completed in the EIR (SFRA 2009). The results of the CALINE4 dispersion modeling analysis were compared to the 1993 NAA baseline, which would generate negligible vehicular emissions from the project site during this time period. Therefore, netting out these baseline emissions would result in nearly identical residual impacts as those estimated for Alternative 1.

Table M2-4 summarizes the results of the CO impact analysis performed for traffic generated by the EIR (SFRA 2009). These data show that CO emissions from traffic generated by 78,109 ADT would not contribute to an exceedance of a CO ambient air quality standard. Alternative 1 would generate substantially less traffic (27,400 ADT) and resulting CO emissions compared to the analyzed scenario. Therefore, in comparison to the 1993 NAA baseline, Alternative 1 would result in *not significant impacts* to ambient air quality levels as related to Factor 3.

Table M2-4. Traffic CO Impacts Predicted for Intersections Adjacent to the Project Site - Alternative 1

Intersection	***1-Hour CO Impacts (ppm)***		***8-Hour CO Impacts (ppm)***	
	Traffic Only (2030)	*Total Traffic Impact (2030)*	*Traffic Only (2030)*	*Total Traffic Impact (2030)*
Arelious Walker Dr./Gilman Ave.	0.6	4.8	1.7	4.4
Third St. / Gilman Ave.	0.7	4.9	1.9	4.6
Griffith St. / Palou Ave.	0.3	4.5	1.7	4.4
Evans Ave. / Jennings St.	0.5	4.7	2.0	4.7

Notes: Calculations reflect CO levels at 25 feet from roadside.
Total traffic impact equates to background concentration plus project traffic only impacts.

1993 CO Background:	Ambient CO Standards:
1-hour average: 4.2 ppm	1-hour—federal: 35 ppm; state 20 ppm
8-hour average: 2.7 ppm	8-hour—federal and state: 9 ppm

Source: SFRA 2009.

M2.2.2.3.3 Factor 4: Operation of Alternative 1 would not conflict with or obstruct implementation of the regional air quality plans

The current air quality plans for the SFBAAB are the *Bay Area 2005 Ozone Strategy* and the adopted *Bay Area 2010 Clean Air Plan (CAP)* (BAAQMD 2010). Both these plans emphasize the need for smart growth (land-use and local-impact measures) and reductions of single automobile occupancy (transportation-control measures). Alternative 1 would promote many of these control measures.

The land-use and local-impact measures proposed in the CAP would promote focused growth to reduce motor vehicle travel and to protect people from exposure to stationary and mobile sources of emissions. Alternative 1 proposes no significant stationary sources within 1,000 feet (ft) of residential development and would implement environmental controls. Additionally, the results of the dispersion modeling

analysis show that mobile source emissions from Alternative 1 would produce less than significant impacts to the public. Finally, Alternative 1 proposes a design that is an example of focused and mixed growth that would reduce vehicular travel. Therefore, Alternative 1 would promote implementation of the regional air quality plans and its impacts would *not be significant* as related to Factor 4.

M2.2.2.3.4 Factor 5: Operation of Alternative 1 would not generate objectionable odors affecting a substantial number of people

Odor impacts could result from siting a new odor source near existing sensitive receptors or siting a new sensitive receptor near an existing odor source. Examples of land uses that the BAAQMD considers would have the potential to generate considerable odors include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, oil refineries and chemical plants. Alternative 1 does not propose any of these land-use types. The large mixed-use development proposed by Alternative 1 does have the potential to generate small and localized sources of odor emissions, such as from food preparation or solid waste collection. In the event that there are public concerns about these new odors, it is expected that the operators of these sources would reduce their emissions to below nuisance levels. As a result, the operation of Alternative 1 would result in *not significant* odor impacts as related to Factor 5.

M2.2.2.4 GHGs

M2.2.2.4.1 Factor 1: Emissions of GHGs from the operation of Alternative 1 would not produce significant impacts to the environment

Table M2-5 shows that operation of Alternative 1 would result in an increase in GHG emissions of 51,348 mt CO_2e emissions in year 2030 relative to the 1993 NAA baseline scenario. Since GHG emissions from Alternative 1 would equate to such a minimal amount of total U.S. GHG emissions, they would not substantially contribute to global climate change. The reduction in GHG emissions resulting from the amount of CO_2 sequestered by new plantings as a result of GHG Environmental Control 1 are accounted for under the vegetation source in Table 2-5.

Table M2-5. Alternative 1 Operations - Annual CO_2e Emissions (mt CO_2e per year)

Source	***Alternative 1*** [a]	***1993 No Action Alternative*** [b]
Vegetation	(88)	
Residential	6,642	
Non-Residential	13,766	(1,404)
Motor Vehicles	30,371	(0.7)
Municipal	766	
Area	56	
Waste	375	
Transit Area	865	
Total	***52,753***	***(1,405)***
Alternative 1 - 1993 NAA =		**51,348**
U.S. 2008 Annual GHG Emissions (10^6 metric tons)		*6,957*
Proposed Emissions as a % of U.S. GHG Emissions		*0.0007*

Sources:
a. SFRA 2009.
b. DoN 2000a.

Implementation of GHG Environmental Controls 1 to 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that emissions of GHGs

from the operation of Alternative 1 would result in *not significant* impacts to the environment as related to Factor 1.

M2.2.2.4.2 Factor 2: Operation of Alternative 1 would not conflict with adopted plans or policies to reduce emissions of GHGs

As discussed in the GHGs subsection of Section 4.2.1.2.3, Air Quality and Greenhouse Gases of this SEIS, the analysis of the operation of Alternative 1 takes into consideration proposed design features that would minimize the generation of GHG emissions. These include mixed land uses and building designs that would provide neighborhood-serving retail; automobile, public transportation, and pedestrian connections between the project site and surrounding community; and land uses that facilitate walking and cycling. Conceptual design features, such as landscape plans and energy efficiencies in building design also would result in lower GHG emissions. Further, proposed transportation features that minimize GHGs would be implemented in part by San Francisco Metropolitan Transportation Agency (SFMTA) as control measures (identified in Section 4.1, Transportation, Traffic, and Circulation, of this SEIS).

The design of Alternative 1, in concept, includes many of the GHG reduction measures proposed in the AB 32 Scoping Plan, local ordinances, and the San Francisco Climate Action Plan (SFCAP). Therefore, operation of Alternative 1 would not conflict with local or state goals to reduce emissions of GHG and *would not result in significant* impacts to climate change as related to Factor 2.

Implementation of GHG Environmental Controls 1 through 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that operation of Alternative 1 *would not result in significant* impacts as related to Factor 2.

M2.3 Alternative 2: Non-Stadium Plan/Additional R&D Plan Impacts Relative to 1993 Baseline

M2.3.1 Construction Impacts

Construction impacts are assessed relative to the 1993 NAA baseline. Therefore, the difference of Alternative 2 and the 1993 baseline emissions are compared to Factors 1 and 2.

M2.3.1.1 Criteria and Toxic Air Pollutants

M2.3.1.1.1 Factor 1: Construction of Alternative 2 would not result in emissions that exceed BAAQMD significance criteria

The impacts of combustive and fugitive dust emissions from construction of Alternative 2, which are shown in Table M2-6 in comparison to the 1993 NAA operational baseline emissions, would be similar but slightly higher than Alternative 1. Replacement of stadium construction with higher amounts of R&D land-use development would result in higher amounts of fugitive dust/combustive emissions generated by Alternative 2, compared to Alternative 1. The data in Table M2-9 show that construction of Alternative 1 would not exceed any of the daily emissions significance thresholds and the impacts *would not be significant* as related to Factor 1.

Table M2-6. Average Daily Combustive Emissions Produced from Construction of Alternative 2				
Activity	***Daily Emissions (Pounds per Day)***			
	ROG	***NO_x***	***PM_{10}***	***$PM_{2.5}$***
Average Construction Day	37	176	8	7
1993 NAA Baseline	17	169	0.4	0.3
Alternative 2 - 1993 NAA =	**20**	**7**	**8**	**7**
BAAQMD Significance Threshold	**54**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**No**	**No**	**No**	**No**
Source: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).				

M2.3.1.2 Environmental Controls

To minimize fugitive dust emissions during construction, the construction contractor would implement feasible dust control measures required by the *San Francisco Health Code* (Article 22B) and the BAAQMD. The contractor would document all proposed environmental controls in a project DCP and would submit the DCP to the BAAQMD and city for approval prior to initiation of ground disturbing activities at the project site. Also, as discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.1.1, Air Quality and Greenhouse Gases of this SEIS, 50 percent of the proposed construction equipment fleet would meet USEPA Tier 2 standards and would be outfitted with particulate matter controls.

M2.3.1.2.1 Factor 2: Construction of Alternative 2 would not expose sensitive receptors to substantial pollutant concentrations)

Results of the HHRA performed for Alternative 2 construction activities are discussed in the Criteria and Toxic Air Pollutants subsection in Section 4.2.4.1.1, Air Quality and Greenhouse Gases of this SEIS and are based on the analysis completed in the EIR (SFRA 2009). The impacts of DPM and chemicals bound to air-borne dust emissions from construction of Alternative 2 would range from similar to slightly higher than those estimated for Alternative 1, due to higher incremental amounts of combustive emissions generated by Alternative 2. Similar to Alternative 1, emissions of DPM and chemicals bound to air-borne dust due to the construction of Alternative 2 would not result in health impacts that would exceed the significance thresholds for cancer risks of 10 in a million or HI of 1.0 for non-cancer health effects for any receptor type.

Incorporating the health impact reductions associated with netting out the 1993 NAA operational baseline emissions will result in even lower health impacts. As a result, construction emissions' impacts from Alternative 2 would *not be significant* as related to Factor 2 with implementation of the environmental control described in Section 4.2.4.1.1 and an approved DCP and ADMP.

M2.3.1.3 GHGs

M2.3.1.3.1 Factor 1: Emissions of GHGs from the construction of Alternative 2 would not produce significant impacts to the environment

Emissions of GHGs from the construction of Alternative 2 would be similar to slightly higher compared with Alternative 1, due to the slightly higher amount of development associated with the alternative. When the reduction in GHG emissions associated with the 1993 NAA baseline are taken into consideration, the net annual GHG emissions from construction of Alternative 2 would be similar to slightly higher compared to net annual GHG emissions from the construction of Alternative 1. However,

GHG emissions from Alternative 2 construction would equate to such a minimal amount of total U.S. GHG emissions that they would not substantially contribute to global climate change. Similar to Alternative 1, GHG emissions from construction of Alternative 2 would result in *not significant* impacts to the environment as related to Factor 1.

M2.3.1.3.2 Factor 2: Construction of Alternative 2 would not conflict with adopted state plans to reduce emissions of GHGs

Similar to Alternative 1, the proposed construction contractors would implement all applicable GHG emission control measures identified in the AB 32 Scoping Plan and the SFCAP. Therefore, construction of Alternative 2 would not conflict with the goals of the city or the state to reduce emissions of GHG. This would result in impacts to climate change that would be *not significant* as related to Factor 2.

M2.3.2 Operational Impacts

M2.3.2.1 Criteria and Toxic Pollutants

M2.3.2.1.1 Factor 1: Operation of Alternative 2 would exceed BAAQMD emissions significance thresholds

Proposed Alternative 2 operations would generate criteria pollutant emissions from on-site area sources (such as combustion of natural gas for space and water heating and other fuels for building and grounds maintenance equipment) and vehicles that access the project site. Area source emissions were based upon the land use designations and magnitudes identified in Section 2.5, Description of Community Reuse Alternatives of this SEIS. The transportation analysis provided in Section 4.1, Transportation, Traffic, and Circulation of this SEIS estimates that the operation of Alternative 2 at full build-out would generate 35,012 ADT from vehicles.

Table M2-7 summarizes the daily emissions that would be produced from the operation of Alternative 2 in comparison to the 1993 NAA operational baseline emissions from the 2000 FEIS (DoN 2000a). These data show that on-road vehicles are the main contributors to all pollutant levels, with the exception of area sources, which would produce the majority of ROG emissions. In comparison to the 1993 NAA baseline, the net emissions from proposed operations of Alternative 2 would exceed the daily significance emissions thresholds for ROG, NO_x, PM_{10} and $PM_{2.5}$.

Table M2-7. Daily Operational Emissions for Alternative 2 - Year 2030 (Pounds per Day)

Scenario/Emission Source	*ROG*	*CO*	*NO_x*	*PM_{10}*	*$PM_{2.5}$*
Alternative 2					
Area Sources	184	44	70	1	1
Motor Vehicles	106	1,121	126	521	99
Total Alternative 2	***290***	***1,166***	***196***	***523***	***100***
1993 No Action Alternative (NAA)					
Area Sources	8	10	6	0.02	0.02
Motor Vehicles	9	159	21	0.34	0.31
Total 1993 NAA	***17***	***169***	***28***	***0.36***	***0.33***
Alternative 2 - 1993 NAA =	**273**	**997**	**168**	**522**	**100**
BAAQMD Significance Threshold	**54**	**N/A**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**Yes**	**N/A**	**Yes**	**Yes**	**Yes**

Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.3.2.2 Environmental Controls

By design, Alternative 2 incorporates features that would minimize motor vehicle trips and energy use in buildings. As a result, there are no additional feasible environmental controls identified at this time that would further reduce operational emissions. Therefore, residual impacts to ROG, NO_x, PM_{10}, and $PM_{2.5}$ emission levels from the operation of Alternative 2 in comparison to the 1993 NAA baseline would be *significant* as related to Factor 1.

M2.3.2.2.1 Factor 2: Operation of Alternative 2 would not expose nearby receptors to substantial pollutant concentrations

An HHRA was performed to evaluate the ambient impact of proposed TACs emissions that would occur within areas designated for R&D uses by Alternative 2 (SFRA 2009). These emissions estimates were then used to evaluate their excess lifetime cancer risk and chronic non-cancer effects at surrounding receptor locations.

The results of the HHRA determined that the impact of operational emissions of TACs from Alternative 2 would not exceed the significance thresholds for cancer risks of 10 in a million or HI of 1.0 for non-cancer effects for any receptor type (DEIR, Volume V, Appendix H3, Attachment III [SFRA 2009]).

The results of the HHRA, completed in the EIR, would apply equally in comparison to the 1993 NAA baseline. This is the case since as there were minor differences in the amounts of TACs emitted from the project site during that time period. Therefore, netting out these baseline emissions from Alternative 2 emissions in the HHRA would result in nearly identical residual health risk impacts.

M2.3.2.3 Environmental Controls

Implementation of the environmental controls identified in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases of this SEIS would ensure that operation of Alternative 2 would not produce significant impacts to public health as related to Factor 2.

M2.3.2.3.1 Factor 2: Vehicle emissions ($PM_{2.5}$) due to the Operation of Alternative 2 would not exceed DPH thresholds or produce significant health impacts to nearby receptors

The operation of Alternative 2 would increase vehicle trips and associated emissions along local roadways. These emissions could expose residents who live in proximity to these roads to adverse health effects. As discussed in the Toxic Air Contaminants subsection of Section 4.2.1.2.2, Air Quality and Greenhouse Gases, the impact of emissions from Alternative 2 traffic to ambient $PM_{2.5}$ levels were estimated by inferring from the CAL3QHCR air dispersion modeling analysis performed by the city in its EIR for traffic generated by the proposed project scenario (SFRA 2009). The analysis completed in the EIR determined that vehicular emissions from 78,109 ADT would not expose residential receptors along roadways in proximity to the project site to annual $PM_{2.5}$ concentrations in excess of DPH's 0.2 $\mu g/m^3$ threshold (SFRA 2009).

Alternative 2 would generate substantially less traffic (35,012 ADT) and resulting $PM_{2.5}$ emissions. Therefore, ambient impact of $PM_{2.5}$ emissions generated by Alternative 2 traffic when taking into consider the reduction from netting out the 1993 NAA baseline would not exceed the DPH annual $PM_{2.5}$ threshold of 0.2 $\mu g/m^3$. As a result, residual impacts from traffic generated by Alternative 2 would *not be significant* to public health impacts as related to Factor 2.

M2.3.2.3.2 Factor 3: Operation of Alternative 2 would not contribute to an exceedance of an ambient air quality standard

Emissions from traffic generated by Alternative 2 would contribute to localized CO impacts. As discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.4.2.1, Air Quality and Greenhouse Gases of this SEIS, the following presents estimates of these CO impacts based on the CALINE4 dispersion modeling analysis completed in the EIR (SFRA 2009). The results of the CALINE4 dispersion modeling analysis were compared to the 1993 NAA baseline, which would generate negligible vehicular emissions from the project site during this time period. Therefore, netting out these baseline emissions would result in nearly identical residual impacts as those estimated for Alternative 2.

Table M2-4 summarizes the results of the CO impact analysis performed for traffic generated by the EIR (SFRA 2009). These data show that CO emissions from traffic generated by 78,109 ADT would not contribute to an exceedance of a CO ambient air quality standard. Alternative 2 would generate substantially less traffic (35,012 ADT) and would result in lower CO emissions compared to the analyzed scenario. Therefore, in comparison to the 1993 NAA baseline, Alternative 2 would result in *not significant impacts* to ambient air quality levels as related to Factor 3.

M2.3.2.3.3 Factor 4: Operation of Alternative 2 would not conflict with or obstruct implementation of the regional air quality plans

Similar to Alternative 1, Alternative 2 would be consistent with emission control measures proposed in the *Bay Area 2005 Ozone Strategy* and the adopted Bay Area *2010 CAP* (BAAQMD 2010). Alternative 2 would promote implementation of the regional air quality plans and would *not be significant* as related to Factor 4.

M2.3.2.3.4 Factor 5: Operation of Alternative 2 would not generate objectionable odors affecting a substantial number of people

Alternative 2 does not propose any land uses that the BAAQMD considers to have the potential to generate considerable odors. The large mixed-use development proposed by Alternative 2 has the potential to generate small and localized sources of odor emissions, such as those emitted during food preparation or solid waste collection. In the event that there are public concerns about these new odors, it is expected that the operators of these sources would reduce their emissions to below nuisance levels. As a result, operation of Alternative 2 would result in *not significant* odor impacts as related to Factor 5.

M2.3.2.4 GHGs

M2.3.2.4.1 Factor 1: Emissions of GHGs from the operation of Alternative 2 would not produce significant impacts to the environment

Table M2-8 shows that operation of Alternative 2 would emit a total of 72,883 mt CO_2e emissions in year 2030, after the deduction of the GHG emissions from the operation of the 1993 NAA scenario. Since GHG emissions from Alternative 2 would equate to such a minimal percentage of total U.S. GHG emissions, they would not substantially contribute to global climate change. The reduction in GHG emissions resulting from the amount of CO_2 sequestered by new plantings as a result of GHG Environmental Control 1 are accounted for under the vegetation source in Table M2-8.

Table M2-8. Alternative 2 Operations - Annual CO_2e Emissions (mT per year)		
Source	***Alternative 2*** [a]	***1993 No Action Alternative*** [b]
Vegetation	(88)	
Residential	6,642	
Non-Residential	23,115	(1,404)
Motor Vehicles	42,332	(0.7)
Municipal	860	
Area	56	
Waste	506	
Transit Area	865	
Total	**74,288**	**(1,405)**
Alternative 2 - 1993 NAA =		***72,883***
U.S. 2008 Annual GHG Emissions (10^6 metric tons)		*6,957*
Proposed Emissions as a % of U.S. GHG Emissions		*0.001*
Sources: a. SFRA 2009. b. DoN 2000a.		

Implementation of GHG Environmental Controls 1 to 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that emissions of GHGs from the operation of Alternative 2 would result in *not significant* impacts to the environment as related to Factor 1.

M2.3.2.4.2 Factor 2: Operation of Alternative 2 would not conflict with adopted plans or policies to reduce emissions of GHGs

Similar to Alternative 1, the design of Alternative 2, in concept, includes many of the GHG reduction measures proposed in the AB 32 Scoping Plan, local ordinances, and the SFCAP. Therefore, operation of Alternative 2 would not conflict with local or state goals to reduce emissions of GHG and would result in *not significant* impacts to climate change as related to Factor 2.

Implementation of GHG Environmental Controls 1 through 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that operation of Alternative 2 would result in *not significant* impacts as related to Factor 2.

M2.4 Alternative 3: Non-Stadium Plan/Additional Housing Alternative Impacts Relative to 1993 Baseline

M2.4.1 Construction Impacts

Construction impacts are assessed relative to the 1993 NAA baseline. Therefore, the difference of Alternative 3 and the 1993 baseline emissions are compared to Factors 1 and 2.

M2.4.1.1 Criteria and Toxic Air Pollutants

M2.4.1.1.1 Factor 1: Construction of Alternative 3 would not result in emissions that exceed BAAQMD significance criteria

The impacts of combustive and fugitive dust emissions from construction of Alternative 3, which are shown in Table M2-9 in comparison to the 1993 NAA operational baseline emissions, would be similar to slightly higher compared to Alternative 1. Some of the emissions from the construction of additional

housing under the alternative would be offset by the elimination of emissions from construction of the stadium. The data in Table M2-9 show that construction of Alternative 3 would not exceed any of the daily emissions significance thresholds and the impacts would *not be significant* as related to Factor 1.

Table M2-9. Average Daily Combustive Emissions Produced from Construction of Alternative 3

Activity	*Daily Emissions (Pounds per Day)*			
	ROG	***NO_x***	***PM_{10}***	***$PM_{2.5}$***
Average Construction Day	35	168	8	7
1993 NAA Baseline	17	169	0.4	0.3
Alternative 3 - 1993 NAA =	**18**	**(1)**	**8**	**7**
BAAQMD Significance Threshold	**54**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**No**	**No**	**No**	**No**

Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.4.1.2 Environmental Controls

To minimize fugitive dust emissions during construction, the contractor would implement feasible dust control measures required by the *San Francisco Health Code* (Article 22B) and the BAAQMD. The construction contractor would document all proposed environmental controls in a project DCP and would submit the DCP to the BAAQMD and city for approval prior to the initiation of ground disturbing activities at the project site. Also, as discussed in the Construction Impacts subsection of Section 4.2.2.1.1, Air Quality and Greenhouse Gases of this SEIS, 50 percent of the proposed construction equipment fleet would meet USEPA Tier 2 standards and would be outfitted with particulate matter controls.

M2.4.1.2.1 Factor 2: Construction of Alternative 3 would not expose sensitive receptors to substantial pollutant concentrations

The impacts of DPM and chemicals bound to air-borne dust emissions from construction of Alternative 3 would range from similar to slightly higher compared to Alternative 1, due to the higher incremental amount of combustive emissions that would be generation during Alternative 3 construction. Some of the emissions from construction of additional housing under the alternative would be offset by the elimination of emissions from construction of the stadium. Similar to Alternative 1, emissions of DPM and chemicals bound to air-borne dust due to the construction of Alternative 3 would not result in health impacts that would exceed the significance thresholds for cancer risks of 10 in a million or HI of 1.0 for non-cancer health effects for any receptor type.

Incorporating the health impact reductions associated with netting out the 1993 NAA operational baseline emissions will result in even lower health impacts. As a result, construction emissions' impacts from Alternative 3 would *not be significant* as related to Factor 2 with implementation of the environmental control described in Section 4.2.6.1.1, Criteria and Toxic Air Pollutants, and an approved DCP and ADMP.

M2.4.1.3 GHGs

M2.4.1.3.1 Factor 1: Emissions of GHGs from the construction of Alternative 3 would not produce significant impacts to the environment

Emissions of GHGs from the construction of Alternative 3 would be similar to slightly higher compared with Alternative 1, due to the slightly higher amount of development associated with the alternative. When the reduction in GHG emissions associated with the 1993 NAA baseline are taken into consideration, the net annual GHG emissions from construction of Alternative 3 would be similar to slightly higher compared to the net annual GHG emissions from the construction of Alternative 1. However, GHG emissions from Alternative 3 construction would equate to such a minimal amount of total U.S GHG emissions that they would not substantially contribute to global climate change. Similar to Alternative 1, GHG emissions from construction of Alternative 3 would result in *not significant impacts* to the environment as related to Factor 1.

M2.4.1.3.2 Factor 2: Construction of Alternative 3 would not conflict with adopted state plans to reduce emissions of GHGs

Similar to Alternative 1, the proposed construction contractors would implement all applicable GHG emission control measures identified in the AB 32 Scoping Plan and the SFCAP. Therefore, construction of Alternative 3 would not conflict with the goals of the city or the state to reduce emissions of GHG. This would result in impacts to climate change that would *not be significant* as related to Factor 2.

M2.4.2 Operational Impacts

M2.4.2.1 Criteria and Toxic Air Pollutants

M2.4.2.1.1 Factor 1: Operation of Alternative 3 would exceed BAAQMD emissions significance thresholds

Proposed Alternative 3 operations would generate criteria pollutant emissions from on-site area sources (such as combustion of natural gas for space and water heating and other fuels for building and grounds maintenance equipment) and vehicles that access the project site. Area source emissions were based upon the land-use designations and magnitudes identified in Section 2.5, Description of Community Reuse Alternatives of this SEIS. The transportation analysis provided in Section 4.1, Transportation, Traffic, and Circulation of this SEIS estimates that the operation of Alternative 3 at full build-out would generate 29,645 ADT of vehicles.

Table M2-10 summarizes the daily emissions that would be produced from the operation of Alternative 3 in comparison to the 1993 NAA operational baseline emissions from the 2000 FEIS (DoN 2000a). These data show that on-road vehicles are the main contributors to all pollutant levels, with the exception of area sources, which would produce the majority of ROG emissions. In comparison to the 1993 NAA baseline, the net emissions from proposed operation of Alternative 3 would exceed the daily significance emissions thresholds for ROG, NO_x, PM_{10} and $PM_{2.5}$.

M2.4.2.2 Environmental Controls

By design, Alternative 3 incorporates features that would minimize motor vehicle trips and energy use in buildings. As a result, there are no additional feasible environmental controls identified at this time that would further reduce operational emissions. Therefore, residual impacts to ROG, NO_x, PM_{10}, and $PM_{2.5}$

emission levels from the operation of Alternative 3 in comparison to the 1993 NAA baseline *would be significant* as related to Factor 1.

Table M2-10. Daily Operational Emissions for Alternative 3 - Year 2030 (Pounds per Day)

Scenario/Emission Source	*ROG*	*CO*	*NO_x*	*PM_{10}*	*$PM_{2.5}$*
Alternative 3					
Area Sources	244	38	71	2	2
Motor Vehicles	95	1,000	112	468	89
Total Alternative 3	***339***	***1,038***	***183***	***470***	***90***
1993 No Action Alternative (NAA)					
Area Sources	8	10	6	0.02	0.02
Motor Vehicles	9	159	21	0.34	0.31
Total 1993 NAA	***17***	***169***	***28***	***0.36***	***0.33***
Alternative 3 - 1993 NAA =	**322**	**868**	**156**	**470**	**90**
BAAQMD Significance Threshold	**54**	**N/A**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**Yes**	**N/A**	**Yes**	**Yes**	**Yes**

Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.4.2.2.1 Factor 2: Operation of Alternative 3 would not expose nearby receptors to substantial pollutant concentrations

Based on land-use types proposed by Alternative 3, substantial TACs emissions would likely only occur within areas designated for R&D uses. As discussed above in Section 4.2.1.2.2 of this SEIS, the following presents an estimate of the impact of TACs emissions from Alternative 3 by inferring from the HHRA performed in the EIR for Alternative 2 (SFRA 2009). Alternative 2 would generate the highest amount of TACs from any project alternative. Therefore, the health risks resulting from the operation of Alternative 3 would be less than those identified for Alternative 2.

The results of the HHRA would be comparable to the impacts assessed in the EIR relative to the 1993 NAA baseline. This is the case since there were minor differences in the amounts of TACs emitted from the project site based on the 1993 NAA baseline. Therefore, netting out these baseline emissions from the emissions assessed in the HHRA would result in nearly identical residual health impacts to the proposed alternative impacts.

Alternative 3 proposes half the R&D land-use and resulting emissions of TACs compared to the Alternative 2 (worst-case) scenario evaluated in the HHRA. The results of HHRA determined that operational emissions of TACs from Alternative 2 would not exceed the BAAQMD significance thresholds for cancer risk of 10 in a million or HI of 1.0 for non-cancer health effects for any receptor type (DEIR, Volume V, Appendix H3, Attachment III [SFRA 2009]). Therefore, health impacts associated with the operation of Alternative 3 would not exceed the health risk significance thresholds, when taking into consideration the reduction in health risk from the 1993 NAA baseline. Thus, operation of Alternative 3 would result in *not significant impacts* as related to Factor 2.

Due to the large number of potential R&D facilities with sources of TAC emissions and their proximity to adjacent receptors, unmitigated impacts could potentially exceed either the cancer risk or HI significance thresholds. Therefore, implementation of the following environmental controls would ensure that operation of Alternative 3 would result in *not significant* impacts to public health as related to Factor 2.

M2.4.2.3 Environmental Controls

Implementation of the environmental controls identified in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases of this SEIS would ensure that operation of Alternative 3 would result in *not significant* impacts to public health as related to Factor 2.

M2.4.2.3.1 Factor 2: Vehicle emissions ($PM_{2.5}$) due to the Operation of Alternative 3 would not exceed DPH thresholds or produce significant health impacts to nearby receptors

The operation of Alternative 3 would increase vehicle trips and associated emissions along local roadways. These vehicle emissions could expose residents who live in proximity to these roads to adverse health effects. As discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases, the results of the analysis completed in the EIR determined that vehicular emissions from 78,109 ADT would not expose residential receptors along roadways in proximity to the project site to annual $PM_{2.5}$ concentrations in excess of DPH's 0.2 µg/m^3 threshold (SFRA 2009).

Alternative 3 would generate substantially less traffic (29,645 ADT) and resulting $PM_{2.5}$ emissions. Therefore, the ambient impact of $PM_{2.5}$ emissions generated by Alternative 3 traffic when taking into consideration the reduction from netting out the 1993 NAA baseline would not exceed the DPH annual $PM_{2.5}$ significance threshold of 0.2 µg/m^3. As a result, residual impacts from traffic generated by Alternative 3 would *not be significant* to public health impacts as related to Factor 2.

M2.4.2.3.2 Factor 3: Operation of Alternative 3 would not contribute to an exceedance of an ambient air quality standard

Emissions of CO from traffic generated by Alternative 3 would impact local ambient CO levels. As discussed in the Criteria and Toxic Air Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases of this SEIS, the following presents estimates of these CO impacts based on the CALINE4 dispersion modeling analysis completed in the EIR (SFRA 2009). The results of the CALINE4 dispersion modeling analysis were compared to the 1993 NAA baseline, which would generate negligible vehicular emissions from the project site during this time period. Therefore, netting out these baseline emissions would result in nearly identical residual impacts as those estimated for Alternative 3.

Table M2-4 summarizes the results of the CO impact analysis performed for traffic generated by the EIR (SFRA 2009). These data show that CO emissions from traffic generated by 78,109 ADT would not contribute to an exceedance of a CO ambient air quality standard. Alternative 3 would generate substantially less traffic (29,645 ADT) and would result in lower CO emissions compared to the analyzed scenario. Therefore, in comparison to the 1993 NAA baseline, Alternative 3 *would not result in significant impacts* to ambient air quality levels as related to Factor 3.

M2.4.2.3.3 Factor 4: Operation *of Alternative 3 would not conflict with or obstruct implementation of the regional air quality plans*

Similar to Alternative 1, Alternative 3 would be consistent with emission control measures proposed in the *Bay Area 2005 Ozone Strategy* and the adopted Bay Area *2010 CAP* (BAAQMD 2010). Alternative 3 would promote implementation of the regional air quality plans and would *not be significant* as related to Factor 4.

M2.4.2.3.4 Factor 5: Operation of Alternative 3 would not generate objectionable odors affecting a substantial number of people

Alternative 3 does not propose any land uses that the BAAQMD considers to have the potential to generate considerable odors. The large mixed-use development proposed by Alternative 3 has the potential to generate small and localized sources of odor emissions, such as those emitted during food preparation or solid waste collection. In the event that there are public concerns about these new odors, it is expected that the operators of these sources would reduce their emissions to below nuisance levels. As a result, operation of Alternative 3 would result in *not significant* odor impacts as related to Factor 5.

M2.4.2.4 GHGs

M2.4.2.4.1 Factor 1: Emissions of GHGs from the operation of Alternative 3 would not produce significant impacts to the environment

Table M2-11 shows that operation of Alternative 3 would result in an increase in GHG emissions of 57,720 mt CO_2e emissions in year 2030 relative to the 1993 NAA baseline scenario. Since GHG emissions from Alternative 3 would equate to such a minimal percentage of total U.S. GHG emissions, they would not substantially contribute to global climate change. The reduction in GHG emissions resulting from the amount of CO_2 sequestered by new plantings as a result of GHG Environmental Control 1 are accounted for under the vegetation source in Table M2-11.

Table M2-11. Alternative 3 Operations - Annual CO_2e Emissions (mT per year)

Source	***Alternative 3*** [a]	***1993 No Action Alternative*** [b]
Vegetation	(88)	
Residential	10,026	
Non-Residential	13,766	(1,404)
Motor Vehicles	32,859	(0.7)
Municipal	1,156	
Area	85	
Waste	456	
Transit Area	865	
Total	**59,125**	***(1,405)***
Alternative 3 - 1993 NAA =		**57,720**
U.S. 2008 Annual GHG Emissions (10^6 metric tons)		*6,957*
Proposed Emissions as a % of U.S. GHG Emissions		*0.0008*

Sources:
a.SFRA 2009.
b.DoN 2000a.

Implementation of GHG Environmental Controls 1 to 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that emissions of GHGs from the operation of Alternative 3 *would not result in significant* impacts to the environment as related to Factor 1.

M2.4.2.4.2 Factor 2: Operation of Alternative 3 would not conflict with adopted plans or policies to reduce emissions of GHGs

Similar to Alternative 1, the design of Alternative 3, in concept, includes many of the GHG reduction measures proposed in the AB 32 Scoping Plan, local ordinances, and the SFCAP. Therefore, operation of

Alternative 3 would not conflict with local or state goals to reduce emissions of GHG and *would result in no significant* impacts to climate change as related to Factor 2.

Implementation of GHG Environmental Controls 1 through 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that operation of Alternative 3 would result in *not significant* impacts as related to Factor 2.

M2.5 Alternative 4: Non-Stadium Plan/Reduced Development Alternative Impacts Relative to 1993 Baseline

M2.5.1 Construction Impacts

Construction impacts are assessed relative to the 1993 NAA baseline. Therefore, the difference of Alternative 4 and the 1993 baseline emissions are compared to Factors 1 and 2.

M2.5.1.1 Criteria and Toxic Air Pollutants

M2.5.1.1.1 Factor 1: Construction of Alternative 4 would not result in emissions that exceed BAAQMD significance criteria)

The impacts of combustive and fugitive dust emissions from construction of Alternative 4, which are shown in Table M2-12 in comparison to the 1993 NAA operational baseline emissions, would be similar to slightly lower compared to Alternative 1, due to the reduced development associated with this alternative. The data in Table M2-12 show that construction of Alternative 4 would not exceed any of the daily emissions significance thresholds and the impacts would *not be significant* as related to Factor 1.

Table M2-12. Average Daily Combustive Emissions Produced from Construction of Alternative 4

Activity	*Daily Emissions (Pounds per Day)*			
	ROG	*NO_x*	*PM_{10}*	*$PM_{2.5}$*
Average Construction Day	23	109	5	4
1993 NAA Baseline	17	169	0.4	0.3
Alternative 4 - 1993 NAA =	**6**	**(60)**	**5**	**4**
BAAQMD Significance Threshold	**54**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**No**	**No**	**No**	**No**

Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.5.1.2 Environmental Controls

To minimize fugitive dust emissions during construction, the contractor would implement feasible dust control measures required by the San Francisco Health Code (Article 22B) and the BAAQMD. The construction contractor would document all proposed environmental controls in a project DCP and would submit the DCP to the BAAQMD and city for approval prior to initiation of ground disturbing activities at the project site. Also, as discussed in the Construction Impacts subsection of Section 4.2.2.1, Air Quality and Greenhouse Gases of this SEIS, 50 percent of the proposed construction equipment fleet would meet USEPA Tier 2 standards and would be outfitted with particulate matter controls.

M2.5.1.2.1 Factor 2: Construction of Alternative 4 would not expose sensitive receptors to substantial pollutant concentrations

The impacts of DPM and chemicals bound to air-borne dust emissions from construction of Alternative 4 would be lower compared to Alternative 1, due to lower development associated with the alternative. Similar to Alternative 1, emissions of DPM and chemicals bound to air-borne dust due to the construction of Alternative 4 would not result in health impacts that would exceed the significance thresholds for cancer risks of 10 in a million or HI of 1.0 for non-cancer health effects for any receptor type.

Incorporating the health impact reductions associated with netting out the 1993 NAA operational baseline emissions will results in even lower health impacts. As a result, construction emissions impacts from Alternative 4 *would not be significant* as related to Factor 2 with implementation of the environmental control described in the Criteria Pollutants subsection of Section 4.2.2.1.1, Air Quality and Greenhouse Gases and an approved DCP and ADMP.

M2.5.1.3 GHGs

M2.5.1.3.1 Factor 1: Emissions of GHGs from the construction of Alternative 4 would not produce significant impacts to the environment

Emissions of GHG from the construction of Alternative 4 would be lower as compared to Alternative 1, due to the lower amount of development associated with the alternative. When the reduction in GHG emissions associated with the 1993 NAA baseline are taken into consideration, the net annual GHG emissions from construction of Alternative 4 would be lower compared to the net annual GHG emissions from construction of Alternative 1. However, GHG emissions from construction of Alternative 4 would equate to such a minimal amount of the U.S. GHG emissions inventory that they would not substantially contribute to global climate change. Similar to Alternative 1, GHG emissions from construction of Alternative 4 *would result in not significant impacts* to the environment as related to Factor 1.

M2.5.1.3.2 Factor 2: Construction of Alternative 4 would not conflict with adopted state plans to reduce emissions of GHGs

Similar to Alternative 1, the proposed construction contractors would implement all applicable GHG emission control measures identified in the AB 32 Scoping Plan and the SFCAP. Therefore, construction of Alternative 4 would not conflict with the goals of the city or the state to reduce emissions of GHG. This would result in impacts to climate change that would *be not significant* as related to Factor 2.

M2.5.1.4 Operational Impacts

M2.5.1.5 Criteria Pollutants

M2.5.1.5.1 Factor 1: Operation of Alternative 4 would exceed BAAQMD emissions significance thresholds

Proposed Alternative 4 operations would generate criteria pollutant emissions from on-site area sources (such as combustion of natural gas for space and water heating and other fuels for building and grounds maintenance equipment) and vehicles that access the project site. Area source emissions were based upon the land-use designations and magnitudes identified in Section 2.5, Description of Community Reuse Alternatives of this SEIS. The transportation analysis provided in Section 4.1, Transportation, Traffic and Circulation, of this SEIS estimates that the operation of Alternative 4 at full build out would generate 22,636 ADT from vehicles.

Table M2-13 summarizes the daily emissions that would be produced from the operation of Alternative 4 in comparison to the 1993 NAA operational baseline emissions from the 2000 FEIS (DoN 2000a). These data show that on-road vehicles are the main contributors to all pollutant levels, except that areas sources would produce the majority of ROG emissions. In comparison to the 1993 NAA baseline, the net emissions from proposed operation of Alternative 4 would exceed the daily significance emissions thresholds for ROG, NO_x, and $PM_{10,}$ and $PM_{2.5}$.

Table M2-13. Daily Operational Emissions for Alternative 4 - Year 2030 (Pounds per Day)

Scenario/Emission Source	*ROG*	*CO*	*NO_x*	*PM_{10}*	*$PM_{2.5}$*
Alternative 4					
Area Sources	118	21	38	1	1
Motor Vehicles	66	690	78	321	61
Total Alternative 4	***184***	***712***	***115***	***322***	***62***
1993 No Action Alternative (NAA)					
Area Sources	8	10	6	0.02	0.02
Motor Vehicles	9	159	21	0.34	0.31
Total 1993 NAA	***17***	***169***	***28***	***0.36***	***0.33***
Alternative 4 - 1993 NAA =	**167**	**543**	**87**	**321**	**61**
BAAQMD Significance Threshold	**54**	**N/A**	**54**	**82**	**54**
Exceeds BAAQMD Threshold?	**Yes**	**N/A**	**Yes**	**Yes**	**Yes**

Sources: Appendix J, Air Emissions Calculations - Construction and Operation of the HPS Project Alternatives (Criteria and GHG Emission Calculations for Air Quality and GHG), except for the 1993 NAA data, which are from the 2000 FEIS (DoN 2000a).

M2.5.1.6 Environmental Controls

By design, Alternative 4 incorporates features that would minimize motor vehicle trips and energy use in buildings. As a result, there are no additional feasible environmental controls identified at this time that would further reduce operational emissions. Therefore, residual impacts to ROG, NO_x, $PM_{10,}$ and $PM_{2.5}$ emission levels from the operation of Alternative 4 in comparison to the 1993 NAA baseline would be *significant* as related to Factor 1.

M2.5.1.6.1 Factor 2: Operation of Alternative 4 would not expose nearby receptors to substantial pollutant concentrations

Based on land-use types proposed by Alternative 4, substantial TACs emissions would likely only occur within areas designated for R&D uses. As discussed above in the Toxic Air Contaminant subsection, Section 4.2.1.2.2, Air Quality and Greenhouse Gases of this SEIS, the following presents an estimate of the impact of TACs emissions from Alternative 4 by inferring from the HHRA performed in the EIR for Alternative 2 (SFRA 2009). Alternative 2 would generate the highest amount of TACs from any project alternative. Therefore, health risks due to the operation of Alternative 4 would be less than those identified for Alternative 2.

The results of the HHRA would be comparable to the impacts assessed in the EIR relative to the 1993 NAA baseline. This is the case since there were minor differences in the amounts of TACs emitted from the project site based on the 1993 NAA baseline. Therefore, netting out these baseline emissions from the emissions assessed in the HRA would result in nearly identical residual health impacts to the proposed alternative impacts.

Alternative 4 proposes 35 percent of the R&D land use area and resulting emissions of TACs compared to the Alternative 2 (worst-case) scenario evaluated in the HHRA. The results of HHRA determined that operational emissions of TACs from Alternative 2 would not exceed the BAAQMD significance thresholds for cancer risk of 10 in a million or HI of 1.0 for non-cancer health effects for any receptor type (DEIR, Volume V, Appendix H3, Attachment III [SFRA 2009]). Therefore, health impacts associated with the operation of Alternative 4 when taking into consideration the reduction in health risk from the 1993 NAA baseline would not exceed the health risk significance thresholds. Thus, operation of Alternative 4 would *not be significant* as related to Factor 2.

Due to the large number of potential R&D facilities with sources of TAC emissions and their proximity to adjacent receptors, unmitigated impacts could potentially exceed either the cancer risk or HI significance thresholds. Therefore, implementation of the following environmental controls would ensure that operation of Alternative 4 would result in *not significant* impacts to public health as related to Factor 2.

M2.5.1.7 Environmental Controls

Implementation of the environmental controls identified in the Criteria Pollutants subsection of Section 4.2.2.2.1, Air Quality and Greenhouse Gases of this SEIS would ensure that operation of Alternative 4 would result in *not significant* impacts to public health as related to Factor 2.

M2.5.1.7.1 Factor 2; Vehicle emissions ($PM_{2.5}$) due to the Operation of Alternative 4 would not exceed DPH thresholds or produce significant health impacts to nearby receptors

Operation of Alternative 4 would increase vehicle trips and associated emissions along local roadways. These vehicle emissions could expose residents who live in proximity to these roads to adverse health effects. As discussed in Section 4.2.2.2.1, the results of the analysis completed in the EIR determined that vehicular emissions from 78,109 ADT would not expose residential receptors along roadways in proximity to the project site to annual $PM_{2.5}$ concentrations in excess of DPH's 0.2 $\mu g/m^3$ threshold (SFRA 2009).

Alternative 4 would generate substantially less traffic (22,636 ADT) and resulting $PM_{2.5}$ emissions. Therefore, the ambient impact of $PM_{2.5}$ emissions generated by Alternative 4 traffic when taking into consideration the reduction from netting out the 1993 NAA baseline would not exceed the DPH annual $PM_{2.5}$ significance threshold of 0.2 $\mu g/m^3$. As a result, residual impacts from traffic generated by Alternative 4 would *not be significant* to public health impacts as related to Factor 2.

M2.5.1.7.2 Factor 3: Operation of Alternative 4 would not contribute to an exceedance of an ambient air quality standard

Emissions of CO from traffic generated by Alternative 4 would impact local ambient CO levels. As discussed in Section 4.2.2.2.1 of this SEIS, the following presents estimates of these CO impacts based on the CALINE4 dispersion modeling analysis completed in the EIR (SFRA 2009). The results of the CALINE4 dispersion modeling analysis were compared to the 1993 NAA baseline, which would generate negligible vehicular emissions from the project site during this time period. Therefore, netting out these baseline emissions would result in nearly identical residual impacts as those estimated for Alternative 4.

Table M2-4 summarizes the results of the CO impact analysis performed for traffic generated by the EIR (SFRA 2009). These data show that CO emissions from traffic generated by 78,109 ADT would not contribute to an exceedance of a CO ambient air quality standard. Alternative 4 would generate substantially less traffic (22,636 ADT) and resulting CO emissions compared to the analyzed scenario.

Therefore, in comparison to the 1993 NAA baseline, Alternative 4 would result in *not significant impacts* to ambient air quality levels as related to Factor 3.

M2.5.1.7.3 Factor 4: Operation of Alternative 4 would not conflict with or obstruct implementation of the regional air quality plans

Similar to Alternative 1, Alternative 4 would be consistent with emission control measures proposed in the *Bay Area 2005 Ozone Strategy* and the adopted Bay Area *2010 CAP* (BAAQMD 2010). Alternative 4 would promote implementation of the regional air quality plans and would *not be significant* as related to Factor 4.

M2.5.1.7.4 Factor 5: Operation of Alternative 4 would not generate objectionable odors affecting a substantial number of people

Alternative 4 does not propose any land uses that the BAAQMD considers to have the potential to generate considerable odors. The large mixed-use development proposed by Alternative 4 has the potential to generate small and localized sources of odor emissions, such as from food preparation or solid waste collection. In the event that there are public concerns about these new odors, it is expected that the operators of these sources would reduce their emissions to below nuisance levels. As a result, operation of Alternative 4 would result in *not significant* odor impacts as related to Factor 5.

M2.5.1.8 GHGs

M2.5.1.8.1 Factor 1: Emissions of GHGs from the operation of Alternative 4 would not produce significant impacts to the environment

Table M2-14 shows that operation of Alternative 4 would result in an increase in GHG emissions of 39,952 mt CO_2e emissions in year 2030 relative to the 1993 NAA baseline scenario. Since GHG emissions from Alternative 4 would equate to such a minimal amount of the total U.S. GHG emissions, they would not substantially contribute to global climate change. The reduction in GHG emissions resulting from the amount of CO_2 sequestered by new plantings as a result of GHG Environmental Control 1 are accounted for under the vegetation source in Table M2-14.

Table M2-14. Alternative 4 Operations - Annual CO_2e Emissions (mt CO_2e per year)

Source	***Alternative 4*** [a]	***1993 No Action Alternative*** [b]
Vegetation	(88)	
Residential	4,649	
Non-Residential	10,002	(1,404)
Motor Vehicles	25,090	(0.7)
Municipal	536	
Area	39	
Waste	263	
Transit Area	865	
Total	**41,357**	***(1,405)***
Alternative 4 - 1993 NAA =		**39,952**
U.S. 2008 Annual GHG Emissions (10^6 metric tons)		*6,957*
Proposed Emissions as a % of U.S. GHG Emissions		*0.0006*

Sources:
a.SFRA 2009.
b.DoN 2000a.

Implementation of GHG Environmental Controls 1 to 4 described in the GHGs subsection of Section 4.2.2.2.2, Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that emissions of GHGs from the operation of Alternative 4 would result in *not significant* impacts to the environment as related to Factor 1.

M2.5.1.8.2 Factor 2: Operation of Alternative 4 would not conflict with adopted plans or policies to reduce emissions of GHGs

Similar to Alternative 1, the design of Alternative 4, in concept, includes many of the GHG reduction measures proposed in the AB 32 Scoping Plan, local ordinances, and the SFCAP. Therefore, operation of Alternative 4 would not conflict with local or state goals to reduce emissions of GHG and *would result in not significant* impacts to climate change as related to Factor 2.

Implementation of GHG Environmental Controls 1 through 4 described in the GHG subsection of Section 4.2.2.2.2 Air Quality and Greenhouse Gas Emissions of this SEIS would ensure that operation of Alternative 1 would result in *not significant* impacts as related to Factor 2.

M2.6 No Action Alternative Impacts Relative to 1993 Baseline

Under the No Action Alternative, the portion of HPS proposed for development under the Stadium Plan and Non-Stadium Alternatives would not be disposed of nor would it be redeveloped and would remain a closed federal property under caretaker status. Thus, limited activities would occur at the site, including continuation of environmental cleanup, periodic inspections and maintenance of the site, security patrols, and continuation of land management programs. The air quality impacts from these activities are considered negligible and would result in *not significant* impacts as related to all air quality and GHG significance factors identified above in the Significance Factors subsection of Section 4.2.1.1, Air Quality and Greenhouse Gases.

Appendix M-3

Noise Resource

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Appendix M3. Noise Resource 1993 Baseline Impacts Analysis

M3.1 1993 Baseline Conditions

As stated in the 2000 *Final Environmental Impact Statement for the Disposal and Reuse of Hunters Point Shipyard* (2000 FEIS), the noise environment of the South Bayshore planning area in 1993 was dominated by transportation noise sources, with highway traffic and aircraft overflights being the major contributors (San Francisco Redevelopment Agency [SFRA] and Lennar Urban 1994). Commuter rail operations and limited freight service contributed to background noise levels in areas adjacent to the Caltrain tracks. No measurements of noise levels within Hunters Point Shipyard (HPS) were made for the 2000 FEIS. However, the Environmental Protection Element of the *San Francisco General Plan*, adopted in 1974, indicates that background day-night average noise (L_{dn}) levels at HPS were about 55 decibles (dB). Adjacent residential and commercial areas had somewhat higher background noise levels, with L_{dn} levels of about 60 dB. Based on this, the 2000 FEIS assumed that background levels were "about 55 dB" based on the Environmental Element of the city's General Plan adopted in 1974 and concluded that levels at adjacent residential and commercial areas would be "about 60 dB."

Noise monitoring was conducted along Third St in the Bayview-Hunters Point (BVHP) area (outside the boundaries of HPS) in July 1997 (U.S. Department of Transportation [USDOT]; Federal Transit Administration [FTA]; and the City and County of San Francisco, Planning Department 1998). The noise measurements made along Third St between Thomas Ave and Jerrold Ave (73 to 76 A-Weighted decibel scale [dBA]) can be considered representative of ambient noise in the vicinity of heavily traveled Third St in the 1990s. No comparable noise measurements were made in 2009 at this or other locations, so there is no direct quantitative way to assess the difference, if any, between 1993 conditions and 2009 conditions. Noise measurements at residential locations in January 2009 were in the range of 59 to 67 dBA L_{dn}, consistent with expectations for an urban residential neighborhood.

The noise data indicate that exposures were relatively high along the Third St corridor due to traffic on Third St and other heavily traveled arterials. The L_{dn} for the segment of the Third St corridor between the U.S. 101 overcrossing and Thomas Ave was estimated at between 70 and 77 dBA. The L_{dn} for the Third St segment between Thomas Ave and Jerrold Ave was estimated at between 73 and 76 dBA. Noise at buildings one row behind Third St was assumed to be 10 dB lower than along Third St (USDOT; FTA; and the City and County of San Francisco, Planning Department 1998).

Considerable data were collected for the current baseline conditions (2007/2009), including traffic counts and ambient noise measurements in nearby communities. As noted above, limited data are available to directly characterize the 1993 baseline. For example, there were no noise measurements taken for the 1993 baseline within HPS and only a few relevant measurements in 1997 at locations rather removed from HPS. While limited, the 1997 data are assumed to be representative of conditions in 1993 given the limited quantitative information available for 1993. The analyses that follow for the 1993 baseline year are predicated on the estimated minor relative differences in onsite and neighborhood activity between 2007/2009 and 1993. On the basis of the available data, the level of industrial and artists' studio activity at HPS in 1993 was somewhat higher than it was in the 2007 baseline year (793 [2000 FEIS] vs. about 100). There were more active artists' studios and more industrial square footage in use in 1993. Offsite, while there has been some development over the years, the intensity of land use in the vicinity has not changed appreciably from 1993. According to the Transportation baseline analysis (Section 3.1.3.3, Traffic Operating Conditions), traffic volumes in 1993 were somewhat higher than in 2007, further confirming that the level of potential noise generating activity onsite in 1993 was greater than in 2007. In

addition, the San Francisco Giants baseball team was playing in Candlestick Park that year which involved over 80 home games during the season, many of which occurred on weekdays. There would have been more traffic and more noise related to events, both at night and during the day, in 1993 than in 2007. Therefore, overall, activities associated with ambient noise levels in 1993 are expected to be at least as high if not marginally higher than the 2007 baseline. Note that relatively large increases in activity are required to make an audible difference in perceived noise levels. A doubling of sound energy results in a barely audible increase in noise levels, so even fairly substantial increases in noise-generating activity can occur without appreciably changing the average person's perception of the ambient noise environment.

M3.2 1993 Impact Analysis

For each alternative, impact analyses based on a 1993 noise baseline are presented in the impact assessment sections that follow. The analyses are based on estimates of 1993 baseline conditions, corresponding to the Department of the Navy's (DoN's) closure date for the HPS facility. Where 1993 data are unavailable, 2009 conditions and activity factor differences between 1993 and 2009 are used to derive an estimate of 1993 conditions.

Impacts are assessed below with respect to best estimates of the noise environment in 1993 relative to conditions in 2007/2009. On the basis of the available data, the level of industrial and artists' studio activity at HPS in 1993 was somewhat higher than it was in the 2007 baseline year. There were more active artists' studios and more industrial activity in 1993. Offsite, while there has been some development over the years, the intensity of land use in the vicinity has not changed appreciably since 1993. According to the Transportation baseline analysis (Section 3.1.3.3, Traffic Operating Conditions), traffic volumes in 1993 were somewhat higher than in 2007, further suggesting that the level of potential noise generating activity onsite in 1993 was greater than in 2007. Overall, ambient noise levels in 1993 are expected to be the same as or marginally higher than the 2007 baseline ambient noise levels.

Note that comparing a higher baseline noise level to total ambient and project-generated noise would result in a smaller increment attributable to the implementation of the alternative. The smaller the increment, the less the alternative would be considered to contribute to overall noise levels. In this case, 1993 was nominally more noisy than 2007. Using 2007 data would therefore make the increase attributed to the proposed action greater and represent a more conservative, worst-case scenario. On this basis, using noise levels measured in 2007/2009 establishes a conservative basis for assessing noise impacts compared to a 1993 baseline. Since limited 1993 data are available on which to base the impact assessment, the analyses rely on the 2007/2009 baseline. The incremental project contribution to overall noise levels associated with the 1993 baseline would likely be equivalent to or somewhat less than those associated with the 2007/2009 baseline.

The following factors are used to assess the significance of impacts in the noise impact analysis sections below:

Construction

Factor 1 Exposure of Persons to Excessive Construction Noise Levels – Construction noise would be significant if it would 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);

Factor 2 Exposure of Persons to Excessive Construction Vibration Levels – Construction noise would be significant if it would result in exposure of persons to or generation of groundborne

vibration or groundborne noise levels in excess of Federal Transit Administration (FTA) criteria; and/or

Factor 3 Increases in Ambient Noise Levels from Construction – Construction noise would be significant if it would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project from construction activities.

Operations

Factor 4 Exposure of Persons to Excessive Noise Levels – Operation noise would be significant if it would result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

Factor 5 Exposure of Persons to Excessive Vibration Levels – Noise would be significant if it would result in exposure of persons to or generation of groundborne vibration or groundborne noise levels in excess of FTA criteria;

Factor 6 Exposure of Persons to Increased Traffic Noise Levels – Noise related to increased traffic would be significant if it would result in the exposure of persons to noise levels in excess of FTA criteria;

Factor 7 Exposure of Persons to Excessive Event Noise Levels - Noise related to stadium events would be significant if it would result in the exposure of persons to noise levels in excess of applicable standards in the City of San Francisco General Plan or Noise Ordinance; and/or

Factor 8 Exposure of Persons to Excessive Aircraft Noise Levels - Operation of the project would have a significant noise impact if it would result in annoyance, activity disruption, or sleep disturbance due to noise from San Francisco International Airport (SFO)-related aircraft operations at the proposed residential uses to be located on the project site according to Federal Aviation Administration (FAA) criteria.

M3.2.1 Alternative 1: Stadium Plan Alternative Impacts Relative to 1993 Baseline

M3.2.1.1 Construction Impacts

Construction impacts are not assessed relative the 1993 baseline or the 2007/2009 baseline. Instead, construction impacts of the proposed action and alternatives are assessed relative to sensitive uses that would be present when construction occurs. Therefore, construction noise impacts of the proposed action based on the 1993 baseline are essentially identical to those described in this SEIS for the proposed action since the baseline does not affect the impact assessment. Tower Variant D would increase the project footprint by a small amount, and while this would make a minor difference to construction noise generation related to tower construction, it would not alter the impact analyses for construction in the next sections.

M3.2.1.1.1 Factor 1: Exposure of Persons to Excessive Construction Noise Levels

Construction Impacts at Offsite Noise-Sensitive Receptors

All offsite construction activities would be required to comply with Sections 2907 and 2908 of the Noise Ordinance and implement mitigation (Measures 1 and 2). Compliance with the Noise Ordinance and the

identified mitigation measures would reduce the impact of construction noise to offsite receptors from construction-related noise associated with HPS to *not significant with mitigation*.

Construction Impacts at Future Onsite Noise-Sensitive Receptors

Construction of Alternative 1 must comply with the San Francisco Noise Ordinance, which prohibits construction between 8:00 P.M. and 7:00 A.M. Additionally, mitigation in the form of **Mitigations 1 and 2** would be implemented during construction within HPS. Construction noise would be reduced as required by the mitigation measures. Further, as construction activities would only occur during the hours allowed under Sections 2907 and 2908 of the Noise Ordinance, noise from project construction would not violate any city codes or other requirements placed on construction activity by the city or agency. Compliance with the Noise Ordinance and **Mitigation Measures 1 and 2** would reduce the impact to offsite receptors from construction-related noise to *not significant with mitigation*.

Minor changes to the project footprint associated with construction of Tower Variant D would not cause substantial additional noise, and *residual* impacts would *not be significant* with implementation of **Mitigations 1 and 2**.

M3.2.1.1.2 Factor 2: Exposure of Persons to Excessive Construction Vibration Levels

Construction Impacts of Vibration at Offsite Vibration-Sensitive Receptors

Offsite roadway improvements would result in construction activities occurring within 25 ft (7.5 meters [m]) of existing residential uses. Groundborne vibration generated by construction trucks would be consistent with deliveries that are currently made along roadways in the project vicinity to nearby commercial uses as a result of ongoing commercial and industrial activities and would not increase groundborne vibration above existing levels. Construction of offsite roadway improvements would not expose sensitive receptors offsite to excessive groundborne vibration or groundborne noise levels.

Construction Impacts of Vibration at Future Onsite Vibration-Sensitive Receptors

Construction of the residential and commercial uses in the HPS Village Center would include two high-rise towers that would require the construction of deep foundations using pile drivers. The HPS Village Center would be located within 50 feet (ft) (15 m) of the HPS North District residential uses. Groundborne vibration levels associated with offsite roadway improvements would be approximately 86 vibration decibels (VdB) due to vibration from loaded trucks and bulldozers for grading. This would exceed the FTA's 80 VdB threshold for residential uses for infrequent events.

Implementation of **Mitigation 1** would help to reduce this impact by requiring that vibration-producing equipment be located as far away from sensitive receptors as practicable. **Mitigation 2** would also be implemented, which would serve to reduce potentially significant vibration impacts by requiring pre-drilled holes and alternate methods for driving piles, such as a vibratory/sonic pile driver. However, these methods would not reduce impacts from pile driving activities to not significant levels. Implementation of **Mitigation 3** would require monitoring of buildings within 50 ft (15 m) of pile driving activities to ensure that groundborne vibration does not result in damage to structures. 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 and unavoidable.

Similar to construction noise levels, the conditions under which vibration levels would be considered excessive during construction activities, such as excavation or pile driving, would only occur for the duration of the specified activity and would only impact receptors located within 100 ft (30 m) or closer to the vibration-producing activity. Once the vibration-producing activities were completed, the affected

receptors would no longer be impacted. Additionally, construction activities would only occur during the hours of 7:00 A.M. to 8:00 P.M. as required by Sections 2907 and 2908 of the Noise Ordinance. Implementation of **Mitigations 1, 2, and 3** would reduce vibration impacts, but not to a not significant level; therefore, this impact would *remain significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D would not cause substantial additional noise, and residual impacts, though temporary, would remain *significant and unavoidable*.

M3.2.1.1.3 Factor 3: Increases in Ambient Noise Levels from Construction

Construction activities occurring at the project site and in the project vicinity for roadway and infrastructure improvements would involve demolition, grading, and excavation activities, followed by construction and external finishing of the proposed facilities and associated parking areas, as well as roadway and landscaping improvements. Pile driving would be required for development of the residential towers in the HPS North District, with noise levels of up to 101 dBA at a distance of 50 ft (15 m). Further, the approximate noise levels experienced by adjacent noise-sensitive uses due to construction activities occurring during offsite roadway improvements, which are conservatively assumed to be 25 ft (8 m) from the proposed improvement activity, would be approximately 91 dBA during the loudest offsite activities.

Implementation of **Mitigation 1** would reduce these impacts by requiring that noise-producing equipment be located as far away from sensitive receptors as practicable; however, construction activities would still occur within 25 ft (8 m) of existing and future residential uses. **Mitigation 2** would also be implemented, which would serve to reduce potentially significant vibration impacts by requiring pre-drilled holes and alternate methods for driving piles, such as a vibratory/sonic pile driver in order to reduce noise and vibration levels. However, these methods would not reduce impacts from pile driving activities to not significant levels. Noise levels during pile driving activities could reach up to 77-83 dBA at the existing residential use in the project vicinity, or 101 dBA in the new residential use areas developed during earlier phases of the project. Pile driving and excavation activities would be intermittent throughout the 18-year construction phasing, and, therefore, this temporary increase in ambient noise levels would be noticeable and would likely represent a cause for human annoyance. Implementation of the above-mentioned mitigation measures would reduce the noise levels associated with the loudest construction activities identified, but not to a significant level. Therefore, construction-related temporary increases in ambient noise levels would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D would not cause substantial additional noise, but residual impacts would remain *significant and unavoidable*.

M3.2.1.2 Operational Impacts

Overall operational impacts of the proposed action relative to the 1993 baseline would be comparable to the impacts assessed in this SEIS relative to the 2007/2009 baseline. Based on limited available information, ambient noise levels in 1993 were the same as or marginally higher than the ambient levels in 2007/2009. Therefore, the incremental impacts compared to the 1993 baseline would be the same as or marginally lower than those assessed above, but not sufficiently lower to result in different levels of significance. Thus, the following analyses are largely the same as those in this SEIS for the 2007/2009 baseline.

M3.2.1.2.1 Factor 4: Exposure of Persons to Excessive Noise Levels

Upon build-out, the entire project site would have a daily noise environment of a typical urban area with average noise levels ranging between 60 and 70 dBA. Residences would be exposed to exterior noise levels exceeding 60 dBA L_{dn} and interior noise levels exceeding 45 dBA L_{dn}. **Mitigation Measures 4 and 5** would reduce exterior and interior noise levels such that they would *not be significant.*

Daily operation of the project would generate noise levels that are comparable to a typical urban environment. As such, mechanical systems, daily deliveries, and trash collection would not result in increases of 5 dBA over the anticipated ambient noise level. Therefore, since the daily operational activity would not exceed the noise standards established by the Municipal Code, potential impacts would *not be significant* and no mitigation is proposed.

Minor changes to the project footprint associated with construction of Tower Variant D would not cause substantial additional noise, and *residual* impacts would *not be significant* with implementation of **Mitigations 4 and 5**.

M3.2.1.2.2 Factor 5: Exposure of Persons to Excessive Vibration Levels

Typical background vibration levels in inhabited areas are about 50 VdB. Such vibration background levels would be expected generally on the project site after the completion of all project-related construction activities. This is substantially less than the FTA's vibration impact threshold of 80 VdB for human annoyance. No substantial sources of groundborne vibration would be built as part of the project. Therefore, since operation of the project would not expose sensitive receptors onsite or offsite to excessive groundborne vibration or groundborne noise levels potential impacts would *not be significant* and no mitigation is proposed.

Minor changes to the project footprint, associated with construction of Tower Variant D would not cause substantial changes in noise, and impacts would *not be significant.*

M3.2.1.2.3 Factor 6: Exposure of Persons to Increased Traffic Noise Levels

The increase in traffic resulting from implementation of the project and growth over the next 20 years would increase the ambient noise levels at noise-sensitive locations along the major vehicular access routes to the project site. Table 4.3.2-2 in this SEIS identifies the changes in future noise levels along the study area roadway segments that have residential uses and, therefore, represent sensitive receptors. These noise levels may slightly overstate the relative difference based on a 1993 baseline, but represent a conservative estimate of increases based on that baseline year.

As indicated in Table 4.3.2-2, project-related traffic would cause a substantial increase in noise at residences along Donahue St, Palou Ave, and the Innes Ave/Evans Ave corridor. Buildout would also cause a substantial noise increase along Third St. This increment would be large enough to exceed the adopted threshold for a "substantial permanent increase" in traffic noise in residential areas.

Mitigation Measures 4 and 5 could address significant traffic noise increases in these residential areas. However, while they are readily applicable to new construction, their applicability to existing structures may be limited. An acoustical and retrofitting program could reduce interior noise levels in some affected residential structures; however, the exterior noise level increase could still exceed the threshold of significance, even with implementation of an acoustical and retrofitting program.

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. Therefore, potential impacts would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D would not cause substantial additional noise, but impacts would remain *significant and unavoidable.*

M3.2.1.2.4 Factor 7: Exposure of Persons to Excessive Event Noise Levels

Noise from stadium events would cause significant impacts in affected residential neighborhoods. However, the ultimate feasibility and implementation of the noise insulation measures recommended under **Mitigation 6** would depend on factors that would be beyond the control of the city as the lead agency or the Project Applicant to guarantee. Further, installation of such noise attenuation features may not be practicable or possible at all locations due to the age and integrity of the residential structures as noted under Impact Factor 6. Therefore, since the ultimate feasibility and practicality of **Mitigation 6** cannot be guaranteed at this time, noise impacts from football games and concerts would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D would not cause substantial additional noise, but impacts would be *significant and unavoidable*.

M3.2.1.2.5 Factor 8: Exposure of Persons to Excessive Aircraft Noise Levels

The project would not expose people living or working onsite to excessive noise from commercial aircraft overflights associated with SFO operations. Minor changes to the project footprint, associated with construction of Tower Variant D would not cause substantial changes in noise, and impacts would *be not significant.*

M3.2.2 Alternative 2: Non-Stadium Plan/Additional R&D Plan Impacts Relative to 1993 Baseline

M3.2.2.1 Construction Impacts

Construction impacts of Alternative 2 are assessed relative to sensitive uses that would be present when construction occurs and not relative the 1993 baseline or the 2007/2009 baseline. Therefore, construction noise impacts of the proposed action based on the 1993 baseline are essentially identical to those described in this SEIS for Alternative 2. This alternative includes a variant that would increase the footprint of Tower Variant D by a small amount. While this would make a minor difference to construction noise generation related to tower construction, it would not alter the impact analyses for construction.

M3.2.2.1.1 Factor 1: Exposure of Persons to Excessive Construction Noise Levels

Construction Impacts at Offsite Noise-Sensitive Receptors

As would be the case for the proposed action, all offsite construction activities would be required to comply with Sections 2907 and 2908 of the Noise Ordinance and implement mitigation (Measures 1 and 2). Compliance with the Noise Ordinance and the identified mitigation measures would reduce the impact of construction noise to offsite receptors from construction-related noise associated with HPS to *not significant with mitigation*.

Construction Impacts at Future Onsite Noise-Sensitive Receptors

As described for the proposed action, construction of Alternative 2 must comply with the San Francisco Noise Ordinance, which prohibits construction between 8:00 P.M. and 7:00 A.M. Mitigation in the form of **Mitigations 1 and 2** would be implemented during construction of the alternative. Further, since construction activities would only occur under the hours allowed under Sections 2907 and 2908 of the Noise Ordinance, noise from project construction would not violate any city codes or other requirements placed on construction activity by the city or agency. Compliance with the Noise Ordinance and **Mitigation Measures 1 and 2** would reduce the impact to offsite receptors from construction-related noise to *not significant with mitigation*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, and *residual* impacts would be *not significant* implementation of **Mitigations 1 and 2**.

M3.2.2.1.2 Factor 2: Exposure of Persons to Excessive Construction Vibration Levels

Construction Impacts of Vibration at Offsite Vibration-Sensitive Receptors

Offsite roadway improvements would result in construction activities occurring within 25 ft (8 m) of existing residential uses. Groundborne vibration generated by construction trucks would be consistent with deliveries that are currently made along roadways in the project vicinity to nearby commercial uses as a result of ongoing commercial and industrial activities and would not increase groundborne vibration above existing levels. Construction of offsite roadway improvements would not expose sensitive receptors offsite to excessive groundborne vibration or groundborne noise levels. Therefore, potential impacts would *not be significant* and no mitigation is proposed.

Construction Impacts of Vibration at Future Onsite Vibration-Sensitive Receptors

Construction of the residential and commercial uses in the HPS Village Center would include two high-rise towers that would require the construction of deep foundations using pile drivers. The HPS Village Center would be located within 50 ft (15 m) of the HPS North District residential uses. In addition, groundborne vibration levels associated with offsite roadway improvements would be approximately 86 VdB due to the vibration from loaded trucks and bulldozers for grading. This would exceed the FTA's 80 VdB threshold for residential uses for infrequent events.

Implementation of **Mitigations 1, 2, and 3** would reduce the impacts associated with Factor 2. However, pile driving and excavation activities would be intermittent throughout the 18-year construction phasing. This temporary increase in ambient noise levels would be noticeable and would likely cause human annoyance. Therefore, while implementation of the above-mentioned mitigation measures would reduce the noise levels associated with the loudest construction activities noted, construction-related temporary increases in ambient noise levels would be significant and unavoidable.

Similar to construction noise levels, the conditions under which vibration levels would be considered excessive during construction activities, such as excavation or pile driving, would only occur for the duration of the specified activity and would only impact receptors located within 100 ft (30 m) or closer of the vibration-producing activity. Once the vibration-producing activities were completed, the affected receptors would no longer be impacted. Additionally, construction activities would only occur during the hours of 7:00 A.M. to 8:00 P.M. as required by Sections 2907 and 2908 of the Noise Ordinance. Implementation of **Mitigations 1, 2, and 3** would reduce vibration impacts, but not to a non-significant level. Therefore, potential impacts would remain *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional vibration, but residual impacts would remain *significant and unavoidable.*

M3.2.2.1.3 Factor 3: Increases in Ambient Noise Levels from Construction

Construction activities occurring at the project site and in the project vicinity for roadway and infrastructure improvements would involve demolition, grading, and excavation activities, followed by construction and external finishing of the proposed facilities and associated parking areas, as well as roadway and landscaping improvements. Pile driving would be required for development of the residential towers in the HPS North District, with noise levels of up to 101 dBA at a distance of 50 ft (15 m). Further, the approximate noise levels experienced by adjacent noise-sensitive uses due to construction activities occurring during offsite roadway improvements, which are conservatively assumed to be 25 ft (8 m) from the proposed improvement activity, would be approximately 91 dBA during the loudest offsite activities.

Implementation of **Mitigations 1, 2, and 3** would reduce the impacts associated with Factor 3. However, pile driving and excavation activities would be intermittent throughout the 18-year construction phasing. This temporary increase in ambient noise levels would be noticeable and would likely cause human annoyance. Therefore, while implementation of the above-mentioned mitigation measures would reduce the noise levels associated with the loudest construction activities noted, construction-related temporary increases in ambient noise levels would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, but residual impacts would remain *significant and unavoidable.*

M3.2.2.2 Operational Impacts

Overall operational impacts of project activities relative to the 1993 baseline would be comparable to the impacts assessed in this SEIS relative to the 2007/2009 baseline. Therefore, the incremental impacts compared to the 1993 baseline would be the same as or marginally lower than those assessed above, but not sufficiently lower to result in different levels of significance. Thus, the following analyses are largely the same as those in this SEIS for the 2007/2009 baseline.

M3.2.2.2.1 Factor 4: Exposure of Persons to Excessive Noise Levels

Daily operations of new commercial, retail, and residential uses would be essentially the same as described for the proposed action. Upon build-out, the entire project site would have a daily noise environment of a typical urban area with average noise levels ranging between 60 and 70 dBA. Residences would be exposed to exterior noise levels exceeding 60 dBA L_{dn} and interior noise levels exceeding 45 dBA L_{dn}. Therefore, residential noise exposure would be considered potentially significant. **Mitigation Measures 4 and 5** would reduce exterior and interior noise levels. With mitigation, community noise levels would be reduced to not significant.

Daily operation of the alternative would generate noise levels that are comparable to a typical urban environment. As such, mechanical systems, daily deliveries, and trash collection would not result in increases of 5 dBA over the anticipated ambient noise level. Therefore, since the daily operational activity would not exceed the noise standards established by the Municipal Code, potential impacts would *not be significant* and no mitigation is proposed.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, and *residual* impacts with mitigation would *not be significant.*

M3.2.2.2.2 Factor 5: Exposure of Persons to Excessive Vibration Levels

Typical background vibration levels in inhabited areas are about 50 VdB. Such vibration background levels would be expected generally on the project site after completion of all project-related construction activities. This is substantially less than the FTA's vibration impact threshold of 80 VdB for human annoyance. No substantial sources of groundborne vibration would be built as part of the Alternative 2. Therefore, since operation of the project would not expose sensitive receptors onsite or offsite to excessive groundborne vibration or groundborne noise levels potential impacts would *not be significant* and no mitigation is proposed.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial changes in noise, and impacts would *be not significant.*

M3.2.2.2.3 Factor 6: Exposure of Persons to Increased Traffic Noise Levels

The increase in traffic resulting from implementation of Alternative 2 and anticipated growth over the next 20 years would increase the ambient noise levels at noise-sensitive locations along the major vehicular access routes to the project site. Table 4.3.4-1 in this SEIS identifies the changes in future noise levels along the study area roadway segments that have residential uses and, therefore, represent sensitive receptors. These noise levels may overstate the relative difference based on a 1993 baseline, but represent a conservative estimate of increases based on that baseline year. All future roadway analyses assumed completion of capital improvements as well as roadway improvement measures required as part of the project's traffic mitigation measures, as detailed in Section 4.1, Transportation, Traffic, and Circulation.

As indicated in Table 4.3.4-1 of this SEIS, project related traffic would cause a substantial increase in noise at residences along Donahue St, Palou Ave, and the Innes Ave/Evans Ave corridor. Buildout would also cause a substantial noise increase along Third St. As shown in Table 4.3.4-1, this increment is large enough to exceed the adopted threshold for a "substantial permanent increase" in traffic noise in residential areas.

Measures 4 and 5 could address significant traffic noise increases in these residential areas. However, while they are readily applicable to new construction, their applicability to existing structures may be limited. An acoustical and retrofitting program could reduce interior noise levels in some affected residential structures; however, the exterior noise level increase could still exceed the threshold of significance, even with implementation of an acoustical and retrofitting program.

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. Therefore potential impacts would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, but impacts would remain *significant and unavoidable.*

M3.2.2.2.4 Factor 7: Exposure of Persons to Excessive Event Noise Levels

There would be no stadium in this alternative. Therefore, *no noise impacts* associated with events at the stadium would occur. Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial changes in noise, and impacts would *not be significant.*

M3.2.2.2.5 Factor 8: Exposure of Persons to Excessive Aircraft Noise Levels

The alternative would not expose people living or working onsite to excessive noise from commercial aircraft overflights associated with SFO operations. Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial changes in noise, and impacts would *not be significant.*

M3.2.3 Alternative 3: Non-Stadium Plan/Additional Housing Alternative Impacts Relative to 1993 Baseline

M3.2.3.1 Construction Impacts

Construction impacts are not assessed relative the 1993 baseline or the 2007/2009 baseline. Instead, construction impacts of the proposed action and alternatives are assessed relative to sensitive uses that would be present when construction occurs. Therefore, construction noise impacts of the proposed action and alternatives based on the 1993 baseline are essentially identical to those described in this SEIS for the proposed action since the baseline does not affect the impact assessment.

M3.2.3.1.1 Factor 1: Exposure of Persons to Excessive Construction Noise Levels

Construction Impacts at Offsite Noise-Sensitive Receptors

As would be the case for the proposed action, all offsite construction activities would be required to comply with Sections 2907 and 2908 of the Noise Ordinance and implement mitigation (Measures 1 and 2). Compliance with the Noise Ordinance and the identified mitigation measures would reduce the impact of construction noise to offsite receptors from construction-related noise associated with HPS. Therefore, potential impacts would *not be significant after mitigation*.

Construction Impacts at Future Onsite Noise-Sensitive Receptors

As described for the proposed action, construction of Alternative 3 must comply with the San Francisco Noise Ordinance, which prohibits construction between 8:00 P.M and 7:00 A.M. Additionally, mitigation using **Mitigations 1 and 2** would be implemented during construction of the alternative. Further, as construction activities would only occur under the hours allowed under Sections 2907 and 2908 of the Noise Ordinance, noise from construction would not violate any city codes or other requirements placed on construction activity by the city or agency. Compliance with the Noise Ordinance and **Mitigations 1 and 2** would reduce the impact to offsite receptors from construction-related noise to *not significant with mitigation.*

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, and *residual* impacts would *not be significant.*

M3.2.3.1.2 Factor 2: Exposure of Persons to Excessive Construction Vibration Levels

Construction Impacts of Vibration at Offsite Vibration-Sensitive Receptors

Offsite roadway improvements would result in construction activities occurring within 25 ft (8 m) of existing residential uses. Groundborne vibration generated by construction trucks would be consistent with deliveries that are currently made along roadways in the project vicinity to nearby commercial uses as a result of ongoing commercial and industrial activities and would not increase groundborne vibration above existing levels. Construction of offsite roadway improvements would not expose sensitive receptors offsite to excessive groundborne vibration or groundborne noise levels. Therefore, potential impacts would *not be significant* and no mitigation is proposed.

Construction Impacts of Vibration at Future Onsite Vibration-Sensitive Receptors

Construction of the residential and commercial uses in the HPS Village Center would include two high-rise towers that would require the construction of deep foundations using pile drivers. The HPS Village Center would be located within 50 ft (15 m) of the HPS North District residential uses. Groundborne vibration levels associated with offsite roadway improvements would be approximately 86 VdB due to the vibration from loaded trucks and bulldozers for grading. This would exceed the FTA's 80 VdB threshold for residential uses for infrequent events.

Implementation of **Mitigations 1, 2, and 3** would reduce the impacts associated with Factor 2. However, pile driving and excavation activities would be intermittent throughout the 18-year construction phasing. This temporary increase in ambient noise levels would be noticeable and would likely cause human annoyance. Therefore, while implementation of the above-mentioned mitigation measures would reduce the noise levels associated with the loudest construction activities noted, construction-related temporary increases in ambient noise levels would be significant and unavoidable.

Similar to construction noise levels, the conditions under which vibration levels would be considered excessive during construction activities, such as excavation or pile driving, would only occur for the duration of the specified activity and would only impact receptors located within 100 ft (30 m) or closer of the vibration-producing activity. Once the vibration-producing activities were completed, the affected receptors would no longer be impacted. Additionally, construction activities would only occur during the hours of 7:00 A.M. to 8:00 P.M. as required by Sections 2907 and 2908 of the Noise Ordinance. Implementation of **Mitigations 1, 2, and 3** would reduce vibration impacts, but not to a not significant level. Therefore, potential impacts would *remain significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, but residual impacts would remain *significant and unavoidable.*

M3.2.3.1.3 Factor 3: Increases in Ambient Noise Levels from Construction

Construction activities occurring within the project site and in the vicinity for roadway and infrastructure improvements would involve demolition, grading, and excavation activities, followed by construction and external finishing of the proposed facilities and associated parking areas, as well as roadway and landscaping improvements. Pile driving would be required for development of the residential towers in the HPS North District, with noise levels of up to 101 dBA at a distance of 50 ft (15 m). Further, the approximate noise levels experienced by adjacent noise-sensitive uses due to construction activities occurring during offsite roadway improvements, which are conservatively assumed to be 25 ft (8 m) from the proposed improvement activity, would be approximately 91 dBA during the loudest offsite activities.

Implementation of **Mitigations 1, 2, and 3** would reduce the impacts associated with Factor 3. However, pile driving and excavation activities would be intermittent throughout the 18-year construction phasing. This temporary increase in ambient noise levels would be noticeable and would likely cause human annoyance. Therefore, while implementation of the above-mentioned mitigation measures would reduce the noise levels associated with the loudest construction activities noted, construction-related temporary increases in ambient noise levels would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, but residual impacts remain *significant and unavoidable*.

M3.2.3.2 Operational Impacts

Overall operational impacts of project and alternative activities relative to the 1993 baseline would be comparable to the impacts assessed in this SEIS relative to the 2007/2009 baseline. Therefore, the incremental impacts compared to the 1993 baseline would be the same as or marginally lower than those assessed above, but not sufficiently lower to result in different levels of significance. Thus, the following analyses are largely the same as those in this SEIS for the 2007/2009 baseline.

M3.2.3.2.1 Factor 4: Exposure of Persons to Excessive Noise Levels

Daily operations of new commercial, retail, and residential uses would be essentially the same as for the proposed action. Upon build-out, the entire project site would have a daily noise environment of a typical urban area with average noise levels ranging between 60 and 70 dBA. Residences would be exposed to exterior noise levels exceeding 60 dBA L_{dn} and interior noise levels exceeding 45 dBA L_{dn}. Therefore, residential noise exposure would be considered potentially significant. Measures 4 and 5 would reduce exterior and interior noise levels. With mitigation, community noise levels would be reduced to not be significant.

Daily operation of the alternative would generate noise levels that are comparable to a typical urban environment. As such, mechanical systems, daily deliveries, and trash collection would not result in increases of 5 dBA over the anticipated ambient noise level. Therefore, the daily operational activity would not exceed the noise standards established by the Municipal Code. Therefore, potential impacts would *not be significant* and no mitigation is proposed.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, and *residual* impacts would *not be significant* with implementation of **Mitigations 4 and 5**.

M3.2.3.2.2 Factor 5: Exposure of Persons to Excessive Vibration Levels

Typical background vibration levels in inhabited areas are about 50 VdB. Such vibration background levels would be expected generally on the project site after the completion of all project-related construction activities. This is substantially less than the FTA's vibration impact threshold of 80 VdB for human annoyance. No substantial sources of groundborne vibration would be built as part of the alternative; therefore, operation would not expose sensitive receptors onsite or offsite to excessive groundborne vibration or groundborne noise levels. Therefore, potential impacts would *not be significant* and no mitigation is proposed.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial changes in noise, and impacts would *be not significant.*

M3.2.3.2.3 Factor 6: Exposure of Persons to Increased Traffic Noise Levels

The increase in traffic resulting from implementation of Alternative 3 and growth over the next 20 years would increase the ambient noise levels at noise-sensitive locations along the major vehicular access routes to the project site. Table 4.3.6-1 of this SEIS identifies the changes in future noise levels along the study area roadway segments that have residential uses and, therefore, represent sensitive receptors. These noise levels may overstate the relative difference based on a 1993 baseline, but represent a conservative estimate of increases based on that baseline year. All future roadway analysis assumed completion of capital improvements as well as roadway improvement measures required as part of the project's traffic mitigation measures, as detailed in Section 4.1, Transportation, Traffic, and Circulation.

As stated in the thresholds of significance, increases in ambient noise due to increases in project-related traffic are based on the FTA criteria specified in Table 4.3.1-2. As baseline ambient levels increase, smaller and smaller increments are allowed to limit increases in community annoyance. For example, in residential areas with a baseline ambient noise level of 50 dBA L_{dn}, a 5 dBA increase in noise levels would be acceptable, while at 70 dBA L_{dn}, only a 1 dBA increase would be allowed. The increases shown are based on a comparison of calculated future traffic noise levels with existing measured noise levels in the area.

As indicated in Table 4.3.6-1, project related traffic would cause a substantial increase in noise at residences along Donahue St, Palou Ave, and the Innes Ave/Evans Ave corridor. Buildout would also cause a substantial noise increase along Third St. As shown in Table 4.3.6-1, this increment is large enough to exceed the adopted threshold for a "substantial permanent increase" in traffic noise in residential areas.

Measures 4 and 5 could address significant traffic noise increases in these residential areas. However, while they are readily applicable to new construction, their applicability to existing structures may be limited. An acoustical and retrofitting program could reduce interior noise levels in some affected residential structures; however, the exterior noise level increase could still exceed the threshold of significance, even with implementation of an acoustical and retrofitting program.

Operation of the alternative 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. Therefore, potential impacts would be *significant and unavoidable*.

Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial additional noise, and residual impacts would be *significant and unavoidable.*

M3.2.3.2.4 Factor 7: Exposure of Persons to Excessive Event Noise Levels

There would be no stadium in this alternative. Therefore, *no noise impacts* associated with events at the stadium would occur. Minor changes to the project footprint associated with construction of Tower Variant D or the Building Preservation option would not cause substantial changes in noise, and *no impacts* would occur.

M3.2.3.2.5 Factor 8: Exposure of Persons to Excessive Aircraft Noise Levels

The alternative would not expose people living or working onsite to excessive noise from commercial aircraft overflights associated with SFO operations. Minor changes to the project footprint associated

with construction of Tower Variant D or the Building Preservation option would not cause substantial changes in noise, and *no impacts* would occur.

M3.2.4 Alternative 4: Non-Stadium Plan/Reduced Development Alternative Impacts Relative to 1993 Baseline

M3.2.4.1 Construction Impacts

Construction impacts are not assessed relative the 1993 baseline or the 2007/2009 baseline. Instead, construction impacts of the proposed action and alternatives are assessed relative to sensitive uses that would be present when construction occurs. Therefore, construction noise impacts of the proposed action based on the 1993 baseline are essentially identical to those described in this SEIS for the proposed action and alternatives since the baseline does not affect the impact assessment.

Alternative 4 does not include the residential towers. Therefore, impacts associated with their construction would not occur under this alternative. Also, there would be no Tower Variant D or Building Preservation option.

M3.2.4.1.1 Factor 1: Exposure of Persons to Excessive Construction Noise Levels

Construction Impacts at Offsite Noise-Sensitive Receptors

As would be the case for the proposed action, all offsite construction activities would be required to comply with Sections 2907 and 2908 of the Noise Ordinance and implement mitigation (Measures 1 and 2). Compliance with the Noise Ordinance and the identified mitigation measures would reduce the impact of construction noise to offsite receptors from construction-related noise associated with HPS. Therefore, potential impacts would *not be significant with mitigation*.

Construction Impacts at Future Onsite Noise-Sensitive Receptors

As for the proposed action, construction of the alternative must comply with the San Francisco Noise Ordinance, which prohibits construction between 8:00 P.M. and 7:00 A.M. Mitigation in the form of **Mitigations 1 and 2** would be implemented during construction of the alternative. Pile driving in proximity to residences would not occur in this alternative. Further, as construction activities would only occur during the hours allowed under Sections 2907 and 2908 of the Noise Ordinance, noise from construction would not violate any city codes or other requirements placed on construction activity by the city or agency. Compliance with the Noise Ordinance and **Mitigation Measures 1 and 2** would reduce the impact to offsite receptors from construction-related noise to *not significant with mitigation*.

M3.2.4.1.2 Factor 2: Exposure of Persons to Excessive Construction Vibration Levels

Construction Impacts of Vibration at Offsite Vibration-Sensitive Receptors

Offsite roadway improvements would result in construction activities occurring within 25 ft (8 m) of existing residential uses. Groundborne vibration generated by construction trucks would be consistent with deliveries that are currently made along roadways in the project vicinity to nearby commercial uses as a result of ongoing commercial and industrial activities and would not increase groundborne vibration above existing levels. Construction of offsite roadway improvements would not expose sensitive receptors offsite to excessive groundborne vibration or groundborne noise levels. Therefore, potential impacts would *not be significant* and no mitigation is proposed.

Construction Impacts of Vibration at Future Onsite Vibration-Sensitive Receptors

Construction for Alternative 4 would not include two high-rise towers. Therefore, no pile driving would occur in close proximity to future residences. Implementation of **Mitigations 1 and 2** would reduce the impacts associated with Factor 2. Since pile driving would not be necessary, **Mitigation 3** would not be required. However, while implementation of the above-mentioned mitigation measures would reduce noise levels associated with the loudest construction activities noted, construction-related temporary increases in ambient noise levels would be *significant and unavoidable*.

M3.2.4.1.3 Factor 3: Increases in Ambient Noise Levels from Construction

Construction activities occurring at the project site and in the vicinity for roadway and infrastructure improvements would involve demolition, grading, and excavation activities, followed by construction and external finishing of the proposed facilities and associated parking areas, as well as roadway and landscaping improvements. No pile driving would be required. The approximate noise levels experienced by adjacent noise-sensitive uses due to construction activities occurring during offsite roadway improvements, which are conservatively assumed to be 25 ft (8 m) from the proposed improvement activity, would be approximately 91 dBA during the loudest offsite activities.

Implementation of **Mitigations 1 and 2** would reduce the impacts associated with Factor 3. However, excavation activities would be intermittent throughout the 18-year construction phasing. This temporary increase in ambient noise levels would be noticeable and would likely cause human annoyance. Therefore, while implementation of the above-mentioned mitigation measures would reduce the noise levels associated with the loudest construction activities noted, construction-related temporary increases in ambient noise levels would be *significant and unavoidable*.

M3.2.4.2 Operational Impacts

Overall operational impacts of project and alternative activities relative to the 1993 baseline would be comparable to the impacts assessed in this SEIS relative to the 2007/2009 baseline. Therefore, the incremental impacts compared to the 1993 baseline would be the same as or marginally lower than those assessed above, but not sufficiently lower to result in different levels of significance. Thus, the following analyses are largely the same as those in this SEIS for the 2007/2009 baseline.

M3.2.4.2.1 Factor 4: Exposure of Persons to Excessive Noise Levels

Daily operations of new commercial, retail, and residential uses would be essentially the same as for the proposed action. Upon build-out, the entire project site would have a daily noise environment of a typical urban area with average noise levels ranging between 60 and 70 dBA. Residences would be exposed to exterior noise levels exceeding 60 dBA L_{dn} and interior noise levels exceeding 45 dBA L_{dn}. Measures 4 and 5 would reduce exterior and interior noise levels. Therefore, potential impacts would *not be significant with mitigation.*

Daily operation of the alternative would generate noise levels that are comparable to a typical urban environment. As such, mechanical systems, daily deliveries, and trash collection would not result in increases of 5 dBA over the anticipated ambient noise level. Therefore, the daily operational activity would not exceed the noise standards established by the Municipal Code. Therefore, potential impacts would *not be significant* and no mitigation is proposed.

M3.2.4.2.2 Factor 5: Exposure of Persons to Excessive Vibration Levels

Typical background vibration levels in inhabited areas are about 50 VdB. Such vibration background levels would be expected generally on the project site after the completion of all project-related construction activities. This is substantially less than the FTA's vibration impact threshold of 80 VdB for human annoyance. No substantial sources of groundborne vibration would be built as part of the alternative. Therefore, since operation would not expose sensitive receptors onsite or offsite to excessive groundborne vibration or groundborne noise levels potential impacts would *not be significant* and no mitigation is proposed.

M3.2.4.2.3 Factor 6: Exposure of Persons to Increased Traffic Noise Levels

The increase in traffic resulting from implementation of Alternative 4 and growth over the next 20 years would increase the ambient noise levels at noise-sensitive locations along the major vehicular access routes to the project site. Table 4.3.7-1 identifies the changes in future noise levels along the study area roadway segments that have residential uses and, therefore, represent sensitive receptors. These noise levels may overstate the relative difference based on a 1993 baseline, but represent a conservative estimate of increases based on that baseline year. All future roadway analyses assumed completion of capital improvements as well as roadway improvement measures required as part of the project's traffic mitigation measures, as detailed in Section 4.1, Transportation, Traffic, and Circulation.

As stated in the thresholds of significance, increases in ambient noise due to increases in project-related traffic are based on the FTA criteria specified in Table 4.3.1-2. As baseline ambient levels increase, smaller and smaller increments are allowed to limit increases in community annoyance. For example, in residential areas with a baseline ambient noise level of 50 dBA L_{dn}, a 5 dBA increase in noise levels would be acceptable, while at 70 dBA L_{dn}, only a 1 dBA increase would be allowed. The increases shown are based on a comparison of calculated future traffic noise levels with existing measured noise levels in the area.

As indicated in Table 4.3.7-1, project related traffic would cause a substantial increase in noise at residences along Donahue St, Palou Ave, and the Innes Ave/Evans Ave corridor. Buildout would also cause a substantial noise increase along Third St. As shown in Table 4.3.7-1, this increment is large enough to exceed the adopted threshold for a "substantial permanent increase" in traffic noise in residential areas.

Measures 4 and 5 could address significant traffic noise increases in these residential areas. However, while they are readily applicable to new construction, their applicability to existing structures may be limited. An acoustical and retrofitting program could reduce interior noise levels in some affected residential structures; however, the exterior noise level increase could still exceed the threshold of significance, even with implementation of an acoustical and retrofitting program.

Operation of the alternative 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. Therefore, potential impacts would be *significant and unavoidable*.

M3.2.4.2.4 Factor 7: Exposure of Persons to Excessive Event Noise Levels

There would be no stadium in this alternative. Therefore, *no noise impacts* associated with events at the stadium would occur.

M3.2.4.2.5 Factor 8: Exposure of Persons to Excessive Aircraft Noise Levels

The alternative would not expose people living or working onsite to excessive noise from commercial aircraft overflights associated with SFO operations.

M3.2.5 No Action Alternative Impacts Relative to 1993 Baseline

Under the No Action Alternative in the 2000 FEIS and in this document, HPS would not be disposed of and would remain a closed federal property under caretaker status.[1] Thus, the remaining parcels would not be reused or redeveloped. Environmental cleanup would continue until completion. No new leases would be entered into under the No Action Alternative. Existing leases would continue until they expire or are terminated, after which DoN could decide to renew or extend some or all of these leases. Environmental impacts associated with the renewal or extension of existing leases would be evaluated before making such decisions.

M3.2.5.1 Construction Impacts

The No Action Alternative represents no substantial change from current operations. No new construction would occur. Therefore, there would be *no noise impacts* associated with construction under the No Action Alternative.

M3.2.5.2 Operational Impacts

Operations that currently occur at Hunters Point would continue into the future at current levels. There would be no increases in housing, R&D, recreational facilities, or infrastructure. Therefore, the noise environment at Hunters Point would remain essentially what it is today. With no appreciable change in the ambient noise environment and no new introduction of noise generating activities, there would be *no noise impacts* associated with the No Action Alternative.

[1] The portions of Parcel A (referred to as HPS Phase I Redevelopment) is not included as part of the alternatives analyzed in this SEIS because Phase I has already been disposed of by DoN and is currently being developed as residential housing.