APPENDIX F
Supporting Technical Information

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APPENDIX F-1
Photographic Documentation

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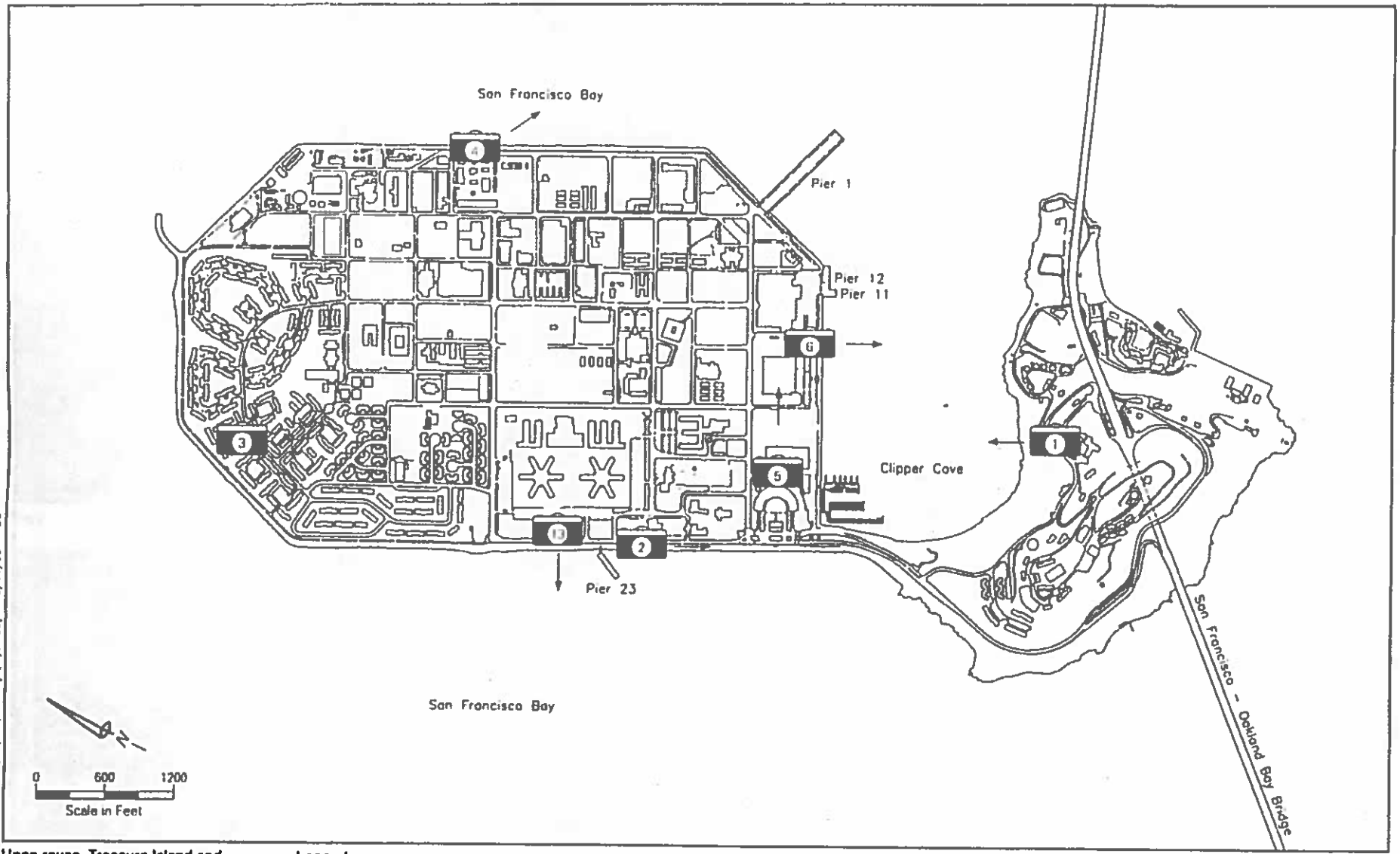


Upon reuse, Treasure Island and Yerba Buena Island would provide recreational viewing opportunities for the public.

Legend:

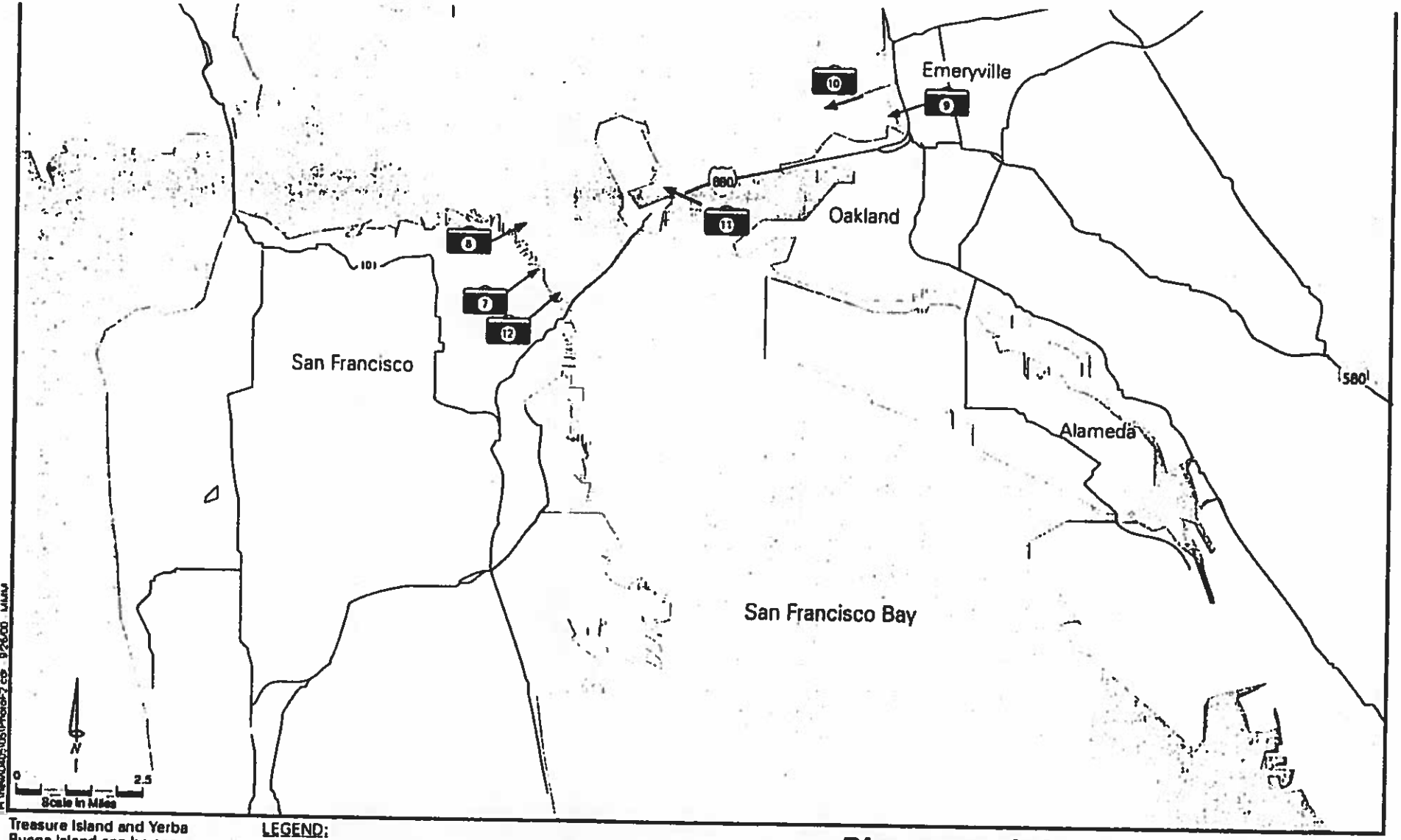
Photograph Location

Photograph Direction

Photograph Locations at NSTI

Naval Station Treasure Island, California

Figure F-1



Treasure Island and Yerba Buena Island can be seen from various vantage points throughout the Bay Area.

LEGEND:

Photograph Location

Photograph Direction

Photograph Locations in Bay Area

Bay Area, California

Figure F-2

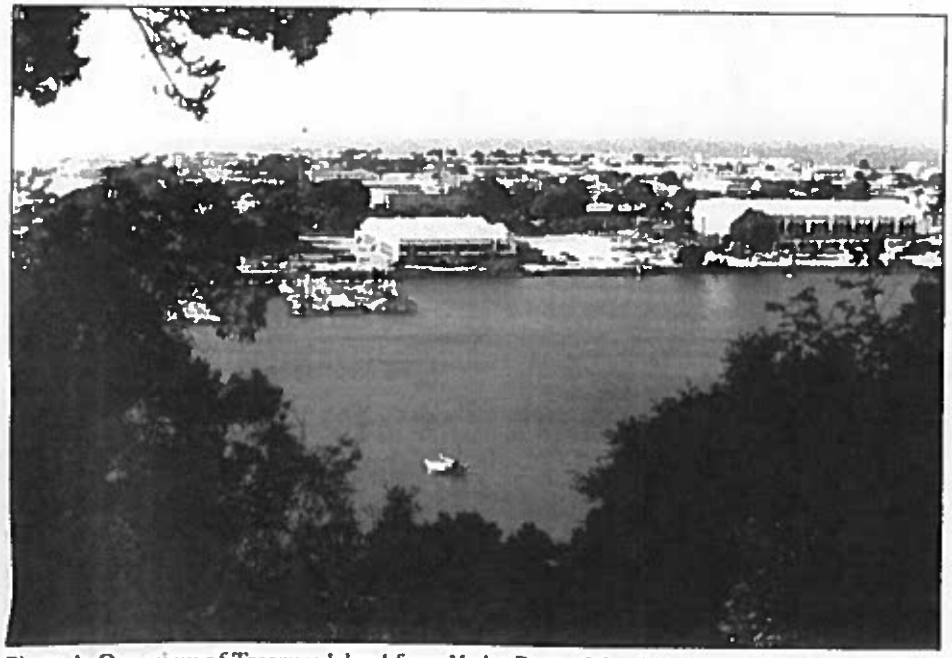


Photo 1: Overview of Treasure Island from Yerba Buena Island

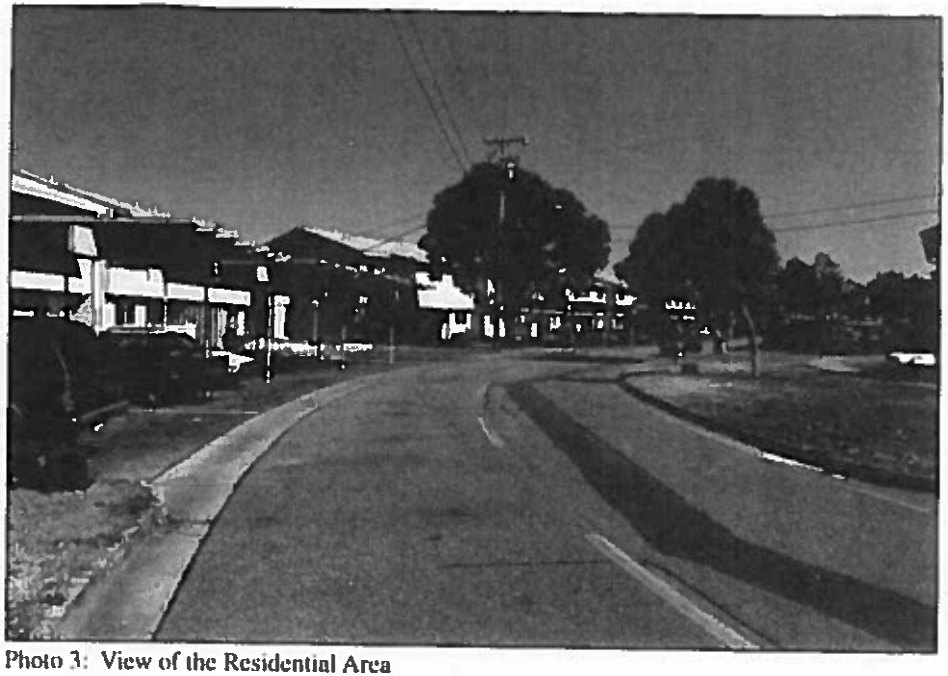


Photo 3: View of the Residential Area

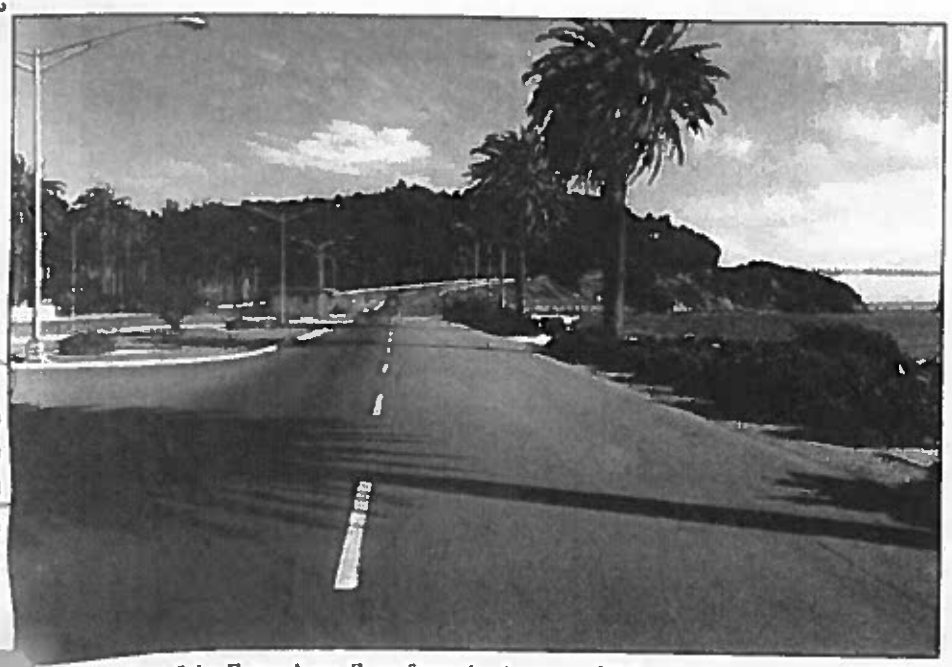


Photo 2: View of the Entry Area, Seen from the Avenue of Palms

Photo 4: View of the East Side of the Waterfront

Photo 5: View of the Former Hangar Building (Building 2)

Photo 6: View of Clipper Cove from Treasure Island

Photo 7: View from Recreational Pier 7, San Francisco Embarcadero

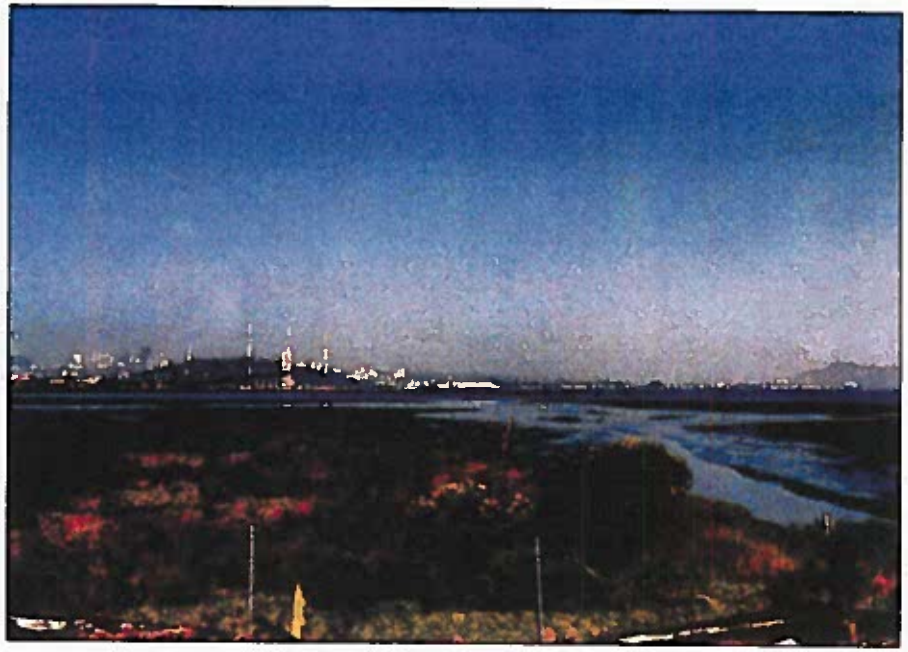


Photo 9: View from Interstate 80 in Emeryville

Photo 8: View from Coit Tower Vista Point in San Francisco

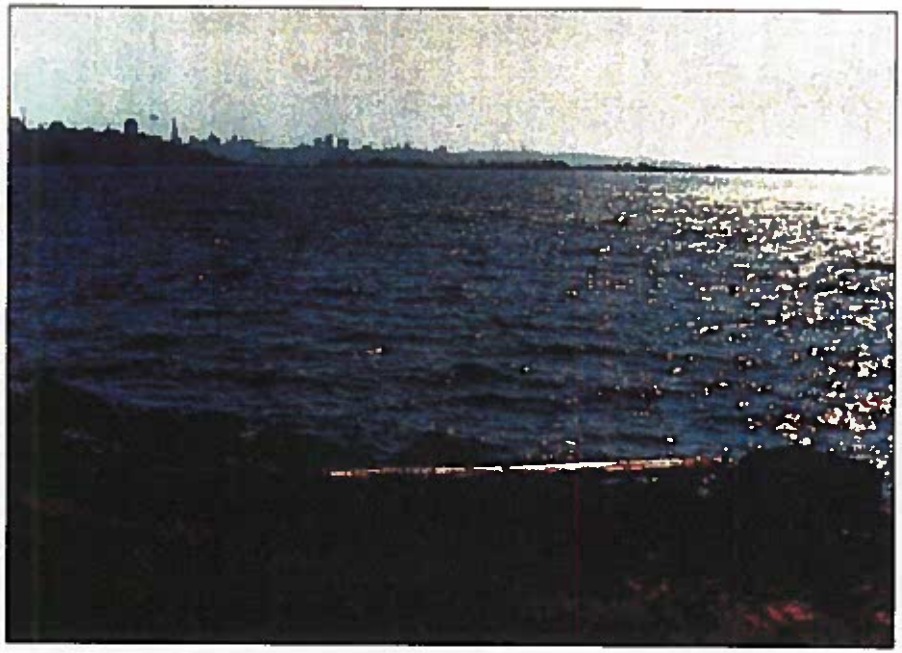


Photo 10: View from Emeryville Waterfront

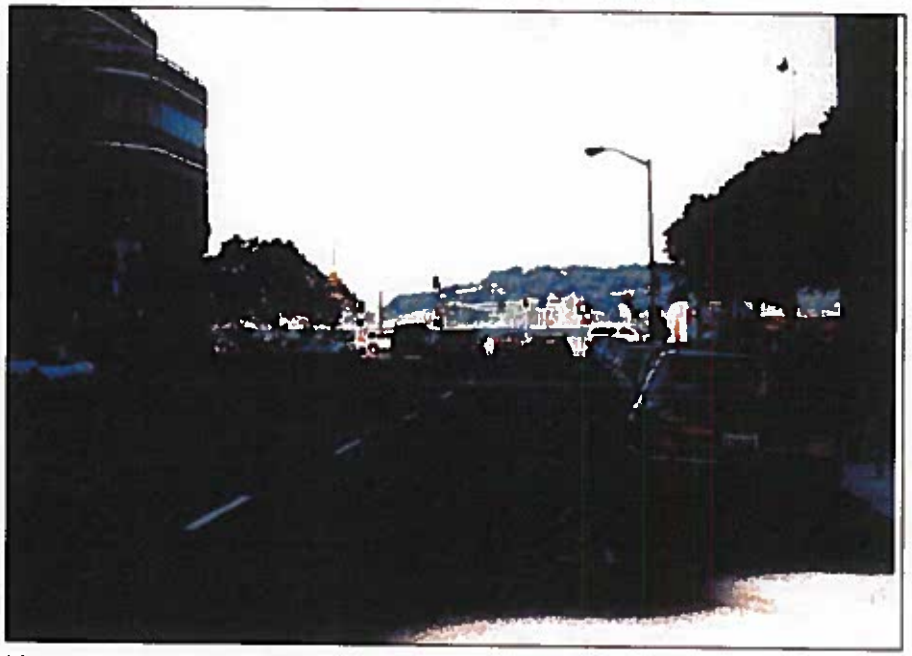


Photo 12: View Along Howard Street View Corridor Near Spear Street

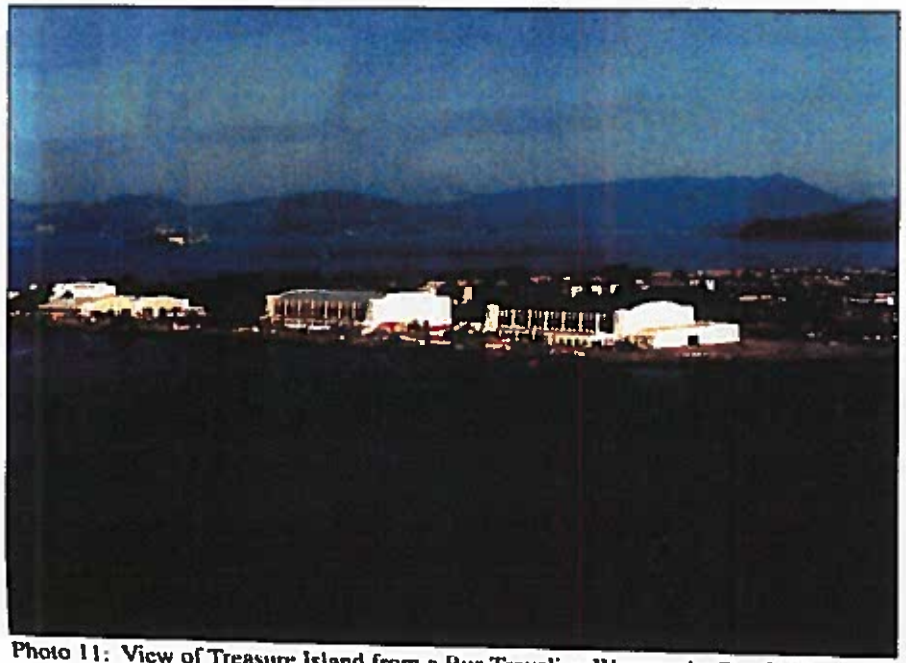


Photo 11: View of Treasure Island from a Bus Traveling West on the Bay Bridge

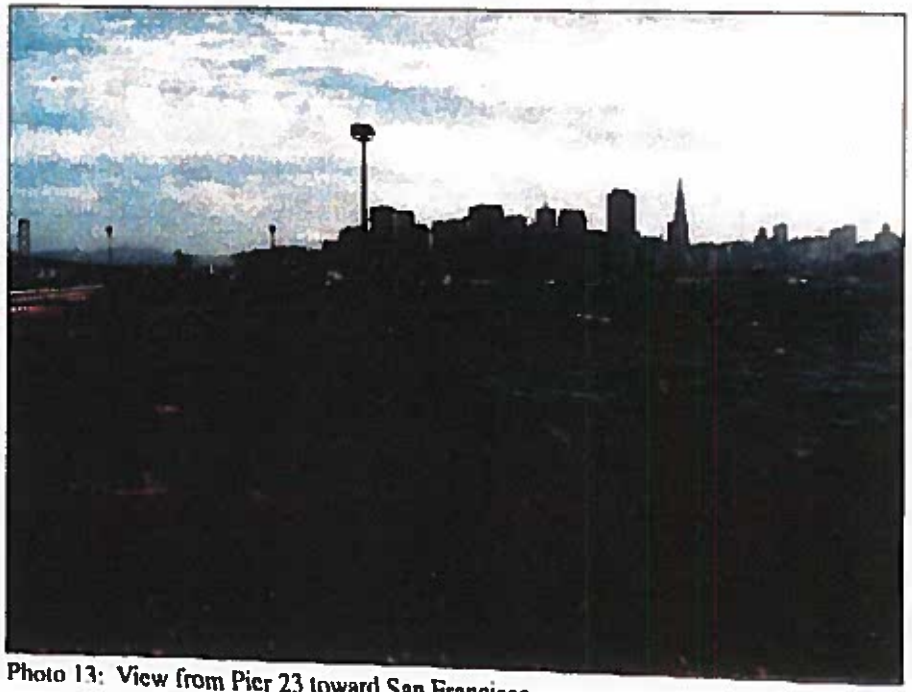


Photo 13: View from Pier 23 toward San Francisco

APPENDIX F-2
Socioeconomics

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APPENDIX F-2
SOCIOECONOMICS

POPULATION AND EMPLOYMENT ASSUMPTIONS

This appendix describes the assumptions that were used to estimate population and employment impacts associated with the three NSTI reuse alternatives considered in the EIS. Sources are noted throughout the text with full references provided at the end of the appendix.

Population Estimation Assumptions

For the purpose of this analysis, household size for existing housing units at NSTI was estimated to be 3.2 persons, while household size for newly constructed units was estimated to be 2.3 persons (Mara Feeney & Associates estimate). The rationale for these assumptions is presented in the following paragraphs.

Factors that might attract larger households to Treasure Island include the availability of an elementary school and childcare center. However, the access constraints could be a major deterrent to families with children who might have to be shuttled to a variety of after-school activities, medical appointments, shopping, etc.

According to the 1990 U.S. Census, the average household size in San Francisco was 2.3, and at NSTI was 3.7, reflecting the larger size of military families in comparison to typical San Francisco households. At NSTI, existing military family housing units have two to four bedrooms. It seems likely that in the future these units would be allocated to relatively large households (e.g., Coast Guard personnel with larger household sizes as reflected in the census data; or larger San Francisco families having the greatest need for space, and/or TIHDI to provide support services for families or groups of adults).

A variety of assumptions have been made regarding household size in current base closure and reuse studies. The Presidio Planning Socioeconomic Analysis Report assumed an average household size of 3.2 for Presidio reuse, based on San Francisco's average *family* size in 1990, as opposed to average household size (Jones & Jones, Inc. 1994). The NSTI Reuse Plan assumed 1.5 persons per household for new construction at Yerba Buena Island and 1.8 persons per household for new housing construction on Treasure Island (San Francisco 1996). The Mayor's Office currently is assuming an average household size of 2.5 persons per household in its NSTI projections (EPS 1997).

Based on a consideration of the above information, it was decided that using two different household sizes—one for existing units and one for new units (which are likely to be built at higher densities)—would provide the most accurate population estimates. Therefore, for existing units, a household size of 3.2 persons is assumed, while a household size of 2.3 is projected for new units.

Population associated with live-work units was estimated at 1.25 persons per unit (Mara Feeney & Associates estimate). Treasure Island population estimates also include the brig inmate population, which is estimated to be 90 (HMH 1997).

Employment Estimation Assumptions

The employment density factors in Table F-1 were used to estimate employment from land uses proposed under each NSTI reuse scenario (Tables F-2 to F-4).

Table F-1
Employment Multipliers for Each Land Use

Land Use	*Employment Density Factor*	*Source*
Publicly Oriented		
Themed Attraction	0.7 jobs per 1,000 visitors, with FTEs[1] calculated as half of total jobs	EPS 1997a
Hotels	1 employee per room	San Francisco 1996; ROMA 1994; EPS 1997
Conference Facilities	1 employee per 5,000 sf	EPS 1997
Retail and Restaurants	1 employee per 500 sf	Jones & Jones, Inc. 1994; ROMA 1994; EPS 1997
Entertainment Center/ Amphitheater	1 employee per 2,500 sf	Mara Feeney & Associates estimate
Wedding Chapel	1 FTE[1]	Mara Feeney & Associates estimate
Museum	1 employee per 2,500 sf	San Francisco 1996; EPS 1997
Mixed Use/Office	1 employee per 385 sf	Jones & Jones, Inc. 1994
Film Production	1 employee per 1,000 sf	EPS 1997
Marina	3 employees per 100 slips/buoys	Mara Feeney & Associates estimate
Yacht Club	1 employee per 1,000 sf	Mara Feeney & Associates estimate
Other public-oriented Uses	1 employee per 1,000 sf	Mara Feeney & Associates estimate

Table F-1
Employment Multipliers for Each Land Use (continued)

Land Use	*Employment Density Factor*	*Source*
Residential		
New Residential	1 job per live-work unit and 1 employee per 500 sf neighborhood retail	Jones & Jones, Inc. 1994
Institutional and Community		
Elementary School	1 teacher per 30 students (approx.) and 1 staff person per 200 students	San Francisco 1996
Child Development Center	1 staff person per 12 children (approx.) or one employee per 1,000 sf (approx.)	San Francisco 1996
Fire Training School	20 staff year-round	HMH 1997
Warehousing	1 employee per 5,000 sf	Jones & Jones, Inc. 1994
Wastewater Treatment Plant	1 employee per 5,000 sf	Mara Feeney & Associates estimate
Police and Fire Stations	1 employee per 1,000 sf	Mara Feeney & Associates estimate
Other Institutional	1 employee per 1,000 sf	Jones & Jones, Inc. 1994
Open Space/Recreation		
Sports Complex	1 employee per 60,000 sf (ballfields) and 1 employee per 10,000 sf (gymnasium)	EPS 1997

Table F-2
Estimated Population and Employment for Alternative 1

	Estimated Population	*Estimated Employment*[a]
TREASURE ISLAND LAND USE		
Publicly Oriented		
Themed Attraction		1,750
Hotel/Conference/Lodging		1,300
Retail/Specialty/Restaurant		450
Entertainment center		
Amphitheater		
Movie Theater		
Wedding Chapel		
Museum		6
Mixed Use/Office		260
Film Production		501
Marina (land)		20
Marina (water)		12
Other publicly oriented uses		183
Total Publicly Oriented		4,482
Residential		
Existing Residential	640	
New Residential	5,290	
Neighborhood Retail		48
Total Residential	*5,930*	*48*

Table F-2
Estimated Population and Employment for Alternative 1
(continued)

	Estimated Population	*Estimated Employment*[a]
Institutional and Community		
Elementary school		32
Child development center		10
Fire training school		20
Warehouse/Storage		
WWTP		17
Brig	90	60
Fire station		35
Police station		26
Other institutional facilities		
Total Institutional and Community	*90*	*200*
Open Space/Recreation		
Golf course		
Sports fields/complex		7
Shoreline promenade/open space		
Ferry Terminals/Piers		2
Wildlife Habitat		
Total Open Space/Recreation		*9*
Total Treasure Island	6,020	4,739

Table F-2
Estimated Population and Employment for Alternative 1
(continued)

	Estimated Population	*Estimated Employment*[1]
YERBA BUENA ISLAND LAND USE		
Publicly Oriented		
Hotel/Bed and Breakfast		150
Conference/Reception		18
Restaurant		
Total Publicly Oriented Uses		***168***
Residential		
Existing Housing	288	
New Housing	575	
Mixed Use	13	10
Total Residential	***876***	***10***
Institutional and Community	N/A	N/A
Open Space/Recreation		1
Total Yerba Buena Island	876	179
NSTI TOTALS	6,896	4,918

[1]Full-time equivalent.

Table F-3
Estimated Population and Employment for Alternative 2

	Estimated Population	*Estimated Employment*[1]
TREASURE ISLAND LAND USE		
Publicly Oriented		
Themed Attraction		700
Hotel/Conference/Lodging		1,400
Retail/Specialty/Restaurant		
Entertainment center		150
Amphitheater		4
Movie Theater		
Wedding Chapel		1
Museum		60
Mixed Use/Office		
Film Production		
Marina (land)		
Marina (water)		15
Other publicly oriented uses		183
Total Publicly Oriented		2,513
Residential		
Existing Residential		
New Residential		
Neighborhood Retail		
Total Residential		

Table F-3
Estimated Population and Employment for Alternative 2
(continued)

	Estimated Population	*Estimated Employment*[1]
Institutional and Community		
Elementary school		
Child development center		
Fire training school		
Warehouse/Storage		
WWTP		9
Brig	90	60
Fire station		17
Police station		17
Other institutional facilities		
Total Institutional and Community	90	103
Open Space/Recreation		
Golf course		20
Sports fields/complex		1
Shoreline promenade/open space		
Ferry Terminals/Piers		2
Wildlife Habitat		
Total Open Space/Recreation		23
Total Treasure Island	90	2,639

Table F-3
Estimated Population and Employment for Alternative 2
(continued)

	Estimated Population	*Estimated Employment*[1]
YERBA BUENA ISLAND LAND USE		
Publicly Oriented		
Hotel/Bed and Breakfast		150
Conference/Reception		6
Restaurant		24
Total Publicly Oriented Uses		*180*
Residential		
Existing Housing	160	
New Housing	460	
Mixed Use		
Total Residential	*620*	
Institutional and Community	N/A	N/A
Open Space/Recreation		1
Total Yerba Buena Island	620	181
NSTI TOTALS	710	2,820

[1]Full-time equivalent.

Table F-4
Estimated Population and Employment for Alternative 3

	Estimated Population	*Estimated Employment*[a]
TREASURE ISLAND LAND USE		
Publicly Oriented/Visitor Attraction		
Themed Attraction		350
Hotel/Conference/Lodging		16
Retail/Specialty/Restaurant		26
Entertainment center		
Amphitheater		
Movie Theater		
Wedding Chapel		1
Museum		6
Mixed Use/Office		557
Film Production		501
Marina (land)		20
Marina (water)		3
Other publicly oriented uses		256
Total Publicly Oriented		*1,736*
Residential		
Existing Residential	2,971	
New Residential		
Neighborhood Retail		
Total Residential	*2,971*	

Table F-4
Estimated Population and Employment for Alternative 3
(continued)

	Estimated Population	*Estimated Employment*[a]
Institutional and Community		
Elementary school		32
Child development center		10
Fire training school		20
Warehouse/Storage		7
WWTP		5
Brig	90	60
Fire station		10
Police station		3
Other institutional facilities		129
Total Institutional and Community	*90*	*276*
Open Space/Recreation		
Golf course		
Sports fields/complex		3
Shoreline promenade/open space		
Ferry Terminals/Piers		
Wildlife Habitat		
Total Open Space/Recreation		*3*
Total Treasure Island	**3,061**	**2,015**

Table F-4
Estimated Population and Employment for Alternative 3
(continued)

	Estimated Population	*Estimated Employment*[1]
YERBA BUENA ISLAND LAND USE		
Publicly Oriented		
Hotel/Bed and Breakfast		150
Conference/Reception		6
Restaurant		24
Total Publicly Oriented Uses		*180*
Residential		
Existing Housing	288	
New Housing	161	
Mixed Use	0	
Total Residential	*449*	
Institutional and Community	N/A	N/A
Open Space/Recreation		1
Total Yerba Buena Island	449	181
NSTI TOTALS	3,510	2,196

[1]Full-time equivalent.

APPENDIX F-3
Transportation

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F.3-A. TECHNICAL MEMORANDUM

UPDATE OF TREASURE ISLAND EIS TRAFFIC ANALYSIS

Based on public comments provided by several government agencies on the *Draft Environmental Impact Statement for the Disposal and Reuse of Naval Station Treasure Island* (DEIS), this technical memorandum updates the freeway mainline and ramp analyses to year 2025. The DEIS included a future year cumulative analysis for year 2010. Year 2010 was a reasonable future horizon year when the preparation of the initial EIS document began in 1996. As stated above, several government agencies requested that the future cumulative year be updated to 2025. These requests are reasonable since year 2025 is commonly used as the future horizon year for the cumulative analysis now. The following sections describe which assumptions were updated, how the updates were performed, and the findings of the analysis.

Analysis Tool

The DEIS used the FREEQ11 traffic simulation model as the software to perform the freeway mainline and ramp analyses. The FREEQ model was developed by the Institute of Transportation Studies of the University of California, Berkeley. In order to provide consistency between the current analysis methodologies and results with the original analyses, FREEQ11 was used for the updates.

Analysis Assumptions

Reuse Alternative Assumptions

The three reuse alternatives, or land use scenarios, analyzed in the DEIS have not changed. The year 2025 updates analyzed traffic impacts generated by the same three land use scenarios as those used in the DEIS.

Transportation Assumptions

For consistency purposes, most of the transportation assumptions for the year 2025 updates remain the same as those used in the DEIS for the year 2010 (refer to the following transportation technical data section of this Appendix) except for the future year freeway mainline traffic volumes (discussed below in F.3-B).

TRIP GENERATION - Since the year 2010 trip generation analysis was prepared for full build-out of NSTI and the land use scenarios have not changed, person and vehicle trip generation estimates for year 2025 remain the same as those presented in the DEIS for year 2010.

TRIP DISTRIBUTION AND MODAL SPLIT ASSUMPTIONS AND TRAFFIC ASSIGNMENT PATTERNS - For consistency, trip distribution and modal split assumptions and traffic assignment patterns remain the same as those presented in the DEIS for year 2010.

YEAR 2025 RAMP VOLUMES - Since the year 2010 trip generation estimates was prepared for full build-out of NSTI, the year 2025 Treasure Island/Yerba Buena Island ramp volumes remain the same as those presented in the DEIS for year 2010.

FREEWAY SYSTEMS - Assumptions for the freeway mainline, weaving section, and on- and off-ramp capacities and free flow speed remain the same as in the DEIS for the year 2010, except for those relating to the eastbound on-ramp on the east side of the tunnel. This ramp will be reconstructed as part of the SFOBB East Span project. Caltrans has estimated that the capacity for the new ramp would be approximately 900-1000 vehicles per hour, compared to the 330 vehicles per hour used in the DEIS.

FUTURE YEAR FREEWAY MAINLINE VOLUMES - Year 2025 freeway mainline volumes were updated using the same methodology used in the DEIS for the year 2010. MTC model output data were used to calculate the growth rates from 1994 and 2025. The growth rates were then applied to the 1994 observed freeway traffic volumes to estimate the year 2025 traffic volumes.

Results of Freeway Mainline and Ramp Analysis

Freeway Mainline LOS Analysis

Table F-5 presents the observed SFOBB traffic volumes in 1994, associated freeway levels of service, and estimated year 2025 traffic volumes for the baseline and three project reuse alternatives. While the MTC model shows that the year 2025 SFOBB baseline traffic demand would be higher than that of year 2010, the number of vehicles can actually get onto SFOBB during the peak hours would be limited. The number of vehicles traveling westbound from the East Bay to SFOBB is controlled by the metering lights and is restricted to approximately 10,500 vehicles during the AM peak hour and 9,000 vehicles during the PM peak hour. The eastbound traffic volumes would be restricted to 9,500 vehicles during both the AM and PM peak hours due to the capacity and congestion of the downtown segments of I-80.

WEEKDAY AM AND PM PEAK HOURS, EASTBOUND DIRECTION - Due to the projected increase in traffic volumes between the 2010 and 2025 future years in the eastbound direction during AM and PM peak hours, travel speed on SFOBB in 2025 would decrease marginally compared to the 2010 analysis (Table 4.8, DEIS). However, the levels of service on SFOBB would stay the same between the two future years in all development scenarios.

WEEKDAY AM AND PM PEAK HOURS, WESTBOUND DIRECTION - Due to the projected increase in traffic volumes between the 2010 and 2025 future years in the westbound direction during AM and PM peak hours, travel speed on SFOBB in 2025 would decrease marginally compared to the 2010 analysis (Table 4.8, DEIS). However, the levels of service on SFOBB would stay the same between the two future years in all development scenarios.

WEEKEND MIDDAY - Due to the projected increase in traffic volumes between the 2010 and 2025 future years in the both eastbound and westbound directions during typical weekend midday travel, speed on SFOBB would decrease marginally compared to the 2010 analysis (Table 4.8, DEIS). However, the levels of service on SFOBB would stay the same between the two future years in all development scenarios.

Ramp LOS Analysis

Table F-6 presents the observed SFOBB ramp volumes and queue in 1994 and the estimated ramp volumes and queue in year 2025 for the baseline and three project reuse alternatives.

There are only two changes to the Treasure Island/Yerba Buena Island ramp levels of services, both of which would occur during a typical weekend midday condition. The length of the vehicle queue at the westbound on-ramp on the west side of the tunnel would increase from 239 vehicle in year 2010 (Table 4.6, DEIS) to 242 vehicles in year 2025. Vehicle queuing on the eastbound on-ramp on the east side of the tunnel would disappear because of the increased capacity of the new on-ramp on the east side of the tunnel that will be constructed as part of the SFOBB East Span project. The DEIS projected a 150 vehicle queue on this ramp during the weekend midday peak hour in 2010 (Table 4.6, DEIS).

Conclusions

The year 2025 update of the freeway mainline and ramp analyses revealed that no additional significant impacts would occur when compared to the year 2010 analysis presented in Section 4.5 of the DEIS.

Table F-5. SFOBB/I-80 Operations Existing and Year 2025 Weekday and Weekend Peak Hour Conditions

Peak Hour/Direction	*Existing (1994) (Operational Base)*		*2025 Background Conditions (No Action)*		*2025 Alternative 1*		*2025 Alternative 2*		*2025 Alternative 3*	
	Speed[3]	LOS[4]	Speed[3]	LOS[4]	Speed[3]	LOS[4]	Speed[3]	LOS[4]	Speed[3]	LOS[4]
Weekday AM peak hour[5]										
Eastbound[1]	57	B	56	B	56	B	56	B	56	B
Westbound[2]	45	D	20	F	20	F	21	F	21	F
Weekday PM peak hour[6]										
Eastbound[1]	46	D	44	D	43	D	44	D	44	D
Westbound[2]	56	B	16	F	16	F	16	F	17	F
Weekend midday peak hour[7]										
Eastbound[1]	57	B	56	B	56	B	56	B	56	B
Westbound[2]	57	B	57	B	57	B	57	B	57	B

[1] Eastbound SFOBB/I-80 east of Yerba Buena Island tunnel.

[2] Westbound SFOBB/I-80 west of Yerba Buena Island tunnel.

[3] Speed is expressed in miles per hour.

[4] LOS is based on mainline travel speeds, consistent with San Francisco Congestion Management LOS designations.

[5] The AM peak hour of 8:00 to 9:00 AM occurs within the AM peak period of 6:00 to 9:00 AM.

[6] The PM peak hour of 5:00 to 6:00 PM occurs within the PM peak period of 3:00 to 7:00 PM.

[7] The midday peak hour of 12:00 to 1:00 PM occurs within the midday peak period of 10:00 AM to 1:00 PM.

Note: Degraded operating conditions on the SFOBB/I-80 in 2010 (without reuse) would be attributable to regional growth. The additional vehicle-trips associated with each reuse alternative would contribute to increases in queues at the SFOBB toll plaza, congestion and queues in downtown San Francisco, and in the duration of the peak periods.

Source: DON 1997d.

Table F-6. SFOBB/I-80 Yerba Buena Island Ramp Volumes and Maximum Queue
Existing and Year 2025 Weekday and Weekend Peak Hour Conditions

Peak Hour/Ramp[3]	*Existing (1994) (Operational Base)*		*2025 Background Conditions (No Action)*		*2025 Alternative 1*		*2025 Alternative 2*		*2025 Alternative 3*	
	Volume	*Queue*[4]	*Volume*	*Queue4*	*Volume*	*Queue4*	*Volume*	*Queue4*	*Volume*	*Queue4*
Weekday AM Peak Hour										
westbound on-ramp1 (east side)	40	–	15	–	145	–	40	–	75	–
westbound on-ramp[2] (west side)	90	–	35	–	335	7	90	–	170	–
westbound off-ramp (east side)	190	–	45	–	160	–	145	–	160	–
eastbound on-ramp (east side)	215	–	80	–	300	–	135	–	190	–
eastbound on-ramp (west side)	120	–	95	–	235	–	205	–	235	–
eastbound on-ramp (east side)	20	–	5	–	145	–	135	–	145	–
Total ramp volumes	675		275		1320		750		975	
Weekday PM Peak Hour										
westbound on-ramp (east side)	25	–	15	–	85	–	70	–	65	–
westbound on-ramp (west side)	135	–	60	–	355	27	295	–	270	–
westbound off-ramp (east side)	240	–	35	–	375	–	145	–	160	–
eastbound on-ramp (east side)	250	–	80	–	300	–	275	–	250	–
eastbound on-ramp (west side)	60	–	55	–	535	36	190	–	240	–
eastbound on-ramp (east side)	20	–	5	–	145	–	45	–	60	–
Total ramp volumes	730		250		1795		1020		1045	

Table F-6. SFOBB/I-80 Yerba Buena Island Ramp Volumes and Maximum Queue
Existing and Year 2025 Weekday and Weekend Peak Hour Conditions

(continued)

Peak Hour/Ramp[3]	*Existing (1994) (Operational Base)*		*2025 Background Conditions (No Action)*		*2025 Alternative 1*		*2025 Alternative 2*		*2025 Alternative 3*	
	Volume	*Queue*[4]	*Volume*	*Queue*[4]	*Volume*	*Queue*[4]	*Volume*	*Queue*[4]	*Volume*	*Queue*[4]
Weekend midday Peak Hour										
westbound on-ramp (east side)	20	–	15	–	195	–	90	–	110	–
westbound on-ramp (west side)	125	–	35	–	570	242	260	–	320	–
westbound off-ramp (east side)	130	–	45	–	175	–	150	–	100	–
eastbound on-ramp (east side)	155	–	80	–	480	–	295	–	320	–
eastbound on-ramp (west side)	75	–	95	–	230	–	210	–	160	–
eastbound on-ramp (east side)	20	–	5	–	60	–	50	–	30	–
Total ramp volumes	**525**		**275**		**1710**		**1055**		**1040**	

[1] Ramp located east of Yerba Buena Island tunnel.

[2] Ramp located west of Yerba Buena Island tunnel.

[3] Maximum on-ramp capacity = 330 vehicles per hour per ramp, except the eastbound on-ramp on the east side of the tunnel = 900 vehicle; maximum eastbound off-ramp capacity (west of the tunnel) = 500 vehicles per ramp. Other off-ramps = 560 vehicles per ramp. Total on-ramp capacity = 1,560 vehicles per hour and total off-ramp capacity = 1,620 vehicles per hour.

[4] Number of vehicles

Source: DON 1997d.

F.3-B TRANSPORTATION

Transportation Analysis Methodology and Assumptions

This appendix presents the methodology and assumptions used in the transportation analysis of this EIS.

Existing Freeway Volumes

Table F-7 presents 24-hour volumes and average daily vehicle trips (ADT's) from traffic counts conducted by Caltrans for the Bay Bridge/I-80 during weekday and weekend periods (Caltrans 1993).

Ramp Volumes

Table F-8 presents the westbound and eastbound traffic volumes on the on- and off-ramps between Yerba Buena Island and the Bay Bridge/I-80. 1994 Caltrans traffic count information for 1994 was used for the ramps.

Land Use Program

The reuse alternatives in Chapter 2, Proposed Action and Alternatives, were defined using 26 classifications of land use assigned to approximately 15 delineated areas of the NSTI property. For purposes of the traffic analysis, these 15 areas were aggregated into 8 Traffic Analysis Zones (TAZs), 7 on Treasure Island and 1 on Yerba Buena Island. The 8 TAZs are shown on the Figure F-3 for Alternatives 1, 2, and 3, respectively. Land use classifications were then used to calculate total trips that would be generated from projected reuses.

Table F-9 presents aggregated acreages, units, or trips for the individual land use categories for each of the community reuse alternatives. The EIS developed land use data for the reuse alternatives based on information from the Reuse Plan and the San Francisco Planning Department.

Policy Summary

The following policies from the Draft Reuse Plan address regional access, street systems, transit, and water transportation; these were developed during the community reuse planning process.

- Develop waterborne transportation as the primary means of access to Treasure Island;
- Establish transit and pedestrian-based development on Treasure Island;
- Establish a multimodal internal circulation system that emphasizes non-auto modes; and
- Promote a regional system of ferry landings that are accessible by a diversity of travel modes.

Table F-7
24-hour Mainline Counts and Total Daily Trips

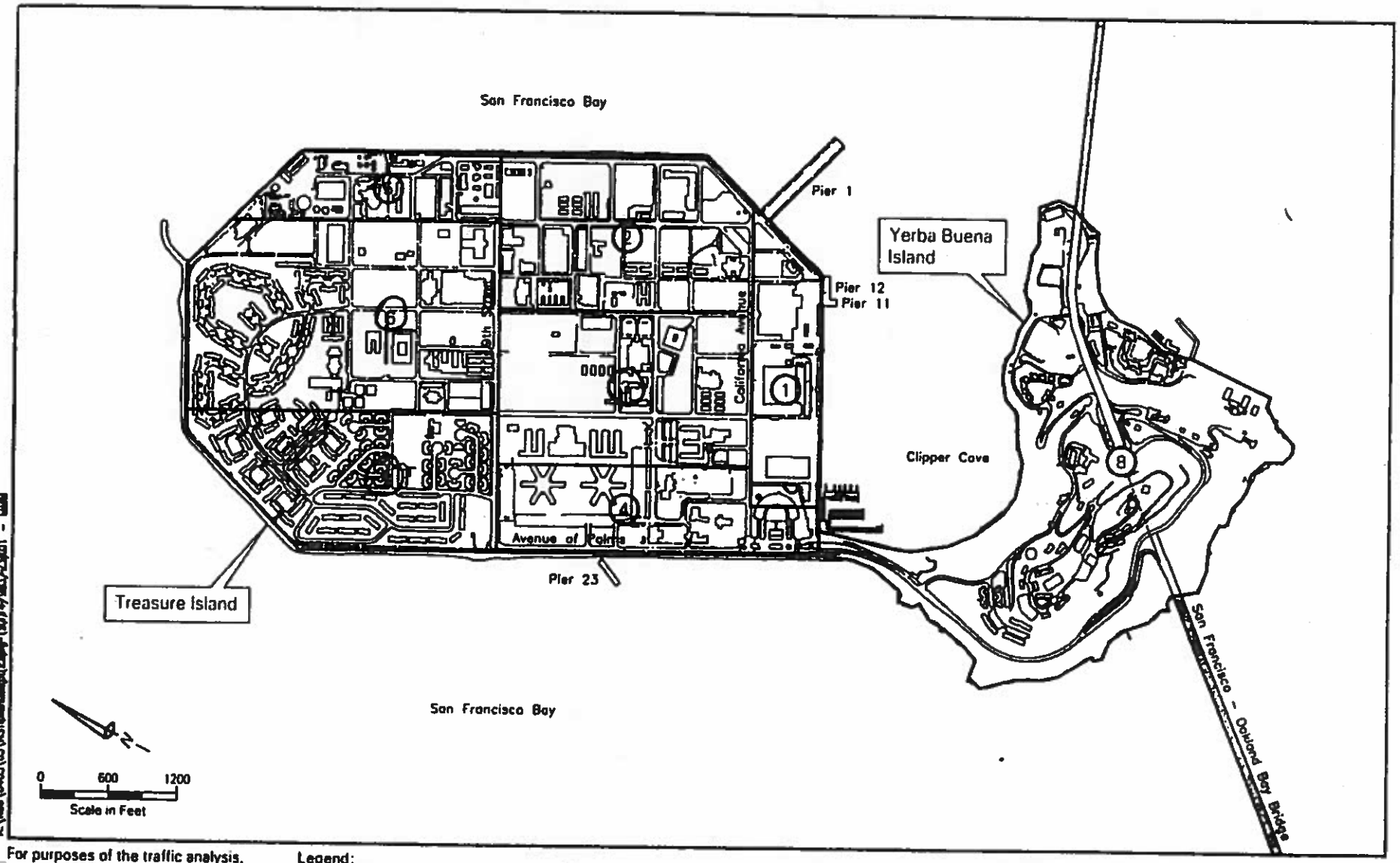
Time	I-80 Westbound Weekday (vph)	Weekend (vph)	Time	I-80 Eastbound Weekday (vph)	Weekend (vph)
12 - 1 AM	1,249	2,080	12 - 1 AM	2,499	4,491
1 - 2	. 792	1,226	1 - 2	1,442	3,367
2 - 3	597	747	2 - 3	986	2,669
3 - 4	689	727	3 - 4	679	1,368
4 - 5	1,342	812	4 - 5	735	946
5 - 6	4,689	1,886	5 - 6	1,653	1,218
6 - 7	9,798	3,227	6 - 7	4,517	2,293
7 - 8	10,762	4,365	7 - 8	7,925	3,936
8 - 9	10,026	5,865	8 - 9	8,356	5,307
9 - 10	8,461	7,760	9 - 10	6,216	6,281
10 - 11	7,423	8,476	10 - 11	5,900	7,077
11 - 12	6,898	8,940	11 - 12	6,442	7,028
12 - 1 PM	6,435	8,373	12 - 1 PM	6,585	6,937
1 - 2	6,408	8,527	1 - 2	7,056	6,974
2 - 3	6,475	7,534	2 - 3	8,855	8,021
3 - 4	7,554	7,152	3 - 4	10,266	8,792
4 - 5	8,289	7,597	4 - 5	9,156	7,608
5 - 6	8,505	7,804	5 - 6	9,747	9,625
6 - 7	7,528	7,753	6 - 7	9,931	9,193
7 - 8	5,752	7,052	7 - 8	8,505	6,961
8 - 9	4,170	5,280	8 - 9	6,071	5,411
9 - 10	4,064	5,759	9 - 10	6,157	5,585
10 - 11	3,804	5,488	10 - 11	5,458	6,074
11 - 12	2,429	4,083	11 - 12	4,833	6,009
Daily Total	134,139	128,513	Daily Total	139,970	133,171

Source: Caltrans 1993.

Table F-8. Ramp Volumes - 1994 Conditions

	I-80 Westbound (Weekday)				I-80 Eastbound (Weekday)			
Time	Macalla Rd. Vph	On-Ramp T.I. Road vph	Total vph	Off-Ramp T.I. Road (vph)	T.I. Road vph	Off-Ramp T.I. Road vph	Total vph	On-Ramp T.I. Road (vph)
12 - 1 AM	1	24	25	28	10	7	17	27
1 - 2	0	12	12	20	4	3	7	8
2 - 3	0	6	6	15	8	4	12	7
3 - 4	3	3	6	10	3	1	4	7
4 - 5	0	8	8	27	5	1	6	12
5 - 6	2	26	28	178	22	3	25	63
6 - 7	15	53	68	470	118	52	170	344
7 - 8	42	86	128	198	122	16	138	226
8 - 9	32	64	96	98	64	32	96	139
9 - 10	18	62	80	142	73	17	90	127
10 - 11	23	83	106	179	74	23	97	125
11 - 12	25	120	145	150	79	20	99	161
12 - 1 PM	29	93	122	177	74	31	105	149
1 - 2	31	85	116	127	79	29	108	157
2 - 3	21	165	186	183	82	23	105	248
3 - 4	45	179	224	210	85	32	117	313
4 - 5	24	142	166	242	78	33	111	206
5 - 6	22	65	87	183	78	16	94	136
6 - 7	19	62	81	168	64	15	79	148
7 - 8	16	47	63	135	57	45	102	102
8 - 9	12	40	52	122	54	12	66	71
9 - 10	32	84	116	104	50	25	75	79
10 - 11	5	48	53	65	39	15	54	50
11 - 12	3	22	25	46	27	14	41	24
Daily Total	420	1,579	1,999	3,277	1,349	469	1,818	2,929

Source: Caltrans 1994.



For purposes of the traffic analysis, NSTI was divided into eight Traffic Analysis Zones, seven on Treasure Island and one on Yerba Buena Island.

Legend:

Traffic Analysis Zone (TAZ) boundary

(2) TAZ number

Traffic Analysis Zones for Community Reuse Alternatives

Naval Station Treasure Island, California

Source: Developed by KORVE 1997

Figure F-3

Table F-9
Land Use Program for the Community Reuse Alternatives

	Alternative One			Alternative Two			Alternative Three		
	Land Use	Size	Unit	Land Use	Size	Unit	Land Use	Size	Unit
ZONE 1:							ZONE 1:		
	Museum	15	tsf	Themed Attraction	19	acres	Museum	15	tsf
	Film Production	501	tsf	Entertainment Center	300	tsf	Film Production	501	tsf
	Marina	403	slips	Museum	49.799	tsf	Marina	503	slips
				Marina	500	slips			
ZONE 2:									
	Themed Attraction	59	acres	Themed Attraction	41	acres	Themed Attraction	39	acres
	Outdoor Recreation	6.1	acres	Amphitheater	5000	seats	Open Space	38	acres
				Outdoor Recreation	10.8	acres	Community / Institutional	89.629	tsf
ZONE 3:									
	Office	100	tsf	Themed Attraction	15	acres	Office	178.8375	tsf
	Community / Institutional	183	tsf	Community / Institutional	182.952	tsf	Conference	80	tsf
	Job Corps	835	trips	Job Corps	835	trips	Job Corps	835	trips
							Community / Institutional	128.04	tsf
ZONE 4:									
	Restaurant	225	tsf	Office	100	tsf	Restaurant	13.2	tsf
	Retail	24	tsf	Hotel	1200	rooms	Wedding Chapel	9.884	tsf
	Open Space	30	acres	Open Space	15.3	acres	Office	35.7675	tsf
	Hotel	1300	rooms	Conference	100	tsf	Community / Institutional	12.804	tsf
				Wedding Chapel	9.884	tsf	Open Space	24	acres
							Warehouse	34.848	tsf
ZONE 5:									
	Water Treatment Plant	10	acres	Police, Fire & Medical	60.984	tsf	Fire School	244	trips
	Brig	109	trips	Fire School	244	people	Community / Institutional	25.608	tsf
	Fire School	244	trips	Open Space	15.3	acres	Water Treatment Plant	3	acres
	Police, Fire & Medical	61	tsf	Brig	109	trips	Brig	109	trips
				Water Treatment Plant	10	acres	Police, Fire & Medical	2.61	tsf
				Community / Institutional	34.848	tsf			
ZONE 6:									
	Outdoor Recreation	40.8	acres	Outdoor Recreation	7.2	acres	Outdoor Recreation	3.5	acres
	Residential	1250	units	Open Space	20.4	acres	Police, Fire & Medical	10.441	tsf
	Elementary School	152	trips	Golf Course	8	holes	Elementary School	152	trips
	Child Development Center	10	tsf				Child Development Center	10.123	tsf
ZONE 7:									
	Residential	1250	units	Golf Course	10	holes	Residential	980	units
							Police, Fire & Medical	2.61	tsf
ZONE 8:									
	Open Space	58	acres	Open Space	57	acres	Open Space	57	acres
	Conference	4	acres	Conference	30.241	tsf	Conference	30.241	tsf
	Restaurant	12	tsf	Restaurant	12	tsf	Restaurant	12.15	tsf
	Hotel	150	rooms	Hotel	150	rooms	Hotel	150	rooms
	Mixed	12000	sq. ft.	Residential	250	units	Residential	180	units
	Residential	340	units	Community / Institutional	0	tsf	Community / Institutional	348.48	tsf
	Community / Institutional	348	tsf						
TOTALS:									
	Amphitheaters			Amphitheaters	5000	seats	Amphitheaters		
	Brig	109	trips	Brig	109	trips	Brig	109	trips
	Child Development Center	10	tsf	Child Development Center			Child Development Center	10	tsf
	Community/Institutional	531	tsf	Community/Institutional	218	tsf	Community/Institutional	805	tsf
	Conference	4	acres	Conference	130	tsf	Conference	110	tsf
	Elementary School	152	trips	Elementary School			Elementary School	152	trips
	Entertainment Center			Entertainment Center	300	tsf	Entertainment Center		
	Film Production	501	tsf	Film Production			Film Production	501	tsf
	Fire School	244	trips	Fire School	244	trips	Fire School	244	trips
	Golf Course			Golf Course	18	holes	Golf Course		
	Hotel	1450	rooms	Hotel	1350	rooms	Hotel	150	rooms
	Job Corps	835	trips	Job Corps	835	trips	Job Corps	835	trips
	Marina	403	slips	Marina	500	slips	Marina	503	slips
	Mixed Use	12000	sq. ft.	Mixed Use			Mixed Use		
	Museum	15	tsf	Museum	50	tsf	Museum	15	tsf
	Office	100	tsf	Office	100	tsf	Office	215	tsf
	Open Space	88	acres	Open Space	108	acres	Open Space	117	acres
	Outdoor Recreation	47	acres	Outdoor Recreation	18	acres	Outdoor Recreation	3.5	acres
	Police Fire Medical	61	tsf	Police Fire Medical	61	tsf	Police Fire Medical	16	tsf
	Residential	2840	units	Residential	250	units	Residential	1140	units
	Restaurant (Quasay)	237	tsf	Restaurant	12	tsf	Restaurant	25	tsf
	Retail	24	tsf	Retail			Retail		
	Themed Attraction	59	acres	Themed Attraction	75	acres	Themed Attraction	39	acres
	Warehouse			Warehouse			Warehouse	35	tsf
	Water Treatment Plant	10	acres	Water Treatment Plant	10	acres	Water Treatment Plant	3	acres
	Wedding Chapel			Wedding Chapel	10	tsf	Wedding Chapel	10	tsf

Regional Access Policies

- Establish ferry service to Treasure Island in conjunction with publicly oriented uses, and increase service as visitor volumes expand;
- Place a priority on making seismic improvements to the causeway; and
- Encourage Caltrans to consider seismic and geometric improvements to the SFOBB as part of the bridge retrofit.

Street System Policies

- Establish a network of streets that builds upon the existing Treasure Island grid to accommodate travel demand and distribute traffic;
- Emphasize shoreline-to-shoreline connections across the island that provide direct linkages from the destinations within the island to the water's edge, aid in orienting users to the site, and maximize opportunities for public access to the shoreline;
- Develop multimodal streets on Treasure Island that accommodate significant levels of bicycle and pedestrian traffic as well as shuttles, transit buses, and automobiles;
- Promote high visibility and accessibility of the ferry terminals through the design of the street system;
- Incorporate amenities in the design of the street network for pedestrians and bicyclists; and
- Maintain the existing street network on Yerba Buena Island.

Transit System Policies

- Establish bus and shuttle services on the islands; and
- Establish a coordinated transit plan for providing access to Treasure Island that brings together Muni, Alameda-Contra Costa Transit District (AC Transit), and ferry operations.

Water Transportation System Policies

- Upgrade facilities to accommodate ferry service on the east side, and establish a new ferry terminal on the west side of Treasure Island. Design both facilities to accommodate water taxis;
- Develop ferry access to be widely available, frequent, and attractive to patrons. Encourage the use of water taxis to supplement regularly scheduled ferries for occasional trips; and
- Ensure that all development agreements, owner participation agreements (OPAs) and leases contribute to the establishment of the Treasure Island ferry access system, commensurate with the level of demand projected for each use.

The following 15 policies from the *Naval Station Treasure Island Reuse Plan Transportation Background Report* were developed during the community reuse planning process to assist in the

formulation of a Reuse Plan. These policies support the use of transit in the form of ferries and buses to NSTI, and the assumptions used in the estimation of trip generation.

1. Support the earliest possible development of ferry service to NSTI from both San Francisco and the East Bay.

2. Ferry access should be widely available, frequent and attractively priced. Regularly scheduled ferries would be supplemented by ferry taxis for occasional trips.

3. Support a visitor-oriented development that requires most visitors to travel by ferry and all visitors to travel via high occupancy modes. Enforce this policy by requiring ticket sales to be completed at landside terminals for tickets that combine ferry and admission. Prohibit visitor parking and ticket sales at the themed attraction to ensure that visitors would in fact take the ferry.

4. All children attending the planned elementary school would arrive via school bus. Pick up and drop off by parents would be prohibited, except for emergencies.

5. Bus transit services would continue to have a role at NSTI. Bus services would be developed connecting the ferry terminal to island destinations (island shuttle) and providing local on-site circulation.

6. Bus services between the island and the mainland would continue to play a role in moving people between the island and the mainland areas.

7. Ferry service should be initially established in the area of Pier 1/Pier ½ on the east side of the island, and would accommodate ferries from both the East Bay and San Francisco. This would serve as the "front door" to the visitor-oriented use. Convenient shuttle services would connect this location with other sites on the island.

8. Ferry service would ultimately be implemented at a new terminal on the west side of the island, separating the travel to and from the East Bay and San Francisco locations. Regularly scheduled ferry service would ultimately be offered from multiple locations in both East Bay and San Francisco. The initial services would be offered from San Francisco Ferry Building and Jack London Square in Oakland.

9. The ferry plan must consider the landside impacts, including parking demand on the landside and traffic impacts for travel to the ferry terminals.

10. All employers on the island would be encouraged to provide transit passes at no charge to employees to encourage transit use.

11. All employers providing parking on the island would be required to charge employees for parking, minimizing auto use.

12. All development agreements would include detailed Travel Demand Management (TDM) plans designed to show how the developer would ensure that traffic generation is minimized.

13. Any residential development planned for the NSTI, beyond the initial Phase I units, would be developed as a "unique community," which would limit auto ownership and auto use so as not to unduly impact the SFOBB.

14. Other TDM measures, including flextime, employer provided shuttles and subsidy of transit services should be aggressively pursued on the island.

15. Encourage the use of alternative fuels for all transit vehicles on the island, including the island shuttle.

Transportation Features Assumed for the Three Reuse Alternatives

The following discussion summarizes the transportation features assumed for the three Community Reuse Alternatives:

- The Treasure Island street grid system would maximize the use of existing streets and access points;
- All street rights-of-way on Treasure Island would contain sidewalks;
- Pedestrian and bicycle facilities would be provided;
- Ferry service would be provided between Treasure Island and San Francisco and the East Bay;
- Bus and shuttle service would be provided on NSTI and to NSTI from San Francisco and the East Bay;
- A coordinated transit plan for access to NSTI with the San Francisco Municipal Railway (Muni) and ferry operators would be established;
- A transportation demand management (TDM) program would be established. Measures that would be implemented would include the following:
  - establish ferry ridership targets for new users;
  - restrict visitor parking;
  - require employers to provide incentives to reduce vehicular demand;
  - establish an employee transportation coordinator;
  - require that residential development develop and implement measures to minimize auto usage (limits on parking, road pricing, integrated community design);
  - prohibit parking for certain uses such as the themed attraction;
  - require school students from San Francisco to arrive by bus;
  - establish parking restrictions;

- prohibit free parking;
- require TDM plans for all new users to meet transit ridership targets and require monitoring;
- require facilities for bicycles in new uses, as well as in all ferries; and
- consider car-share and bicycle rental programs

Planned Seismic Retrofit of the SFOBB/I-80. The suspension bridge that connects San Francisco and Yerba Buena Island will undergo major work on its towers, superstructure, foundation, and approaches during the planning horizon. A new replacement east span will be constructed in place of the existing bridge. The SFOBB east span project will include an upgrade of the eastbound on-ramp on the east side of the tunnel. This on-ramp will be built to Caltrans standards with improved sight and merging distances. A bicycle lane from Oakland to Yerba Buena Island on the new east span is also a possible component of that project.

In evaluating the reuse alternatives it has been assumed that the SFOBB/I-80 structure and connecting ramps to NSTI would remain as they are, except the eastbound on-ramp on the east side of the tunnel. The capacity of this ramp has been assumed to be 900-1,000 vph instead of 330 vph as it exists today. The substandard geometries of other ramps limit their vehicle processing capacities.

Transportation Plan Assumptions

In order to fulfill the transportation policies for NSTI listed above, a number of transportation improvements would need to be in place. The reuse planning effort developed a transportation plan for various phases of development on NSTI. The transportation service assumptions that were assumed for each community reuse alternative are summarized below. The transportation plan for the Reuse Plan was presented in the *Naval Station Treasure Island Reuse Plan Transportation Background Report.*

Alternatives 1 and 2 - Phase 3 of the Reuse Plan Transportation Plan

- Both Alternatives 1 and 2 depend heavily on ferry service to NSTI to handle the predicted levels of visitors. On Treasure Island, the southeastern pier (either Pier 1 or Pier 12) would still be in service. In addition, a new pier on the western side of the island would be constructed.
- Ferry access would be extended on both sides of the bay. New terminals could be created at Golden Gate Fields on Gilman Street, along the border of Albany and Berkeley, and at Candlestick Point in San Francisco.

Due to the increased intensity of land uses, there would be a heightened demand for ferry service. The numbers of parking spaces identified in the plan that would be needed at ferry terminals are as follows:

- 1,100 parking spaces at the San Francisco Ferry Building;
- 1,100 parking spaces at Candlestick Point; and,

– 1,850 parking spaces in the East Bay, evenly split between Jack London Square and Golden Gate Fields.

- The Reuse Plan Implementation Strategy identified the need to provide off-site parking at the San Francisco Ferry Building, Jack London Square, Candlestick Point and the East Bay (Golden Gate Fields).
- Additional vessels would be needed to handle the ferry service increase in the bay. The new facilities at Golden Gate Fields and Candlestick Point would each require two dedicated ferries. In addition, there would be an extra vessel for the Ferry Building during peak periods, plus limited use of supplemental ferries during peak periods.

Frequency during peak periods:

– 10 trips per hour from the Ferry Building (6 minute headways);

– 5 trips per hour from Candlestick Point (12 minute headways); and

– 8 trips per hour from the East Bay, divided between the 2 terminals (15-minute headways for each terminal).

- Shuttle bus service around the two islands would be provided. A total of four vehicles, plus one back-up vehicle would be provided. Furthermore, two additional back-up vehicles would be used to cover the peak periods, plus a secondary shuttle loop.
- The AC Transit T route would also be expanded, with headways shortened to 10 minutes during the peak and 15 minutes during the non-peak times. Since this service is no longer provided, the service requirement to accommodate demand during the peak and non-peak periods was determined, and included in section 4.5, Transportation as mitigation.

Alternative 3 - Phase 2 of the Reuse Plan Transportation Plan

- The intensity of the land uses in Alternative 3 is sufficient to warrant the addition of ferry service to NSTI. Either Pier 1 or Pier 12 would be used, both located on the southeast corner of Treasure Island. Modifications would have to be made for either pier, so they can be used by conventional ferries, and in order to meet American with Disabilities Act (ADA) requirements.
- For the ferry service, four vessels would be in use, two each from the San Francisco Ferry Building and from Jack London Square in Oakland. At the Ferry Building, an additional float would be needed to handle the new ferry service, while no modifications would be needed for the Jack London Square service.
- Parking requirements for the new ferry service include a need for significant parking at the two terminal sites. The off-site parking requirement was identified to be 950 and 950 parking spaces, at Jack London and the Ferry Building, respectively.
- On NSTI, a shuttle bus service would be implemented. This service would be necessary to connect the Treasure Island ferry terminal to the major activity centers of the two islands. A fleet of 3 buses would be needed for this service, and would run approximately every 15 minutes.

- In addition to the on-island buses, there also would be expanded AC Transit T route service to both Treasure Island and Yerba Buena Island. No new stops are planned, but headways would be decreased to 15 minutes during the peak, and between 20 and 30 minutes off-peak. Similar to Alternatives 1 and 2, since the AC Transit service is no longer provided, the service requirement to accommodate demand during the peak and non-peak periods was determined, and included in section 4.5, Transportation, as mitigation.

Travel Demand

Travel demand refers to new auto, transit and pedestrian traffic generated by proposed land uses. These include traffic (in trips) entering and leaving NSTI, as well as trips between the various land uses on NSTI. Preliminary trip generation estimates were conducted during the reuse planning effort. Trip generation, trip distribution and mode split estimates were determined for the various land uses proposed on NSTI. Due to the isolated nature of NSTI, standard San Francisco and national rates were adjusted. The reuse planning team conducted this effort in cooperation with the San Francisco Planning Department.

For this EIS, the work conducted by the reuse planning team and the San Francisco Planning Department was reviewed. In general, trip generation rates, distribution and mode split estimates developed by the reuse planning team were used. Travel demand information needed to be developed, however, for other land uses not evaluated for the Reuse Plan. In addition, auto occupancy factors for vehicle trips to NSTI, and vehicle trips to ferry terminals were reviewed, and adjusted in some cases.

Trip Generation

Tables F-10 and F-11 summarize the trip generation rates used to estimate community reuse alternative-generated traffic, for weekday and weekend conditions, respectively. Tables F-12 and F-13 present the work/non-work split for weekday and weekend conditions, respectively.

Overall community reuse alternative travel demand to and from NSTI was estimated from person-trip generation rates obtained from a variety of sources, including the San Francisco Planning Department's *Citywide Travel Behavior Survey* (*CTBS*) and *Guidelines for Environmental Review: Transportation Impacts* (July 1991), the *Port of San Francisco Waterfront Land Use Plan Draft EIR* (December 1996), *Hunters Point Transportation Plan* (1996), information from existing operations on NSTI (e.g., brig and elementary schools), as well as input from the San Francisco Planning Department. Weekday and weekend person-trips projected to be generated in 2010 under the three reuse alternatives are shown in Tables F-14 and F-15, respectively, as summarized below.

The Reuse Plan for NSTI provides for a balanced mix of land uses that would serve to create a new neighborhood. As such, it is anticipated that there would be a substantial number of trips that would occur between the various land uses, such as between residential and retail uses and between themed attraction and restaurant uses. Such trips were classified as "internal" trips. Internal trips within NSTI would also occur due to the fact that the development would occur on the islands that have delay penalties for bridge crossings due to congestion and substandard ramp configurations, and, therefore, residents and visitors would limit the number of crossings they would make throughout the day.

Table F-10
Trip Generation and In/Out Split—Weekday

		Person-Trip Rate	Peak		AM Peak				PM Peak			
					Worker		Visitor		Worker		Visitor	
Land Use	Units	Daily	AM	PM	In	Out	In	Out	In	Out	In	Out
Themed Attraction (1)	acres	30400.00	1.7%	9.8%	1.00	0.00	1.00	0.00	0.37	0.63	0.30	0.70
Themed Attraction	acres	12200.00	1.7%	9.8%	1.00	0.00	1.00	0.00	0.37	0.63	0.30	0.70
Themed Attraction	acres	6100.00	1.7%	9.8%	1.00	0.00	1.00	0.00	0.37	0.63	0.30	0.70
Office (2)	ksf	18.10	13.8%	17.3%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50
Hotel (3)	rooms	6.92	3.3%	9.5%	0.37	0.63	1.00	0.00	0.37	0.63	0.47	0.53
Retail (4)	ksf	168.00	0.0%	9.2%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50
Outdoor Recreation (5)	acres	50.00	4.0%	8.0%	0.70	0.30	1.00	0.00	0.30	0.70	0.30	0.70
Open Space (6)	acres	20.00	4.0%	8.0%	0.70	0.30	1.00	0.00	0.30	0.70	0.30	0.70
Marina (7)	slips	2.96	2.7%	6.4%	0.33	0.67	0.33	0.67	0.60	0.40	0.60	0.40
Museum (8)	ksf	50.00	0.0%	9.2%	1.00	0.00	1.00	0.00	0.30	0.70	0.30	0.70
Brig (9)	trips	109.00	37.9%	33.1%	0.67	0.33	0.90	0.10	0.40	0.60	0.40	0.60
Job Corps (10)	trips	635.00	43.0%	43.5%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50
Elementary School (11)	trips	152.00	49.3%	19.7%	1.00	0.00	0.60	0.40	0.00	1.00	0.00	1.00
Film Production (12)	ksf	1.14	0.0%	0.4%	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Fire School (13)	trips	244.00	46.0%	50.0%	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Conference (14)	ksf	5.93	9.8%	9.8%	1.00	0.00	0.90	0.10	0.00	1.00	0.10	0.90
Residential (15)	units	10.00	13.8%	17.3%	0.00	1.00	0.34	0.66	1.00	0.00	0.32	0.68
Restaurant (16)	ksf	96.51	1.0%	7.9%	0.94	0.06	0.94	0.06	0.70	0.30	0.70	0.30
Warehouse (17)	ksf	4.88	11.7%	15.2%	0.72	0.28	0.72	0.28	0.35	0.65	0.35	0.65
Golf Course (18)	holes	37.59	8.6%	8.9%	0.83	0.17	0.83	0.17	0.52	0.48	0.52	0.48
Water Treatment Plant (19)	acres	0.00										
Entertainment Center (20)	ksf	46.81	0.0%	3.0%	1.00	0.00	0.50	0.50	0.50	0.50	0.50	0.50
Amphitheater (21)	seats	2.01	0.0%	30.0%	1.00	0.00	0.50	0.50	0.50	0.50	0.50	0.50
Community / Institutional (22)	ksf	50.00	10.0%	10.0%	1.00	0.00	0.50	0.50	0.00	1.00	0.00	1.00
Child Development Center (23)	ksf	0.00										
Police, Fire & Medical (24)	ksf	24.00	10.0%	10.0%	1.00	0.00	0.50	0.50	0.20	0.80	0.20	0.80
Wedding Chapel (25)	ksf	0.00										
Mixed Use (26)	ksf	45.50	2.0%	2.0%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50

Sources:

(1) Korve Engineering, Distribution of visitors to So. Cal. themed attraction; N/N 3/25 memo to Dave Fellham
Trip generation based on projected number of visitors for each development alternative.

(2) CTBS Table A3, Table 39, AM Peak from ITE AM Peak/Weekday ADT relationship

(3) CTBS SD1, AM Peak from ITE relationship, PM Peak per 4/11/96 DCP memo, weekend rate per 4/1/96 DCP memo

Table F-10
Trip Generation and In/Out Split—Weekday (continued)

(4) S.F. Waterfront EIR SD 2,3,4, weekend rate per 4/11/96 DCP memo
(5) Draft Hunter's Point Transportation Plan, 1996; weekday, weekend same per 4/23 memo
(6) Draft Hunter's Point Transportation Plan, 1996; passive open space
(7) ITE (420)
(8) Draft Hunter's Point/Weekday-weekend relationship from Exploritorium, 4/11/96, and work/non-work splits from CTBS Cultural
(9) San Francisco City and County Sheriff, based on 180 inmates
(10) Job Corps Environmental Evaluation
(11) 4/9/96 DCP Memorandum
(12) Conversation with Robin Elsman at SF Film and Video Arts Commission 4/10/96
(13) 4/10/96 DCP memo; Conversation with Assistant Director of Navy Fire Training Facility 4/10/96, Butte College Fire Sciences Dept. 4/6/96
(14) Presidio Transportation Planning & Analysis Technical Report, Oct 1993
(15) DCP Guidelines - ITE AM Peak/ADT relationship, weekend same as PM weekday, per 4/24/96 DCP memo
(16) ITE (831)
(17) ITE (150)
(18) ITE (430)
(19) Trip generation rate assumed to be 0.0, due to minimal number of trips. Korve Engineering, April 1997
(20) ITE (320)
(21) Trip generation rate based on two visitor trips per seat and one worker per 100 seats. All amphitheater events would occur in the evening, with one event per day. Korve Engineering, April 1997
(22) CTBS SD1 - Institutional
(23) Trip generation rate assumed to be 0.0. Majority of trips linked to Job Corps, Elementary School, and residential. Korve Engineering, April 1997
(24) ITE (630)
(25) Wedding Chapel not anticipated to generate trips on a daily basis. Korve Engineering, April 1997
(26) Draft Hunter's Point Transportation Plan, 1996

Table F-11. Trip Generation and In/Out Split—Weekend

Land Use	Units	Person-Trip Rate		Midday			
				Worker		Visitor	
		Daily	Peak	In	Out	In	Out
Themed Attraction (1)	acres	30400.00	5.5%	0.0%	1.00	0.90	0.10
Themed Attraction	acres	12200.00	5.5%	0.0%	1.00	0.90	0.10
Themed Attraction	acres	6100.00	5.5%	0.0%	1.00	0.90	0.10
Office (2)	ksf	0.00	17.3%	0.0%	1.00	0.50	0.50
Hotel (3)	rooms	6.92	8.2%	37.0%	0.63	0.47	0.53
Retail (4)	ksf	168.00	9.9%	0.0%	1.00	0.50	0.50
Outdoor Recreation (5)	acres	50.00	8.0%	30.0%	0.70	0.30	0.70
Open Space (6)	acres	20.00	8.0%	30.0%	0.70	0.30	0.70
Marina (7)	slips	3.22	27.0%	44.0%	0.56	0.44	0.56
Museum (8)	ksf	75.00	14.4%	70.0%	0.30	0.70	0.30
Brig (9)	trips	195.00	33.1%	40.0%	0.60	0.40	0.60
Job Corps (10)	trips	1646.00	12.1%	0.0%	1.00	0.50	0.50
Elementary School (11)	trips	0.00					
Film Production (12)	ksf	1.14	4.0%	50.0%	0.50	0.50	0.50
Fire School (13)	trips	1.00	9.2%	0.0%	1.00	0.00	1.00
Conference (14)	ksf	5.93	9.8%	50.0%	0.50	0.50	0.50
Residential (15)	units	10.00	17.3%	0.0%	1.00	0.50	0.50
Restaurant (16)	ksf	92.65	11.9%	53.0%	0.47	0.53	0.47
Warehouse (17)	ksf	1.22	9.8%	64.0%	0.36	0.64	0.36
Golf Course (18)	holes	42.43	10.8%	72.0%	0.28	0.72	0.28
Water Treatment Plant (19)	acres	0.00					
Entertainment Center (20)	ksf	46.81	10.0%	50.0%	0.50	0.50	0.50
Amphitheater (21)	seats	2.01	20.0%	50.0%	0.50	0.50	0.50
Community / Institutional (22)	ksf	75.00	5.0%	0.0%	1.00	0.00	1.00
Child Development Center (23)	ksf	0.00					
Police, Fire & Medical (24)	ksf	24.00	10.0%	20.0%	0.80	0.20	0.80
Wedding Chapel (25)	ksf	0.00					
Mixed Use (26)	ksf	45.50	10.0%	50.0%	0.50	0.50	0.50

Sources:

(1) Korve Engineering, Distribution of visitors to So. Cal. themed attraction; N/N 3/25 memo to Dave Fellham
Trip generation based on projected number of visitors for each development alternative.
(2) CTBS Table A3, Table 39, AM Peak from ITE AM Peak/Weekday ADT relationship
(3) CTBS SD1, AM Peak from ITE relationship, PM Peak per 4/11/96 DCP memo, weekend rate per 4/1/96 DCP memo
(4) S.F. Waterfront EIR SD 2,3,4, weekend rate per 4/11/96 DCP memo
(5) Draft Hunter's Point Transportation Plan, 1996; weekday, weekend same per 4/23 memo
(6) Draft Hunter's Point Transportation Plan, 1996; passive open space
(7) ITE (420)
(8) Draft Hunter's Point/Weekday-weekend relationship from Exploritorium, 4/11/96, and work/non-work splits from CTBS Cultural
(9) San Francisco City and County Sheriff, based on 180 inmates
(10) Job Corps Environmental Evaluation
(11) 4/9/96 DCP Memorandum
(12) Conversation with Robin Eisman at SF Film and Video Arts Commission 4/10/96
(13) 4/10/96 DCP memo; Conversation with Asst. Director of Navy Fire Training Facility 4/10/96, Butte College Fire Sciences Dept. 4/6/96
(14) Presidio Transportation Planning & Analysis Technical Report, Oct 1993
(15) DCP Guidelines - ITE AM Peak/ADT relationship, weekend same as PM weekday, per 4/24/96 DCP memo
(16) ITE (831)
(17) ITE (150)
(18) ITE (430)
(19) Trip generation rate assumed to be 0.0, due to minimal number of trips. Korve Engineering, April 1997
(20) ITE (320)
(21) Trip generation rate based on two visitor trips per seat and one worker per 100 seats. All amphitheater events would occur in the evening, with one event per day. Korve Engineering, April 1997
(22) CTBS SD1 - Institutional
(23) Trip generation rate assumed to be 0.0. Majority of trips linked to Job Corps, Elementary School, and residential. Korve Engineering, April 1997
(24) ITE (630)
(25) Wedding Chapel not anticipated to generate trips on a daily basis. Korve Engineering, April 1997
(26) Draft Hunter's Point Transportation Plan, 1996

Table F-12
Work, Non-work Splits—Weekday

	Daily		AM Peak # of		PM Peak # of	
Land Use	Workers	Visitors	Workers	Visitors	Workers	Visitors
Themed Attraction	0.10	0.90	0.19	0.81	0.19	0.81
Office	0.08	0.92	0.50	0.50	0.50	0.50
Hotel	0.10	0.90	0.45	0.55	0.45	0.55
Retail	0.08	0.92	0.08	0.92	0.08	0.92
Outdoor Recreation	0.05	0.95	0.05	0.95	0.05	0.95
Open Space	0.05	0.95	0.05	0.95	0.05	0.95
Marina	0.08	0.92	0.08	0.92	0.08	0.92
Museum	0.08	0.92	0.08	0.92	0.08	0.92
Brig	0.79	0.21	0.97	0.03	0.97	0.03
Job Corps	0.37	0.63	0.57	0.43	0.57	0.43
Elementary School	0.47	0.53	0.50	0.50	1.00	0.00
Film Production	1.00	0.00	1.00	0.00	1.00	0.00
Fire School	0.11	0.89	0.11	0.89	0.11	0.89
Conference	0.08	0.92	0.08	0.92	0.08	0.92
Residential	0.33	0.67	0.50	0.50	0.50	0.50
Restaurant (1)	0.08	0.92	0.08	0.92	0.08	0.92
Warehouse (2)	0.10	0.90	0.10	0.90	0.08	0.92
Golf Course (3)	0.08	0.92	0.08	0.92	0.08	0.92
Entertainment Center (4)	0.08	0.92	0.08	0.92	0.08	0.92
Amphitheatre (5)	0.005	0.995	0.00	0.00	0.10	0.90
Community/Institutional (6)	0.08	0.92	0.08	0.92	0.08	0.92
Police/Fire/Medical (7)	0.05	0.95	0.50	0.50	0.50	0.50
Mixed Use	0.08	0.92	0.08	0.92	0.08	0.92

Notes:

(1) Based on Specialty Retail
(2) From Korve Engineering, May 1997
(3) Based on Museum
(4) Based on Specialty Retail
(5) From Korve Engineering, May 1997
(6) Based on Museum
(7) Based on Office

Table F-13
Work, Non-work Splits—Weekend

	Daily # of		Midday Peak # of	
Land Use	Workers	Visitors	Workers	Visitors
Themed Attraction	0.10	0.90	0.00	1.00
Office	0.00	0.00	0.00	0.00
Hotel	0.10	0.90	0.45	0.55
Retail	0.08	0.92	0.08	0.92
Outdoor Recreation	0.05	0.95	0.05	0.95
Open Space	0.05	0.95	0.05	0.95
Marina	0.08	0.92	0.08	0.92
Museum	0.08	0.92	0.08	0.92
Brig	0.79	0.21	0.97	0.03
Job Corps	0.37	0.63	0.57	0.43
Elementary School	0.00	0.00	0.00	0.00
Film Production	1.00	0.00	1.00	0.00
Fire School	0.00	0.00	0.00	0.00
Conference	0.08	0.92	0.08	0.92
Residential	0.10	0.90	0.10	0.90
Restaurant (1)	0.08	0.92	0.08	0.92
Warehouse (2)	0.10	0.90	0.10	0.90
Golf Course (3)	0.08	0.92	0.08	0.92
Water Treatment Plant	1.00	0.00	1.00	0.00
Entertainment Center (4)	0.08	0.92	0.08	0.92
Amphitheatre (5)	0.005	0.995	0.01	0.99
Community/Institutional (6)	0.08	0.92	0.08	0.92
Child Development Center	0.50	0.50	0.08	0.92
Police/Fire/Medical (7)	0.05	0.95	0.50	0.50
Wedding Chapel	0.50	0.50	0.08	0.92
Mixed Use	0.08	0.92	0.08	0.92

Notes:

(1) Based on Specialty Retail
(2) From Korve Engineering, May 1997
(3) Based on Museum
(4) Based on Specialty Retail
(5) From Korve Engineering, May 1997
(6) Based on Museum
(7) Based on Weekday percentages

Table F-14
Estimated Person-trip Generation by Travel Mode[1]
Weekday Daily, AM and PM Peak Hour (2010)[2]

Mode	*Maximum Construction Alternative*			*Medium Construction Alternative*			*Minimum Construction Alternative*		
	Daily	**AM**	**PM**	**Daily**	**AM**	**PM**	**Daily**	**AM**	**PM**
				Person-trips					
Auto	19,570	1,645	2,660	11,660	715	1,365	10,440	1,075	1,430
Vanpool/ Other	5,890	310	610	4,120	255	455	2,665	280	335
Bus	9,600	700	1,280	7,100	285	910	3,925	430	585
Ferry	34,635	1,530	3,900	35,040	555	4,410	9,580	735	1,260
Internal[3]	48,285	2,835	4,830	17,790	1,150	1,405	18,755	1,820	2,185
Total Person- trips	***117,980***	***7,020***	***13,280***	***75,710***	***2,960***	***8,545***	***45,365***	***4,340***	***5,795***

[1]Includes inbound and outbound trips.

[2]The AM peak hour of 8:00 to 9:00 AM occurs within the AM peak period of 6:00 to 9:00 AM. The PM peak hour of 5:00 to 6:00 PM occurs within the PM peak period of 3:00 to 7:00 PM.

[3]Internal person-trips are by walking, bicycle, and shuttle, internal to the two islands.

Source: Korve Engineering 1997.

Table F-15
Estimated Person-trip Generation by Travel Mode[1]
Weekend Daily and Midday Peak Hour (2010)[2]

Mode	*Maximum Construction Alternative*		*Medium Construction Alternative*		*Minimum Construction Alternative*	
	Daily	**Midday**	**Daily**	**Midday**	**Daily**	**Midday**
Person-trips						
Auto	18,640	2,630	15,780	1,585	13,655	1,555
Vanpool/Other	6,340	585	7,080	525	5,180	340
Bus	8,760	1,110	8,170	875	4,650	510
Ferry	32,120	3,115	36,170	4,235	9,675	1,005
Internal[3]	53,470	4,950	36,365	1,920	40,780	2,550
Total Person-trips	***119,330***	***12,390***	***103,565***	***9,140***	***73,940***	***5,960***

[1]Includes inbound and outbound trips.
[2]The midday peak hour of 12:00 to 1:00 PM occurs within the midday peak period of 10:00 AM to 1:00 PM.
[3]Internal person-trips are by walking, bicycle, and shuttle, internal to the two islands.
Source: Korve Engineering 1997.

Alternative 1 is estimated to generate approximately 117,980 weekday daily person-trips, including 7,020 weekday AM peak hour and 13,280 weekday PM peak-hour person-trips. Under weekend conditions, Alternative 1 would generate approximately 119,330 daily person-trips, including 12,390 midday peak-hour person-trips. Internal trips would represent approximately 40 percent of the daily and peak hour person-trips.

Under Alternative 2, approximately 75,710 weekday daily person-trips would be generated, including 2,960 weekday AM peak hour and 8,545 weekday PM peak hour person-trips (Table F-14). Under weekend conditions, Alternative 2 would generate approximately 103,565 daily person-trips, including 9,140 midday peak hour person-trips (Table F-15).

The number of daily and peak-hour person-trips generated by Alternative 2 would be less than the number generated by Alternative 1. During the weekday, the number of daily person-trips generated by Alternative 2 would be approximately 64 percent of Alternative 1, while during the weekend, the number of daily person-trips generated by Alternative 2 would be approximately 87 percent of Alternative 1. Internal trips would range between approximately 16 to 37 percent of daily and peak hour trips.

Under Alternative 3, it is estimated that approximately 45,365 daily person-trips would be generated during a typical weekday, including approximately 4,340 AM peak hour and approximately 5,795 PM peak hour person-trips (Table F-14). During weekend conditions, Alternative 3 would generate approximately 73,940 daily person-trips, including approximately 5,960 midday peak hour person-trips (Table F-15).

Except as noted, this alternative would generate fewer daily and peak hour person- trips than the other reuse alternatives. During the weekday and weekend trips, Alternative 3 would generate from approximately 40 to 60 percent of Alternative 1 person-trips and from approximately 60 to 70 percent of Alternative 2 person-trips. However, during the weekday AM peak hour, the number of person-trips would be greater than Alternative 2, reflecting the greater number of residential dwelling units in Alternative 3 (approximately 1,065 units in Alternative 3 versus approximately 250 units in Alternative 2).

Trip Distribution

Travel distribution to and from Treasure Island was based on existing factors from the *CTBS* and the *Waterfront Land Use Plan Draft EIR*. Trip distribution factors are specific to the type of trip generated. For example, work trips to the visitor-oriented attractions would not be expected to follow the same distribution patterns as those of the visitors. Table F-16 presents the trip distributions between NSTI and four areas—San Francisco, the East Bay, the North Bay and the South Bay.

Mode Split

Mode split assumptions were made primarily based on a combination of existing and modified policies that emphasized high occupancy modes and recognized the impact of capacity constraints on mode choice. See Policy Summary of this appendix. In general, mode splits were adjusted to recognize the limited roadway access to the islands and accordingly to emphasize non-auto travel modes. Table F-17 presents the mode split assumptions, while Tables F-18 and

F-19 present, respectively, the average vehicle occupancy for vehicle trips to and from NSTI and to the ferry terminals.

Table F-16
Person-trip Distribution—Weekday and Weekend

	San Francisco		East Bay		South Bay/Peninsula		North Bay		Internal	
Land Use	Work %	Visitor %	Work %	Visitor %	Work %	Visitor %	Work %	Visitor %	Work %	Visitor %
Themed Attraction	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Office	56.6	11.6	25.4	5.8	13.7	1.4	4.3	1.2	0.0	80.0
Hotel	55.4	19.9	24.2	17.5	14.3	9.3	6.1	3.3	0.0	50.0
Retail	45.4	0.0	24.2	0.0	14.3	0.0	6.1	0.0	10.0	100.0
Outdoor Recreation	55.4	70.0	24.2	30.0	14.3	0.0	6.1	0.0	0.0	0.0
Open Space	55.4	70.0	24.2	30.0	14.3	0.0	6.1	0.0	0.0	0.0
Marina	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Museum	55.4	58.0	24.2	29.0	14.3	7.0	6.1	6.0	0.0	0.0
Brig	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Job Corps	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Elementary School	55.4	100.0	24.2	0.0	14.3	0.0	6.1	0.0	0.0	0.0
Film Production	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Fire School	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Conference	55.4	58.0	24.2	29.0	14.3	7.0	6.1	6.0	0.0	0.0
Residential	69.1	15.8	17.2	3.4	1.7	0.3	2.0	0.4	10.0	80.0
Restaurant (1)	55.4	15.0	24.2	15.0	14.3	0.0	6.1	0.0	0.0	70.0
Warehouse (2)	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Golf Course (3)	55.4	70.0	24.2	30.0	14.3	0.0	6.1	0.0	0.0	0.0
Water Treatment Plant	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Entertainment Center (4)	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Amphitheatre (5)	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Community/Institutional (6)	55.4	15.0	24.2	15.0	14.3	0.0	6.1	0.0	0.0	70.0
Child Development Center	55.4	100.0	24.2	0.0	14.3	0.0	6.1	0.0	0.0	0.0
Police/Fire/Medical (7)	55.4	0.0	24.2	0.0	14.3	0.0	6.1	0.0	0.0	100.0
Wedding Chapel	55.4	20.0	24.2	17.5	14.3	9.3	6.1	3.3	0.0	50.0
Mixed Use	27.7	40.6	12.1	20.3	7.2	4.9	3.1	4.2	50.0	30.0

Notes:

(1) Based on Hotel, with modifications to reflect predominantly internal trips for visitors.

(2) Based on Film Production

(3) Based on Outdoor Recreation

(4) Based on Themed Attraction

(5) Based on Themed Attraction

(6) Based on Museum, with modifications to reflect predominantly internal trips for visitors.

(7) Based on Brig, with modifications to reflect predominantly internal trips for visitors.

Table F-17. Mode Split—Weekday and Weekend

Land Use	Mode	San Francisco		East Bay		South Bay/Peninsula		North Bay		Internal	
		Work	Non-Work	Work	Non-Work	Work	Non-Work	Work	Non-Work	Work	Non-Work
		%	%	%	%	%	%	%	%	%	%
Themed Attraction	Auto	34.0	0.0	39.0	0.0	57.4	0.0	51.0	0.0	7.7	8.8
Amphitheater	Carpool	14.0	0.0	4.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0
Entertainment Center	Bus	13.0	10.0	43.0	10.0	10.2	10.0	0.0	10.0	39.6	28.1
	Ferry	39.0	90.0	14.0	90.0	30.4	90.0	44.0	90.0	0.0	0.0
	Other*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Office, Museum, Brig	Auto	34.0	36.0	39.0	47.0	57.4	60.0	51.0	71.0	7.7	9.6
Mixed Use, Job Corp	Carpool	14.0	30.0	4.0	28.0	2.0	16.0	5.0	19.0	0.0	0.0
Elem Sch; Police, Fire, Med	Bus	13.0	9.0	43.0	19.0	10.2	6.0	0.0	7.0	39.6	28.7
Comm/Inst.	Ferry	39.0	26.0	14.0	6.0	30.4	18.0	44.0	3.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	61.7
Hotel	Auto	34.0	35.5	39.0	47.0	57.4	60.0	51.0	71.4	7.7	8.8
Conference	Carpool	14.0	30.0	4.0	28.0	2.0	16.0	5.0	19.4	0.0	0.0
Restaurant	Bus	13.0	9.0	43.0	19.0	10.2	6.0	0.0	7.2	39.6	28.1
	Ferry	39.0	25.5	14.0	6.0	30.4	18.0	44.0	2.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Retail	Auto	34.0	50.0	39.0	50.0	57.4	0.0	51.0	0.0	7.7	8.8
	Carpool	14.0	0.0	4.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0
	Bus	13.0	50.0	43.0	50.0	10.2	0.0	0.0	0.0	39.6	28.1
	Ferry	39.0	0.0	14.0	0.0	30.4	0.0	44.0	0.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Outdoor Recreation	Auto	34.0	36.0	39.0	47.0	57.4	60.0	51.0	71.0	7.7	8.8
Golf Course	Carpool	14.0	30.0	4.0	28.0	2.0	16.0	5.0	19.0	0.0	0.0
	Bus	13.0	9.0	43.0	19.0	10.2	6.0	0.0	7.0	39.6	28.1
	Ferry	39.0	26.0	14.0	6.0	30.4	18.0	44.0	2.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Open Space	Auto	34.0	84.0	39.0	84.0	57.4	84.0	51.0	84.0	7.7	8.8
Marina	Carpool	14.0	0.0	4.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0
	Bus	13.0	12.0	43.0	12.0	10.2	12.0	0.0	12.0	39.6	28.1
	Ferry	39.0	4.0	14.0	4.0	30.4	4.0	44.0	4.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Film Production	Auto	58.0	36.0	66.0	47.0	89.0	60.0	52.0	71.0	7.7	8.8
Warehouse	Carpool	19.0	30.0	0.0	28.0	5.0	16.0	10.0	19.0	0.0	0.0
	Bus	6.0	9.0	17.0	19.0	3.0	6.0	19.0	7.0	39.6	28.1
	Ferry	17.0	26.0	17.0	6.0	3.0	18.0	19.0	2.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Fire School	Auto	34.0	34.0	39.0	39.0	57.4	57.4	51.0	51.0	7.7	8.8
	Carpool	14.0	14.0	4.0	4.0	2.0	2.0	5.0	5.0	0.0	0.0
	Bus	13.0	13.0	43.0	43.0	10.2	10.2	0.0	0.0	39.6	28.1
	Ferry	39.0	39.0	14.0	14.0	30.4	30.4	44.0	44.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	63.1
Residential	Auto	34.0	66.0	66.0	84.0	34.0	62.5	66.0	0.0	7.7	9.6
	Carpool	2.0	2.0	2.0	0.0	2.0	3.0	2.0	0.0	0.0	0.0
	Bus	16.0	24.0	24.0	12.0	16.0	9.0	24.0	10.0	39.6	28.7
	Ferry	48.0	8.0	8.0	4.0	48.0	25.5	8.0	90.0	0.0	0.0
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	61.7

Note: * Other = Pedestrian or bicycle.

	Work	Non-Work
Vehicle Occupancy Rates: Carpool	3.0	8.0
Auto	1.5	3.0

Table F-18
Average Vehicle Occupancy for Trips to NSTI
(persons per vehicle)

Vehicle type	*Work*	*Non-work*
Vanpool/Other	3	8
Auto	1.5	3

Table F-19
Average Vehicle Occupancy for Vehicle Trips to Ferry Terminals
(persons per vehicle)

Vehicle type	*Work*	*Non-work*
Vanpool/Other	3	8
Auto	1.5	3

SFOBB/I-80 Analysis

Freeway Operation Analysis

This section presents the approach to and results of the freeway operation analysis conducted for the existing conditions and all the community reuse alternatives. It also includes the on- and off-ramp analysis for Yerba Buena Island. Table F-20 provides level of service definitions for freeway sections. Analyses of freeway operations were conducted for the following freeway sections and directions:

Westbound direction I-80 in the AM peak period

Westbound direction I-80 in the PM peak period

Eastbound direction I-80 in the AM peak period

Eastbound direction I-80 in the PM peak period

Table F-20
Level of Service Definitions for Freeway Sections

LOS	*Average Speed (mph)*
A	≥60
B	≥55
C	≥49
D	≥41
E	≥30
F	<30

Network Development

The freeway operations area studied included the section of I-80 freeway from east of Treasure Island to the west of the I-80/U.S. 101 junction. This study area is approximately 4.3 miles (7 km) long and includes the mainline freeway and the associated ramps.

The analysis employed the FREQ11 software program, a freeway corridor simulation model developed by the Institute of Transportation Studies of the University of California at Berkeley. This program evaluates the basic freeway segments, ramp junctions, and weaving areas based on the 1985 *Highway Capacity Manual* (HCM) procedures as a system, and provides system wide average speeds and queue spillback data over a three-hour peak period. The purpose of the three-hour analysis period is to analyze the network before, during and after the peak hour to analyze the congestion build-up and dissipation. The calibrated AM and PM peak conditions network developed for the *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure* (November 1994) was used as a base for this exercise. This network included the section of I-80 freeway from west of Treasure Island to the west of the I-80/U.S. 101 junction based on 1993/1994 traffic conditions.

For the NSTI Disposal and Reuse EIS, the FREQ11 freeway network was expanded to include NSTI and the on- and off-ramps associated with it in both the eastbound and westbound directions. Ramp volumes from 1994 Caltrans counts were used as an input into the expanded network.

In addition to the AM and PM peak networks, a third network, the weekend midday peak period, was developed. Since weekend ramp volumes were not available for year 1993/1994, it was assumed that ramp traffic volumes during the weekend midday peak period are similar to the AM peak. Mainline volumes for weekend conditions were obtained from Caltrans for 1996/1997 conditions, and these volumes were used as an input into the model.

The following input parameters were adjusted to calibrate the new model to the existing conditions as reported in *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure* and existing conditions observed in 1997:

- Speed flow curves for each freeway subsection was developed to reflect the maximum flow rate of 2,100 passenger cars per hour per lane.
- A speed-flow curve (65-mph) was used, based on the data on the I-80 freeway provided by FREQ11.
- Weaving section capacities were based on the existing operations. The weaving section capacities in the model were adjusted to reflect the existing operation.
- On- and off-ramp capacities were based on existing counts and HCM procedures. The field-measured counts were used at ramp locations where the actual ramp counts exceeded the HCM maximum recommended capacity.

Development of SFOBB/Yerba Buena Island Ramp Capacities

Since the existing ramps, especially the westbound and eastbound on-ramps, have substandard geometries, a number of approaches were taken to determine the on- and off-ramp capacities of these ramps. These methods included an HCM methodology procedure, linear regression methodology, and field measured maximum volume throughput counts.

Linear Regression Methodology

The HCM uses a methodology that calculates the capacity of an on-ramp merge area in terms of the maximum total flow that can enter the merge influence area. This is the sum of the ramp flow plus the flow in lanes one and two. A survey was conducted to find the relationship between the on-ramp volume, the time it takes for a given vehicle to enter the traffic stream from the on-ramp, the measured lane one (right-most lane) volume and the calculated lane two volume. A regression analysis was conducted with the above data, in which a relationship was not found between the collected data (i.e., R square value of 0.08).

HCM Methodology

The Yerba Buena on-ramps to I-80/SFOBB function similar to a STOP controlled T-intersection due to the existing configuration. As a result, the on-ramps were evaluated using the 1985 Highway Capacity Manual (Special Report 209, Transportation Research Board, 1994 Update) operations methodology, as outlined in Chapter 10 (Unsignalized Intersections). This method determines the capacity of the minor street intersection approach (on-ramp) by estimating the availability and the usefulness in gaps in major street traffic (so that vehicles on the minor street can merge with traffic on the major street). A survey was conducted to measure the time it takes for a given vehicle to enter the traffic stream from the on-ramp. This value (averaged by the total number of vehicles) was used as an accepted gap value. This method was not used because actual counts on the on-ramps exceeded the HCM maximum recommended capacity.

Field Measured Data

Using 1994 on-ramp and off-ramp traffic counts (a complete set of ramp volume counts for when NSTI was operational was only available for 1994 conditions) provided by Caltrans, the maximum number of serviced vehicles were used as the capacity of the on- and off-ramps. Caltrans data indicate that the eastbound on-ramp from Yerba Buena Island had the highest demand. In addition, during field surveys in 1994, a queue at the eastbound on-ramp was

observed during the ramp peak hour, this signifying that the on-ramp was operating at capacity. The merging distances for the eastbound on-ramp is less than 50 feet (15 m) and the bridge piers severely restrict sight distances for drivers trying to get onto the bridge. With the operational constraints on the eastbound on-ramp, this ramp was used as a worst-case scenario, and an on-ramp capacity of 330 vph was used for all on-ramps. An off-ramp capacity of 560 vph was used for all off-ramps, except for the eastbound off-ramp west of the tunnel in which a lower capacity of 500 vph was used due to its steep grade and tight turning radius.

The capacity data input into the FREQ11 model for the freeway and ramps is presented in Table F-21.

Table F-21
Freeway and Ramp Capacity at Yerba Buena Island (vph)

Freeway Mainline	*Eastbound SFOBB/I-80*			*Westbound SFOBB/I-80*		
	off-ramp (west of YBI[1])	off-ramp (east of YBI[1])	on-ramp	on-ramp (east of YBI[1])	off-ramp	on-ramp (west of YBI[1])
10,500	500	560	900	330	560	330

[1]Yerba Buena Island.

Future Travel Forecasts

SFOBB/I-80

Year 2010 conditions AM and PM peak period traffic volumes were estimated using the MTC travel demand model. An annualized growth rate, which was determined by comparing the existing 1994 counts and year 2015 model volumes obtained from the *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure Report*, was applied to existing 1994 traffic counts to derive Year 2010 baseline volumes. These growth rates were based on ABAG Projections '94. Recently developed San Francisco 2015 Cumulative Update to the ABAG Projections '96 land use database was not used in the analyses. Such data is useful only when the project under review is broadly physically integrated into the larger region. NSTI is connected to the region by 1 route – the SFOBB/I-80. Since the SFOBB/I-80 is already operating at capacity, the new data would not affect any analyses done using the Projections '94 data.

Based on the growth rate developed for the *Alternatives to the Replacement of the Embarcadero Freeway and Terminal Separator Structure EIS/EIR*, the AM peak traffic hour demand on the SFOBB is anticipated to increase over 1994 by approximately 6 percent in the westbound direction and 14 percent in the eastbound direction east of Treasure Island by the year 2010. Overall increases in traffic volumes during the PM peak hour are anticipated to be approximately 13 percent in the westbound direction and an additional 3 percent in the westbound direction east of Treasure Island by the year 2010.

For the EIS, year 2010 conditions needed to be developed for weekend conditions. The year 2010 weekend midday peak hour volumes were developed using 1996/1997 mainline traffic volumes for weekday and weekend conditions, and projected growth for weekday conditions. The existing relationship between the weekend midday peak and weekday AM peak period was calculated. This distribution was then applied to the projected year 2010 weekday AM peak hour volumes to obtain year 2010 weekend midday peak period mainline traffic volumes.

The weekend midday peak hour traffic demand growth on the SFOBB is projected to be similar to the AM peak. The increase would be approximately 6 percent in the westbound direction and 14 percent in the eastbound direction east of Treasure Island by the year 2010.

Year 2025 forecast and analyses were prepared and included in Appendix F.3-A for both SFOBB freeway mainline and on- and off-ramps to NSTI, using the same methodology for the year 2010 analyses.

On- and Off-ramps

The land use components of Alternatives 1, 2, and 3 were used to determine the projected travel to and from NSTI during the weekday AM and PM peak hours, and the weekend midday peak hour.

Conditions in 2010 without the Project

SFOBB /I-80 Operations

During peak period of operation, traffic demand projected for future year 2010 conditions is expected to exceed the current maximum volumes on the SFOBB of 10,000 vph. However, existing metering practices in the westbound direction at the toll plaza would limit the number of vehicles that could access the SFOBB/I-80. Westbound traffic accessing the SFOBB/I-80 is restricted to approximately 10,500 vehicles during the AM peak hour and 9,000 vehicles during the PM peak hour. More vehicles are metered in the PM peak due to congestion and backups from I-80 in San Francisco. With the projected increases in traffic demand, the peak period is anticipated to spread over a longer period than under existing conditions. During both the AM and PM peak hours, the westbound traffic on the SFOBB/I-80 is projected to operate at capacity for more than three hours during the peak period.

In the eastbound direction, the capacity and congestion in downtown segments of I-80 restrict the number of vehicles accessing the SFOBB/I-80 to approximately 9,500 vph. This condition is anticipated to continue, as there are no planned improvements at the downtown San Francisco approach of the SFOBB/I-80. As in the westbound direction, the increase in eastbound demand results in the spread of the peak period.

Ramp Operations

As a result of the closure of the NSTI, traffic volume on the ramps connecting the SFOBB/I-80 with Yerba Buena Island would decrease. During both the weekday AM and PM peak hours, the ramp volumes are anticipated to be approximately a third of the 1994 levels. Under No Action conditions, total traffic entering and exiting NSTI in both the eastbound and westbound directions would be approximately 277 vph during the AM peak hour, and 249 vph during the

PM peak hour. During the weekend midday peak hour, volumes are estimated to be similar to weekday AM conditions (277 vph). These vehicles would include trips to and from the Coast Guard Station, the museum, and sightseeing trips.

Analysis Results

Table F-22 presents a summary of the analysis results of the SFOBB/I-80 freeway operations for the peak hour conditions. Tables F-23 and F-24 present the SFOBB/I-80 operations for the three-hour FREQ11 run, for the eastbound and westbound directions, respectively. Traffic volumes, speeds and LOS are presented for five segments of the SFOBB/I-80. Table F-25 presents the SFOBB/I-80 results for weekend conditions. Table F-26 presents the SFOBB/I-80 ramp volumes and queues for the Yerba Buena Island on- and off-ramps.

Intersection Analysis

Operating characteristics of intersections are described by use of the concept of Level of Service (LOS). LOS designations are a qualitative description of an intersection's performance based on traffic delays. An intersection's LOS could range from LOS A, representing free-flow conditions, to LOS F, representing congested conditions. All intersections analyzed for the community reuse alternatives are unsignalized, and Table F-27 provides detailed descriptions of the various LOS operating conditions for unsignalized intersections.

Operations at unsignalized intersections (both two-way and all-way stop-controlled) were evaluated using the methodology outlined in Chapter 10 of the 1994 Update to the *1985 Highway Capacity Manual*. For two-way stop-controlled intersections, the analysis method determines the conflicting traffic volumes, the capacity of the gaps in the major traffic stream, and estimates the average total delay for each movement. Total delay is defined as the total elapsed time from when a vehicle joins the queue until the vehicle departs from the stopped position at the head of the queue. Level of service is then based on the average total delay. Level of service for unsignalized intersections ranges from LOS A, which is generally free-flow conditions with easily made turns by the minor street traffic, to LOS F, which indicates very long delays for the minor street traffic. For all-way STOP-controlled intersections, the analysis methodology estimates the capacity and delay for each roadway approach based upon the intersection geometry and the turning movements at the intersection. The LOS is then determined based on the average total delay for the intersection as a whole.

Table F-28 presents a summary of the weekday and weekend peak hour analyses for the 5 study intersections.

Table F-22
Summary of SFOBB / I-80 Weekday and Weekend Peak Hour Traffic Conditions

Scenario / Time	Eastbound		Westbound	
	Speed	LOS	Speed	LOS
Weekday AM Peak Hour (7:30 - 8:30)				
Existing	57	B	45	D
No Action (Year 2010)	57	B	23	F
Maximum Alternative (Year 2010)	57	B	22	F
Medium Alternative (Year 2010)	57	B	23	F
Minimum Alternative (Year 2010)	57	B	23	F
Weekday PM Peak Hour (4:30 - 5:30)				
Existing	46	D	56	B
No Action (Year 2010)	46	D	18	F
Maximum Alternative (Year 2010)	46	D	17	F
Medium Alternative (Year 2010)	46	D	17	F
Minimum Alternative (Year 2010)	46	D	17	F
Weekend Midday Peak Hour (12:30 - 1:30)				
Existing	57	B	57	B
No Action (Year 2010)	57	B	57	B
Maximum Alternative (Year 2010)	56	B	57	B
Medium Alternative (Year 2010)	57	B	57	B
Minimum Alternative (Year 2010)	56	B	57	B

(1) Eastbound I-80/SFOBB east of the tunnel
(2) Westbound I-80/SFOBB east of the tunnel
(3) LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations
Source: Korve Engineering, Inc., May 1997

Table F-23
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Eastbound) — Weekday Conditions

AM Peak Period

Scenario / Time Period	Fremont On-ramp to I-80 Mainline			I-80 Bay Bridge to TI Road Left Off-ramp			TI Road Left Off-ramp to TI Road Right Off-ramp			TI Road Right Off-ramp To TI Road On-ramp			TI Road On-ramp to I-80 Mainline		
	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
Existing															
6:30-7:30 AM	6,889	53	C	6,889	57	B	7,061	57	B	6,721	57	B	7,049	57	B
7:30-8:30 AM	7,048	53	C	7,048	57	B	7,367	57	B	6,918	57	B	7,133	57	B
8:30-9:30 AM	6,529	53	C	6,529	57	B	6,870	57	B	6,349	57	B	6,567	57	B
No Action															
6:30-7:30 AM	7,136	52	C	7,136	57	B	6,864	57	B	7,046	57	B	7,127	57	B
7:30-8:30 AM	7,410	52	C	7,410	57	B	7,376	57	B	7,388	57	B	7,407	57	B
8:30-9:30 AM	6,822	52	C	6,822	57	B	6,836	57	B	6,887	57	B	6,909	57	B
Maximum Alternative															
6:30-7:30 AM	7,188	52	C	7,188	57	B	6,986	57	B	6,864	57	B	7,162	57	B
7:30-8:30 AM	7,483	52	C	7,483	57	B	7,376	57	B	7,310	57	B	7,469	57	B
8:30-9:30 AM	6,882	52	C	6,882	57	B	6,836	57	B	6,781	57	B	6,910	57	B
Medium Alternative															
6:30-7:30 AM	7,178	52	C	7,178	57	B	7,001	57	B	6869	57	B	7,024	57	B
7:30-8:30 AM	7,466	52	C	7,469	57	B	7,376	57	B	7,317	57	B	7,398	57	B
8:30-9:30 AM	7,330	52	C	6,986	57	B	6,847	57	B	6,778	57	B	6,844	57	B
Minimum Alternative															
6:30-7:30 AM	7,188	52	C	7,188	57	B	6,864	57	B	6,864	57	B	7,053	57	B
7:30-8:30 AM	7,483	52	C	7,483	57	B	7,376	57	B	7,310	57	B	7,466	57	B
8:30-9:30 AM	6,891	52	C	6,891	57	B	6,836	57	B	6,790	57	B	6,856	57	B

PM Peak Period

Scenario / Time Period	Fremont On-ramp to I-80 Mainline			I-80 Bay Bridge to TI Road Left Off-ramp			TI Road Left Off-ramp to TI Road Right Off-ramp			TI Road Right Off-ramp To TI Road On-ramp			TI Road On-ramp to I-80 Mainline		
	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
Existing															
3:30-4:30 PM	9,461	47	D	9,461	46	D	9,393	46	D	9,373	46	D	9,620	46	D

Table F-23
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Eastbound) — Weekday Conditions (continued)

PM Peak Period

	Fremont On-ramp to I-80 Mainline			I-80 Bay Bridge to TI Road Left Off-ramp			TI Road Left Off-ramp to TI Road Right Off-ramp			TI Road Right Off-ramp To TI Road On-ramp			TI Road On-ramp to I-80 Mainline		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
4:30-5:30 PM	9,488	47	D	9,488	46	D	9,304	46	D	9,309	46	D	9,473	46	D
5:30-6:30 PM	8,995	51	D	8,995	46	D	8,977	47	D	8,975	47	D	8,995	46	D
No Action															
3:30-4:30 PM	9,499	47	D	9,499	46	D	9,423	46	D	9,421	46	D	9,490	46	D
4:30-5:30 PM	9,457	47	D	9,457	46	D	9,389	46	D	9,393	46	D	9,471	46	D
5:30-6:30 PM	8,995	51	D	8,995	46	D	8,937	46	D	8,936	46	D	8,975	46	D
Maximum Alternative															
3:30-4:30 PM	9,490	47	D	9,490	46	D	9,208	46	D	9,140	46	D	9,290	46	D
4:30-5:30 PM	9,495	47	D	9,495	46	D	8,833	47	D	8,790	47	D	9,090	46	D
5:30-6:30 PM	8,995	51	C	8,995	46	D	8,708	47	D	8,633	47	D	8,765	47	D
Medium Alternative															
3:30-4:30 PM	9,490	47	D	9,490	46	D	9,360	46	D	9,339	46	D	9,476	46	D
4:30-5:30 PM	9,496	47	D	9,490	46	D	9,280	46	D	9,214	46	D	9,487	46	D
5:30-6:30 PM	8,995	51	C	8,995	46	D	8,889	47	D	8,847	47	D	8,984	46	D
Minimum Alternative															
3:30-4:30 PM	9,490	47	D	9,490	46	D	9,338	46	D	9,311	46	D	9,436	46	D
4:30-5:30 PM	9,459	47	D	9,459	46	D	9,211	46	D	9,180	46	D	9,397	46	D
5:30-6:30 PM	8,995	51	C	8,995	46	D	8,846	47	D	8,814	47	D	8,936	46	D

LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-24
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Westbound) – Weekday Conditions

AM Peak Period

	I-80 Bay Bridge to YBI On-ramp			YBI On-ramp to YBI Off-ramp			YBI Off-ramp to YBI On-ramp			YBI On-ramp to I-80 Mainline			I-80 Mainline to Fremont Off-ramp		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
Existing															
6:30-7:30 AM	10,840	34	E	10,826	36	E	10,429	46	D	10,472	37	E	10,500	26	F
7:30-8:30 AM	8,871	46	D	8,844	46	D	8,840	46	D	8,872	86	B	8,823	25	F
8:30-9:30 AM	8,120	49	C	8,184	49	C	8,034	60	C	8,006	57	B	8,006	57	B
No Action															
6:30-7:30 AM	9,116	21	F	9,130	21	F	9,090	21	F	9,125	22	F	9,125	22	F
7:30-8:30 AM	9,866	23	F	9,878	23	F	9,833	23	F	9,871	24	F	9,871	24	F
8:30-9:30 AM	8,422	48	D	8,439	49	C	8,410	42	D	8,041	27	F	8,041	22	F
Maximum Alternative															
6:30-7:30 AM	8,729	20	F	8,679	21	F	8,726	20	F	9,006	22	F	9,006	22	F
7:30-8:30 AM	9,274	22	F	9,348	22	F	9,280	22	F	9,439	23	F	9,439	23	F
8:30-9:30 AM	8,863	27	F	8,867	21	F	8,867	20	F	9,057	22	F	9,057	22	F
Medium Alternative															
6:30-7:30 AM	8,297	22	F	8,336	22	F	8,198	21	F	9,291	23	F	9,291	23	F
7:30-8:30 AM	8,803	23	F	8,872	23	F	8,802	23	F	9,549	34	F	9,549	34	F
8:30-9:30 AM	8,473	42	D	8,494	27	F	8,431	34	F	9,048	22	F	9,048	22	F
Minimum Alternative															
6:30-7:30 AM	8,126	21	F	8,290	22	F	8,045	21	F	9,217	23	F	9,217	22	F
7:30-8:30 AM	8,474	23	F	8,810	23	F	8,431	22	F	8,817	34	F	8,817	24	F
8:30-9:30 AM	8,462	35	E	8,819	22	F	8,883	20	F	8,049	27	F	8,049	22	F

PM Peak Period

	I-80 Bay Bridge to YBI On-ramp			YBI On-ramp to YBI Off-ramp			YBI Off-ramp to YBI On-ramp			YBI On-ramp to I-80 Mainline			I-80 Mainline to Fremont Off-ramp		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
Existing															
3:30-4:30 PM	8,191	69	B	8,327	69	B	8,072	67	B	8,097	67	B	8,097	69	B
4:30-5:30 PM	8,347	66	B	8,423	69	B	8,210	66	B	8,223	66	B	8,169	19	F
5:30-6:30 PM	7,866	67	B	8,047	66	B	7,880	67	B	7,909	67	B	7,909	67	B
No Action															

Table F-24
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Westbound) — Weekday Conditions (continued)

PM Peak Period

	I-80 Bay Bridge to YBI On-ramp			YBI On-ramp to YBI Off-ramp			YBI Off-ramp to YBI On-ramp			YBI On-ramp to I-80 Mainline			I-80 Mainline to Fremont Off-ramp		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
3:30-4:30 PM	8,000	56	B	8,006	56	B	8,060	56	B	7,822	38	E	7,822	18	F
4:30-5:30 PM	7,960	16	F	7,975	16	F	7,941	17	F	8,001	18	F	8,001	18	F
5:30-6:30 PM	8,456	20	F	8,806	20	F	8,466	20	F	8,520	20	F	8,520	20	F
Maximum Alternative															
3:30-4:30 PM	7,722	46	D	7,784	37	E	7,866	32	E	7,760	23	F	7,745	17	F
4:30-5:30 PM	7,766	17	F	7,879	16	F	7,813	16	F	7,823	17	F	7,843	18	F
5:30-6:30 PM	8,408	19	F	8,446	20	F	8,289	19	F	8,474	19	F	8,436	20	F
Medium Alternative															
3:30-4:30 PM	7,887	47	D	7,734	37	E	7,880	32	F	7,788	23	F	7,788	18	F
4:30-5:30 PM	7,887	17	F	7,788	17	F	7,827	18	F	7,822	17	F	7,822	18	F
5:30-6:30 PM	8,386	19	F	8,401	19	F	8,328	19	F	8,476	19	F	8,476	20	F
Minimum Alternative															
3:30-4:30 PM	7,708	51	C	7,740	40	E	7,886	35	E	7,746	24	F	7,760	18	F
4:30-5:30 PM	7,743	17	F	7,810	17	F	7,813	16	F	7,843	17	F	7,823	18	F
5:30-6:30 PM	8,366	19	F	8,429	19	F	8,289	19	F	8,436	19	F	8,474	20	F

LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-25
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80)
Weekend Conditions

EASTBOUND WEEKEND MIDDAY PEAK

	Fremont On-ramp to I-80 Mainline			I-80 Bay Bridge to TI Road Left Off-ramp			TI Road Left Off-ramp to TI Road Right Off-ramp			TI Road Right Off-ramp To TI Road On-ramp			TI Road On-ramp to I-80 Mainline		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
Existing															
11:30-12:30 PM	6,884	63	C	6,884	67	B	6,810	68	B	6,487	68	B	6,840	67	B
12:30-1:30 PM	7,162	63	C	7,162	67	B	7,080	67	B	7,056	67	B	7,171	67	B
1:30-2:30 PM	7,436	63	C	7,436	67	B	7,329	67	B	7,304	67	B	7,409	67	B
No Action															
11:30-12:30 PM	7,378	62	C	7,378	67	B	7,330	67	B	7,328	67	B	7,369	67	B
12:30-1:30 PM	7,882	62	C	7,882	67	B	7,804	67	B	7,800	67	B	7,881	67	B
1:30-2:30 PM	7,434	62	C	7,434	67	B	7,380	67	B	7,389	67	B	7,430	67	B
Maximum Scenario															
11:30-12:30 PM	7,403	62	C	7,403	67	B	7,282	67	B	7,284	67	B	7,804	67	B
12:30-1:30 PM	7,766	62	C	7,766	66	B	7,687	67	B	7,633	67	B	7,663	66	B
1:30-2:30 PM	7,436	62	C	7,436	67	B	7,334	67	B	7,308	67	B	7,836	67	B
Medium Scenario															
11:30-12:30 PM	7,389	62	C	7,338	67	B	7,298	67	B	7,272	67	B	7,420	67	B
12:30-1:30 PM	7,778	62	C	7,778	66	B	7,699	67	B	7,643	67	B	7,636	67	B
1:30-2:30 PM	7,434	62	C	7,434	67	B	7,343	67	B	7,321	67	B	7,466	67	B
Minimum Scenario															
11:30-12:30 PM	7,391	62	C	7,391	67	B	7,312	67	B	7,287	67	B	7,457	67	B
12:30-1:30 PM	7,744	62	C	7,744	66	B	7,666	67	B	7,570	67	B	7,600	66	B
1:30-2:30 PM	7,434	62	C	7,434	67	B	7,663	67	B	7,360	67	B	7,510	67	B

WESTBOUND WEEKEND MIDDAY PEAK

	I-80 Bay Bridge to YBI On-ramp			YBI On-ramp to YBI Off-ramp			YBI Off-ramp to YBI On-ramp			YBI On-ramp to I-80 Mainline			I-80 Mainline to Fremont Off-ramp		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
Existing															
11:30-12:30 PM	7,800	67	B	7,727	67	B	7,698	67	B	7,809	67	B	7,809	67	B
12:30-1:30 PM	7,131	67	B	7,263	67	B	7,094	67	B	7,106	67	B	7,106	67	B
1:30-2:30 PM	7,087	67	B	7,233	67	B	7,094	67	B	7,111	67	B	7,111	67	B

Table F-25
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80)
Weekend Conditions (continued)

WESTBOUND WEEKEND MIDDAY PEAK

	I-80 Bay Bridge to YBI On-ramp			YBI On-ramp to YBI Off-ramp			YBI Off-ramp to YBI On-ramp			YBI On-ramp to I-80 Mainline			I-80 Mainline to Fremont Off-ramp		
Scenario / Time Period	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS	Volume (vph)	Speed (mph)	LOS
No Action															
11:30-12:30 PM	8,084	57	B	8,071	57	B	8,000	57	B	8,087	57	B	8,057	57	B
12:30-1:30 PM	7,811	57	B	7,824	57	B	7,882	57	B	7,816	57	B	7,816	57	B
1:30-2:30 PM	7,488	57	B	7,804	57	B	7,488	57	B	7,804	57	B	7,804	57	B
Maximum Scenario															
11:30-12:30 PM	8,130	57	B	8,227	56	B	8,148	57	B	8,432	56	B	8,432	56	B
12:30-1:30 PM	7,744	57	B	7,957	57	B	7,770	57	B	8,100	57	B	8,100	57	B
1:30-2:30 PM	7,853	57	B	7,899	57	B	7,882	57	B	7,912	57	B	7,912	57	B
Medium Scenario															
11:30-12:30 PM	8,118	57	B	8,183	57	B	8,090	57	B	8,221	56	B	8,221	56	B
12:30-1:30 PM	7,717	57	B	7,807	57	B	7,804	57	B	7,926	57	B	7,926	57	B
1:30-2:30 PM	7,690	57	B	7,804	57	B	7,828	57	B	7,890	57	B	7,960	57	B
Minimum Scenario															
11:30-12:30 PM	8,093	57	B	8,148	57	B	8,099	57	B	8,257	56	B	8,257	56	B
12:30-1:30 PM	7,669	57	B	7,778	57	B	7,682	57	B	7,899	57	B	7,899	57	B
1:30-2:30 PM	7,528	57	B	7,581	57	B	7,537	57	B	7,667	57	B	7,667	57	B

LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-26
Volume and Maximum Queue on Connector Ramps--Weekday & Weekend Conditions

Ramp	No Action		Maximum Alternative		Medium Alternative		Minimum Alternative	
	Volume (vph)	Queue (veh.)	Volume (vph)	Queue (veh.)	Volume (vph)	Queue (veh.)	Volume (vph)	Queue (veh.)
Weekday AM Peak								
Westbound On- (east of Tunnel)	14	0	147	0	39	0	74	0
Westbound Off-	44	0	160	0	144	0	162	0
Westbound On- (west of Tunnel)	35	0	337	3	93	0	172	0
Eastbound Off- (west of Tunnel)	97	0	237	0	206	0	237	0
Eastbound Off- (east of Tunnel)	6	0	143	0	133	0	143	0
Eastbound On-	81	0	298	0	135	0	190	0
Weekday PM Peak								
Westbound On- (east of Tunnel)	15	0	85	0	72	0	66	0
Westbound Off-	34	0	375	0	142	0	161	0
Westbound On- (west of Tunnel)	61	0	352	22	295	0	272	0
Eastbound Off- (west of Tunnel)	55	0	536	22	191	0	241	0
Eastbound Off- (east of Tunnel)	6	0	146	0	46	0	60	0
Eastbound On-	78	0	300	0	273	0	247	0
Weekend Midday Peak								
Westbound On- (east of Tunnel)	14	0	194	0	90	0	109	0
Westbound Off-	44	0	176	0	151	0	102	0
Westbound On- (west of Tunnel)	35	0	569	239	261	0	318	0
Eastbound Off- (west of Tunnel)	97	0	232	0	210	0	161	0
Eastbound Off- (east of Tunnel)	6	0	59	0	50	0	31	0
Eastbound On-	81	0	480	150	295	0	320	0

*Note: On-ramp queue based on a measured capacity of 330 vph on the Treasure Island On-ramps.

Off-ramp queue based on a measured capacity of 560 for all off-ramps except the EB Treasure Island off-ramp (east of T.I.) with a capacity of 500 vph.

Source: Korve Engineering, Inc., May 1997

Table F-27
Level of Service Definitions for
Two-Way and All-Way Stop-Controlled Intersections

LOS	Average Total Delay (sec/veh)	Typical Traffic Condition
A	0 - 5	Little or no delay
B	5.1 - 10	Short traffic delays
C	10.1 - 20	Average traffic delays
D	20.1 - 30	Long traffic delays
E	30.1 - 45	Very long traffic delays
F	>45	(1)

(1) For two-way stop-controlled intersections, LOS F exists when there are insufficient gaps of suitable size to allow side street demand to cross safely through major street traffic stream. This LOS is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. When demand volume exceeds the capacity of the lane, extreme delays would be encountered with queuing, which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

Source: Highway Capacity Manual, Special Report No. 209, Transportation Research Board, 1985, Updated 1994.

Table F-28
Intersection Level of Service—Year 2010 Conditions
Weekday AM and PM Peak Hours

Study Intersection	*Maximum Construction Alternative*				*Medium Construction Alternative*				*Minimum Construction Alternative*			
	AM		PM		AM.		PM		AM		PM	
	Delay (1)	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Avenue of Palms/ California Avenue	6.2	B	28.9	D	0.7	A	3.4	A	2.8	B	3.8	A
Avenue C/ California	0.1	A	0.9	A	0.1	A	0.0	A	0.1	A	1.2	A
Avenue C/ 9th Street	0.2	A	2.4	B	0.2	A	0.1	A	0.3	A	2.5	A
Avenue H/ 4th Street	0.3	A	0.3	B	0.4	A	0.6	A	0.5	A	0.4	A
Avenue H/ 9th Street	2.5	A	4.5	A	1.1	A	1.3	A	1.2	A	1.2	A

Weekend Midday Peak Hour

Intersection	*Alternative 1*		*Alternative 2*		*Alternative 3*	
	Delay (1)	LOS	Delay	LOS	Delay	LOS
Avenue of Palms/California Avenue	21.9	D	3.4	A	3.5	A
Avenue C/ California Avenue	0.1	A	0.0	A	0.1	A
Avenue C/ 9th Street	0.2	A	0.2	A	0.5	A
Avenue H/ 4th Street	0.0	A	0.2	A	0.1	A
Avenue H/ 9th Street	4.1	A	1.1	A	1.1	A

Delay is expressed in seconds per vehicle.

Source: **Korve Engineering 1997.**

Transit Analysis

Ferry Service

The key determinants to the ferry requirement tables (Figures 40, 44 and 47 in the *Naval Station Treasure Island Reuse Plan Transportation Background Report*) were the number of vessels and trips required to meet the peak travel hour/peak direction requirements. For example, if the peak direction ferry travel demand to Treasure Island is 709 passengers, 3 vessels would be required during that hour assuming a standard vessel capacity of 300 persons and a single ferry route. Table F-29 summarizes peak hour/peak direction ferry travel demand to Treasure Island for the community reuse alternatives.

Table F-29
Summary of Treasure Island Ferry Trips
Peak Hour/Peak Direction

Analysis Period	*Maximum Construction Alternative*	*Medium Construction Alternative*	*Minimum Construction Alternative*
Weekday daily	34,632	35,036	9,578
Weekday AM peak	1,529	554	739
Weekday PM/peak direction	3,898/2,082	4,416/2,482	1,260/709
Weekend daily	32,118	36,170	9,681
Weekend midday peak/peak direction	3,118/1,706	4,233/2,262	1,004/633

If the peak demand hour is during a commute period, when all available vessels are in service, the entire fleet of vessels required to NSTI must be dedicated to that service. In contrast, if the peak travel demand for NSTI is midday or evenings during the weekdays or any time on the weekend, there would be some reserve capacity in the existing and projected Bay Area ferry fleet to provide additional trips to NSTI, and somewhat less than 100 percent of the fleet requirement would need to be dedicated to NSTI service. Because of this, the Reuse Plan ferry analysis focused on the weekday demand when excess vessels are not available. In comparing the daily and peak hour ferry demand calculated for the Reuse Plan and for the alternatives in the EIS, the following conclusions were developed.

- The Reuse Plan Phase 3 ferry plan would be adequate to serve the trip demand generated by Alternatives 1 and 2. Although the 30,668 trips using the ferries during Phase 3 of the Reuse Plan would be less than the 34,632 daily riders under Alternative 1 and less than the 35,036 under Alternative 2, the weekday PM peak hour/peak directional use was projected to be 2,300 for the Phase 3 plan, compared with the demand of 2,082 and 2,482 peak directional trips with Alternatives 1 and 2, respectively.

  Although Alternative 2 would generate eight percent more ferry trips during the 5:00 to 6:00 PM peak hour than the Reuse Plan Phase 3 ferry plan, due to differences in land

uses from the Reuse Plan, Alternative 2 has somewhat different distributions to the Ferry Building, Candlestick Point, and the East Bay terminals. Thus, in comparison with the Phase 3 plan, Alternative 2 would result in 3 percent fewer trips to the Ferry Building, 15 percent more trips to the East Bay, and 19 percent more trips to Candlestick Point. However, since ferry increments serve up to 300 passengers, the comparison trips indicates that the same number of peak hour and peak period (the peak hour for ferry was assumed to be 7:00 to 8:00 PM), trips could carry the incremental peak hour demand. For example, 2 ferry trips are required to carry 506 persons from NSTI to Candlestick Point, the same number of ferry trips required to carry 436 persons between 5:00 and 6:00 PM in the Phase 3 plan.

Because of parking deficiencies at the Ferry Building and Jack London Square, the Phase 3 plan included additional vessels from Candlestick Point in San Francisco and Golden Gate Fields on the Albany/Berkeley border, locations where additional parking capacity is available. This level of service required three vessels from the Ferry Building, three vessels from Candlestick Point, and four from the two East Bay ferry terminals.

- The Reuse Plan Phase 2 would be adequate to serve the trip demand generated by Alternative 3. The Phase 2 plan was developed to serve weekday daily transportation of 10,222 trips by ferry, as compared to 9,578 daily weekday trips for Alternative 3. Assuming 15-knot vessels between the Ferry Building and Treasure Island, and 25-knot vessels operating from Jack London Square, a total of 4 vessels would be required to serve the travel demand.

  During development of the Reuse Plan ferry program, at least 2 ferry trips were assigned per hour from each terminal so that wait times would never exceed 30 minutes. Since 4 vessels could provide 2 trips per hour from Oakland and 3 trips per hour from the Ferry Building, they would have a capacity of 900 persons per hour in the peak direction from the Ferry Building and 600 passengers an hour from Jack London Square, significantly above the indicated demand for 790 passenger trips during the weekday PM peak hour for Alternative 3.

Proposals for additional ferry service from NSTI and Larkspur, Vallejo, Alameda and Oakland have been discussed as part of the community reuse alternative definition. While ferry service is expected from Oakland (and a stop at Alameda is possible), service from Larkspur and Vallejo is unlikely to be warranted, with passengers from those locations taking regularly scheduled service to the Ferry Building and transferring to the short route from the Ferry Building to NSTI. Demand from those locations would be insufficient to justify new vessels for dedicated service on Larkspur to NSTI or Vallejo to NSTI routes. Adding an additional NSTI stop to existing San Francisco trips from these terminals would have an adverse impact on existing ridership and would disrupt standard sequential schedules (typically service once every hour or two).

Bus Service

AC Transit bus service between NSTI, San Francisco, and the East Bay was discontinued in 1996. Subsequently, San Francisco Muni has provided bus service between NSTI and San Francisco. The *Naval Station Treasure Island Reuse Plan* Transportation Plan assumed that bus service would be provided to and from both San Francisco and the East Bay.

With the three proposed community reuse alternatives, the existing Muni service would be inadequate. The number of projected bus trips to Treasure Island was, therefore, calculated for each of the three community reuse alternatives. These trips were determined for both inbound and outbound of San Francisco and the East Bay. Due to the bus connections from the North Bay and South Bay within San Francisco (Golden Gate Transit and SamTrans, respectively), all transit trips from these two regions were combined with the San Francisco trips. Bus transit person-trips are summarized in Table 4.5-5 in section 4.5, Transportation.

Under Alternative 1, approximately 9,600 weekday daily and approximately 8,760 weekend daily bus transit patrons are estimated between NSTI and the East, North, and South Bays (including San Francisco). During the weekday, approximately 700 AM and 1,280 PM peak bus transit person-trips are estimated, as well as 1,110 weekend midday bus person-trips.

Under Alternative 2, approximately 7,100 weekday daily and approximately 8,170 weekend daily bus transit patrons are estimated between NSTI and the East, North, and South Bays (including San Francisco). During the weekday, approximately 285 AM and 910 PM peak bus transit person-trips are estimated, as well as 875 weekend midday bus person-trips.

Approximately 3,925 weekday daily and approximately 4,650 weekend daily bus transit patrons are estimated under Alternative 3 between NSTI and the East, North, and South Bays (including San Francisco). During the weekday, approximately 430 AM and 585 PM peak hour bus transit person-trips are estimated, as well as 510 weekend midday bus person-trips.

For both eastbound and westbound travel, the average bus size was estimated to be 40 passengers and the maximum load factor was taken to be 1.55 passengers/seat, based on bus size and load factor standards for San Francisco Muni. From these values and the projected number of transit users, the headways necessary to ensure adequate transit service were calculated for weekday AM and PM peak hours and off-peak conditions. A similar effort was conducted for weekend midday and off-peak conditions. These headways are summarized in Table F-30.

Parking Analysis

Long-term and short-term parking demand for all the proposed land uses was determined based on the methodology outlined in Appendix 5.1 of the *San Francisco Guidelines for Environmental Review: Transportation Impacts (SF Guidelines)*. For the proposed residential uses, long-term parking demand was estimated for residents using a rate of 1.5 spaces per unit. For the proposed commercial uses (i.e., all uses other than residential), both long-term parking demand was estimated for employees and short-term parking demand was estimated for visitors.

Table F-30
Summary of Bus Service Requirements

Alternative	*Weekday Headways*	*Weekend Headways*
Maximum Construction	10 minutes	15 minutes
Medium Construction	15 minutes	15 minutes
Minimum Construction	20 minutes	

Long-term parking demand for employees of the commercial uses was based on the estimated number of work trips by auto, while short-term parking demand for visitors was based on the estimated number of non-work trips by auto. As described in the *SF Guidelines*, the use of parking turnover rates[1] is required in order to estimate short-term parking demand. Parking turnover rates were obtained from the *Naval Station Treasure Island Reuse Plan Transportation Background Report* and are summarized in Table F-31 for each land use.

Table F-31
Parking Turnover Rates

Land Use	*Parking Turnover Rate (Vehicles Per Space)*
Brig, child development center, entertainment center, film production, fire school, golf, police, themed attraction, water treatment plant, and wedding chapel	1.0
Amphitheater, mixed-use, restaurant, and retail	1.5
Community/institutional, conference, elementary school, hotel, and job corps	2.0
Museum, office, and warehouse	4.0
Marina, open space, and outdoor recreation	5.0

Source: Naval Station Treasure Island Reuse Plan Transportation Background Report.

1. A parking turnover rate represents the number of vehicles, in a parking lot or garage, that occupy one parking space during the day (i.e., the number of times one parking space turns over throughout the day).

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APPENDIX F-4
Air Quality

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APPENDIX F-4. AIR QUALITY

OZONE, CARBON MONOXIDE, AND PM_{10}

Ozone usually is considered the primary indicator of photochemical smog, a complex mixture of secondary pollutants created by chemical reactions that occur in the presence of ultraviolet light. Because photochemical reaction rates depend on the intensity of ultraviolet light and warm air temperatures, photochemical smog is primarily a summer and early fall air pollution problem. The constituents of photochemical smog include respiratory irritants, such as ozone, nitrogen dioxide, sulfuric acid, and sulfate aerosols; eye irritants, such as aldehydes (including acrolein and formaldehyde), nitrogen dioxide, and organic nitrates; a range of toxic or potentially carcinogenic organic compounds; and visibility-reducing aerosols. Ambient air quality standards have been set for two of the major components of photochemical smog, namely ozone and nitrogen dioxide. All combustion processes, including motor vehicle engines, produce emissions of ozone precursors (reactive organic compounds and nitrogen oxides).

Carbon monoxide is primarily a winter period pollution problem, with motor vehicles being the dominant emission source in most areas. The winter seasonality occurs because vehicle emission rates increase at low temperatures and because meteorological factors that limit pollutant dispersion (low wind speeds and strong temperature inversions) are more prevalent during the winter than at other times of the year. Ambient air quality standards for carbon monoxide have been set for both one- and eight-hour periods.

Inhalable particulate matter (PM_{10}) is an aggregation of solid particles and liquid aerosols capable of penetrating to the lower respiratory tract. PM_{10} includes directly emitted particulate matter plus secondary aerosols formed from gaseous pollutants through chemical reactions and condensation processes. Major categories of secondary aerosols include low-volatility organic compounds, nitrate salts, and sulfate salts. The constituents of PM_{10} include a range of particle sizes, shapes, densities, and chemical compositions. Federal and state PM_{10} standards have been set for concentrations averaged over 24-hour and annual periods. PM_{10} concentrations are expressed on a weight basis as micrograms per cubic meter ($\mu g/m^3$).

The "10" in PM_{10} does not refer to a particle size limit but refers to a statistical measure of monitoring equipment performance called a cutpoint diameter. A cutpoint diameter is the size range at which 50 percent of the mass of ambient particles will be collected by a sampling device. A PM_{10} sampler collects 50 percent by weight of the particles in the 9.5 to 10.5 micron size range, more than 50 percent by weight of particles in smaller size ranges, and less than 50 percent by weight of particles in larger size ranges. The Federal and state PM_{10} standards do not define any absolute upper size limit for the included particles, but particles with aerodynamic equivalent diameters larger than 50 microns are unlikely to be collected.

APPLICABLE FEDERAL AND STATE AIR REGULATIONS

The Federal Clean Air Act, 42 U.S.C.A. §§ 7401-7671q (West 1995 & Supp. 1998), requires each state to develop, adopt, and implement a state implementation plan (SIP) to achieve, maintain, and enforce Federal air quality standards throughout the state. These plans must be submitted to and approved by the US Environmental Protection Agency (EPA). In California, the state

implementation plan consists of separate elements for different regions of the state. SIP elements are generally developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being violated.

Local councils of governments and air pollution control districts have had the primary responsibility for developing and adopting the regional elements of the California SIP. In the San Francisco Bay region, SIP document preparation has been a coordinated effort involving three regional agencies: the Bay Area Air Quality Management District (BAAQMD), the Association of Bay Area Governments (ABAG), and the Metropolitan Transportation Commission (MTC).

Areas that violate a Federal or state ambient air quality standard are generally categorized as nonattainment areas. Ozone, carbon monoxide, and PM_{10} nonattainment designations are further categorized by severity of the problem. Those areas that meet Federal or state ambient air quality standards are categorized as attainment areas. Areas that lack sufficient monitoring data are generally categorized as unclassified areas.

In July 1997, the EPA revised the violation criteria for the existing Federal PM_{10} standards, adopted a new 8-hour ozone standard (an 8-hour average of 0.08 parts per million [ppm]), and adopted new fine particle ($PM_{2.5}$) standards (15 micrograms per cubic meter as an annual average and 65 micrograms per cubic meter as a 24-hour average).

In June 1998, the San Francisco Bay Area was reclassified from an attainment/maintenance area to an unclassified nonattainment area for the federal 1-hour ozone standard. The urbanized portions of the San Francisco Bay Area are presently categorized as attainment areas for the Federal carbon monoxide standards. The Bay Area is currently designated as unclassified for the Federal PM_{10} standard (Libretti 1998). If future monitoring data results in a nonattainment designation for the Federal $PM_{2.5}$ standards, a $PM_{2.5}$ SIP would be required (probably in 2005).

The California Clean Air Act of 1988, 1988 Cal. Stat. 1568, Cal. Health & Safety Code § 39607 note (West 1996), requires air pollution control districts and air quality management districts to develop air quality management plans for meeting state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide and nitrogen dioxide. The state Air Resources Board (ARB) is responsible for developing a plan for meeting state PM_{10} standards. The entire San Francisco Bay Area is classified as a moderate nonattainment area for the state ozone standard. The Bay Area is also classified as a nonattainment area for the state PM_{10} standard. The entire San Francisco Bay Area is currently classified as an attainment area for the state carbon monoxide standards.

The California Clean Air Act does not set specific deadlines for achieving state air quality standards. Instead, attainment is required "as expeditiously as practicable". Emission control programs that must be implemented are more stringent for areas that do not expect rapid attainment of the ozone and carbon monoxide standards.

CLEAN AIR ACT CONFORMITY REQUIREMENTS

Section 176(c) of the Clean Air Act, 42 U.S.C.A. § 7506(c), requires Federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the Clean Air Act and with Federally enforceable air quality management plans. EPA has promulgated

separate rules that establish conformity analysis procedures for transportation-related actions and for other (general) Federal agency actions.

A formal conformity determination is required for Federal actions occurring in nonattainment or maintenance areas (such as the San Francisco Bay area) when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The Federal nonattainment and maintenance pollutants subject to conformity analyses in the San Francisco Bay area include ozone precursors (reactive organic compounds and nitrogen oxides) and carbon monoxide. Applicable threshold levels for Federal actions in the San Francisco Bay Area are 100 tons (91 metric tons) per year of reactive organic compounds, 100 tons (91 metric tons) per year of nitrogen oxides, and 100 tons (91 metric tons) per year of carbon monoxide.

Several categories of Federal agency actions are identified in the general conformity rule as actions that are presumed to result in emissions below the threshold level. Transfers of ownership, interests, and titles in land, facilities, real property, or personal property to other public agencies or to private parties are presumed to have emissions below the threshold level because the agency transferring the facilities or property will not retain responsibility or control over subsequent activities. Lease arrangements, however, may be subject to the requirements of the conformity rule if the terms of the lease allow Federal agencies to control the leasee's emission-generating activities.

Air Pollution Control Programs

Air pollution control programs were established in California prior to the enactment of Federal requirements. Responsibility for air quality management programs in California is divided between ARB as the primary state air quality management agency and air pollution control districts as the primary local air quality management agencies. Federal Clean Air Act legislation in the 1970s resulted in a gradual merger of local and Federal air quality programs, particularly industrial source air quality permit programs.

The roles and responsibilities of both ARB and local air pollution control districts were expanded by the California Clean Air Act of 1988. Local air pollution control districts were given added responsibility and authority to adopt transportation control measure programs and emission reduction programs for indirect and areawide emission sources. Recent state legislation restricts the types of transportation control measure programs that can be established by air pollution control districts. Mandatory trip reduction programs can be established only if necessary to achieve Federal air quality standards.

Many types of industrial and commercial facilities require air quality permits for their equipment and operations. The BAAQMD has the primary air quality permit authority throughout the San Francisco Bay Area. Permit authority is derived from a combination of Federal and state legislation, and can be categorized into construction or installation authorizations for individual pieces of equipment and permits for continued operation of equipment and facilities. This results in a two-step permit process for new emission sources: an initial authority to construct (ATC) permit and a subsequent permit to operate (PTO).

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DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, WEST
NAVAL FACILITIES ENGINEERING COMMAND
900 COMMODORE DRIVE
SAN BRUNO, CALIFORNIA 94066-5006

IN REPLY REFER TO:

Record of Non-Applicability

Disposal and Reuse of Naval Station Treasure Island

Pursuant to Section 176(c) of the Clean Air Act, 42 U.S.C. § 7506(c), the General Conformity Rule, 40 C.F.R. Part 93, Subpart B, and the Chief of Naval Operations Interim Guidance on Compliance with the Clean Air Act General Conformity Rule, March 8, 1995, the Department of the Navy has determined that the actions to dispose of and reuse Naval Station Treasure Island are exempt from the requirement for a conformity determination. This finding is based on the following exemptions as stated in 40 C.F.R. § 93.153(c)(2):

> (xi) The granting of leases, licenses such as for exports and trade, permits, and easements where activities conducted will be similar in scope and operation to activities currently being conducted.
>
> . . .
>
> (xiv) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of transfer.
>
> . . .
>
> (xix) Actions (or portions thereof) associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met, such as promptly after the land is certified as meeting the requirements of CERCLA, and where the Federal agency does not retain continuing authority to control emissions associated with the land, facilities, title, or real properties.
>
> . . .
>
> (xx) Transfers of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity and assignments of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity for subsequent deeding to eligible applicants.

The Environmental Protection Agency's preamble to the General Conformity Rule explained the exemption for Federal land transfers as follows: "Under the exclusive definition of indirect emissions, Federal land transfers are unlikely to be covered since the Federal agency will not maintain authority over reuse activities on that land. Consequently, Federal land transfers are included in the regulatory list of actions that will not exceed the de minimis levels and thus are exempt from the final conformity rules." 58 Fed. Reg. 63231 (1993).

Based on the foregoing regulations and policies, I have determined that the Navy's actions to dispose of and reuse Naval Station Treasure Island are exempt from the requirement for a conformity determination.

ERNEST R. HUNTER
Captain, CEC, US Navy
Commanding Officer

5/18/1999
DATE

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Table F-32
Characteristics of Roadway Network Used for CALINE4 Dispersion Modeling

ROADWAY	SEGMENT	LINK SEGMENT COORDINATES				LINK HEIGHT	LINK SEGMENT LENGTH	LANES	PM PEAK HOUR VOLUMES BY SCENARIO			
		X1	Y1	X2	Y2				NO ACTION	MINIMUM	MEDIUM	MAXIMUM
UPPER DECK	EAST 1UD	2100	5170	1970	3890	55	1287	5	9000	8300	8100	8300
	EAST 2UD	1970	3890	1950	3590	55	301	5	9000	8300	8300	8300
	EAST 3UD	1950	3590	1980	3325	40	267	5	9000	8300	8300	8300
	EAST 4UD	1980	3325	2160	2810	25	546	5	9000	8300	8300	8300
	EAST 5UD	2160	2810	2480	2030	25	843	5	9000	8300	8300	8300
	TUNNELUD	2480	2030	2670	1510	25	554	5	9000	8300	8300	8300
	WEST 1UD	2670	1510	2790	1210	25	323	5	9000	8300	8300	8300
	WEST 2UD	2790	1210	3310	-140	55	1447	5	9000	8300	8300	8300
LOWER DECK	EAST 1LD	2100	5170	1970	3890	30	1287	5	9500	9500	9500	9500
	EAST 2LD	1970	3890	1950	3590	30	301	5	9500	9500	9500	9500
	EAST 3LD	1950	3590	1980	3325	15	267	5	9500	9500	9500	9500
	EAST 4LD	1980	3325	2160	2810	0	546	5	9500	9500	9500	9500
	EAST 5LD	2160	2810	2480	2030	0	843	5	9500	9500	9500	9500
	TUNNELLD	2480	2030	2670	1510	0	554	5	9500	9500	9500	9500
	WEST 1LD	2670	1510	2790	1210	0	323	5	9500	9500	9500	9500
	WEST 2LD	2790	1210	3310	-140	30	1447	5	9500	9500	9500	9500

Table F-33
Receptor Coordinates

RECEPTOR	X-COORD (FEET)	Y-COORD (FEET)	OFFSET (FEET)
N OF SEGMENT EAST3	1915	3452	50
	1890	3449	75
	1866	3446	100
	1766	3435	200
	1667	3424	300
S OF SEGMENT EAST3	2015	3463	50
	2040	3466	75
	2064	3469	100
	2164	3480	200
	2263	3491	300
N OF SEGMENT EAST5	2274	2401	50
	2251	2392	75
	2227	2382	100
	2135	2344	200
	2042	2306	300
S OF SEGMENT EAST5	2366	2439	50
	2389	2448	75
	2413	2458	100
	2505	2496	200
	2598	2534	300
N OF SEGMENT WEST1	2684	1341	50
	2660	1332	75
	2637	1323	100
	2544	1286	200
	2451	1249	300
S OF SEGMENT WEST1	2776	1379	50
	2800	1388	75
	2823	1397	100
	2916	1434	200
	3009	1471	300

Table F-34
PM Peak Hour Operating Modes, Freeway Traffic

TRIP PURPOSE	TRIP PURPOSE MIX	HOT STABLE FRACTION		COLD START FRACTION	HOT START FRACTION
H-W	50.00%	90.00%		9.25%	0.75%
H-S	10.00%	90.00%		5.27%	4.73%
H-O	20.00%	90.00%		6.81%	3.19%
O-W	10.00%	90.00%		6.24%	3.76%
O-O	10.00%	90.00%		2.87%	7.13%
CHECKSUM:	100.00%	90.00%	WTD MEAN:	7.42%	2.58%

	COLD START	HOT START
CATALYST	7.44%	2.56%
NONCATALYST	5.70%	4.30%

CATALYST FRACTION FOR LDA + LDT + MDT + MCY: 98.97%

START MODE = FIRST 505 SECONDS OF VEHICLE TRAVEL
STABLE MODE = TRAVEL AFTER 505 SECONDS OF VEHICLE OPERATION

START MODE SPLIT FACTORS:

	CATALYST VEHICLES		NONCAT VEHICLES	
TRIP PURPOSE	COLD STARTS	HOT STARTS	COLD STARTS	HOT STARTS
H-W	92.63%	7.37%	80.04%	19.96%
H-S	52.89%	47.11%	33.61%	66.39%
H-O	68.35%	31.65%	43.38%	56.62%
O-W	62.64%	37.36%	40.73%	59.27%
O-O	28.90%	71.10%	8.25%	91.75%
WTD MEAN:	74.43%	25.57%	56.96%	43.05%

Table F-35
Basic Freeway Traffic Emission Rates

SUMMARY OF EMFAC7F INPUT ASSUMPTIONS:

CALENDAR YEAR: 2010 I/M PROGRAM: YES

VEHICLE MIX ASSUMPTIONS:

LDA	LDT	MDT	HDG	HDD	BUS	MCY
70.00%	22.25%	2.37%	2.37%	1.49%	0.99%	0.98%

AIR TEMPERATURE FOR EXHAUST RATES: SUMMER: 70 WINTER: 50

EVAPORATIVE EMISSIONS TEMPERATURE PATTERNS:

	MINIMUM	8 AM	9 AM	11 AM	1 PM	MAXIMUM
SUMMER	55	57	60	68	72	75
WINTER	40	40	42	51	58	60

OPERATING MODE ASSUMPTIONS:

COLD START	HOT START	HOT STABLE
7.42%	2.58%	90.00%

VEHICLE EMISSION RATES, GRAMS/MILE:

	GRAM/MILE RATES BY SPEED IN MPH					FIXED
	15	25	35	45	55	AMOUNT
ROG	0.44	0.25	0.20	0.16	0.16	
NOx	0.82	0.67	0.65	0.74	0.97	
CO-S	4.10	2.68	2.11	1.92	2.24	
CO-W	4.63	3.07	2.44	2.23	2.59	
PMEX	0.05	0.05	0.05	0.05	0.05	
PMTW	0.21	0.21	0.21	0.21	0.21	
HOT SOAK						0.21
DRNL/RSTL						1.21

NOTES: LDA = Light duty autos
LDT = Light duty trucks
MDT = Medium duty trucks
HDG = Heavy duty gasoline-fueled vehicles
HDD = Heavy duty diesel-fueled vehicles
BUS = diesel-fueled urban buses
MCY = motorcycles
ROG = reactive organic gases (summer fuel volatility)
NOx = oxides of nitrogen (summer fuel volatility)
CO-S = carbon monoxide (summer fuel volatility)
CO-W = carbon monoxide (winter fuel volatility)
PMEX = exhaust particulate matter
PMTW = ten micron particulate matter
DRNL = running loss evaporative emissions (grams/vehicle/day)
RSTL = resting loss evaporative emissions (grams/vehicle/day)
Hot Soak evaporative emission rate in grams/trip

Table F-36
Cold Start Emission Rates for Idle Adjustment Analyses

SUMMARY OF EMFAC7F INPUT ASSUMPTIONS:

CALENDAR YEAR: 2012 I&M PROGRAM: YES

VEHICLE MIX ASSUMPTIONS:

LDA	LDT	MDT	HDG	HDD	BUS	MCY
72.20%	22.20%	2.27%	2.07%	1.49%	0.99%	0.98%

AIR TEMPERATURE FOR EXHAUST RATES. SUMMER: 70 WINTER: 50

EVAPORATIVE EMISSIONS TEMPERATURE PATTERNS:

	MINIMUM	8 AM	9 AM	11 AM	1 PM	MAXIMUM
SUMMER	55	57	60	68	72	75
WINTER	40	40	42	51	58	62

OPERATING MODE ASSUMPTIONS:

COLD START	HOT START	HOT STABLE
100.00%	0.00%	0.00%

VEHICLE EMISSION RATES, GRAMS/MILE:

	GRAM/MILE RATES BY SPEED IN MPH					FIXED
	5	10	15	20	25	AMOUNT
ROG	1.96	1.06	0.75	0.63	0.57	
NOx	1.51	1.28	1.15	1.04	0.99	
CO-S	13.36	9.77	8.10	7.21	6.68	
CO-W	16.19	12.19	10.36	9.38	8.80	
PMEX	0.05	0.05	0.05	0.05	0.05	
PMTW	0.21	0.21	0.21	0.21	0.21	
HOT SOAK						0.21
DRNL/RSTL						1.21

NOTES: LDA = Light duty autos
LDT = light duty trucks
MDT = medium duty trucks
HDG = heavy duty gasoline-fueled vehicles
HDD = heavy duty diesel-fueled vehicles
BUS = diesel-fueled urban buses
MCY = motorcycles
ROG = reactive organic gases (summer fuel volatility)
NOx = oxides of nitrogen (summer fuel volatility)
CO-S = carbon monoxide (summer fuel volatility)
CO-W = carbon monoxide (winter fuel volatility)
PMEX = exhaust particulate matter
PMTW = tire wear particulate matter
DRNL = summer diurnal evaporative emissions (grams/vehicle/day)
RSTL = summer running loss evaporative emissions (grams/vehicle/day)
Hot Soak evaporative emissions are in grams/trip

Table F-37
Hot Stabilized Emission Rates for Idle Adjustment Analyses

SUMMARY OF EMFAC7F INPUT ASSUMPTIONS:

CALENDAR YEAR: 2010 I&M PROGRAM: YES

VEHICLE MIX ASSUMPTIONS:

LDA	LDT	MDT	HDG	HDD	SUT	MCY
70.00%	22.35%	2.27%	2.07%	1.49%	0.99%	0.98%

AIR TEMPERATURE FOR EXHAUST RATES: SUMMER: 70 WINTER: 50

EVAPORATIVE EMISSIONS TEMPERATURE PATTERNS:

	MINIMUM	8 AM	9 AM	11 AM	1 PM	MAXIMUM
SUMMER	53	57	60	68	72	75
WINTER	40	40	42	51	58	60

OPERATING MODE ASSUMPTIONS:

COLD START	HOT START	HOT STABLE
0.00%	0.00%	100.00%

VEHICLE EMISSION RATES, GRAMS/MILE:

POLLUTANT	GRAM/MILE RATES BY SPEED IN MPH 5	10	15	20	25	FIXED AMOUNT
ROG	1.62	0.71	0.41	0.29	0.23	
NOx	1.16	0.93	0.79	0.69	0.64	
CO-S	9.01	5.42	3.76	2.86	2.33	
CO-W	9.98	5.98	4.14	3.17	2.58	
PMEX	0.05	0.05	0.05	0.05	0.05	
PMTW	0.21	0.21	0.21	0.21	0.21	
HOT SOAK						0.21
DRNL/RSTL						1.21

NOTES: LDA = light duty autos
LDT = light duty trucks
MDT = medium duty trucks
HDG = heavy duty gasoline-fueled vehicles
HDD = heavy duty diesel-fueled vehicles
SUS = diesel-fueled urban buses
MCY = motorcycles
ROG = reactive organic gases (summer fuel volatility)
NOx = oxides of nitrogen (summer fuel volatility)
CO-S = carbon monoxide (summer fuel volatility)
CO-W = carbon monoxide (winter fuel volatility)
PMEX = exhaust particulate matter
PMTW = tire wear particulate matter
DRNL = summer diurnal evaporative emissions (grams/vehicle/day)
RSTL = summer resting loss evaporative emissions (grams/vehicle/day)
Hot Soak evaporative emissions are in grams/trip

Table F-38
Estimated Vehicle Delays by Roadway Segment

		DELAY TIME (SECONDS) BY SCENARIO				ESTIMATED VOLUME:CAPACITY RATIOS BY SCENARIO			
ROADWAY	SEGMENT	NO ACTION	MINIMUM	MEDIUM	MAXIMUM	NO ACTION	MINIMUM	MEDIUM	MAXIMUM
UPPER DECK	EAST 1UD	25	18	18	18	0.90	0.83	0.83	0.83
	EAST 2UD	6	4	4	4	0.90	0.83	0.83	0.83
	EAST 3UD	5	4	4	4	0.90	0.83	0.83	0.83
	EAST 4UD	11	8	8	8	0.90	0.83	0.83	0.83
	EAST 5UD	17	12	12	12	0.90	0.83	0.83	0.83
	TUNNELUD	11	8	8	8	0.90	0.83	0.83	0.83
	WEST 1UD	6	5	5	5	0.90	0.83	0.83	0.83
	WEST 2UD	29	21	21	21	0.90	0.83	0.83	0.83
LOWER DECK	EAST 1LD	32	32	32	32	0.95	0.95	0.95	0.95
	EAST 2LD	7	7	7	7	0.95	0.95	0.95	0.95
	EAST 3LD	7	7	7	7	0.95	0.95	0.95	0.95
	EAST 4LD	14	14	14	14	0.95	0.95	0.95	0.95
	EAST 5LD	21	21	21	21	0.95	0.95	0.95	0.95
	TUNNELLD	14	14	14	14	0.95	0.95	0.95	0.95
	WEST 1LD	8	8	8	8	0.95	0.95	0.95	0.95
	WEST 2LD	36	36	36	36	0.95	0.95	0.95	0.95

Table F-39
Emission Factor Adjustments for Excess Vehicle Idling Time: SFOBB Traffic, 2010

INPUT VARIABLES	EAST1UD	EAST2UD	EAST3UD	EAST4UD	EAST5UD	UNNELUD	WEST1UD	WEST2UD	EAST1LD	EAST2LD	EAST3LD	EAST4LD	EAST5LD	UNNELLD	WEST1LD	WEST2LD
SPEED (MPH) FOR BASE EMISSION RATE	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
LINK LENGTH, FEET	1297	301	267	546	843	554	323	1447	1257	301	267	546	843	554	323	1447
DELAY PER VEHICLE, SECONDS OF IDLE	25	6	5	11	17	11	6	29	32	7	7	14	21	14	8	36
BASE EMISSION RATE, GM/MI	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
100% STABILIZED 5 MPH RATE, GM/MI	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98
100% STABILIZED 16 MPH RATE, GM/MI	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
100% COLD START 16 MPH RATE, GM/MI	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36
% CATALYST VEHICLES	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97
% NON-CATALYST COLD STARTS	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
% CATALYST COLD STARTS	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44
OUTPUT																
HOT STABILIZED IDLE RATE, GM/MIN	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
ADJUSTED COLD START 5 MPH RATE, GM/MI	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97
COLD START IDLE RATE, GM/MIN	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812
% IDLE TIME IN EMFAC/MOBILE RATES	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65
IDLE SECONDS IN EMFAC/MOBILE RATES	4.79	1.12	0.99	2.03	3.14	2.06	1.20	5.39	4.79	1.12	0.99	2.01	3.14	2.06	1.20	5.39
REQUIRED EXTRA IDLE SECONDS	20.71	4.64	4.31	8.80	13.61	8.94	5.19	23.31	27.04	6.53	5.59	11.48	17.72	11.61	6.85	30.15
WEIGHTED % COLD STARTS	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42
WEIGHTED COLD/HOT IDLE RATE, GM/MIN	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244
BASE EMISSION RATE, GM/MI	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
ADDED IDLE ADJUSTMENT, GM/MI	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71
ADJUSTED EMISSION RATE, GM/MI	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
ADJUSTMENT FACTOR, % INCREASE	42.6%	42.7%	42.8%	42.7%	42.8%	42.8%	42.6%	42.7%	55.7%	55.8%	55.5%	55.8%	55.7%	55.6%	55.8%	55.6%

Table F-40
Basic Input Parameters Used for CALINE4 Runs

MODEL PARAMETER	INPUT VALUES			
POLLUTANT CODE:	1			
POLLUTANT NAME:	CARBON MONOXIDE			
SURFACE ROUGHNESS:	75	cm		
MOLECULAR WEIGHT:	28.01			
SETTLING VELOCITY:	0	cm/sec		
DEPOSITION VELOCITY:	0	cm/sec		
NUMBER OF RECEPTORS:	16			
NUMBER OF LINKS:	30			
SCALE FACTOR:	0.3048	feet/meter		
LINK TITLE OPTION CODE:	1			
RECEPTOR TITLE OPTION CODE:	1			
ALTITUDE:	0	feet		
LINK TYPE CODE:	4	(bridge)	1	(tunnel ends)
LINK HEIGHT:	0-30	(lower deck)	25-55	(upper deck)
MIXING CELL WIDTH:	60			
RIGHT SIDE CANYON CODE:	0			
LEFT SIDE CANYON CODE:	0			
LINK CONTINUATION CODE:	1			
RUN TYPE CODE:	1			
TRAFFIC VOLUME CHANGE CODE:	1	(first link)	0	(other links)
EMISSION RATE CHANGE CODE:	1	(first link)	0	(other links)
INTERSECTION CHANGE CODE:	0			
MET SCENARIO CHANGE CODE:	1			
WIND SPEED:	1	meters/second		
WIND DIRECTION:	0	to 350 degrees in 10 degree increments		
STABILITY CLASS:	5	(Class E, isothermal/mild inversion)		
MIXING HEIGHT LIMIT:	50	meters		
SIGMA THETA:	10	degrees		
BACKGROUND CONCENTRATION:	0	ppm		
AIR TEMPERATURE:	25	degrees C		

Note: The CALINE4 model source code was modified to accept large numbers of links and receptors, and to eliminate the inappropriate adjustment of concentration results to study area altitude and temperature; concentration results must be computed for 1 atmosphere pressure and 25 degrees C to provide a direct comparison to federal and state ambient air quality standards.

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