4.6 AIR QUALITY

Potential air quality impacts resulting from disposal and reuse of NSTI are discussed in this section. Factors considered in determining whether an alternative would have significant air quality impacts included the extent or degree to which its implementation would:

1. Conflict with or obstruct implementation of the applicable air quality attainment plan;
2. Exceed an ambient air quality standard or substantially contribute to an existing or projected air quality violation;
3. Create or contribute to a non-stationary source "hot spot;" or
4. Expose sensitive receptors (e.g., children, elderly, or persons with respiratory conditions) to substantial pollutant concentrations.

Dispersion modeling analyses have been performed and are documented in Appendix F.

General Conformity

On November 30, 1993, EPA published the federal General Conformity Rule (40 C.F.R. §§ 51.850-51.860 and 40 C.F.R. Part 93). The US Navy document *Chief of Naval Operations Interim Guidance on Compliance with the Clean Air Act General Conformity Rule* (DON 1994c) provides policies and procedures for conformity evaluations.

As specified in 40 C.F.R. § 51.853 and 40 C.F.R. § 93.153, certain actions are exempt from general conformity determinations, including the action to dispose of NSTI. This finding is based on the following exemption as stated in 40 C.F.R. § 51.853(c)(2)(xix) and 40 C.F.R. § 93.153(c)(2)(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." This is further explained in Volume 58 Number 228 of the Federal Register, "Supplementary Information on the Final Rule." Subsection III.J(3)(e) states that "Federal land transfers are included in the regulatory list of actions...exempt from the final conformity rules." The Navy's Record of Non-Applicability (RONA) is included in Appendix F.

4.6.1 Alternative 1

Buildout of Alternative 1 would result in short-term air pollutant emissions from construction activities, long-term emissions from operation of new uses, and potential long-term emissions from hazardous air pollutants.

Not Significant Impacts

Construction and demolition (Factors 1 and 2). Clearing and grading of sites and construction, demolition, and remodeling activities within the reuse plan area would generate fugitive dust (PM_{10}) and combustive emissions from equipment and from workers' vehicles. Building demolition, site preparation for new building construction, and roadway reconstruction would be the primary emission-generating activities. Construction-related emissions would be temporary and limited to the construction period.

Development is expected to occur in phases (see section 2.4). Each phase would include some demolition and construction activities and would lead to additional employment and housing development. In this way, construction and demolition activities at NSTI are expected to occur incrementally, and the inconveniences and impacts associated with construction would be spread out in terms of time and location.

The impact of combustive emissions from proposed construction sources would be insignificant, as construction emissions from land use development projects have been included in the regional air quality attainment plans and they are not expected to delay attainment or maintenance of the O_3 and CO standards within the SFBAAB (BAAQMD 1996). Therefore, fugitive dust is the pollutant of greatest concern with respect to construction activities. The BAAQMD's approach to CEQA analyses of construction impacts is to emphasize implementation effective and comprehensive fugitive dust control measures rather than on detailed emissions quantification. Implementation of feasible control measures would ensure that emissions from construction activities would produce less than significant impacts to air quality (BAAQMD 1996).

Since the proposed reuse construction activities would disturb more then 4 acres of ground, implementation of the following BAAQMD "basic" and "enhanced" PM_{10} control measures would ensure that proposed construction would produce less than significant impacts to air quality:

- Minimize the area disturbed by clearing, earthmoving, or excavation activities at all times;
- Sufficiently water all areas to be excavated or graded to prevent excessive dust generation;
- Seed and water all unpaved, inactive portions of the construction site to maintain a grass cover if they are to remain inactive for a long period during building construction;
- Water or treat all unpaved active portions of the construction site with dust control solutions, twice daily, to minimize windblown dust and dust generation by vehicle traffic;
- Sweep paved portions of the construction site daily or as necessary to control wind-blown dust and dust generation by vehicle traffic;
- Limit on-site vehicle speeds on unpaved areas on the construction site to 15 mph (24 km/hour) or less;
- Sweep streets adjacent to the construction site as necessary to remove accumulated dust and soil;
- Halt all clearing, grading, earthmoving, and excavating activities during periods of sustained strong winds (hourly average wind speeds of 25 mph [40 km/hour] or greater);
- Use tarpaulins or other effective covers for piles stored onsite and for haul trucks that travel on streets; and

- On haul trucks, maintain at least 6 inches (15 centimeters [cm]) of freeboard between the top of the load and the top of the trailer.

Transportation-related air pollutant emissions (Factors 1 and 2). By providing for increased employment and housing, Alternative 1 would result in increased travel, including personal vehicle travel, travel to and from off-site ferry terminals, bus travel, and ferry vessel travel. Travel associated with buildout under Alternative 1 would result in an increase in ozone precursor emissions (reactive organic compounds and nitrogen oxides) and PM_{10} (direct PM_{10} emissions plus organic compounds and nitrogen oxides, which are precursors of the portion of PM_{10} formed through chemical reactions). However, the increase in these emissions would not contribute to an exceedance of any ambient air quality standard for ozone or PM_{10}.

The 2000 Clean Air Plan for the San Francisco Bay Area estimates that regional emissions in 2006 (the last year for which a projection is available) would be approximately 460 tons (383 metric tons) per day for reactive organic compounds and nitrogen oxides and 185 tons (154 metric tons) per day for PM_{10} (BAAQMD 2000). Compared to operational (baseline) activity levels, the net addition of less than 0.2 tons (0.18 metric tons) per day of either ozone precursor or PM_{10} emissions by 2010 under Alternative 1 (Table 4.6-1) would not cause a measurable change in the location, magnitude, or frequency of high ozone or PM_{10} concentrations. Consequently, the change in land use and vehicle travel patterns resulting from buildout of Alternative 1 would not lead to additional violations of ambient air quality standards for ozone or PM_{10}. No mitigation is proposed.

Potential carbon monoxide hot spots (Factors 1 and 2). Implementation of Alternative 1 would add vehicular trips to the local roadways. Therefore, the potential exists for localized carbon monoxide hot spots. A carbon monoxide hot spot is created when sensitive receptors are exposed to carbon monoxide levels that exceed either federal or state ambient carbon monoxide standards. The federal standards for carbon monoxide are an average of 9.0 ppm (parts per million) over an 8-hour period, and an average of 35 ppm over a 1-hour period. The state standards for carbon monoxide are an average of 9.0 ppm over an 8-hour period, and an average of 20 ppm over a 1-hour period.

Areas on Yerba Buena Island in the vicinity of the SFOBB corridor, which would support the highest peak hour traffic volumes, were chosen for analysis. The CALINE4 dispersion model (Caltrans 1989) was used to estimate the carbon monoxide concentrations from vehicular exhaust at three locations: near Macalla Road at the eastern end of Yerba Buena Island, about 300 feet (91 m) east of the eastern SFOBB tunnel opening, and about 160 feet (49 m) west of the western SFOBB tunnel opening. Receptor locations were established at 50, 75, 100, 200, and 300 feet (15, 23, 30.5. 61, and 91 m) from the centerline of the SFOBB. Vehicle emission rates were estimated for 2010 conditions using the California Air Resources Board's EMFAC7F model (California Air Resources Board 1993). Emission rates produced by the EMFAC7F model were adjusted to account for vehicle idling during peak period traffic periods.

As shown in Table 4.6-2, the CALINE4 model demonstrates that carbon monoxide levels would not be expected to exceed federal or state standards at 50 feet (15 m) from the centerline of the SFOBB. Carbon monoxide concentrations would be less at distances greater than 50 feet (15 m). Because no sensitive receptor would be located closer than 50 feet (15 m) from the center of the SFOBB, no sensitive receptors in this area would be exposed to carbon monoxide hot spots in

2010. Therefore, carbon monoxide impacts would be less than significant. No mitigation is proposed.

Table 4.6-1
Summary of Transportation-Related Air Pollutant Emissions for the Reuse Alternatives
(page 1 of 2)

Alternative	*Component*	*Amount*		Estimated 2010 Emissions (Tons per Year)				
				ROG	NO_x	*CO*	SO_x	PM_{10}
NSTI Operational Activity	Vehicle Traffic	21,677,000	annual VMT	7.6	14.5	61.0	0.7	22.3
	Mobile Equipment			1.6	0.5	6.6	0.01	0.04
	Ships			0.2	1.4	0.7	0.5	0.1
	Small Craft			17.7	87.1	19.8	12.3	3.0
	Totals			**27.1**	**103.4**	**88.0**	**13.5**	**25.4**
Alternative 1	Vehicle Traffic	72,800,428	annual VMT	32.8	58.7	316.9	2.4	74.8
	Bus System Travel	1,059,503	annual VMT	4.6	20.4	19.5	0.7	4.0
	To/From Terminals	15,476,203	annual VMT	6.1	8.5	67.9	0.5	15.6
	Ferry Vessel Trips	41,170	annual trips	1.5	18.4	3.7	7.7	1.0
	Totals			**45.0**	**105.9**	**408.1**	**11.3**	**95.5**
Alternative 2	Vehicle Traffic	36,413,204	annual VMT	15.0	31.7	138.5	1.2	37.8
	Bus System Travel	852,113	annual VMT	3.7	16.4	15.7	0.6	3.2
	To/From Terminals	14,813,005	Annual VMT	5.8	8.1	65.0	0.5	14.9
	Ferry Vessel Trips	42,800	Annual trips	1.5	19.1	3.9	8.0	1.1
	Totals			**26.0**	**75.3**	**223.1**	**10.3**	**57.0**
Alternative 3	Vehicle Traffic	35,725,521	Annual VMT	16.8	29.3	149.6	1.2	36.8
	Bus System Travel	468,023	Annual VMT	2.1	9.0	8.6	0.3	1.8
	To/From Terminals	2,741,663	Annual VMT	1.1	1.5	12.0	0.1	2.8
	Ferry Vessel Trips	17,520	Annual trips	0.4	6.7	1.7	2.9	0.4
	Totals			**20.4**	**46.6**	**172.0**	**4.5**	**41.7**

Table 4.6-1
Summary of Transportation-related Air Pollutant Emissions for the Reuse Alternatives
(page 2 of 2)

Alternative	*Component*	Net Change Compared to the Operational Activity Scenario (Tons per Year)[1]				
		ROG	*NO_x*	*CO*	*SO_x*	*PM_{10}*
Alternative 1	Total mobile source emissions	17.9	2.5	320.1	-2.2	70.0
Alternative 2	Total mobile source emissions	-1.1	-28.2	135.1	-3.3	31.6
Alternative 3	Total mobile source emissions	-6.7	-56.9	84.0	-9.0	16.3

Notes: [1] All values rounded independently after calculation.

VMT = vehicle miles traveled

ROG = reactive organic compounds NO_x = nitrogen oxides

CO = carbon monoxide SO_x = sulfur oxides

PM10 = inhalable particulate matter

Annual carbon monoxide emissions from motor vehicle traffic assume 8 months of summer temperature patterns and 4 months of winter temperature patterns.

SO_x emissions for vehicle traffic based on an average emission rate of 0.3 grams/vmt (BAAQMD 1996).

PM_{10} emission estimates for motor vehicle and bus traffic include a resuspended dust component based on the BAAQMD recommended factor of 0.69 grams per vmt (BAAQMD 1996).

Emissions associated with the NSTI operational activity scenario based on Radian International (1997), with adjustment of motor vehicle emissions for emission rate changes between 2001 and 2010.

Mobile equipment under the operational activity scenario include forklifts, pile drivers, and mobile generators.

The operational activity scenario assumes 250 work days per year. The reuse alternatives assume 365 work days per year.

Motor vehicle and bus traffic emissions for reuse alternatives calculated for 2010 using emission factors from the California Air Resources Board's EMFAC7F vehicle emission rate program.

Ferry trip estimates assume average passenger loads of 200 per trip for Alternative 3 and 300 per trip for Alternatives 1 and 2.

Ferry vessel emissions based on data in California Air Resources Board 1991a assuming diesel-fueled ferry vessels and an average run time of 15 minutes per trip.

The maximum CO impact from project and future traffic in the year 2010 was estimated to occur just north of I-80 near the vicinity of Macalla Road at eastern end of Yerba Buena Island. In the year 2025, traffic volumes/speeds within this portion of I-80 would be about 6 percent greater/less then those considered in the CALINE4 dispersion modeling analysis for year 2010. A comparison of applicable emission factors for years 2010 and 2025 shows that CO emissions would decrease by approximately 69 percent during this time period within this portion of I-80 (California Air Resources Board 2002). As a result, the project CO impacts analyzed for year 2010 would be greater then those analyzed for year 2025 conditions. Therefore, the current analysis represents a worst-case analysis compared to conditions beyond year 2010.

Potential toxic air emissions (Factors 3 and 4). Some land uses that may be developed in Alternative 1 may generate air contaminants (other than the criteria pollutants discussed above) that have the potential to harm human health and the environment. Toxic air contaminants

Table 4.6-2
Summary of Dispersion Modeling Results For Yerba Buena Island
(page 1 of 2)

Location and Distance From the Centerline of the SFOBB	Modeled Peak Hour CO Value (ppm)	1-hour Background CO Value ppm)	Total Peak Hour CO Value (ppm)	Estimated 8-hour CO Value (ppm) By Reuse Alternative		
				Alternative 1	Alternative 2	Alternative 3
Near Macalla Road at eastern end of Yerba Buena Island						
50 ft N of I-80	5.0	1.0	6.0	5.1	5.0	4.8
75 ft N of I-80	3.4	1.0	4.4	3.7	3.7	3.5
100 ft N of I-80	3.0	1.0	4.0	3.4	3.3	3.2
200 ft N of I-80	2.0	1.0	3.0	2.6	2.5	2.4
300 ft N of I-80	1.6	1.0	2.6	2.2	2.2	2.1
50 ft S of I-80	2.5	1.0	3.5	3.0	2.9	2.8
75 ft S of I-80	2.1	1.0	3.1	2.6	2.6	2.5
100 ft S of I-80	1.8	1.0	2.8	2.4	2.3	2.2
200 ft S of I-80	1.5	1.0	2.5	2.1	2.1	2.0
300 ft S of I-80	1.3	1.0	2.3	2.0	1.9	1.8
About 300 feet east of eastern tunnel opening, Yerba Buena Island						
50 ft N of I-80	4.3	1.0	5.3	4.5	4.4	4.2
75 ft N of I-80	3.4	1.0	4.4	3.7	3.7	3.5
100 ft N of I-80	2.8	1.0	3.8	3.2	3.2	3.0
200 ft N of I-80	1.9	1.0	2.9	2.5	2.4	2.3
300 ft N of I-80	1.8	1.0	2.8	2.4	2.3	2.2
50 ft S of I-80	3.6	1.0	4.6	3.9	3.8	3.7
75 ft S of I-80	2.7	1.0	3.7	3.1	3.1	3.0
100 ft S of I-80	2.2	1.0	3.2	2.7	2.7	2.6
200 ft S of I-80	1.5	1.0	2.5	2.1	2.1	2.0

Table 4.6-2
Summary of Dispersion Modeling Results For Yerba Buena Island
(page 2 of 2)

Location and Distance From the Centerline of the SFOBB	*Modeled Peak Hour CO Value (ppm)*	*1-hour Background CO Value ppm)*	*Total Peak Hour CO Value (ppm)*	*Estimated 8-hour CO Value (ppm) By Reuse Alternative*		
				ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
300 ft S of I-80	1.2	1.0	2.2	1.9	1.8	1.8
ABOUT 160 FEET WEST OF WESTERN TUNNEL OPENING, YERBA BUENA ISLAND						
50 ft N of I-80	4.1	1.0	5.1	4.3	4.2	4.1
75 ft N of I-80	3.1	1.0	4.1	3.5	3.4	3.3
100 ft N of I-80	2.6	1.0	3.6	3.1	3.0	2.9
200 ft N of I-80	1.9	1.0	2.9	2.5	2.4	2.3
300 ft N of I-80	1.6	1.0	2.6	2.2	2.2	2.1
50 ft S of I-80	3.5	1.0	4.5	3.8	3.7	3.6
75 ft S of I-80	2.6	1.0	3.6	3.1	3.0	2.9
100 ft S of I-80	2.2	1.0	3.2	2.7	2.7	2.6
200 ft S of I-80	1.5	1.0	2.5	2.1	2.1	2.0
300 ft S of I-80	1.0	1.0	2.0	1.7	1.7	1.6

Notes: CO = carbon monoxide.
ppm = parts per million by volume.

Modeling analyses were performed with the CALINE4 dispersion model, assuming poor dispersion conditions (1 meter per second wind speeds, mild inversion conditions [Class E stability], a 50-meter mixing height limit, and a horizontal wind fluctuation parameter of 10 degrees. Wind directions were varied in 10-degree increments. This table presents only the highest modeled CO concentration for each receptor location.

Emission rates were calculated for 2010 using the EMFAC7F vehicle emission rate program, with additional idling emissions added to account for peak period congestion conditions.

Due to SFOBB capacity limitations, peak hour traffic volumes are nearly identical for each alternative, resulting in identical peak 1-hour CO levels. Background CO values represent contributions from unmodeled sources (minor roadways, parking facilities, etc.).

Potential 8-hour CO values are estimated by applying a persistence (extrapolation) factor to the total peak hour CO value. The duration of near capacity traffic flows varies among reuse alternatives, resulting in somewhat larger persistence factors for higher intensity reuse alternatives.

Persistence factors assumed for this analysis are: 78% for the No Action Alternative, 85% for Alternative 1, 83% for Alternative 2, and 80% for Alternative 3.

The federal 1-hour CO standard is 35 ppm. The state 1-hour CO standard is 20 ppm. The federal and state 8-hour CO standards are 9 ppm.

(TACs) could be generated from stationary sources. Although no industrial land use is proposed on NSTI, certain retail establishments could be potential sources of TACs. However, the actual amount of these air contaminants cannot be quantified due to a lack of information about specific business uses that may be located in the reuse plan area.

The BAAQMD limits emissions of and public exposure to TACs through a number of programs. TAC emissions from new and modified stationary sources are limited through an air toxics new source review program, which implements the district's Risk Management Policy via the district's permitting process for stationary sources. These analyses help to establish buffer zones around proposed new uses, preventing the exposure of sensitive receptors to TACs.

Evaluation of potential impacts attributable to TAC emissions from stationary sources would be speculative because no specific types or sizes of stationary sources have been proposed. Therefore, at this time, there is not sufficient information to evaluate the significance of stationary source emissions from future individual projects. Future air permit review (for both construction and operation) required by the BAAQMD would determine the significance of these potential impacts and could require new stationary sources to adopt specific mitigations as a condition for new permits.

In addition to stationary sources, vehicle trips generated under Alternative 1 would cause motor vehicle exhaust and evaporative emissions, known mobile sources of TACs. Exposure of TAC emissions from mobile sources would be roughly proportional to traffic volumes on the area roadway network. The further away from high-volume traffic arteries, the lower the exposure to all mobile source emissions. Reuse of NSTI would not result in traffic volumes on the local roadway network that would be unusually high in comparison to traffic volumes on comparable types of roadways elsewhere in the urbanized portions of the Bay Area. Furthermore, the BAAQMD's Impact Assessment Guidelines (BAAQMD 1996) do not include a requirement for including mobile sources of TACs when evaluating impacts. Therefore, exposure to TAC emissions from mobile sources is considered not significant. No mitigation is proposed.

4.6.2 Alternative 2

Not Significant Impacts

<u>*Construction and demolition* (Factors 1 and 2).</u> Construction emissions from the development of Alternative 2 would be less than but similar in nature to those that would result from the development of Alternative 1. These activities would occur incrementally over an extended build-out period, making it impossible to estimate specific numbers for any particular year. Construction-generated dust would be reduced to a less than significant level by implementing dust control measures as required by the BAAQMD. No mitigation is proposed.

<u>*Transportation-related air pollutant emissions* (Factors 1 and 2).</u> Development of Alternative 2 would generate air pollutants from transportation-related emissions (Table 4.6-1). Under this alternative, reactive organic compound emissions in 2010 (26 tons/year [23.5 metric tons/year]) would be a little more than half of those projected under Alternative 1 (45 tons/year [41 metric tons/year]).

The 2000 Clean Air Plan for the San Francisco Bay Area estimates that regional emissions in 2006 (the last year for which a projection is available) would be approximately 460 tons (383 metric tons) per day for reactive organic compounds and nitrogen oxides and 185 tons (154 metric tons) per day for PM_{10} (BAAQMD 2000). Compared to operational (baseline) activity levels, the net decrease of approximately 0.07 tons per day (0.06 metric tons per day) of ozone precursor emissions and the net increase of about 0.08 tons per day (0.07 metric tons per day) of PM_{10} emissions by 2010 under Alternative 2 would not cause a measurable change in the location, magnitude, or frequency of high ozone or PM_{10} concentrations. Consequently, the change in land use and vehicle travel patterns resulting from buildout of Alternative 2 would not lead to additional violations of ambient air quality standards for ozone or PM_{10}. No mitigation is proposed.

Potential carbon monoxide hot spots (Factors 1 and 2). Traffic associated with Alternative 2 would produce carbon monoxide concentrations that are well within the limits of the federal and state air quality standards (Table 4.6-2). Consequently, this impact is considered not significant. No mitigation is proposed.

Potential toxic air emissions (Factors 3 and 4). Unlike Alternative 1, Alternative 2 does not propose to develop any land uses that are anticipated to be major generators of TAC emissions. However, weekday daily vehicle trips generated under Alternative 2, although fewer than under Alternative 1, would cause motor vehicle exhaust and evaporative emissions, known mobile sources of toxic air contaminants. This potential impact is similar to, but less than, the not significant impact described for Alternative 1. No mitigation is proposed.

4.6.3 Alternative 3

Not Significant Impacts

Construction and demolition (Factors 1 and 2). Construction emissions from the development of Alternative 3 would be substantially less than but similar in nature to those that would result for Alternative 1. Lower emissions are expected because several existing buildings would be reused and there would be limited new construction. These activities would occur incrementally over an extended build-out period, making it impossible to estimate specific numbers for any particular year. Construction-generated dust would be reduced to a not significant level by implementing dust control measures as required by the BAAQMD. No mitigation is proposed.

Transportation-related air pollutant emissions (Factors 1 and 2). Development of Alternative 3 would generate air pollutants from transportation-related emissions (Table 4.6-1). Under this alternative, ozone precursor and PM_{10} emissions in 2010 would be less than half of those projected under Alternative 1.

The 2000 Clean Air Plan for the San Francisco Bay Area estimates that regional emissions in 2006 (the last year for which a projection is available) would be approximately 460 tons (383 metric tons) per day for reactive organic compounds and nitrogen oxides and 185 tons (154 metric tons) per day for PM_{10} (BAAQMD 2000). Compared to operational (baseline) activity levels, the net decrease of approximately 0.2 tons per day (0.18 metric tons per day) of ozone precursor emissions and the net increase of about 0.04 tons per day (0.04 metric tons per day) of

PM_{10} emissions by 2010 under Alternative 3 would not cause a measurable change in the location, magnitude, or frequency of high ozone or PM_{10} concentrations. Consequently, the change in land use and vehicle travel patterns resulting from buildout of Alternative 3 would not lead to additional violations of ambient air quality standards for ozone or PM_{10}. No mitigation is proposed.

Potential carbon monoxide hot spots (Factors 1 and 2). Traffic associated with Alternative 3 would produce carbon monoxide concentrations that are well within the limits of the federal and state air quality standards (Table 4.6-2). Consequently, this impact is considered not significant. No mitigation is proposed.

Potential toxic air emissions (Factors 3 and 4). Similar to Alternative 2, Alternative 3 does not propose to develop any land uses that are anticipated to be major generators of TAC emissions. However, weekday daily vehicle trips generated under Alternative 3, although fewer than under both Alternatives 1 and 2, would cause motor vehicle exhaust and evaporative emissions, known mobile sources of toxic air contaminants. This potential impact is similar to, but less than, the impact described for Alternative 1. No mitigation is proposed.

4.6.4 No Action Alternative

The No Action Alternative would not result in an increase in air pollutant emissions. The site would be retained under federal ownership under a caretaker maintenance program. No operations other than minimal maintenance and security would occur. Existing interim leases would be allowed to expire. As a result, this alternative would have a beneficial impact on air quality because it would eliminate the majority of existing air pollutant emissions associated with the site and would not generate new emissions.