Coordinate Construction with Ongoing Remediation Actions

All construction activities would be coordinated with the Trust to ensure that project development does not affect on-going investigation and/or remediation of hazardous materials sites. For those sites where Caltrans is not the responsible party (i.e., CERCLA or petroleum contamination sites at the Presidio where the Army has been identified as the responsible party), and avoidance of the site is not possible, Caltrans' policy is to "make every effort to have the owner and/or responsible party investigate and cleanup the contamination prior to acquisition" (*Caltrans Project Development Procedures Manual*, Chapter 8, Article 1).

The Presidio Trust represents that under its 1999 agreement with the Army, the Presidio Trust is responsible for remediating known contamination related to historic Army land uses at certain enumerated sites. Any further remediation actions will be carried out by the responsible parties as required by appropriate regulatory authorities.

Estimated costs for management of serpentinite range from $2.6 million (Alternative 2) to $3.2 million (Alternative 5). ADL remediation costs for either alternative will be approximately $7.124 million.

3.3.4 Air Quality

This section presents a summary of air quality conditions within the existing Doyle Drive Project study area. Detailed information regarding methodology and findings can be found in the *South Access to the Golden Gate Bridge: Doyle Drive Project Revised Air Quality Study*, November 2004.

Regulatory Setting

The *Clean Air Act* as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the *California Clean Air Act* of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called *National Ambient Air Quality Standards* (NAAQS). Standards have been established for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$). These standards are shown in **Exhibit 3-45** (on the following page).

Under the *1990 Clean Air Act Amendments*, the U.S. Department of Transportation (USDOT) cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to the *Clean Air Act* requirements. Conformity with the *Clean Air Act* takes place on two levels: at the regional and project level. The proposed project must conform at both levels to be approved.

The California Clean Air Act (CCAA), which became effective on January 1, 1989, provides a planning framework for attainment of California Air Quality

Standards. Local air quality agencies in violation of state ambient air quality standards are required to prepare plans for attaining the state standards. The California Air Resources Board (CARB) coordinates and oversees the activities of California's many local air quality agencies. The CARB has established state ambient air quality standards, many of which are more stringent than the corresponding NAAQS (see **Exhibit 3-45** for a comparison of the standards).

Regional level conformity is concerned with how well the region meets the standards set for the pollutants listed above. *Regional Transportation Plans* (RTP) are developed and include all of the transportation projects planned for a region over a period of twenty years. An air quality model is based on the projects included in the RTP, to determine whether or not the implementation of those projects would result in a violation of the *Clean Air Act*. If no violations would occur, then the regional planning organization (for this project the Association of Bay Area Governments), and the appropriate federal agencies, such as the FHWA, make the determination that the RTP is in conformity with the *Clean Air Act*. Otherwise, the projects in the RTP must be modified until conformity is attained.

Project level conformity is also required. If a region is meeting the standard for a given pollutant, then the region is said to be in "attainment" for that pollutant. If the region does not meet the standard, then it is designated a "non-attainment" area for that pollutant. Areas previously designated as non-attainment areas that have recently met the standard are called "maintenance" areas. If a project is located in a non-attainment or maintenance area for a given pollutant, then additional air quality analysis and reduction measures in regard to that pollutant is required. This is most frequently done for CO and $PM_{10/}PM_{2.5}$.

The Metropolitan Transportation Commission (MTC) prepares and adopts the *Transportation Improvement Plan* (TIP) every two years. The proposed project was included in the most recent TIP (the 2005 TIP), as approved by the FWHA on October 1, 2004. On February 23, 2005, the MTC issued a final transportation conformity finding for the Transportation 2030 Plan and the 2005 TIP/Amendment #05-05. The FHWA approved this conformity finding on March 17, 2005. Since the design concept and scope of the project has not changed, the project conforms to the SIP.

Exhibit 3-45
Summary of Monitoring Data for San Francisco
(Arkansas Street Monitoring Station), 2000–2003

Pollutant	State Standard	National Standard	Pollutant Concentration Year 2000	2001	2002	2003
Ozone						
Highest 1-hour average, ppm [a]	0.09	0.12	0.06	0.08	0.05	0.08
Days over State Standard			0	0	0	0
Days over National Standard			0	0	0	0
Highest 8-hour average, ppm	NA	0.08	0.04	0.05	0.05	0.06
Days over National Standard			0	0	0	0
Carbon Monoxide						
Highest 8-hour average, ppm	9.0	9	3.2	3.3	2.6	2.8
Days over Standard			0	0	0	0
Respirable Particulate Matter (PM_{10})						
Highest 24-hour average, µg/m3 [a]	50	150	63	70	74	52
Number of samples [b]			61	61	61	61
Days over State Standard			2	8	4	1
Days over National Standard			0	0	0	0
Annual average, µg/m3	30	50	22	26	25	22
Fine Particulate Matter ($PM_{2.5}$)						
Highest 24-hour average, µg/m3	-	65		77	70	42
Days over National Standard				2	4	0
Annual Average, µg/m3	12	15		12	13	10

Source: California Air Resources Board, Summary of Air Quality Data, Gaseous and Particulate Pollutants, 2000–2003.

Notes: NA = Not Applicable or Not Available.
[a] ppm = parts per million; µg/m³ = micrograms per cubic meter.
[b] PM_{10} is not measured every day of the year. The number of samples refers to the number of days in a given year during which PM_{10} was measured at Arkansas Street monitoring station.

On March 18, 2002 the FHWA and the Federal Transit Administration (FTA) approved the Metropolitan Transportation Commission (MTC)'s finding that the 2001 TIP for the San Francisco Bay Area conforms to the *State Implementation Plan* (SIP). This put the nine-county region in conformity with all transportation related federal air quality requirements. This project is included in the 2005 TIP (adopted by MTC on July 28, 2004; approved by the FHWA on October 1, 2004) and the 2001 RTP. On February 23, 2005, MTC issues a final transportation conformity finding for the *Transportation 2030 Plan* and the *2005 TIP/ Amendment #05-05*; the FHWA and the FTA approved this conformity finding on March 17, 2005. The design concept and scope of the project has not changed from the

design scope and concept in the RTP and TIP listings. Therefore this project conforms to the SIP.

General Study Area Conditions

On April 22, 2004, the U.S. Environmental Protection Agency (EPA) declared the San Francisco Bay Area as attainment for the national one-hour ozone standard. It will not officially be reclassified until the Bay Area Air Quality Management District (BAAQMD) submits a plan demonstrating how the area will maintain the standard for the next ten years. In June 2004 the Bay Area was designated as a marginal nonattainment area for the newly adopted national eight hour ozone standard.

In 1998, the EPA redesignated a subregion of the Bay Area, referred to as the urbanized area, from nonattainment to attainment for the national CO standard (EPA, 1998a). At the same time, EPA approved a "maintenance" plan, which shows how the subregion will continue to maintain the standard. The subregion is now designated as a "maintenance area" for the national CO standard.

The Bay Area is currently designated as nonattainment for state standards for ozone, $PM_{2.5}$ and PM_{10} and is attainment or unclassified for the other state standards (CARB, 1999).

The Bay Area is in attainment of the national annual average PM_{10} standard and is unclassified for the national 24-hour PM_{10} standard. With regard to the newly adopted national $PM_{2.5}$ standards, the Bay Area is unclassified for both the annual average and 24-hour average standards. The BAAQMD has set up a PM2.5 monitoring program to determine the attainment status in the region of the unclassified pollutant.

The air district periodically prepares and updates plans to achieve the goal of healthy air. Air quality plans usually include reduced air pollutant emissions from industrial facilities, commercial processes, motor vehicles and other sources. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission, and the Association of Bay Area Governments. The most recent plans are the *2002 Ozone Attainment Plan* and the *2000 Clean Air Plan*.

In addition to these standards and regulations, regional plans also dictate air quality criteria and goals.

National Park Service and Presidio Trust Air Quality Policy

The National Park Service (NPS) and the Presidio Trust provide additional emphasis on air quality. While there are no existing national or state air quality standards that are specific to the Presidio or national parks, the following lists the titles of existing NPS policies set forth in its Director's Orders and *Executive Orders* which provide general policy direction in promoting cleaner air quality:

- *Director's Order 13A - Environmental Management Systems*

- *Executive Order No 13031 – Federal Alternative Fueled Vehicle Leadership*
- *Executive Order No. 13123 - Greening the Government through Efficient Energy Management*
- *Executive Order No. 13148 - Greening the Government through Leadership in Environmental Management*:
- *Executive Order No. 13149 - Greening the Government through Federal Fleet and Transport Efficiency*

Affected Environment

The project area lies within the city and county of San Francisco, at the northern end of the peninsula climatological sub-region of the San Francisco Bay Area Air Basin (Bay Area). Because most of San Francisco's topography is below sixty-one meters (200 feet), marine air is able to flow easily across most of the city, making its climate cool and windy. Pollutant emissions in San Francisco are high, especially from motor vehicle congestion. Localized pollutants, such as CO, can build up in "urban canyons." However, winds are generally strong enough to carry the pollutants away before they can accumulate (BAAQMD, 1999).

Criteria Air Pollutants

BAAQMD operates a regional air quality monitoring network that provides information on ambient concentrations of criteria air pollutants, including ozone, CO, and PM_{10}, the three pollutants of most concern in the Bay Area. The nearest ambient air monitoring station to the project site is the Arkansas Street monitoring station in San Francisco.

Ozone

Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production. As shown in **Exhibit 3-45**, the local monitor has not recorded exceedances of the state ozone standard over the past four years.

Carbon Monoxide

Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. **Exhibit 3-45** shows that no exceedances of CO standards have been recorded by the local monitoring station over the past four years. CO emissions are expected to decrease by approximately thirty-three percent from 2000 to 2010 (BAAQMD, 1999) and thus background CO concentrations are expected to continue to be less than the corresponding standards for the foreseeable future.

Particulate Matter

Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) consist of particulates ten microns (a micron is one one-millionth of a meter) or less in diameter and 2.5 microns or less in diameter, respectively. $PM_{2.5}$ can be inhaled deeply into the lungs and cause adverse health effects. Particulate matter in the atmosphere, result from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Some of these operations, such as demolition and construction activities, primarily contribute to increases in local particulate concentrations, while others, such as vehicular traffic, affect regional particulate matter concentrations.

PM_{10}, and ambient air concentrations from 2000 to 2003 at the local monitoring station on Arkansas Street are reported in **Exhibit 3-45**. The data show that there were no exceedances of the federal PM_{10} standard, and approximately five percent of the time, the more stringent state standard is exceeded. The Arkansas Street monitoring station is in an urban setting, and is between two freeways (U.S. 101 and I-280). These measured levels are consistent to the regional monitoring network which is representative of urban areas. Levels in the Presidio Project area would be lower than the Arkansas Street location, as they are not downwind of major sources of pollution.

PM2.5 data is also reported in Exhibit 3-40 for 2000-2003. In spite of the two high 24-hour readings in 2001 and 2002 for the Arkansas street monitor in San Francisco, the Bay Area is designated as attainment for the PM2.5 National Ambient Air Quality Standard. Attainment designations are based on a three-year average of 98th percentile values from a monitor, called a design value. Of all the monitors in a region, EPA uses the one with the highest design value as the basis for designations.

To obtain the design value for a particular monitor, the value that exceeds 98% of all observed values (i.e., the 98th percentile value) is taken from each of the three years being considered and averaged together. Thus, for San Francisco the monitor recorded a peak readings, but the majority of values recorded were below the 24-hour standard.

Under the *Clean Air Act*, ambient air quality must meet the standards for criteria pollutants in all locations generally accessible to the public; however, some land uses are considered more sensitive than others. Schools, parks, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people or the infirmed frequent these areas and are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also sensitive to poor air quality.

Sensitive receptors within the Doyle Drive project area include:

- Open spaces of the Presidio;
- Crissy Field;
- Residential areas along and in the vicinity of Armistead Road (northwest of the junction of Highway 1 and Doyle Drive);
- Storey Avenue (north of Ruckman Avenue);
- Riley Avenue;
- General Kennedy Avenue; and
- Girard Road.

Sensitive receptors adjacent to the project area:

- Sibert Loop (west of Arguello Boulevard);
- Sumner Street (west of Presidio Boulevard);
- The Ruckman Avenue residential area;
- The residential area along Hitchcock Street (immediately west of Highway 1);
- The residential area along Amatury Loop (east of Park Boulevard);
- The residential area along Wyman Avenue (near the southern boundary of the Presidio);
- Residences immediately east of the Palace of Fine Arts;
- Residences along the south side of Marina Boulevard;
- Residences along the east side of Lyon Street, north of Lombard; and
- Residences along both sides of Richardson Avenue.

Temporary Impacts

The construction-related air quality impact analysis follows the methodology recommended by *BAAQMD Guidelines*. The *Guidelines* recommend a qualitative approach to evaluating construction-phase impacts with the emphasis placed on identifying and implementing an adequate dust abatement program rather than on quantification of related emissions or ambient air concentrations. BAAQMD provides a recommended list of measures to minimize emissions during construction activities, and the air quality analysis relies on the list to develop measures appropriate for this project.

Alternative 1: No-Build

The No-Build Alternative would not result in any construction activities, therefore there are no temporary impacts.

Alternative 2: Replace and Widen

Temporary impacts resulting from Alternative 2 are the same for both build alternatives. Impacts are discussed below.

Alternative 5: Presidio Parkway

Temporary impacts resulting from Alternative 5 are the same for both build alternatives. Impacts are discussed below.

Alternative 2: Replace and Widen and Alternative 5: Presidio Parkway

The construction period for the Doyle Drive Project would be approximately four to five years for both build alternatives. Construction will occur in phases. The build alternatives would involve standard construction techniques and require large-scale construction equipment and labor intensive activities.

Construction activities will generate emissions of criteria pollutants. Dust emissions will vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of standard mitigation techniques, construction activities could result in substantial quantities of dust, and as a result, local visibility and PM_{10} concentrations could be adversely affected on an intermittent basis during construction. Dust generated by construction would include not only PM_{10}, but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

Construction activities would also result in the emission of other criteria pollutants from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers. The impact of these emissions would contribute to local air quality degradation in the area, but would be minor and temporary.

Avoidance, Minimization, and/or Mitigation Measures

During construction, the contractor would be required to mitigate potential impacts by implementing BAAQMD's basic dust control procedures, and to maintain project construction-related impacts at acceptable levels. These mitigation measures are identified in the *BAAQMD Guidelines* (BAAQMD, 1999). Elements of the dust abatement program for this project could include, but may not be limited to the following:

Water all active construction areas at least twice daily. Watering could be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed twenty-four kilometers per hour (fifteen miles per hour).

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 0.6 meter (two feet) of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day if visible soil material is carried onto adjacent paved roads.

In addition to these mitigation measures, there will be additional PM and NOx emission reductions for future construction equipment, since on May 11, 2004, the EPA signed the final rule introducing Tier 4 emission standards, which are to be phased-in over the period of 2008-2015 [69 FR 38957-39273, 29 June 2004]. The Tier 4 standards require that emissions of PM and Nitrogen Oxides (NOx) be further reduced by about ninety percent. Such emission reductions are to be achieved through the use of control technologies similar to those required by the 2007 to 2010 standards for highway engines. To enable sulfur-sensitive control technologies in Tier 4 engines—such as catalytic particulate filters and NOx absorbers—the EPA mandated reductions in sulfur content in non-road diesel fuels, as follows:

- 500 ppm effective June 2007 for non-road (construction), locomotive and marine (NRLM) diesel fuels, and
- 15 ppm (ultra-low sulfur diesel) effective June 2010 for non-road fuels.

Implementation of this regulation will serve to reduce NOx, Volatile Organic Compound (VOC), and toxic PM_{10} emissions.

With implementation of the proposed construction mitigation measures, project compliance with all applicable regulations for reducing air emissions, would be generally consistent with the NPS Director's and Executive Order's for promoting cleaner air quality.

Permanent Impacts

The air quality impact analysis for long term roadway operations addresses changes in regional emissions and changes in local air pollutant concentrations of CO. With respect to regional emissions, the San Francisco Bay Area is a nonattainment area for the state and national eight-hour ozone standard and a nonattainment area for the state PM_{10} standard. Future emissions from the Doyle Drive Project have already been incorporated by the MTC into the 2003 TIP, and the project is in conformity. Consequently, regional emissions from the Doyle Drive Project would not contribute to exceedances of the national ozone standard.

With regard to local impacts of CO, a hot spot analysis[28] was conducted to determine if the any of the build alternatives would cause or contribute to any localized CO violations near key intersections.[29]

---

[28] A hot spot analysis is a study which is performed at key roadway intersections to determine if air quality standards are (or will be) being met.

[29]The analysis uses the Project-Level Protocol developed jointly by Caltrans and the Institute of Transportation Studies, University of California at Davis and approved by EPA for use in the Bay Area. A top-down approach was followed, in which the intersection with the worst-case traffic levels and congestion was first analyzed. If, from the worst-case analysis, it is determined that CO concentrations do not exceed the ambient air standards, then it can be assumed that other intersections affected by the project, but with lower traffic counts and less congestion would also result in worst-case concentrations that are well below the standards and would not have to be analyzed.

Tunnel portals were analyzed, in which maximum concentrations of CO in the tunnel ventilation system were considered to determine impacts. These maximum concentrations exiting the portals were modeled using the EPA dispersion model SCREEN3 to estimate downwind concentrations.

Based on the model's results, the following potential impacts were identified.

Alternative 1: No-Build

The No-Build Alternative would not result in any permanent impacts as a result of this project.

Alternative 2: Replace and Widen

All of the permanent impacts resulting from Alternative 2 are impacts which will also result from Alternative 5. These mutual impacts are discussed later in this section.

Alternative 5: Presidio Parkway (tunnel portion)

This Alternative proposes to use two tunnels with lengths of approximately 240 meters and 315 meters (787 and 1,033 feet). The FHWA and EPA require that tunnels be designed to limit CO concentrations to certain levels in order to protect public health (Caltrans, 2000). CO concentrations are allowed to approach a maximum fifteen minute average concentration of 120 ppm (parts per million) or 35 ppm for a one-hour average within a tunnel, provided there are no pedestrians or bicycles allowed; otherwise, the fifteen minute average limit is 60 ppm. Pedestrians and bicyclists will be prohibited on Doyle Drive, hence the higher limits will be adhered to.

Emergency ventilation systems that would provide air and limit pollution concentrations within the tunnel to acceptable levels in the event of a vehicular accident or fire would be included in the design of this alternative. This emergency ventilation system would consist of a series of jet fans. Under normal operating conditions, the tunnel will be self-ventilating due to the piston-effect of vehicles for certain tunnel variations.

The greatest impacts outside the tunnels will be from emissions at the exit and entry portals. A modeling analysis of emissions from the tunnel portals was carried out to estimate maximum downwind concentrations. A screening modeling analysis predicted that maximum one hour CO concentrations at downwind locations would be no greater than 11 ppm. This level is well below the state and federal one-hour standards. Thus, the impact would be minor.

Alternative 2: Replace and Widen and Alternative 5: Presidio Parkway

Permanent impacts which will result from either build alternative are discussed in this section. These impacts are the only air quality impacts identified for Alternative 2.

Regional Air Quality

During project operations, changes in traffic in the design year of 2030 are compared with the No-Build Alternative in the design year and with existing baseline conditions (2000) to determine if emissions would change and cause impacts on air quality. **Exhibit 3-46** summarizes the peak-hour vehicle miles traveled (VMT) for the various alternatives.

Exhibit 3-46
Estimated Vehicle Miles Traveled at Peak Times

SCENARIO	VEHICLE MILES TRAVELED	
	AM PEAK	PM PEAK
2000 Base	61,500	69,600
2030 No-Build	69,500	77,400
2030 Replace and Widen	69,600	78,800
2030 Presidio Parkway Diamond Option	70,400	79,500
2030 Presidio Parkway Circle Option	70,200	79,400

Exhibit 3-46 indicates that, although traffic volumes would increase by the design year as compared with existing conditions, VMT for all alternatives will be similar. Differences in VMT are attributable to the minor variations in alternative roadway configurations. There would be no air quality impacts for any of the alternatives when compared with the future No-Build Alternative. Although VMT for future years are greater than existing conditions for all of the alternatives, any emissions changes associated with the increased VMT have already been included in the 2003 TIP, and those emissions conform to the *Regional Clean Air Plan*.

Local Air Quality

Project-related traffic could result in localized "hot spots." Although the Doyle Drive Project alternatives are expected to have similar VMT, the change in route configurations could cause CO impacts to increase at key receptors.

The CO analysis utilizes the Project-Level CO Analysis Protocol developed jointly by Caltrans and the Institute of Transportation Studies, University of California at Davis. The protocol is based on the fact that the Bay Area meets air quality standards for CO, and it allows a qualitative approach for determining air quality impacts. In this approach, the highest traffic volume related to the

Project is compared to the traffic volume on another artery in the area where the CO levels are not exceeded. In this case, existing Route 101 between Story Road and Tully Road in Santa Clara County (224,000 vehicles per day) is compared to the highest traffic volume related to the Project, which is Route 101 between Merchant Drive Ramps and Veterans Boulevard (83,000 vehicles per day). Since traffic volume related to the Project is much smaller, the Project would meet air quality standards and would therefore have no impacts on local air quality or cause exceedances of state or federal standards.

3.3.5 Noise and Vibration

This section discusses the existing conditions and potential impacts related to noise and vibration.

Noise

This section describes the existing noise environment in the Doyle Drive Project study area and the results of detailed studies to predict future noise levels. Information for this section has been extracted from the *South Access to the Golden Gate Bridge: Doyle Drive Project: Final Noise and Vibration Study,* December 2004.

Regulatory Setting

The Doyle Drive Project is subject to the requirements of the *National Environmental Policy Act (*NEPA) and the *California Environmental Quality Act* (CEQA). These laws provide the basis for analyzing and abating the effects of highway traffic noise and construction noise. In addition to the federal and state requirements, the project must take into consideration noise standards for the city of San Francisco, the National Park Service (NPS), and the Presidio Trust (the Trust).

Federal Standards

The standard for the Federal Highway Administration (FHWA) is Title 23, Part 772 of the *Code of Federal Regulations*. 23 CFR 772 provides the framework for analyzing traffic noise impacts. Under 23 CFR 772, noise abatement must be considered when the construction of a highway project will cause either of the following:

- a substantial increase in noise; or
- predicted noise levels that will approach or exceed Noise Abatement Criteria (NAC).

The Caltrans *Traffic Noise Analysis Protocol* defines substantial as an increase in the existing noise levels by 12 dBA, Leq (h), and defines approach as being within 1 dBA of the federal criteria.(The term dBA refers to A-weighted decibels, the unit of measure used to express environmental sound. Leq(h) refers to the energy-average of the A-weighted sound levels occurring during a one-hour period.)