Chapter 12. Air Quality

Affected Environment

Data Sources

The following information on affected environment for air quality is based on previously published information. The Hamilton Army Airfield disposal and reuse EIS (U.S. Army Corps of Engineers 1996a) provided the basis for this section. The Bay Area Air Quality Management District's (BAAQMD's) guidelines for assessing air quality impacts were used to evaluate the environmental effects of the project and the alternatives (Bay Area Air Quality Management District 1996).

Regional Climate

The concentration of a given pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of air pollution transport and dilution are wind, atmospheric stability, terrain, and insolation.

In Novato, the topography is generally flat and elevation is less than 100 feet above sea level. The project area is characterized by warm, dry summers and cool, moist winters.

Figure 12-1 shows the wind rose for a meteorological station located at HAAF. The wind rose shows the percentage of time wind blows in each direction and the mean wind speed by direction. Annually, the predominant wind direction is from the northwest. During spring and fall, the predominant direction is from the west-northwest. The predominant wind direction is from the east-southeast during summer and from the north-northwest during winter. Mean wind speeds range from 5 to 10 miles per hour, and calm winds occur 31.3% of the time. (California Air Resources Board 1984.)

Federal and State Ambient Air Quality Standards

California and the federal government have each established ambient air quality standards for several pollutants (Table 12-1). For some pollutants, separate standards have been set for different time periods. Most standards have been set to protect public health; however, for some pollutants, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

The air pollutants of greatest concern in the project area are carbon monoxide (CO), ozone, and inhalable particulate matter less than 10 microns in diameter (PM10). A mildly toxic pollutant, CO interferes with oxygen transport to body tissues. The major effects of ozone (a component of photochemical smog) include reductions in plant growth and crop yield, chemical deterioration of various materials, irritation of the respiratory system, and eye irritation. Particulate matter can be responsible for a wide range of pollution effects, including visibility reduction, respiratory irritation, corrosion of structures and materials, and economic effects related to soiling of materials.

Existing Air Quality Conditions

The existing air quality conditions in the project area can be characterized by monitoring data collected in the region. PM10, CO, and ozone concentrations are measured at several north bay monitoring stations. Recent monitoring data are presented in Table 12-2.

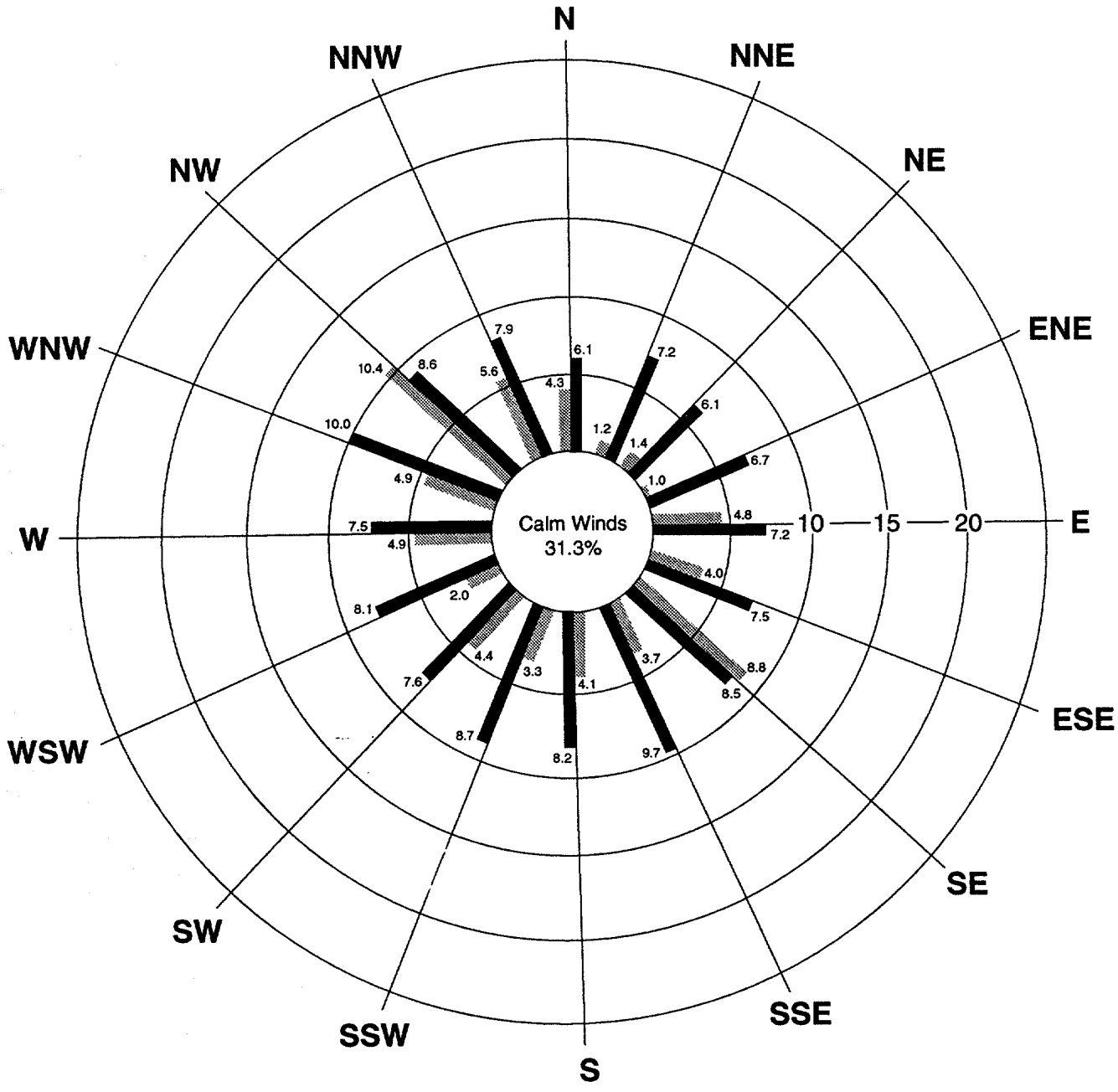
The closest PM10 air quality monitoring station is in San Rafael. This station has recorded exceedances of the California PM10 24-hour standard (50 micrograms per cubic meter [$\mu g/m^3$]) during each year of the monitoring data.

The closest CO air quality monitoring stations are in San Rafael and Santa Rosa. These stations have recorded no violations of the CO standards during the recent years of monitoring.

The closest ozone air quality monitoring stations are in San Rafael and Santa Rosa. These air quality monitoring stations have recorded no exceedances of the ozone standard during the four most recent years of available data.

Emission Sources

Ozone precursor and CO emissions stem primarily from vehicle traffic associated with urban development. A variety of emission sources contribute to PM10 problems in the area. Major contributors to particulate matter problems include dust generated by agricultural activities, resuspended by vehicle traffic, and generated by construction and demolition and aerosols formed by photochemical smog reactions.



Source: California Air Resources Board 1984.

Jones & Stokes Associates, Inc.

Figure 12-1
Wind Rose Depicting Average Wind Speed and Directional Frequency at Hamilton Army Airfield

Attainment/Nonattainment Status

The San Francisco Bay Area Air Basin (SFBAAB) includes San Francisco; portions of Sonoma and Solano Counties; and all of San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Napa Counties.

The SFBAAB is currently classified as a nonattainment area for the state PM10 standards and for the state and federal ozone standards. The SFBAAB is an attainment area for the federal PM10 standards and for the state and federal CO, nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) standards. Attainment designations are made for individual pollutants, such as NO_2 and SO_2. These should not be confused with generic terms, such as oxides of nitrogen (NO_x) and oxides of sulfur (SO_x), which describe groups of pollutants.

The BAAQMD, which has primary air quality responsibilities within the SFBAAB, had asked EPA to redesignate the entire SFBAAB as an attainment area for ozone based on monitoring data from the mid-1990s. However, based on recent monitoring data, EPA has designated the SFBAAB as a nonattainment area for ozone.

Air Quality Management Programs

Air pollution control programs were established in California prior to the enactment of federal requirements. 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. Development of air quality management planning programs during the past decade has generally been in response to requirements established by the federal Clean Air Act. Enactment of the California Clean Air Act in 1988 and the federal Clean Air Act Amendments of 1990 has produced additional changes in the structure and administration of air quality management programs.

The California Clean Air Act requires preparation of an air quality attainment plan for areas that violate state air quality standards for CO, SO_2, NO_2, or ozone. No locally prepared attainment plans are required for areas that violate the state PM10 standards. The California Air Resources Board addresses PM10 attainment issues in California Air Quality Data (California Air Resources Board 1993).

Air pollution problems in the San Francisco Bay Area are primarily the result of locally generated emissions. The San Francisco Bay Area, however, has been identified as a source of ozone-precursor emissions that occasionally contribute to air quality problems in the Monterey Bay area, the northern San Joaquin Valley, and the southern Sacramento Valley. Consequently, air quality planning for the San Francisco Bay Area must not only correct local air pollution problems, but must also reduce the Bay Area's impact on downwind air basins.
In 1997, the BAAQMD released its current Clean Air Plan and Triennial Assessment, which it prepared in cooperation with the Association of Bay Area Governments and the Metropolitan Transportation Commission (Bay Area Air Quality Management District 1997). The plan, which was approved by the BAAQMD Board of Directors in December 1997, addresses ozone problems in the Bay Area.

Monitoring data show that the SFBAAB from the mid-1990s was meeting the federal CO and ozone standards. Consequently, the BAAQMD had asked EPA to redesignate the SFBAAB as an attainment area for ozone. However, the BAAQMD now violates the federal and state zone standard; thus, EPA has classified the Bay Area as a ozone nonattainment area.

General Conformity

As required by the 1990 Federal Clean Air Act Amendments, EPA enacted two separate federal conformity rules. Those rules (incorporated as Section 40 CFR Parts 51 and 93) are designed to ensure that federal actions do not cause or contribute to air quality violations in areas that do not meet the national ambient air quality standards. The two rules include transportation conformity, which applies to transportation plans, programs, and projects, and general conformity, which applies to all other nontransportation-related projects.

The proposed wetland restoration project would be subject to the general conformity rule because the Corps is participating in the project.

A general conformity determination is required by Section 40 CFR Part 51, Subpart W, and Part 93, Subpart B. The general conformity regulation requires that federal agencies sponsoring nontransportation-related activities show that the emissions associated with those activities conform to state implementation plans (SIPs) if emissions meet specific criteria. First, the emissions must occur in areas designated as nonattainment areas for one or more of the federal ambient air quality standards. Second, those emissions must exceed certain de minimis threshold levels.

Currently, the SFBAAB, which includes Marin County, is classified as a moderate federal nonattainment area for ozone. Ozone is an indirectly generated pollutant that results when the ozone precursors NO_x and reactive organic gases (ROG) form in the atmosphere in the presence of sunlight. Because ozone is not a directly emitted pollutant, EPA has, in its general conformity regulations, set *de minimis* levels for ozone precursors rather than for ozone. From a conformity standpoint, areas classified as moderate ozone nonattainment areas are exempt from conformity if emissions of ROG are less than 50 tons per year and emissions of NO_x are less than 100 tons per year.

Environmental Consequences and Mitigation Measures

Approach and Methods

Analytical Methods

The BAAQMD's approach to analysis of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions (Bay Area Air Quality Management District 1996). However, because of the requirement to prepare a general conformity analysis as required by EPA and BAAQMD, a quantitative evaluation of ozone precursors was conducted.

Impact Mechanisms

Operation. At full function, the proposed wetlands would generate air emissions related to visitor use and maintenance activities. Because visitor use and maintenance activities would be limited, impacts on air emissions would be considered less than significant.

Construction Period. Construction of the proposed action may generate significant air emissions. Construction-related emissions are generally short term but may still cause adverse air quality impacts. Fine particulate matter (PM10) is the pollutant of greatest concern with respect to construction activities. PM10 emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved roads, and emission of vehicle and equipment exhaust. Construction-related emissions of PM10 can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions and other factors. Construction-related emissions can cause substantial increases in localized concentrations of PM10. Particulate emissions from construction activities can lead to adverse health effects, as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces. (Bay Area Air Quality Management District 1996.)

In addition, PM10 emissions could increase between the time dredged materials are placed on the site and the time the bayward levee is breached. PM10 could be generated as the dredged material dries.

Construction equipment emits CO and ozone precursors. However, these emissions are included in the emission inventory that is the basis for the regional air quality plans. Construction activities are not expected to impede attainment or maintenance of ozone and CO standards in the Bay Area (Bay Area Air Quality Management District 1996). Project impacts on CO are assumed to be less than significant and are not evaluated further. Ozone precursors are evaluated in the general conformity analysis.

Operation of the hydraulic off-loaders and supplemental pipeline booster pumps would not contribute to construction-related emissions of CO or ozone precursors because the off-loaders and

pumps would be electric-powered. Therefore, operation of the hydraulic off-loaders and booster pumps was not evaluated in the following impact analysis.

Thresholds of Significance

According to the BAAQMD guidelines and professional judgment, a project is considered to have a significant impact air quality if it would allow uncontrolled emissions of PM10. In addition, EPA and BAAQMD conformity thresholds state that emissions exceeding 50 tons ROG per year or 100 tons NO_x per year would result in a significant impact.

Impacts and Mitigation Measures of Alternative 1: No Action

Under Alternative 1, the HAAF parcel would remain under Army ownership and the existing uses of the SLC parcel are expected to continue. Because no changes in activities are expected under Alternative 1, no change in PM10, CO, or ozone precursors would occur.

Impacts and Mitigation Measures Common to Alternatives 2, 3, 4, and 5

All air quality impacts of Alternatives 2, 3, 4, and 5 are common to all four alternatives.

Impact 12.1: Construction-Related Emissions of PM10

As described under "Impact Mechanisms", implementation of the proposed action would result in PM10 emissions from mass grading and levee and training berm construction. This impact would be considered significant. To reduce this impact to a less-than-significant level, the construction contractor shall implement Mitigation Measure 12.1.

Mitigation Measure 12.1: Control PM10 Emissions in Accordance with BAAQMD Standards. The BAAQMD guidelines identify feasible control measures for construction emissions of PM10. The following list of measures was developed from the BAAQMD master list based on an understanding of the project:

a. Water all active construction areas at least twice daily.

b. Apply water three times daily or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and staging areas.

c. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas.

d. Sweep streets daily (with water sweeper) if visible soil material is carried onto adjacent public streets.

e. Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).

f. Water twice daily or apply (nontoxic) soil stabilizers to exposed stockpiles.

g. Limit traffic speeds on unpaved roads to 15 miles per hour (mph).

h. Revegetate disturbed areas as soon as possible.

i. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

Impact 12.2: Construction-Related Emissions of Ozone Precursors

The wetland creation project would generate air emissions of 3 tons per year of ROG and 41 tons per year of NO_x, which are less than the *de minimis* threshold levels for ozone precursors. These emission estimates are based on the vehicle activity described in Appendix E. Consequently, the proposed wetland restoration project is exempt from the requirement to conduct additional in-depth conformity analyses.

Potential Issues and Resolutions under the Bel Marin Keys V Scenario

Potential Issue: Construction-Related Emissions of PM10

As described under "Impact Mechanisms", implementation of the proposed action would result in PM10 emissions from grading and other earthworking activities. This potential issue would be considered significant. A potential resolution to this issue would be similar to Mitigation Measure 12.1.

Table of Contents

List of Acronyms

List of Citations

(California Air Resources Board 1984.) (12-1)
(California Air Resources Board 1993). (12-3)
(Bay Area Air Quality Management District 1997 (12-4)
(Bay Area Air Quality Management District 1996) (12-5)
(Bay Area Air Quality Management District 1996.)In addition, PM10 emissions could increase between the time dredged materials are placed on the site and the time the bayward levee is breached. PM10 could be generated as the dredged material dries. (12-5)
(Bay Area Air Quality Management District 1996). (12-6)

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