

3.2 AIR QUALITY

3.2.1 Introduction

3.2.1.1 Definition of Resource

Air quality is defined by ambient air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. Six major pollutants of concern are carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter (PM₁₀), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants, called “criteria pollutants.” The NAAQS establish ambient concentrations of criteria pollutants that are considered protective of public health and welfare.

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO₂, lead, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O₃, NO₂, and some particulates, are formed through atmospheric photochemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

In general, emissions that are considered “precursors” to secondary pollutants in the atmosphere (such as reactive organic gases [ROG] and oxides of nitrogen [NO_x], which are considered precursors for O₃) are the pollutants for which emissions are evaluated to control the level of O₃ in the ambient air.

The California Air Resources Board (CARB) subsequently established the more stringent California Ambient Air Quality Standards (CAAQS). Areas within California in which ambient air concentrations of a pollutant are higher than the state and/or federal standard are considered to be in *nonattainment* for that pollutant. [Figure 3.2-1](#) shows both the federal and state ambient air quality standards. Ventura County is classified as a *severe nonattainment area* for the federal standard for O₃, and a *nonattainment area* for the state standards for PM₁₀ and O₃. San Nicolas Island and Santa Cruz Island are both considered by the USEPA to be attainment/unclassifiable areas for the NAAQS.

A - Federal Requirements

The USEPA is the agency responsible for enforcing the federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 amendments (42 U.S.C. § 7401 et seq.). The purpose of the CAA is to establish NAAQS, to classify areas as to their attainment status relative to the NAAQS, to develop schedules and strategies to meet the NAAQS, and to regulate emissions of criteria pollutants and air toxics to protect public health and welfare. Under the CAA, individual states are allowed to adopt ambient air quality standards and other regulations, provided they are at least as stringent as federal standards. The Clean Air Act Amendments (CAAA) (1990) established new deadlines for achievement of the NAAQS, dependent upon the severity of nonattainment.

The USEPA requires each state to prepare a State Implementation Plan (SIP), that describes how that state will achieve compliance with the NAAQS. A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all federal air quality standards.



| POLLUTANT | AVERAGING TIME | CALIFORNIA STANDARDS (1) | NATIONAL STANDARDS (2) | |
|--|--------------------------------------|--|------------------------------------|------------------------------------|
| | | | Primary | Secondary |
| Ozone (O ₃) (3) | 8 Hour | • | 0.08 ppm (157 µg/m ³) | Same as Primary Standards |
| | 1 Hour | 0.09 ppm (180 µg/m ³) | 0.12 ppm (235 µg/m ³) | |
| Carbon Monoxide (CO) | 8 Hour | 9.0 ppm (10 mg/m ³) | 9.0 ppm (10 mg/m ³) | • |
| | 1 Hour | 20 ppm (23 mg/m ³) | 35 ppm (40 mg/m ³) | |
| Nitrogen Dioxide (NO ₂) | Annual Average | • | 0.053 ppm (100 µg/m ³) | Same as Primary Standard |
| | 1 Hour | 0.25 ppm (470 µg/m ³) | • | |
| Sulfur Dioxide (SO ₂) | Annual Average | • | 0.030 ppm (80 µg/m ³) | • |
| | 24 Hour | 0.04 ppm (105 µg/m ³) | 0.14 ppm (365 µg/m ³) | • |
| | 3 Hour | • | • | 0.50 ppm (1300 µg/m ³) |
| | 1 Hour | 0.25 ppm (655 µg/m ³) | • | • |
| Respirable Particulate Matter (PM ₁₀) | Annual Arithmetic Mean | 30 µg/m ³ | 50 µg/m ³ | Same as Primary Standards |
| | 24 Hour | 50 µg/m ³ | 150 µg/m ³ | |
| Respirable Particulate Matter (PM _{2.5}) | Annual Arithmetic Mean | no separate standard | 15 µg/m ³ | Same as Primary Standards |
| | 24 Hour | | 65 µg/m ³ | |
| Sulfates | 24 Hour | 25 µg/m ³ | • | • |
| Lead (Pb) | 30 Day Average | 1.5 µg/m ³ | • | • |
| | Calendar Quarter | • | 1.5 µg/m ³ | Same as Primary Standard |
| Hydrogen Sulfide (HS) | 1 Hour | 0.03 ppm (42 µg/m ³) | • | • |
| Vinyl Chloride (chloroethene) | 24 Hour | 0.010 ppm (26 µg/m ³) | • | • |
| Visibility Reducing Particles | 8 Hour (10:00 a.m. to 6:00 p.m. PST) | In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent. Measurement in accordance with CARB Method V. | • | • |

ppm – parts per million
µg/m³ – micrograms per cubic meter
mg/m³ – milligrams per cubic meter
• – no standard established

Sources: CARB 1999; USEPA 1999.

- (1) CO, SO₂ (1- and 24-hour), NO₂, O₃, PM₁₀, and visibility reducing particles standards are not to be exceeded. All other California Standards are not to be equaled or exceeded.
- (2) Not to be exceeded more than once a year except for annual standards.
- (3) USEPA promulgated new federal 8-hour O₃ and fine particulate matter standards in 1997. The federal 1-hour O₃ standard continues to apply in areas that violated the standard. Attainment status for the 8-hour standard will be determined in 2000.



**Figure 3.2-1
California and National
Ambient Air Quality Standards**



Each change to a compliance schedule or plan must be incorporated into the SIP. In California, the SIP consists of separate elements for each air basin, depending on the attainment status of that air basin.

The CAAA also requires that states develop an operating permit program that requires all major sources of pollutants to obtain an air permit, and contains programs designed to reduce mobile source emissions and control emissions of hazardous air pollutants by establishing control technology guidelines for various classes of sources.

Clean Air Act Conformity

On November 30, 1993, the USEPA instituted final rules for determining general conformity of federal actions with state and federal air quality implementation plans. Section 176(c) of the CAA, the General Conformity Rule, requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the applicable implementation plan. In order to demonstrate conformity with the CAA, a project must clearly demonstrate that it does not: 1) cause or contribute to any new violation of any standard in any area; 2) increase the frequency or severity of any existing violation of any standard in any area; or 3) delay timely attainment of any standard, any required interim emission reductions, or other milestones in any area. A conformity applicability analysis is required for each of the nonattainment pollutants or its precursor emissions.

Compliance with the General Conformity Rule is presumed if the emissions associated with the federal action are below the relevant *de minimis* emissions levels for the region in which the action is proposed. Because Ventura County is classified as a severe nonattainment area for the federal O₃ standard, the *de minimis* level for O₃ precursors (NO_x and ROG) is 25 tons (28 metric tons) per year. In the event that the conformity applicability analysis demonstrates that the federal action is subject to the General Conformity Rule, a conformity determination must be conducted to demonstrate that the action is in conformity with the applicable implementation plan.

New Source Review

A New Source Review (NSR) is required when a source has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specified major source thresholds (100 or 250 tons [110 or 280 metric tons, respectively] per year) which are predicated on the source's industrial category. A major modification to the source also triggers an NSR. A major modification is a physical change or change in the method of operation at an existing major source that causes a significant "net emission increase" at that source of any pollutant regulated under the CAA. Any new or modified stationary emission sources within the county require permits from the Ventura County Air Pollution Control District (VCAPCD) to construct and operate. Through the VCAPCD's permitting process, stationary sources are reviewed and are subject to an NSR process. The NSR process ensures that factors such as the availability of emission offsets and their ability to reduce emissions are addressed and conform with the SIP.

B - California Requirements

The California Clean Air Act of 1988 (26 California Health and Safety Code [CH&SC] § 10000 et seq.) established CAAQS for criteria pollutants as well as additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. The CARB is the agency responsible for enforcing regulations designed to achieve and maintain the CAAQS. Some air quality management districts have been given authority by the state to manage their own stationary source emissions. The CARB requires that each of these air districts develop its own strategy for achieving compliance with the NAAQS and



CAAQS, but maintains regulatory authority over these strategies, as well as all mobile source emissions throughout the state. The VCAPCD is the local agency responsible for the administration and enforcement of air quality regulations affecting Point Mugu.

3.2.1.2 Regional Setting

Coastal southern California and the adjacent valleys, mountains, and basins experience a *Mediterranean Climate* characterized by generally warm, dry summers and cool winters interspersed with wet storms from the Pacific Ocean and dry winds from the interior. During the summer months, a semi-permanent region of high pressure over the Pacific is responsible for creating cooling sea breezes, which tend to keep the coastal strip generally comfortable, while inland areas become very warm. Temperature inversions that occur in the stable air may trap pollutants that become photochemically modified in the abundant sunshine. During the winter months, the moderating influences of the ocean together with a protective ring of mountains inland insulate much of southern California from very cold air except far inland, and over higher terrain. Most of the precipitation that occurs during the year falls from winter-season storms that traverse the Pacific when the region of high pressure is displaced.

Many of the air basins in the coastal region of southern California are nonattainment areas for federal O₃ standards. This is due to several factors, including increases in population that generate increased industrial and automotive activity; episodes of air stagnation; warm periods with low, strong inversions; and transport of pollutants from neighboring areas.

On average, the Sea Range generally experiences frequent northwesterly surface winds. However, such conditions are interrupted by: 1) cool season storms (with southerly winds) and periods of dry offshore northeast winds (Santa Ana winds); 2) mainly warm season coastal eddies with southeast winds over the inner waters; and 3) alternating land/sea breeze circulations as one approaches the mainland coast. Due to the influence of the continent on the overall wind flow, in addition to the eddies and other complicating factors nearshore, there is a strong tendency for the relatively persistent northwesterly winds in the outer Sea Range to become more westerly as the air approaches the mainland.

3.2.1.3 Region of Influence

Identifying the region of influence (ROI) for air quality requires knowledge of the type of pollutant, emission rates of the pollutant source, proximity to other emission sources, and local and regional meteorology. For inert pollutants (all pollutants other than O₃ and its precursors), the ROI is generally limited to a few miles downwind from the source. However, for photochemical pollutants such as O₃, the impact area may extend much farther downwind. O₃ is a secondary pollutant that is formed in the atmosphere by photochemical reactions of previously emitted pollutants, or *precursors* (ROG, NO_x, and PM₁₀). The maximum effect of precursors on O₃ levels tends to occur several hours after the time of emission during periods of high solar load (i.e., sunlight) and may occur many miles from the source. O₃ and O₃ precursors transported from other regions can also combine with local emissions to produce high local O₃ concentrations. Extensive modeling efforts demonstrate that a majority of the emissions occurring inland of San Nicolas Island and the northern Channel Islands will, under certain wind conditions, be transported to onshore areas east and southeast of the Sea Range (NAWCWPNS Point Mugu 1997e) (refer to discussion in [Section 4.2.1](#) and Appendix C). Therefore, the ROI for air quality impacts includes Santa Barbara County, Ventura County, the South Coast Air Quality Management District (SCAQMD), and San Diego County. Air Districts within the ROI are depicted on [Figure 3.2-2](#).

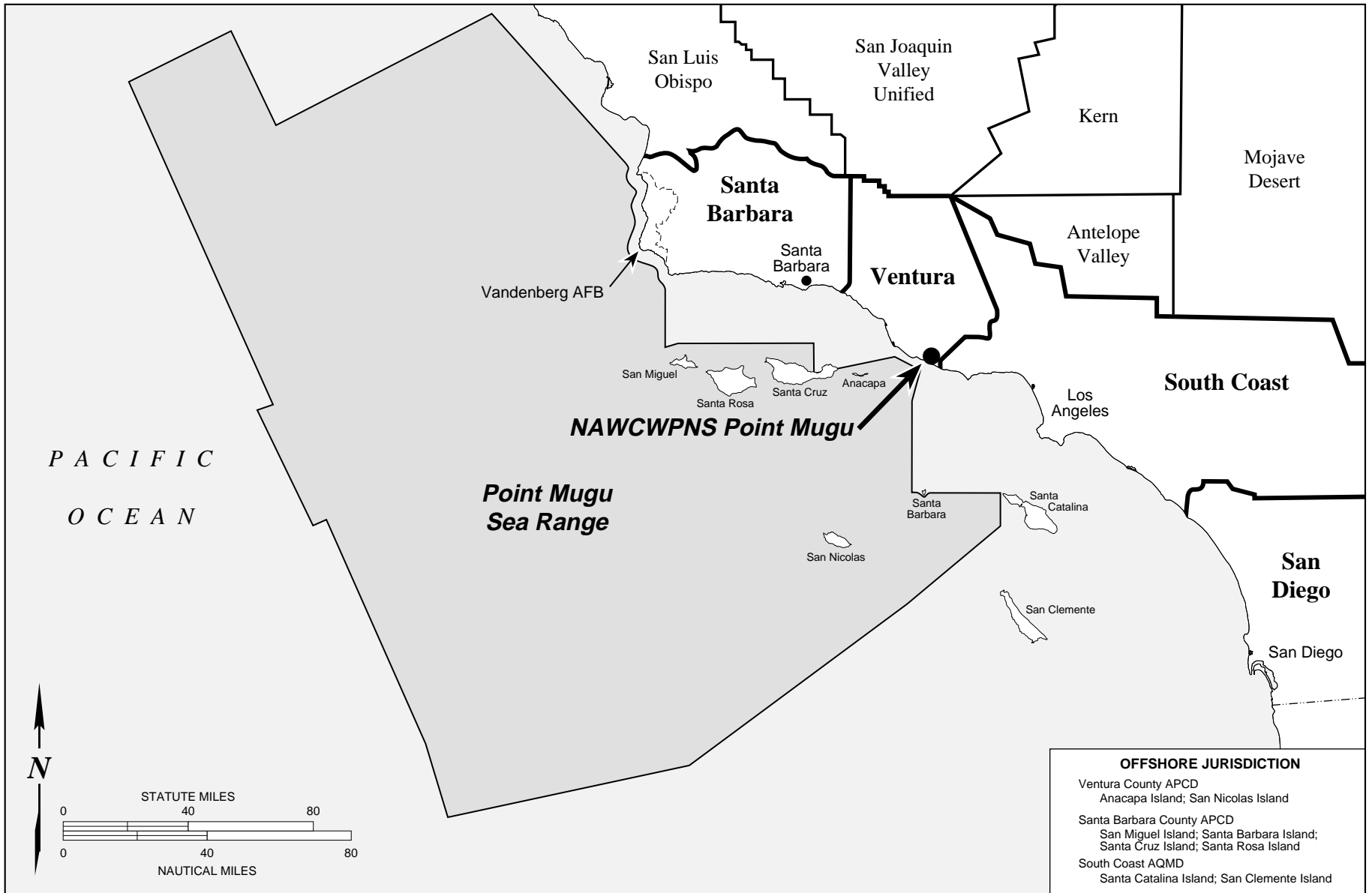


Figure 3.2-2
Air Districts in the Region of Influence



For purposes of this EIS/OEIS, baseline emissions are presented for the Sea Range, NAS Point Mugu, San Nicolas Island, and Santa Cruz Island. Although the proposed action would not affect the Navy's support facilities located on Santa Cruz Island (the Navy currently leases approximately 10 acres [4.1 hectares] from the Nature Conservancy as an instrumentation site), stationary emission sources owned by the Navy contribute to the overall baseline air emission estimates discussed in this section. San Miguel Island is not addressed within this section because there are no Navy facilities on the island except for an unmanned, remotely interrogated solar-powered automatic weather station.

3.2.2 Point Mugu Sea Range

3.2.2.1 Ambient Air Quality

A - Climate

Climate data presented in this section are also applicable to San Nicolas Island, Santa Cruz Island, and the other Channel Islands. Meteorological data for the Sea Range are based on data collected at a weather station located on San Nicolas Island. The station is situated at 504 feet (154 m) above mean sea level and records means, minimums, and maximums of precipitation, temperature, cloud cover, winds, and other parameters including frequency and heights of the subtropical inversion that is a characteristic of southern California weather patterns.

Total precipitation at San Nicolas Island averages 8.40 inches (21.3 cm) per year. The dry season occurs between May and September. The rainy season occurs between November and March when the island receives 87 percent of its total annual rainfall. The month of highest average precipitation is January. The average mean monthly temperature on land is 59°F (15°C), with a seasonal variation (January to July) of approximately 9°F (5°C). Temperatures during the coolest month average 54.7°F (13°C), and during the warmest month average 65.4°F (19°C). Prevailing winds are northwesterly, with an average speed from that direction of 13 knots (24.1 km/hour).

B - Air Quality

Portions of the Sea Range are located in Santa Barbara and Ventura counties. Ventura County is classified as a *nonattainment area* for the state standards for O₃ and PM₁₀, and a *severe nonattainment area* for the federal O₃ standard. Lack of available data for visibility-reducing particles, hydrogen sulfide, and vinyl chloride has resulted in an "unclassified" attainment status for these three air contaminants for the state ambient air quality standards. The county is designated as an *attainment area* for other federal and state ambient air quality standards.

Santa Barbara County is classified as a *nonattainment area* for the federal standard of O₃, and a *nonattainment area* for the state standards for both O₃ and PM₁₀. The county is designated as an *attainment area* for other federal and state ambient air quality standards.

San Nicolas Island and Santa Cruz Island are both considered to be attainment/unclassifiable as to air quality by the USEPA (USEPA 1996).

C - Existing Emissions

The following categories of emitting sources are present in the Sea Range (a description of the methodology used to calculate emissions and detailed emission estimates are included in Appendix C):

- Aircraft operations;
- Missile and target operations; and
- Marine vessel operations.

3.2.2.2 Emissions from Airborne Sources

Airborne sources of emissions in the Sea Range include military aircraft conducting exercises, contract aircraft making deliveries and transporting personnel, and missile and target launches. Offshore emission estimates were calculated for the baseline year to establish an air quality baseline for the Sea Range.

A - Aircraft Operations

Table 3.2-1 shows the annual baseline emissions for aircraft operating in the Sea Range.

Table 3.2-1. Baseline Aircraft Operations on the Sea Range

| Aircraft Type | Engine Model | No. of Engines | No. of Sorties | Emissions, tons/year | | | | |
|---------------|--------------|----------------|----------------|----------------------|-----------------|-------------|-----------------|------------------|
| | | | | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| F-4 | J79-GE-10B | 2 | 149 | 5.29 | 0.40 | 1.92 | 0.04 | 0.80 |
| F-14 | TF30-P-414 | 2 | 222 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| F-18 | F404-GE-400 | 2 | 308 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| C-130 | T56-A-16 | 4 | 69 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| P-3 | T56-A-16 | 4 | 31 | 0.04 | 0.82 | 0.01 | 0.04 | 0.18 |
| E-2C | T56-A-426 | 2 | 10 | 0.02 | 0.12 | 0.01 | 0.00 | 0.02 |
| S-3 | T34-GE-400 | 2 | 32 | 1.54 | 0.31 | 0.22 | 0.02 | 0.04 |
| AV-8B | F-402-RR-404 | 1 | 5 | 0.20 | 0.06 | 0.03 | 0.00 | 0.00 |
| Total | | | | 7.09 | 1.71 | 2.19 | 0.10 | 1.04 |

Aircraft operations associated with aircraft flights originating from NAS Point Mugu (e.g., taxi, takeoff, etc.) have already been included in the emission estimates for NAS Point Mugu (refer to Section 3.2.3) and are not included in the emissions estimates for the Sea Range. Therefore, with the exception of the F-4, which also takes off and lands on San Nicolas Island, aircraft would be operating in the cruise mode while conducting exercises in the Sea Range. Emissions above 3,000 feet (914 m) were considered to be above the atmospheric inversion layer and would not have an impact on local air quality. The average time the aircraft operates between 0 and 3,000 feet (0 and 914 m) was calculated based on aircraft operating profiles and estimated time of operation for each sortie.

B - Missiles and Targets

Current Sea Range activities include test and training operations, including air-to-air, air-to-surface, surface-to-air, surface-to-surface, and subsurface-to-surface tests, as well as Fleet training exercises. These operations involve launching missiles and/or targets which are involved in the test and training scenarios. Emissions are associated with combustion of propellants and/or fuels used to propel the missiles and targets. (Missiles and targets are not used during littoral warfare training exercises.)



In order to estimate emissions associated with missile and target operations, the types of missiles and targets were determined from baseline year information. In certain cases, the specific type of propellant used was unavailable. For operations involving unknown propellants, the propellant emissions were estimated based on combustion of a known type of solid propellant, and emissions factors for the first stage of the boost operation and first stage of sustained combustion operation were used to represent emissions (Range Surveillance Center 1996). For the purpose of this analysis, it was assumed that most of the emissions associated with missile and target operations would take place below 3,000 feet (914 m), and therefore could impact air quality. [Table 3.2-2](#) presents a summary of the emission estimates for current missile and target operations in the Sea Range.

3.2.2.3 Emissions from Marine Vessels

The majority of marine vessel traffic consists of commercial vessels transiting the inner waters enroute to and from the Ports of Los Angeles and Long Beach. Additional commercial vessel traffic is associated with transit to and from Port Hueneme. Other marine vessel traffic in the Sea Range comprises military boat and ship traffic, as well as a limited number of commercial vessels providing various support services to the military craft. A number of non-military recreational vessels are also regularly present in the Sea Range. Because they are present regardless of military operations, they are not considered to be part of the baseline emissions attributable to the Navy. For the purpose of determining Sea Range baseline emissions, only military vessels and those vessels responsible for providing support have been characterized. In addition, emissions from yellow gear (support/maintenance equipment) aboard aircraft carrier vessels have been included. Emissions estimates from marine vessel activities in the Sea Range are presented in [Table 3.2-3](#).

3.2.2.4 Summary of Sea Range Emissions

[Table 3.2-4](#) presents a summary of the baseline emissions for current Sea Range activities.

3.2.3 Point Mugu

3.2.3.1 Ambient Air Quality

A - Climate

Principal topographic features in Ventura County include coastal mountain ranges, the coastal shore, the coastal plain, and several inland valleys. The northern half of the county, which includes Los Padres National Forest, is extremely mountainous, with elevations reaching 8,800 feet (2,682 m). Consequently, the climate in the northern half of the county varies a great deal depending on altitude. This description of climate focuses on the southern half of the county where Point Mugu is located.

The average annual temperature in the coastal and inland valleys of the south half of Ventura County ranges from the upper 50's (°F) (about 14°C) at the coast (Point Mugu) to the mid-60's (°F) (about 18°C) in Simi Valley. The difference between the maximum and minimum temperature becomes greater as distance increases from the coast. The average minimum and maximum temperatures at Point Mugu are 51° and 69°F (10° and 21°C), respectively. The smaller range of temperatures at Point Mugu reflects the moderating influence of the ocean on air temperature. The ocean's ability to warm and cool the overlying air while its temperature remains relatively unchanged produces the moderating effect.

Table 3.2-2. Missile/Target Activities in Sea Range

| Missile/Target | No. Fired/ Launched | Emissions, tons/year | | | | |
|---|------------------------|----------------------|-----------------|-------------|-----------------|------------------|
| | | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| Missiles | | | | | | |
| AIM-7 Sparrow ^a | 82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AIM-9 Sidewinder | 46 | 0.09 | 0.00 | 0.00 | 0.00 | 0.07 |
| AIM-54 Phoenix ^a | 30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) ^a | 10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AGM-84 Harpoon | 12 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| Standoff Land Attack Missile (SLAM) | 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AGM-88 High Speed Anti-Radiation Missile (HARM) | 6 | 0.25 | 0.00 | 0.00 | 0.00 | 0.20 |
| AGM-65 Maverick | 1 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 |
| AGM-154 Joint Standoff Weapon (JSOW) ^a | 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SM-1&2 Standard Missile - (RIM-66-B) (RIM-66-C) | 56 | 14.79 | 0.00 | 0.00 | 0.00 | 11.49 |
| FIM-92 Stinger | 19 | 0.04 | 0.00 | 0.00 | 0.00 | 0.03 |
| HAWK | 4 | 0.54 | 0.00 | 0.00 | 0.00 | 0.42 |
| RGM-109/UGM-109 Tomahawk | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SSM | 7 | 0.34 | 0.00 | 0.00 | 0.00 | 0.26 |
| Other Missiles | 29 | 0.58 | 0.00 | 0.00 | 0.00 | 0.44 |
| RIM-7 Sea Sparrow | 6 | 0.12 | 0.00 | 0.00 | 0.00 | 0.09 |
| Naval-configuration Army Tactical Missile System (NATACMS) | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BATS | 18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Naval Gunfire | | | | | | |
| Aircraft and Vessel Gunfire Activities | 9,998 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 |
| Targets | | | | | | |
| <u>Airborne Targets</u> | | | | | | |
| AQM-37 ^a | 29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MQM-8 | 9 | 0.44 | 0.00 | 0.00 | 0.00 | 0.34 |
| TDU-34 | 1 | 0.00 | 0.00 | 0.00 | 0.0 | 0.00 |
| QF-4 NOLO | 24 | 0.36 | 0.12 | 0.07 | 0.01 | 0.12 |
| BQM-74 | 141 | 0.02 | 0.06 | 0.01 | 0.00 | 0.05 |
| BQM-34 | 22 | 0.20 | 0.04 | 0.00 | 0.00 | 0.06 |
| <u>Surface Targets</u> | | | | | | |
| QST-35 | 34 | 159.85 | 4.15 | 5.36 | 0.21 | 0.26 |
| Mobile Ship Target (MST) | 21 | 1.01 | 1.91 | 0.04 | 0.01 | 0.06 |
| QST-33 | 20 | 18.81 | 0.49 | 0.64 | 0.03 | 0.03 |
| Tow Bar ^b | 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pontoon Boat (IVANDUCK) ^b | 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Floating at Sea Target (FAST) ^b | 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Improved Surface Tow Target (ISTT) ^b | 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | | 197.72 | 6.78 | 6.12 | 0.26 | 13.93 |

^a Missile/target launched or fired above 3,000 feet.

^b Surface target is not engine powered.

Source: NAWCWPNS Point Mugu FY95 Operations.



Table 3.2-3. Point Mugu Sea Range Marine Vessel Emissions

| Ship Type | No. of Events | Emissions, tons/year | | | | |
|-------------------------------------|---------------|----------------------|-----------------|--------------|-----------------|------------------|
| | | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| Project Ships | | | | | | |
| Self-Defense Test Ship | 49 | 6.19 | 19.36 | 0.56 | 2.39 | 0.49 |
| Guided Missile Frigate | 45 | 12.11 | 31.02 | 1.42 | 11.77 | 1.56 |
| Guided Missile Destroyer | 31 | 8.97 | 41.50 | 0.59 | 20.19 | 1.71 |
| Guided Missile Cruiser | 23 | 7.83 | 19.57 | 0.56 | 10.96 | 0.99 |
| Destroyer | 22 | 9.66 | 22.82 | 0.73 | 12.88 | 1.19 |
| Landing Platform Dock | 20 | 0.46 | 2.81 | 0.35 | 8.11 | 1.71 |
| Aircraft Carrier | 24 | 4.12 | 22.14 | 2.62 | 60.96 | 12.85 |
| Fleet Oiler | 7 | 0.36 | 2.24 | 0.27 | 6.31 | 1.33 |
| Landing Helicopter Assault Ship | 7 | 0.36 | 2.12 | 0.26 | 6.01 | 1.27 |
| Landing Ship Dock | 6 | 1.03 | 13.59 | 0.63 | 1.92 | 0.65 |
| Canadian Ship | 4 | 3.18 | 8.16 | 0.39 | 3.09 | 0.41 |
| Contract Ship | 4 | 0.17 | 0.28 | 0.01 | 0.91 | 0.05 |
| Landing Helicopter Deck | 3 | 0.13 | 0.77 | 0.10 | 2.19 | 0.47 |
| Multi-Purpose Stores Ship | 5 | 1.65 | 14.87 | 0.25 | 5.99 | 0.48 |
| Range Project Boats | 79 | 42.98 | 24.60 | 3.27 | 5.94 | 0.90 |
| Range Support Boats | 225 | 9.09 | 33.32 | 4.21 | 8.49 | 2.00 |
| Yellow Gear (four squadrons) | | | | | | |
| TA-75 | 2 | 0.00 | 0.04 | 0.00 | 0.01 | 0.00 |
| A/S 32K-1A | 2 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| JG-40 | 2 | 0.00 | 0.04 | 0.00 | 0.01 | 0.00 |
| Total | | 108.29 | 259.25 | 16.23 | 168.13 | 28.06 |

Table 3.2-4. Summary of Sea Range Emissions

| Activity | Emissions, tons/year | | | | |
|--------------------------|----------------------|-----------------|--------------|-----------------|------------------|
| | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| Aircraft Operations | 7.09 | 1.71 | 2.19 | 0.10 | 1.04 |
| Missiles and Targets | 197.72 | 6.78 | 6.12 | 0.26 | 13.93 |
| Marine Vessel Operations | 108.29 | 259.25 | 16.23 | 168.13 | 28.06 |
| Total | 313.10 | 267.74 | 24.54 | 168.49 | 43.03 |

Almost all rainfall in Ventura County occurs during the winter and early spring (November through April). Summer rainfall is normally restricted to scattered thundershowers in lower elevations, and somewhat heavier activity in the mountains associated with influx of tropical air. Occasionally, these showers may reach the coastal zone.

Since the sea breeze is typically stronger than the land breeze, the net wind flow during the day is from west to east. Under light land-sea breeze patterns, recirculation of pollutants can occur as emissions move westward during morning hours, and eastward during the afternoon. This can cause a build-up of pollutants over several days, as well as interbasin transport.

In Ventura County, weather is typically mild with fog and low clouds common in the summer. At Point Mugu, where official cloud cover records are available, the cloudiest month of the year is June, while the clearest month is November. Point Mugu averages 45 percent clear skies, 18 percent partly cloudy skies, and 36 percent cloudy skies during the year. Inland locations typically have a lower percentage of cloud cover than coastal areas.

B - Attainment Status

Ventura County is considered a *nonattainment area* for the state ambient O₃ and PM₁₀ standards, and a *severe nonattainment area* for the federal O₃ standard. Lack of available data for visibility reducing particles, hydrogen sulfide, and vinyl chloride has resulted in an “unclassified” attainment status for these three air contaminants for the state ambient air quality standards. The county is designated as an *attainment area* for other federal and state ambient air quality standards.

C - Existing Emissions

Emission sources at NAS Point Mugu include aircraft operations, motor vehicle use, and various stationary sources. Stationary sources include aircraft engine tests cells, stationary engines used for generators and compressors, fuel storage and handling facilities, boilers, and gasoline stations. Missile and target launches were accounted for in estimates of Sea Range emissions (Section 3.2.2) and are not included in this section.

Summaries of aircraft emissions are shown in Table 3.2-5. The aircraft emissions estimates were based on 1996 emissions estimates in addition to emissions associated with the realignment of four E-2 squadrons to NAS Point Mugu (Southwest Division 1998). Emission estimates were based on emission factors obtained from the Navy’s Aircraft Environmental Support Office (AESO).

Table 3.2-5. Aircraft Operations Emissions at NAS Point Mugu

| Aircraft | Emissions, tons/year | | | | |
|------------------|----------------------|-----------------|--------------|-----------------|------------------|
| | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| P-3 | 4.95 | 17.06 | 2.23 | 1.19 | 4.97 |
| C-130 | 8.50 | 27.11 | 3.60 | 1.91 | 8.03 |
| C-12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A-7 | 0.00 | 0.00 | 0.00 | 0.0 | 0.00 |
| F-86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A-3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A-6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| F-4 | 21.47 | 2.15 | 6.73 | 0.29 | 3.65 |
| F-14 | 32.25 | 10.68 | 14.09 | 0.93 | 3.46 |
| F/A-18 | 9.83 | 4.08 | 3.38 | 0.19 | 1.21 |
| T-38 | 9.47 | 0.18 | 1.33 | 0.16 | 0.83 |
| H-46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| UH-1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 206B | 0.46 | 0.12 | 0.15 | 0.05 | 0.02 |
| CV-440 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| H-60 | 0.82 | 0.87 | 0.20 | 0.09 | 0.38 |
| CV-340 | 5.24 | 0.03 | 0.75 | 0.02 | 0.01 |
| CV-580 | 1.26 | 2.97 | 0.42 | 0.22 | 0.95 |
| Metroliner | 0.35 | 0.78 | 0.10 | 0.06 | 0.25 |
| General Aviation | 1.83 | 0.01 | 0.05 | 0.00 | 0.00 |
| Other Carriers | 0.61 | 1.15 | 0.09 | 0.00 | 0.07 |
| E-2 | 6.73 | 22.1 | 4.53 | 0.93 | 5.55 |
| Total | 103.77 | 89.29 | 37.65 | 6.04 | 29.38 |

Source: Tables D-15 and D-66 from the Final Environmental Impact Statement for the Realignment of E-2 Squadrons from MCAS Miramar (Southwest Division 1998).



Table 3.2-6 presents a summary of the baseline emissions for NAS Point Mugu, inclusive of stationary and mobile emission sources.

Table 3.2-6. Summary of Emissions at NAS Point Mugu

| Emission Source Category | Emissions, tons/year | | | | |
|---|----------------------|-----------------|---------------|-----------------|------------------|
| | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| NAS Point Mugu¹ | | | | | |
| Aircraft Operations | 103.77 | 89.29 | 37.65 | 6.04 | 29.38 |
| Personal Vehicle Work Trips | 408.30 | 29.26 | 40.99 | 0.75 | 78.32 |
| Government Vehicle Use | 24.39 | 5.67 | 5.05 | 0.07 | 8.03 |
| Fuel Farm, JP-8B Jet Fuel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Natural Gas Use-housing/office/industrial | 0.70 | 1.61 | 0.12 | 0.01 | 0.01 |
| Engine Test Cells | 1.33 | 4.19 | 0.18 | 0.53 | 1.57 |
| Aircraft Engine Maintenance Runups | 5.69 | 6.30 | 5.48 | 0.34 | 3.93 |
| Coating and Cleaning | 0.00 | 0.00 | 3.66 | 0.00 | 0.00 |
| Ground Support Equipment - Diesel Engines | 2.41 | 25.42 | 1.86 | 5.20 | 1.76 |
| Ground Support Equipment - Gasoline Engines | 125.30 | 3.03 | 4.92 | 0.16 | 0.16 |
| Incinerator | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fuel Farm, Aviation Gasoline | 0.00 | 0.00 | 2.71 | 0.00 | 0.00 |
| Fuel Farm, Vehicle Gasoline | 0.00 | 0.00 | 1.95 | 0.00 | 0.00 |
| Fuel Oil Boilers | 0.01 | 0.06 | 0.00 | 0.13 | 0.01 |
| Natural Gas Low NO _x Boilers | 0.35 | 0.71 | 0.09 | 0.01 | 0.05 |
| Propane Combustion | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other Natural Gas Use | 0.64 | 3.22 | 0.17 | 0.02 | 0.10 |
| Navy Exchange Gas Station | 0.00 | 0.00 | 0.89 | 0.00 | 0.00 |
| Public Works Gas Station | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 |
| Lawn Mowers | nd | 1.69 | 11.80 | nd | nd |
| Aircraft Refueling | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |
| Aircraft Painting | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 |
| Solvent Use | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| Abrasive Blasting | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| Total | 672.89 | 170.45 | 118.09 | 13.26 | 123.33 |

¹ Emissions for NAS Point Mugu are based on 1996 emissions estimates in addition to emissions associated with the realignment of E-2 squadrons as calculated for the Final Environmental Statement for the Realignment of E-2 Squadrons from MCAS Miramar (Southwest Division 1998).

Note: nd = no data

Source: Tables D-16 (E-2 Engine Runups), D-18 (E-2 Ground Support Equipment - presented as either diesel or gas engine), D-20 (E-2 Miscellaneous Stationary Sources - offbase housing emissions not included), D-40 (Personnel Vehicle Emissions for E-2 Personnel - offbase vehicle use not included), D-54 (Government Vehicle Use by E-2 Squadrons), and D-63 (NAWS Point Mugu Emissions) from the Final Environmental Impact Statement for the Realignment of E-2 Squadrons from MCAS Miramar (Southwest Division 1998). Estimates of 1996 aircraft maintenance runups are based on 1990 emissions numbers reduced to reflect 1996 estimates consistent with the reduction assumptions as reflected in the E-2 FEIS as calculated by the NAS Environmental Division (S. George 1998).

3.2.4 San Nicolas Island

3.2.4.1 Ambient Air Quality

A - Climate

Meteorological and climatological information for San Nicolas Island is included in [Section 3.2.2](#).

B - Attainment Status

San Nicolas Island has been categorized as an unclassified/attainment area by the USEPA. Due to the lack of major emitting sources on the island, in conjunction with predominantly strong winds from the northwest, the likelihood of pollutants remaining in the ambient air of the island is very low.

3.2.4.2 Emissions from Stationary Sources

Stationary sources on San Nicolas Island consist of a power plant, a gasoline refueling station and underground storage tank (UST), small boilers, several internal combustion engines, a waste incinerator, and various adhesive and sealant operations. All non-exempt emitting sources on San Nicolas Island are permitted under Ventura County Permits to Operate Numbers 5207 and 1207. The permits limit the total hourly and monthly emissions of criteria pollutants by these sources, as well as total fuel use, pounds of waste incinerated, total power produced, and amount of sealant and adhesive product used.

3.2.4.3 Emissions from Mobile Sources

Mobile sources of emissions on San Nicolas Island consist of aircraft and target operations, as well as combustion emissions from a limited number of military vehicles on the island. [Table 3.2-7](#) shows vehicle counts from San Nicolas Island and Santa Cruz Island. The majority of vehicles are located on San Nicolas Island. Emissions from aircraft and target operations at San Nicolas Island are included with those presented for the Sea Range ([Section 3.2.2](#)).

Table 3.2-7. Vehicle Counts, San Nicolas Island and Santa Cruz Island

| Vehicle Type | Vehicles at SNI/SCI (1996) | Gas Vehicles SNI/SCI (1996) | Diesel Vehicles SNI/SCI (1996) |
|---------------------------------|----------------------------|-----------------------------|--------------------------------|
| Bus, 20 passenger, 36 passenger | 2 | 2 | 0 |
| Pick-up Truck (½T, ¾T) | 30 | 30 | 0 |
| Panel Truck | 3 | 3 | 0 |
| Van | 8 | 8 | 0 |
| Truck (1T to 1.5T) | 13 | 13 | 0 |
| Truck (2T to 2.5T) | 7 | 4 | 3 |
| Truck (5T) | 1 | 1 | 0 |
| Truck (7.5T to 10T) | 2 | 0 | 2 |
| Truck (15T) | 2 | 0 | 2 |

Note: T = tons

3.2.5 Other Channel Islands

The Navy operates instrumentation sites at San Miguel, Santa Rosa, and Santa Cruz islands. However, the only site that generates emissions is on Santa Cruz Island.

3.2.5.1 Regional Setting, Santa Cruz Island

A - Climate

Meteorological and climatological information for Santa Cruz Island is included in [Section 3.2.2](#), which presents an overview of climate and weather patterns for the Sea Range.



B - Attainment Status

Santa Cruz Island has been categorized as an unclassified/attainment area by the USEPA. Due to the lack of major emitting sources on the island, in conjunction with frequent strong winds, the likelihood of pollutants remaining in the ambient air of the island is very low.

3.2.5.2 Emissions from Stationary Sources

Stationary emission sources at Santa Cruz Island which are owned by the Navy include a power plant, a boiler, and a 15,000 gallon (57,000 liters) fuel storage tank (above ground). The equipment is permitted under Santa Barbara County APCD Permits to Operate Numbers 9195 and 8362. The permits limit the total hourly and yearly emissions of criteria pollutants by these sources, as well as pounds of waste incinerated and type of fuel used.

3.2.6 Summary of Baseline Air Emissions

Table 3.2-8 presents a summary of the overall baseline air emissions estimated for the Sea Range, NAS Point Mugu, San Nicolas Island, and Santa Cruz Island.

Table 3.2-8. Summary of Baseline Air Emissions

| Location | Emissions, tons/year | | | | |
|--------------------|----------------------|-----------------|---------------|-----------------|------------------|
| | CO | NO _x | ROG/HC | SO _x | PM ₁₀ |
| Sea Range | 313.10 | 267.74 | 24.54 | 168.49 | 43.03 |
| NAS Point Mugu | 672.89 | 170.45 | 118.09 | 13.26 | 123.33 |
| San Nicolas Island | 33.92 | 151.75 | 11.45 | 5.17 | 11.65 |
| Santa Cruz Island | 0.30 | 0.45 | 0.07 | 0.19 | 0.16 |
| Total | 1,020.21 | 590.39 | 154.15 | 187.11 | 178.17 |