



Final Programmatic Environmental Assessment

For the

**2011-2015 Integrated Natural Resources
Management Plan**

**Vandenberg Air Force Base,
California**

16 August 2011

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14. ABSTRACT This Programmatic Environmental Assessment (PEA) evaluates the potential environmental impacts associated with adopting the Integrated Natural Resources Management Plan (INRMP) for Vandenberg Air Force Base (AFB) and with implementing individual projects in the INRMP. This PEA was prepared in accordance with all applicable federal, state, and local laws and regulations: the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA; and the Air Force's Environmental Impact Analysis Process (EIAP) (Title 32 Code of Federal Regulations Part 989). Vandenberg AFB is headquarters for the 30th Space Wing (30 SW), which represents the Department of Defense (DoD) as the lead agency.					
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FINDING OF NO SIGNIFICANT IMPACT

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR THE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN, VANDENBERG AIR FORCE BASE, CALIFORNIA

This Programmatic Environmental Assessment (PEA) evaluates the potential environmental impacts associated with adopting the Integrated Natural Resources Management Plan (INRMP), for Vandenberg Air Force Base (AFB), and with implementing individual projects within the INRMP. This PEA was prepared in accordance with all applicable federal, state, and local laws and regulations: the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA, and the Air Force's Environmental Impact Analysis Process (EIAP) (Title 32 Code of Federal Regulations Part 989). Vandenberg AFB is headquarters for the 30th Space Wing (30 SW); 30 SW is representing the Department of Defense (DoD) as the lead agency.

Under the Sikes Act, as amended, the Secretary of Defense is directed to "carry out a program to provide for the conservation and rehabilitation of natural resources on military installations." Therefore, each military installation in the United States under the jurisdiction of the Secretary of Defense must prepare and implement an INRMP, unless a determination is made that the absence of significant natural resources makes preparation of such a plan inappropriate.

The INRMP for Vandenberg AFB includes specific projects to be implemented over the next five years to sustain, promote, and restore the health and integrity of Vandenberg AFB ecosystems. The specific projects proposed in the INRMP are contained in Appendix C of the INRMP and are also shown in Table 2-1 of the PEA.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action involves adopting the INRMP and implementing every project contained in the INRMP, with the exception of projects involving demolition, construction, or refurbishment of structures. Under the No-Action alternative, the INRMP would not be adopted and none of the projects in the INRMP would be implemented.

SUMMARY OF THE ANTICIPATED ENVIRONMENTAL IMPACTS

Of the projects contained in the INRMP Work Plan, many are entirely administrative and would qualify for a categorical exclusion (CATEX), in accordance with the Department of the Air Force's EIAP. These projects are not listed in Table 2-1 of the PEA and are not discussed in the environmental impact analysis in the PEA. The remaining projects are discussed further in the PEA and are evaluated at a programmatic level. In addition, each of these remaining INRMP projects would be evaluated further through the Air Force's EIAP to determine whether another type of CATEX applies to the project or whether a Supplemental EA, independent EA, or Environmental Impact Statement is required. Requirements for permits or consultations will also be determined through this process.

The PEA describes the affected environment and environmental consequences of the Proposed Action and No-Action alternative and identifies measures to prevent or minimize environmental impacts. With implementation of the minimization measures listed in Chapter 2 (Table 2-2) of the PEA, impacts associated with implementation of INRMP projects under the Proposed Action would be less than significant for agricultural resources, human health and safety, noise, recreation, socioeconomics and environmental justice, solid waste, transportation, utilities, and visual resources. Most impacts on air quality, biological resources, cultural resources, geology and earth resources, hazardous materials and hazardous waste management, land use and coastal zone resources, and water resources would also be reduced to less than significant levels with implementation of minimization measures. However, certain types of projects that would continue to potentially result in the following impacts (even after implementation of minimization measures and standard best management practices), would require further impact analysis:

- Projects with the potential to injure or kill a special-status species;
- Projects that would result in temporary or permanent impacts on aquatic habitat, wetlands or waters of the United States, or floodplains;
- Projects that would result in permanent impacts on other native vegetation communities;
- Projects that would result in permanent impacts on a significant cultural resource;
- Projects in geohazardous areas, such as active landslide areas, coastal bluffs, or streams
- Projects that would disturb contaminated soil, surface water, or groundwater; and
- Prescribed burns greater than 100 acres, that are calculated to produce greater than 10 tons of particulate matter, that would produce smoke at night, that are near smoke sensitive areas or where monitoring is necessary for public health and safety.

The No-Action alternative would have lesser impacts on all issue areas, with the exception of biological resources, visual resources, and recreation. Under the No-Action alternative, impacts on biological resources and visual resources would be much greater and could be significant and unmitigable, and the project's contribution to cumulative impacts on biological resources and visual resources would be considerable and significant.

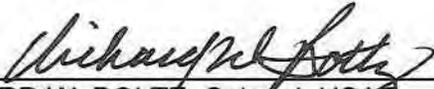
FINDINGS AND CONCLUSION

Following a review of the PEA, I find that the proposed adoption and implementation of the INRMP for Vandenberg AFB would not have any significant unavoidable environmental impacts that can be identified through this first-tier stage of NEPA review. Additional analysis of site-specific impacts will be conducted as part of the second-tier NEPA review once particular sites and project details are identified. Based on the information contained in this assessment, a Finding of No Significant Impact is made. The preparation of an Environmental Impact Statement is not required for this action.

The PEA was available for public review for 30 days from 23 May 2011 to 21 June 2011. No objections to the INRMP PEA were received from either the public or from public agencies.

FINDING OF NO SIGNIFICANT IMPACT SIGNATURE PAGE

Programmatic Environmental Assessment for the Integrated Natural Resources Management Plan for Vandenberg Air Force Base, California



25 AUG 2011

RICHARD W. BOLTZ, Colonel, USAF
Commander, 30th Space Wing

Final
Programmatic Environmental Assessment
For the
2011-2015 Integrated Natural Resources Management
Plan
Vandenberg Air Force Base, California

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16 August 2011

Executive Summary

This Programmatic Environmental Assessment (PEA) evaluates the potential environmental impacts associated with adopting the Integrated Natural Resources Management Plan (INRMP) for Vandenberg Air Force Base (AFB) and with implementing individual projects in the INRMP.

This PEA was prepared in accordance with all applicable federal, state, and local laws and regulations: the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA; and the Air Force's Environmental Impact Analysis Process (EIAP) (Title 32 Code of Federal Regulations Part 989). Vandenberg AFB is headquarters for the 30th Space Wing (30 SW), which represents the Department of Defense (DoD) as the lead agency.

Under the Sikes Act, as amended, the Secretary of Defense is directed to "carry out a program to provide for the conservation and rehabilitation of natural resources on military installations." Therefore, each military installation in the United States under the jurisdiction of the Secretary of Defense must prepare and implement an INRMP, unless a determination is made that the absence of significant natural resources makes preparation of such a plan inappropriate.

The INRMP for Vandenberg AFB includes specific projects to be implemented over the next five years to sustain, promote, and restore the health and integrity of Vandenberg AFB ecosystems. The specific projects proposed are contained in Appendix C of the INRMP and are also shown in Table 2-1 of the PEA.

The Proposed Action involves adopting the INRMP and implementing every project

contained in the INRMP, with the exception of projects involving demolition, construction, or refurbishment of structures. Under the No-Action alternative, the INRMP would not be adopted and none of the projects within the INRMP would be implemented.

A PEA is a tool for consolidating and analyzing multiple related federal actions in a single document. The federal actions are evaluated to the fullest extent possible with the information available at the time. This approach has the advantage of reducing or eliminating redundant and duplicate analyses. Once individual projects are ready to be implemented, the PEA is used to determine if the NEPA is legally complete for the action *or* if additional environmental studies, regulatory consultations, public reviews, or environmental permits are needed.

Project details are not finalized for all the INRMP projects that require field work, so the projects are analyzed generically in this PEA according to their common foreseeable impacts on the environment.

As project designs are clarified and funding is expected, each project would undergo a secondary environmental review by the Air Force. The Air Force would determine if the action is fully analyzed and legally sufficient within the PEA or if further analysis under the NEPA is warranted.

In addition, because the INRMP is a living document that can be revised at any time, for any new projects that are proposed to be included in the INRMP, the Air Force would either prepare a Supplemental PEA or an independent EA for that project if the project does not qualify for a categorical exclusion (CATEX).

The PEA describes the affected environment and environmental consequences of the Proposed Action and the No-Action alternative and identifies measures to prevent or minimize environmental impacts. With implementation of the minimization measures listed in Table 2-2 of the PEA, impacts of implementing the INRMP projects under the Proposed Action would be less than significant for agricultural resources, human health and safety, noise, recreation, socioeconomics and environmental justice, solid waste, transportation, utilities, and visual resources. Most impacts on air quality, biological resources, cultural resources, geology and earth resources, hazardous materials and hazardous waste management, land use and coastal zone resources, and water resources would also be reduced to less than significant levels with implementation of minimization measures. However, certain types of projects that would continue to potentially result in the following impacts (even after implementation of minimization measures and standard best management practices) would require further impact analysis:

- Projects with the potential to injure or kill a special status species as defined in Section 3.4 of the PEA;
- Projects that would result in temporary or permanent impacts on aquatic habitat, wetlands or waters of the US, or floodplains;
- Projects that would result in permanent impacts on other native vegetation communities occurring at Vandenberg AFB (e.g., oak woodland, coastal scrub) as described in Section 3.4 of the PEA;
- Projects that would result in permanent impacts on a significant cultural resource as defined in the NHPA;

- Projects in geohazardous areas (or areas with geologic conditions that are capable of causing damage or loss of property and life), such as active landslide areas, coastal bluffs, stream banks, or stream channels;
- Projects that would disturb contaminated media such as soil through excavation with mechanized equipment or hand tools, or extraction of contaminated surface water or groundwater; and
- Prescribed burns greater than 100 acres that are calculated to produce greater than 10 tons of particulate matter, that would produce smoke at night, that are near smoke sensitive areas, or where monitoring is necessary for public health and safety.

The No-Action alternative would have lesser impacts on all issue areas, with the exception of biological resources, visual resources, and recreation. Under the No-Action alternative, impacts on biological resources and visual resources would be much greater. Project impacts on biological resources and visual resources would be potentially significant and unmitigable, and the project's contribution to cumulative impacts on biological resources and visual resources would be considerable and significant.

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ACRONYMS AND ABBREVIATIONS

30 CES/CEA	30th Space Wing Asset Management Flight
30 CES/CEANC	30th Space Wing Asset Management Flight, Natural Resources
30 SFS/S3SW	30th Space Wing Conservation Law Enforcement
30 SW/CC	30th Space Wing Installation Commander
30 SWI	30th Space Wing Instruction
AB	Assembly Bill
ACM	asbestos containing material
AETC	Air Education and Training Command
AFB	Air Force Base
AFI	Air Force Instruction
AFPMB	Armed Forces Pest Management Board
AICUZs	Air Installation Compatible Use Zones
AOCs	Areas of Concern
AOIs	Areas of Interest
APZs	Accident Potential Zones
ATVs	all terrain vehicles
BASH	Bird/Aircraft Strike Hazard
BMPs	best management practices
BP	Before Present
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standard
Cal/OSHA	California Division of Occupational Health and Safety
CARB	California Air Resources Board
CATEX	Categorical Exclusion
CCAA	California Clean Air Act
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CE	Civil Engineering
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH ₄	methane
CIWMB	California Integrated Waste Management Board
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ -equivalents

CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	“A-weighted” decibel
DoD	Department of Defense
DoDI	Department of Defense Instruction
EIAP	environmental impact analysis process
EIS	Environmental Impact Statement
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
ESBB	EI Segundo Blue Butterfly
ESHOC	Environmental, Safety, and Occupational Health Council
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
GCEMP	Golf Course Environmental Management Plan
GHGs	greenhouse gases
GIS	geographic information system
HQ AFSC	Headquarters Air Force Space Command
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
kV	kilovolt
LBP	lead-based paint
LCZs	Lateral Clear Zones
Leq	equivalent noise levels
LOS	level of service
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
MBTA	Migratory Bird Treaty Act
mg/m^3	milligrams per cubic meter
MMPA	Marine Mammal Protection Act
mph	mile per hour
MS4s	Small Municipal Separate Storm Water Sewer Systems
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
N ₂ O	nitrous oxide

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NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries
NOx	nitrogen oxides
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
O ₃	ozone
ORV	off-road vehicle
OSHA	Occupational Health and Safety Administration
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PEA	Programmatic Environmental Assessment
PERP	Portable Equipment Registration Program
PL	Public Law
PM _{2.5}	fine particulate matter with a diameter of less than 2.5 micrometers
PM ₁₀	fine particulate matter with a diameter of less than 10 micrometers
ppm	parts per million
Qal	Quaternary alluvium deposits
Qo	Quaternary Orcutt Formation, middle to late Pleistocene eolianite unit
Qoa	Quaternary Older alluvium deposits
Qt	Quaternary stream deposits
Qt ₂	Quaternary continental terrace deposits
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
RWQCB	Regional Water Quality Control Board
SBCAPCD	Santa Barbara County Air Pollution Control District
SHPO	State Historic Preservation Officer
SWPPP	Storm Water Pollution Prevention Plan
TCE	trichloroethylene
Tm	Monterey Formation
Tml	Miocene Lower Monterey Formation
TPHs	total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
Tsq, Tsqd	Miocene/Pliocene Sisquoc Formation
Tvq	Lower Miocene Vaqueros Formation
US	United States
USACE	US Army Corps of Engineers
USC	US Code
US EPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
UXO	unexploded ordnance

VOCs	volatile organic compounds
VPFS	vernal pool fairy shrimp
WFMP	Wildland Fire Management Plan
WWTP	wastewater treatment plant

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Chapter 1. Purpose and Need for the Proposed Action

Chapter 1 defines what the Integrated Natural Resource Management Plan (INRMP) is and why the Air Force needs the plan for Vandenberg Air Force Base (AFB). Chapter 1 further explains why a Programmatic Environmental Assessment (PEA) needs to be prepared for the INRMP. Ultimately, the chapter defines the proposed action and explains its purpose and need. This information is the foundation for the document's subsequent chapters.

Vandenberg AFB is in Santa Barbara County, California, and is home to the 30th Space Wing, a component of the Air Force's Space Command. Vandenberg AFB covers 99,579 acres of largely undeveloped land (Figure 1-1). Biological resources include 33 miles of coastal landscapes and 15 federally threatened and endangered species. The base is home to thousands of acres of natural ecosystems, from wetlands, waterways, and estuaries to coastal dunes, chaparral, and woodlands.

1.1 What is an INRMP and Why is it Needed?

An INRMP is a guide for conserving and restoring biological resources and ecosystems on military installations. An INRMP combines and integrates several individual plans for managing fish and wildlife, forests, wetlands and riparian habitats, croplands, fire management, grazing management, invasive plant species, and outdoor recreation. The United States (US) Air Force is required to prepare an INRMP for Vandenberg AFB by the Sikes Act (16 United States Code [USC], 670a[1][B]), as well as Department of Defense Instruction (DoDI) 4715.3 and Air Force Instruction (AFI) 32-7064.

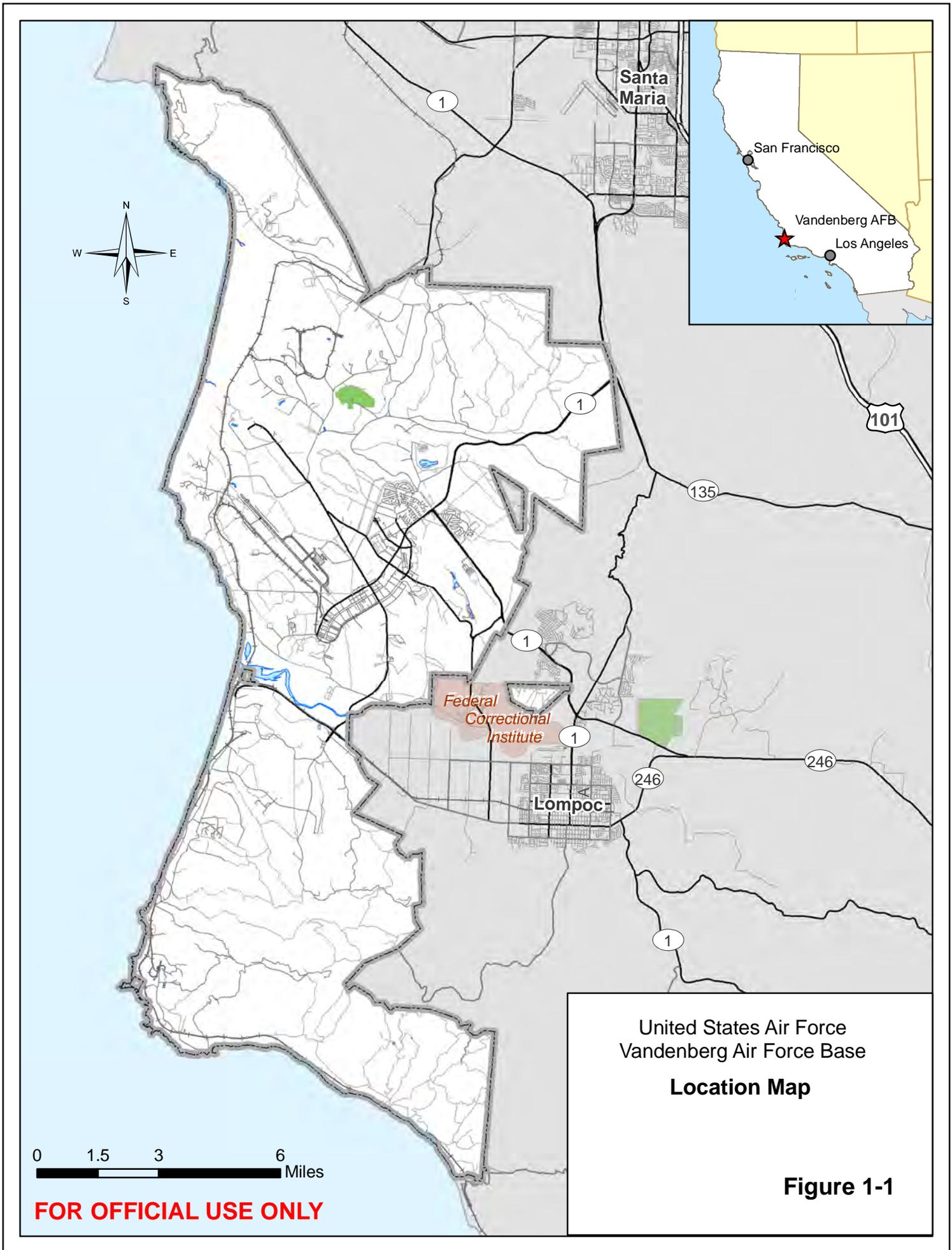
Vandenberg AFB's INRMP includes a list of 312 proposed projects aimed at conserving

CHAPTER 1 EXPLAINS:

- **What the INRMP is and why the Air Force needs it;**
- **INRMP status and approval process;**
- **Why the INRMP needs an Environmental Assessment (EA) and why it is a PEA;**
- **The purpose and need for implementing the Vandenberg AFB INRMP;**
- **Objective of the PEA;**
- **Legal requirements; and**
- **Decision to be made.**

and restoring the base's biological resources and ecosystems. Approximately half of the projects involve administrative activities that can be accomplished in an office, like records management and report writing. The remaining projects require restoration and conservation field activities, such as animal habitat studies, plant surveys, fence repairs, and invasive vegetation removal.

While the INRMP is intended to manage Vandenberg AFB's natural resources, the plan's guidance must not conflict with the Air Force's mission or military readiness. As such, projects proposed in the INRMP would be implemented without interfering or delaying mission critical actions, such as space launches, military aircraft operations, or troop activities.



Santa Maria

San Francisco

Vandenberg AFB

Los Angeles

Federal
Correctional
Institute

Lompoc

United States Air Force
Vandenberg Air Force Base

Location Map

Figure 1-1

0 1.5 3 6 Miles

FOR OFFICIAL USE ONLY

1.2 What is the INRMP Status and the Approval Process?

As of April 2011, Vandenberg AFB's INRMP is in draft form and awaits completion of this PEA before it can be implemented. The INRMP must also fully comply with applicable federal, state, and local laws and regulations before going into effect.

In order to comply with the Sikes Act, the INRMP must be reviewed and approved by the 30th Space Wing's command headquarters. The plan must also be reviewed and endorsed by the US Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and the California Department of Fish and Game (CDFG).

Both the INRMP and this EA are made available to the general public for review through Santa Barbara County libraries for 30 days, the dates of which are announced in local newspapers. According to Department of Defense (DoD) policy, the INRMP must also be reviewed annually with the cooperation of the USFWS, CDFG, and NOAA Fisheries to ensure that projects and activities for the upcoming year are identified, budgeted, and implemented.

The Vandenberg AFB INRMP would be in effect for five years. In order to stay current with changing laws and regulations and changes in the environment, the INRMP would be revised and updated every five years thereafter.

1.3 Why does the INRMP need an Environmental Assessment?

While the INRMP may appear inherently beneficial to the environment, the projects aimed at protecting biological resources and ecosystems could create impacts on other protected resources, like air quality, water

quality, soils, and cultural resources. In order to determine potential impacts on all environmental resources, the Air Force prepared this environmental document in accordance with the National Environmental Policy Act (NEPA) and associated regulations from the Council on Environmental Quality (CEQ).

The NEPA and its associated regulations require federal agencies to define federal actions and to assess potential impacts on the environment resulting from those actions. In the case of Vandenberg AFB's INRMP, impacts on the environment from the INRMP's numerous proposed projects were unknown; as such, the Air Force determined that a PEA was the best approach for complying with the NEPA.

1.4 Why Prepare a Programmatic Environmental Assessment ?

A PEA is a tool for consolidating and analyzing multiple related federal actions in a single document. The federal actions are evaluated to the fullest extent possible with the information available at the time. This approach has the advantage of reducing or eliminating redundant and duplicate analyses. Once individual projects are ready to be implemented, the PEA is used to determine if the NEPA is legally complete for the action *or* if additional environmental studies, regulatory consultations, public reviews, or environmental permits are needed.

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PEA

- ✓ A tool for eliminating redundant and duplicate studies
- ✓ Provides a springboard document for future project-specific NEPA reviews

1.5 The Proposed Action and its Purpose

The Proposed Action analyzed in this PEA is the implementation of Vandenberg AFB's INRMP, a five-year comprehensive plan used for managing biological resources and ecosystems. Guidance in the INRMP would allow Air Force personnel to sustain, promote, and restore the health and integrity of Vandenberg AFB ecosystems through effective long-term management actions.

As required by the NEPA, an alternative to the Proposed Action is addressed in this PEA. The alternative is a No-Action alternative wherein the environmental impacts of proceeding *without* an INRMP are analyzed. This alternative is explained in Chapters 2 through 4.

1.6 Need for the Proposed Action

The Sikes Act directs the Secretary of Defense to “carry out a program to provide for the conservation and rehabilitation of natural resources on military installations” (16 USC, 670 et seq.). Under Department of Defense Instruction 4715.3, Environmental

Conservation Program, and AFI 32-7064, military installations that have significant natural resources must prepare and implement an INRMP.

1.7 Objective of the PEA

The PEA identifies, describes, and evaluates the range of potential environmental impacts that could result from the proposed action and the No-Action alternative. It evaluates potential cumulative effects from other past, present, and planned actions on Vandenberg AFB. Environmental regulatory requirements are identified, as well as necessary permits.

Chapter 2 explains the Proposed Action and describes the No-Action alternative. Potential impacts on air quality, agricultural resources, noise levels, hazardous materials, solid waste, geology, water resources, biological and cultural resources, coastal zone resources, land use, recreation, transportation, utilities, visual resources, socioeconomic and environmental justice, and human health and safety are analyzed in **Chapter 3**. The environmental consequences and cumulative impacts resulting from the Proposed Action and alternative are explained in **Chapter 4**. **Chapters 5 through 7** list agencies and persons contacted, the PEA preparers, and the PEA distribution list.

1.8 Legal Requirements

A critical component of preparing this PEA is a thorough identification of all environmental laws, regulations, and directives that would apply to the Proposed Action and the No-Action alternative. The Air Force determined that the following list of laws and regulations must be reviewed for their relevance to the projects listed in the Vandenberg AFB INRMP:

FEDERAL LAWS and REGULATIONS
➤ American Indian Religious Freedom Act of 1978 (42 USC 1996)
➤ Archaeological and Historic Preservation Act of 1974 (16 USC, 469a et seq.)
➤ Archaeological Resources Protection Act of 1979 (16 USC, 470aa-mm), Supplemental Regulations of 1984
➤ Bald and Golden Eagle Protection Act, as amended (16 USC, 668-668c)
➤ Clean Air Act of 1970 (42 USC, 7401 et seq.)
➤ Clean Water Act of 1977, as amended (33 USC, 1251 et. seq.)
➤ Comprehensive Environmental Response, Compensation, and Liability Act (42 USC, 9601-9675)
➤ Coastal Zone Management Act of 1972 (16 USC 1451-1464)
➤ Endangered Species Act of 1973 (16 USC, 1531 et seq.)
➤ Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265)
➤ Marine Mammal Protection Act (16 USC, 1361)
➤ Migratory Bird Treaty Act of 1918, as amended (16 USC, 703-712)
➤ National Environmental Policy Act of 1969, as amended (42 USC, 4321-4347)
➤ National Historic Preservation Act of 1966 as amended (NHPA) (16 USC, 470 et seq.)
➤ Native American Graves Protection and Repatriation Act of 1990 (25 USC, 3001-3013)
➤ Noise Control Act of 1972 (42 USC, 4901 et seq.)
➤ Occupational Safety and Health Act of 1970 (29 USC, 659-678)
➤ Pollution Prevention Act of 1990 (42 USC,

13101-13109)
➤ Resource Conservation and Recovery Act of 1976 (42 USC, 6901 et seq.)
➤ Sikes Act (16 USC, 670a-670o)
➤ Superfund Amendments and Reauthorization Act (42 USC, 9601-9675)
➤ Title II of the Toxic Substances Control Act of 1976 (15 USC, 2601 et seq.)
STATE LAWS and REGULATIONS
➤ California Coastal Act of 1976
➤ California Clean Air Act of 1988
➤ Porter-Cologne Water Quality Control Act
➤ California Integrated Waste Management Act of 1989, California Assembly Bill AB 939

1.9 Decision to be Made

This PEA is a decision-making document that provides the Air Force with sufficient information to determine if the Proposed Action or the No-Action alternative would significantly affect the quality of the human environment. If the PEA revealed that significant impacts could not be avoided with implementation of the Vandenberg AFB INRMP, then an Environmental Impact Statement (EIS) would be the next step required under the NEPA.

If it were determined that the Proposed Action or any of the alternatives could be achieved without significantly affecting the quality of the human environment, then a Finding of No Significant Impact (FONSI) letter would be prepared, indicating compliance with the NEPA. After addressing regulatory agency and public comments, the Air Force decides if a FONSI is legally sufficient.

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Chapter 2. Proposed Action and Alternatives

According to the NEPA, a federal agency must clearly define the action it wishes to undertake so that it may properly evaluate potential environmental impacts. Federal agencies must also “rigorously explore and objectively evaluate all reasonable alternatives” to a proposed project (CEQ Part 1502.14a). NEPA guidance emphasizes that a federal agency should then define the differences between the alternatives and carefully explain how their environmental impacts differ.

Once a proposed action and all reasonable alternatives are identified, a federal agency may proceed with analyzing the affected environment (Chapter 3) and environmental consequences (Chapter 4) for the proposed action and alternatives.

Chapter 2 describes in detail the Air Force’s Proposed Action to finalize and implement Vandenberg AFB’s Draft INRMP. The chapter also describes an alternative to the Proposed Action, which is the No-Action alternative. The No-Action alternative would have Vandenberg AFB proceed without an INRMP and without implementing the projects listed in the INRMP.

2.1 Selection Criteria for Alternatives

The criteria for selecting alternatives to the Air Force’s proposal come from the purpose and need discussed in Chapter 1, which is to prepare and implement an INRMP, as required by the Sikes Act.

The Air Force proposes that the best way to accomplish the purpose and need is to finalize Vandenberg AFB’s draft INRMP and to implement the projects listed in the plan. This plan is referred to throughout the PEA as the Proposed Action.

In searching for alternatives to preparing and implementing the INRMP, the Air Force considered changing the format of the INRMP and parceling out some of the individual plans as separate management tools. The Air Force determined that this would not change the types of proposed activities and therefore would not reduce potential environmental impacts. Also, this approach would defeat one of the purposes of the INRMP, which is to integrate all natural resource management plans. As such, in order to ensure optimum success of the INRMP, the Air Force concluded that the individual plans must remain parts of the whole.

The sole alternative analyzed in the PEA is the No-Action alternative. This approach identifies potential impacts on the environment if the INRMP were not finalized or implemented. By proceeding with the No-Action alternative, the Air Force would be out of legal compliance with the Sikes Act.

The Air Force identified no other options as reasonable alternatives to adequately accomplish the purpose and need objective and to minimize environmental impacts at the programmatic level. In addition, Chapter 1 (Section 1.4) explains that as project designs are clarified and funding is expected, the Air Force would conduct a secondary environmental review of each project proposed in the INRMP. A project-specific alternatives analysis would be part of this secondary review.

2.2 The Proposed Action

The Proposed Action would finalize the INRMP and implement the projects listed in the plan. In the past, natural resource management at Vandenberg AFB was guided by separate plans addressing different aspects of natural resources management, such as land management,

urban forestry, fish and wildlife management, forestry management, outdoor recreation, and range management. Each plan addressed various base resources independently of the others, and there was poor integration of management strategies. As a result, natural resources may not have been managed cohesively and efficiently.

The INRMP should integrate all management activities in a manner that sustains, promotes, and restores the health and integrity of Vandenberg AFB ecosystems using an adaptive management approach. Since the environment is not static and is ever changing, an adaptive management approach would allow the Air Force to manage natural resources in new, better, and more efficient ways. This approach also complies with AFI 32-7064, which directs installations to ensure ecologically sound stewardship of the nation's natural resources found on Air Force lands.

The INRMP is designed to accomplish the following:

- Summarize existing management plans and natural resources literature pertaining to Vandenberg AFB;
- Identify and analyze management goals in existing plans;
- Integrate the management goals and objectives of the individual plans;
- Support base compliance with applicable regulatory requirements;
- Support the integration of natural resource stewardship with the Air Force mission; and
- Provide direction for monitoring strategies.

2.2.1 Natural Resource Management Categories

There are fifteen natural resource management categories addressed in the INRMP. Each category focuses on a specific management topic and involves specific goals and planned projects. The categories are listed below and correspond with Chapter 7 of the INRMP and with the tabs to the INRMP.

2.2.1.1 Fish and Wildlife Management

Guidelines are implemented on Vandenberg AFB that allow the completion of base missions while providing conservation, protection, and responsible management strategies for fish and wildlife resources on the base. Fish and wildlife management issues include resource demand, hunting and fishing, habitat improvement, public access, fee structures, wildlife pest problems, and human-wildlife interaction. Specific management objectives are included in the Fish and Wildlife Management Plan (Tab A), Outdoor Recreation Management Plan (Tab H), and Integrated Pest Management Plan (Tab G).

2.2.1.1.1 Hunting, Fishing, and Wildlife Viewing

Hunting and fishing are conducted through the Fish and Wildlife Cooperative Agreement, in coordination with the USFWS and CDFG. Hunting and fishing are important recreation activities for active duty, reservists, retired military, and DoD civilian personnel on Vandenberg AFB; Chumash Tribal Members; and US Penitentiary, Lompoc, employees. A small number of local civilians also fish on the base, using the civilian fishing pass system.

Wildlife sanctuaries and natural areas provide entertainment and education for bird and other wildlife watchers, as well as scenic locations for picnicking, hiking, and camping. There are wildlife-viewing opportunities in various locations and

habitats on Vandenberg AFB, including a wildlife viewing area at the Santa Ynez River Estuary, the Waterfowl Natural Resources Area in the Santa Ynez River floodplain, and some coastal beach and dune areas.

All access is regulated to accommodate recreation without exposing users to space and missile launch hazards, compromising the security requirements of military operations, or permitting the “take” of listed species. Hunting, fishing, and wildlife viewing areas on Vandenberg AFB are depicted in Appendix A of the INRMP, Figures 7-1A and 7-1B, and are detailed in the 30th Space Wing Instruction (30 SWI) 32-7001. Access and authorizations for fishing, hunting, and wildlife viewing are the responsibility of 30th Space Wing Conservation Law Enforcement Program (30 SFS/S3SW).

2.2.1.1.2 Wildlife Pest Program

Species identified as wildlife pests on Vandenberg AFB include feral pig, beaver, California ground squirrel, and bark beetle. Information regarding these species is provided in the Integrated Pest Management Plan (Tab G).

2.2.1.1.3 Human-Wildlife Interaction Concerns

Human-wildlife interaction concerns refer to situations where the presence or activities of wildlife could be hazardous to human activities and where human presence could have detrimental impacts on wildlife. Vandenberg AFB implements a range of practices to minimize human-wildlife interactions. Deer, nesting birds, bats, feral pigs, California ground squirrels, skunks, and raccoons are of particular concern for human-wildlife interactions on-base. Additional detail regarding the management of these species is provided in the INRMP

and the Integrated Pest Management Plan (Tab G).

State Wildlife Action Plan

In 2000, Congress enacted the State Wildlife Grants Program to support state programs that broadly benefit wildlife and habitats but particularly “species of greatest conservation need.” The CDFG directed the development of the State Wildlife Action Plan for California, titled California Wildlife: Conservation Challenges, which is directed at answering three primary questions:

- What are the species and habitats of greatest conservation need?
- What are the major stressors affecting California’s native wildlife and habitats?
- What are the actions needed to restore and conserve California’s wildlife, thereby reducing the likelihood that more species will approach the condition of threatened or endangered status?

Wildlife provides significant economic benefits to the state through recreation, tourism, and commercial harvest. Many of the places where wildlife thrives are often the same as those valued for recreation and other human activities. By learning what threatens the state’s wildlife and the steps that can be taken to reduce those threats, California’s residents have the opportunity to become more active stewards of this precious resource.

In the State Wildlife Action Plan, conservation actions were considered for each region of California, based on the stressors and circumstances in each. Statewide conservation actions are those that are important across most or all regions. Vandenberg AFB is committed through this INRMP, as well as the Sikes Act Memorandum of Understanding, to work

with the CDFG to consider and implement actions discussed in the State Wildlife Action Plan to the maximum extent feasible.

2.2.1.2 Management of Threatened and Endangered Species and Habitats

A major overarching goal for managing sensitive species on Vandenberg AFB is to preserve, protect, and enhance populations and their habitats. To achieve this goal, Vandenberg AFB applies the following measures in threatened and endangered species management:

- Avoid adverse direct and indirect impacts on and disturbances to species and their habitats. Where impacts are unavoidable, optimum minimization measures would be evaluated and implemented.
- Since all populations of rare species that could exist on Vandenberg AFB may not be known, base-wide surveys would be performed to document new populations.
- Because rare species populations are dynamic and their ecology is not always completely understood, existing known populations would be monitored as needed, based on species' requirements and recovery efforts.
- Proposed actions by Vandenberg AFB that may affect federally threatened or endangered species or their critical habitat are subject to formal consultation, in accordance with section 7 of the Endangered Species Act (ESA), unless it is determined through informal consultation that the proposed action is not likely to adversely affect any listed species or critical habitat or it is covered by a Programmatic Biological Opinion. Protective measures and monitoring of all threatened and endangered species

occurs during implementation of projects in their habitats.

The Threatened and Endangered Species Management Plan (Tab D) includes specific management actions at Vandenberg AFB to protect listed species. The Threatened and Endangered Species Management Plan also summarizes current biological opinions and their terms and conditions.

2.2.1.3 Water Resource Protection

Watershed protection and the preservation of water quality are important to the health and function of natural resources on Vandenberg AFB. The primary causes of degraded water quality generally include disease-causing agents found in untreated sewage, oxygen-demanding wastes, water-soluble inorganic chemicals, inorganic plant nutrients, organic chemicals, erosion sediments, and thermal pollution. Degraded water quality may cause ecosystems to become vulnerable to other adverse environmental factors.

Water quality impacts associated with activities on Vandenberg AFB include pollution related to domestic wastewater, industrial wastewater, stormwater, pesticides and fertilizer use, organic chemical use, and erosion. Vandenberg AFB uses many methods to control potential impacts on water resources, including regulating land use, air pollution, pesticide and fertilizer use, wastewater discharges, and stormwater discharges. Effective control of water quality on-base requires the integration of watershed planning and management. The Regional Water Quality Control Board (RWQCB) oversees Vandenberg AFB in programs addressing indirect and direct impacts on water quality. Vandenberg AFB's Wastewater Management Plan, Industrial Wastewater Management Plan, and Stormwater Pollution Prevention Plan provide direction

for controlling direct impacts on local water quality.

2.2.1.4 Wetlands Protection

Approximately five percent of Vandenberg AFB lands are wetlands (5,110 acres). Vandenberg AFB contains a variety of relatively undisturbed wetlands, ranging from estuaries and rivers to freshwater marshes and intermittent streams. Major wetland areas on-base are Barka Slough; the Santa Ynez River and the Santa Ynez River estuary; San Antonio, Canada Honda, Jalama, and Shuman Creeks; and Pine Canyon and Punchbowl Lakes.

Vernal pools are among the least understood habitats on Vandenberg AFB and require further study and mapping. Since many of the pools on-base occur near roadsides, they are subject to disturbances from roadside maintenance, and from grass cutting for fire prevention. Additional information regarding the management of wetlands is provided in the Wetlands and Riparian Habitats Management Plan (Tab B).

2.2.1.5 Grounds Maintenance

Grounds maintenance on Vandenberg AFB includes native landscaping strategies, pest/insect and disease control, tree windbreak monitoring, nonpoint source pollution control, urban forestry maintenance, and green waste management. Proper grounds maintenance is a critical issue for natural resources protection. Currently, there are four grounds maintenance plans for Vandenberg AFB: the Lands and Grounds Maintenance Management Plan (Tab J), the Forestry and Urban Forestry Management Plan (Tab F), the Base Facilities Excellence Plan, and the Base Landscaping Guidelines. Each plan contains recommendations for the type of landscaping that the base will have. The

Base Landscaping Guidelines promote the use of native plants.

2.2.1.6 Forest Management

On military lands, successful urban forest management must accommodate and support the military mission, while providing environmental benefits and improving the quality of life for base personnel and residents. Information regarding forest management on Vandenberg AFB is provided in the Forestry and Urban Forestry Management Plan (Tab F).

2.2.1.7 Wildland Fire Management

The Wildland Fire Management Plan (WFMP) (Tab M) describes the fire management activities at Vandenberg AFB. The WFMP meets the requirements of AFI 32-7064, Integrated Natural Resources Management, Chapter 12, Wildland Fire Management, and complies with the National Fire Protection Association Standards. Chapter 12 of AFI 32-7064 requires Air Force installations with unimproved lands that present a wildfire hazard and installations that use prescribed burns as a land management tool to develop and implement a WFMP. According to AFI 32-7064, WFMPs must be incorporated into or be consistent with an installation's INRMP. The WFMP is a fundamental strategic document that guides the full range of fire management-related activities.

2.2.1.8 Agricultural Outleasing

Proper management of the agricultural outleasing program for Vandenberg AFB is a major factor in maintaining the quality of natural resources on-base. Past agricultural practices have contributed to the destruction of sensitive habitats and disturbance of threatened, endangered, and candidate species. The Cropland Management Plan (Tab E1) discusses the main components of

the agricultural outleasing program on Vandenberg AFB. The Grazing Management Plan (Tab E2) describes the grazing management practices at Vandenberg AFB.

Management strategies have been focused on assessing the status of suitable and available areas for agricultural activities, properly interfacing with the Natural Resources Conservation Service and The Nature Conservancy, and implementing rotational grazing practices and grazing monitoring programs.

2.2.1.9 Integrated Pest Management Program

Invasive nonnative species are major threats to native flora and fauna. The most problematic and widespread species on Vandenberg AFB are iceplant, veldt grass, European beachgrass, and pampas grass. Other invasive species that are of concern include narrow-leaved iceplant and crystalline iceplant. The habitats most threatened by these species are coastal dune communities and chaparral. Riparian and wetland habitats also are vulnerable to invasion by German ivy, tamarisk, and giant reed. Information regarding these species and the efforts to control them on Vandenberg AFB is provided in the Integrated Pest Management Program and Invasive Plant Species Management Plan (Tabs G and K).

2.2.1.10 Bird-Aircraft Strike Hazard

Aircraft may strike birds flying over the airfield or in aircraft approach and departure routes. Such bird-aircraft strikes could cause significant damage and casualties because the high speed of the aircraft greatly increases the force of the impact. A large flock of seagulls that travels back and forth between its night roost along the coast and its feeding area at the base landfill flies over the airfield twice each day, posing a

serious hazard to aircraft arriving and departing Vandenberg AFB and transiting along the coast. Pilots are instructed to be alert to this hazard during the peak gull travel periods, usually one hour before and after sunrise and sunset. Lesser numbers of other bird species may also fly over the runway and approach zones daily or seasonally.

Other Wildlife-Aircraft Strike Hazard

The airfield at Vandenberg AFB is surrounded by excellent mule deer habitat. An electric deer exclusion fence was installed around the airfield to reduce deer strike incidents. Information regarding the management of bird/wildlife-aircraft strike hazard issues is provided in the Bird/Aircraft Strike Hazard (BASH) Plan (Tab L).

2.2.1.11 Outdoor Recreation

Vandenberg AFB contains a variety of outdoor recreation opportunities, including camping, picnicking, wildlife viewing, off-road vehicle use, hunting, and fishing. A sustainable outdoor recreation program includes the management, conservation, and use of natural and outdoor recreation resources that is practical and consistent with the military mission and provides the greatest possible public benefit.

Mission priorities, safety, and security limit public access to recreation on Vandenberg AFB. In addition, outdoor recreation makes use of available natural resources for recreation, while safeguarding public health, safety, and environmental qualities. Natural and recreation resources are managed to provide the greatest possible benefit, while protecting natural areas. Vandenberg AFB provides recreation opportunities for nearly 15,000 active duty, retired, and dependent personnel and for more than 3,000 civilian workers.

Open space recreation facilities on-base include a 237-acre, 18-hole golf course, the 216-acre Saddle Club, a 600-acre off-road vehicle area, and access to beaches (with seasonal restrictions to protect sensitive species). Also available are football/baseball/softball fields, tennis courts, running tracks, picnic areas, and bicycle paths. Additional information regarding the outdoor recreation facilities on Vandenberg AFB is provided in the Outdoor Recreation Management Plan (Tab H).

2.2.1.12 Coastal Zone Management

Vandenberg AFB has 33 miles of coastline, consisting of a variety of natural communities that include coastal dunes and coastal dune scrubland, coastal salt marshes, coastal bluffs, and rocky coastlines and beaches. Disturbances to some of these areas have been due to past cattle grazing, off-road vehicle (ORV) use, and past military-related development. Several of these natural communities contain endangered and other special-status plant species or are used as habitat or roosting sites for threatened, endangered, and other special-status animal species.

Management of these areas is important to maintain their health and that of the species in them. Coastal issues affecting Vandenberg AFB include requirements for coastal consistency determinations, protection of marine animals, special management areas for threatened and endangered species, public and military recreation access, the Vandenberg State Marine Reserve, and the Marine Ecological Reserve. The Coastal and Riparian Habitats Management Plan (Tab C) contains additional information regarding these resources.

Special Management Areas

There are numerous special management areas on Vandenberg AFB for coastal species that are discussed elsewhere in the INRMP. In addition, several natural areas are considered sensitive or unique because of their rarity or drastic rate of decline in acreage, either statewide or nationwide, and their importance to the native plant species they support. These areas require special management consideration to preserve their integrity and the diversity of natural systems on the base as a whole. The areas are seabird nest sites, the Vandenberg Marine Ecological Reserve, and the Vandenberg State Marine Reserve. Additional detail regarding the special management areas on Vandenberg AFB is provided in the INRMP and in Tab H.

2.2.1.13 Cultural Resources Protection

The 30th Space Wing Asset Management Flight (30 CES/CEA) Natural Resources (30 CES/CEANC) staff work closely with 30 CES/CEA Cultural Resources staff archaeologists to ensure that cultural resource concerns are addressed when implementing natural resource programs and activities. Natural resource issues of concern to cultural resource protection are incorporated into the Vandenberg AFB Integrated Cultural Resource Management Plan, which is in preparation. Examples of ongoing cultural/natural resource coordination issues are as follows:

- California least tern and Western snowy plover protection requires placement of signs and fencing.
- Early coordination between biologists and archaeologists ensures that cultural resources are not adversely affected. In some cases, fencing to protect listed species can also be designed and placed so as to enhance protection of archaeological sites. Native American

monitors are involved, where appropriate, to further ensure protection of sensitive cultural sites.

- Vandenberg AFB extended hunting and fishing privileges to Chumash Tribe members and coordinates on locations for gathering natural materials that are important to Chumash culture and traditions.
- Natural and cultural resources staff coordinate on the management of Swordfish Cave, an extremely important site to the Chumash and also a significant and sensitive pallid bat roosting area.
- Natural and cultural resources staff coordinate on restoration projects for historic buildings on Vandenberg AFB that may affect nesting birds and bats.

2.2.1.14 Enforcement

The Vandenberg AFB Fish and Wildlife Management Program was first established in 1957. The Rod and Gun Club, a private recreation organization on Vandenberg AFB, was the first to establish a natural resources enforcement program on the base in the 1960s to protect game stocks by ensuring adherence to CDFG laws and regulations. The program was established through a Fish and Wildlife Cooperative Agreement among Vandenberg AFB, the USFWS, and CDFG in 1963. The first natural resources enforcement program with professionally trained staff was organized under the 30th Space Wing Security Forces Squadron in 1997.

A comprehensive natural resources program at Vandenberg AFB began in 1985 with the establishment of the Directorate of Environmental Management. Areas of deficiency identified before 1985 included overgrazing, absence of fire in overmature stands of chaparral, inadequate game

harvests, invasion of exotic plant species, and lack of natural resources data on important species occurring on-base. These deficiencies were largely the result of loosely written land outleasing (in the case of overgrazing) and a lack of qualified personnel to monitor species on Vandenberg AFB. The result in some areas was degraded natural habitat, accelerated erosion, decreased forage production, and reduced wildlife populations.

The Environmental Conservation Office oversees the Fish and Wildlife Management Program (also known as the Natural Resources Program) on Vandenberg AFB. This office reports to the Environmental, Safety, and Occupational Health Council (ESOHC), which is chaired by the 30th Space Wing Installation Commander (30 SW/CC). The Fish and Wildlife Management Program includes habitat protection, threatened and endangered species protection, nonnative species control, and management of hunting and fishing. The 30 SFS/S3SW enforces this program following the policies, responsibilities, and procedures established in the 30 SWI 32-7001, Conservation, Management and Enforcement.

The Conservation Law Enforcement Program incorporates all provisions of 30 SWI 32-7001, which includes land use enforcement for natural areas (Class II) and special interest areas (Class III) on-base. Natural areas are undeveloped and are used for dispersed recreation, such as hunting, fishing, bird watching, hiking, and sightseeing. Special interest areas contain valuable ecological, archaeological, botanical, geological, historical, biological or other features requiring protection and are closed to hunting and fishing.

In addition to land use-related enforcement, the 30 SFS/S3SW is responsible for the following:

- Enforcing rules and regulations mandated by USFWS biological opinions for mission-related activities on-base;
- Enforcing cooperative agreements and memorandums of understanding for the protection of natural and cultural resources; and
- Ensuring compliance with all applicable state and federal laws and regulations.

Additional information about base enforcement can be found in the Conservation Law Enforcement Management Plan (Tab I).

2.2.1.15 Public Outreach

Vandenberg AFB's INRMP addresses different approaches to educating the public about the base's natural resources and how the resources are protected. Methods of public outreach include prepared talks, newspapers and related media, the Internet, special events, and a designated public wildlife viewing area.

2.2.2 Proposed Projects and Associated Actions

Each of the management categories described in Section 2.2.1 has proposed projects listed in the INRMP (Appendix C). The projects involve specific actions, some of which would have potential impacts on the environment. The action types are described below.

Action Type and Definition

- Ground and Vegetation Disturbance
Activities involving manual or mechanical disturbance of ground surface or subsurface and those that disturb surface vegetation. Examples include collecting soil samples and plant samples,

constructing outdoor signs, conducting pedestrian surveys, and removing invasive plant species. These activities would have potential impacts on natural and cultural resources.

- Off-Road Vehicle Use
Activities that require transportation in passenger vehicles or light duty trucks off established roads. These activities would have potential impacts on natural and cultural resources.
- Air Emissions
These activities would have potential impacts on the air.
- Chemical Use
These activities would have potential impacts on air, ground, or water sources.
- Prescribed Vegetation Burn
The INRMP proposes prescribed burns as one method for removing large populations of nonnative plant species (e.g., pampas grass) and habitat for some invasive animal species (e.g., ground squirrels). This activity would have potential impacts on natural and cultural resources and the air.
- Noise
These activities would have potential impacts on animal species.

Table 2-1 lists the projects proposed in the INRMP and the action types associated with the projects. The table does not include projects that would solely involve administrative activities since those projects would not have impacts on the environment. Table 2-1 is also a tool for determining the action types for all projects proposed in the

INRMP and the potential resulting environmental impacts.

Three of the projects proposed in the INRMP (project I.1.2.3, to repair and upgrade the Sudden Ranch Station Mounted Officer Command Center, project B.1.1.12, to remove the remnants of the 35th Street Bridge in the Santa Ynez River estuary, and project O.1.1.1 to maintain existing power lines, antennas, and towers) involve construction, demolition, and/or refurbishment of structures, which are activities that are not covered under this PEA. Therefore, these projects would require an independent review under NEPA.

2.2.3 Minimizing Environmental Impacts

Given the environmental impacts that could result from implementing the projects listed in Table 2-1, the INRMP includes measures that would minimize many of the impacts. These minimization measures are considered part of the Proposed Action. They are compiled from the INRMP and are presented in Table 2-2.

The minimization measures listed in Table 2-2 are standard measures that are implemented for all projects. This approach allows for all impacts to be minimized to the maximum possible extent as part of the proposed project.

2.3 The No-Action Alternative

The CEQ regulations require inclusion of a No-Action alternative in an EA. The No-Action alternative serves as a baseline against which the impacts of the Proposed Action and alternatives can be evaluated.

Under the No-Action alternative, the INRMP would not be finalized. As a result, Vandenberg AFB's natural resources and ecosystems would not be managed in a more cohesive, adaptive, or efficient

manner. Selection of the No-Action alternative would also place the Air Force out of compliance with DoD policies. Legal actions, corrective measures, and budgetary restrictions are a few of the many consequences that may occur without a finalized INRMP.

Table 2-1: INRMP Projects and Associated Actions

<p style="text-align: center;">PROPOSED PROJECTS LISTED IN VANDENBERG AFB'S INRMP (Project numbers correspond with the numbers listed in Appendix C of the INRMP)</p>	ACTION TYPES					
	Ground/Vegetation Disturbance	Off-road Vehicle Use	Air Emissions	Chemical Use	Prescribed Burn	Noise
A.1.1.2: Assist with identification of all power lines, transmitter towers, and associated electrical configurations for needed upgrades that ensure compliance with avian protection.		x				
A.2.1.7: Update Geographic Information System (GIS) vegetation maps for the base.		x				
A.3.1.2: Conduct jurisdictional wetland delineations.	x	x				
A.3.1.4: Monitor recovery of regionally uncommon wetland species previously found in Barka Slough.	x					
A.3.2.1: Produce and implement recommendations for ground squirrel management.		x	x	x		x
A.3.2.4: Increase invasive species controls and acreage for habitat improvement.	x	x	x	x	x	
A.3.2.5: Adapt grazing water structures for wildlife use and avoidance of wildlife entrapment.	x	x				
A.3.4.1: Continue surveys for native and nonnative species of tiger salamanders to determine occurrence on-base.	x	x				
A.3.4.2: Advise and assist with the eradication of the nonnative tiger salamander found in ponds at the Lompoc Federal Penitentiary.	x			x		
A.3.4.4: Remove exotic fish from the Santa Ynez River and other wetland and riparian habitats.	x	x		x		x
A.3.5.1: Monitor known bat populations.	x					
A.3.5.3: Construct bat habitat, particularly for displaced bats from demolished buildings.	x					x
A.3.6.1: Monitor population trends and habitat use of pinnipeds (seals and sea lions) by surveying quarterly with standard protocols.		x				x
A.3.6.2: Produce warning and educational signs to prevent harassment of harbor seals.	x					
A.3.7.3: Erect closure signs to protect peregrine falcon nesting at Point Arguello.	x					
A.3.7.4: Survey wintering populations of burrowing owls and potential summer occupancy and consider installation of artificial burrows.	x			x		x

<p style="text-align: center;">PROPOSED PROJECTS LISTED IN VANDENBERG AFB'S INRMP (Project numbers correspond with the numbers listed in Appendix C of the INRMP)</p>	ACTION TYPES					
	Ground/Vegetation Disturbance	Off-road Vehicle Use	Air Emissions	Chemical Use	Prescribed Burn	Noise
A.3.7.10: Conduct large mammal surveys on-base to estimate population sizes and habitat use of these species (e.g., mountain lion and bear).	x					
A.3.7.11: Survey for legless lizards.	x					
A.3.7.12: Survey for the coast horned lizard.	x					
A.3.7.13: Survey for southwestern pond turtles.	x					
A.3.7.14: Determine the taxonomical status, origin, and distribution of the salamander (<i>Batrachoceps</i> spp.) recently discovered on south Vandenberg AFB.	x	x				
B.1.1.1: Update the floodplain boundary determination.	x					
B.1.1.2, B.1.1.8, B.1.1.9 Conduct jurisdictional wetland delineations, update GIS.	x					
B.1.1.10: Monitor recovery of regionally uncommon wetland species previously found in Barka Slough.	x	x				
B.1.1.12: Cooperate with other organizations to assess the feasibility and potential effects of removing the remnants of the 35th Street Bridge in the Santa Ynez River estuary.	x	x	x	x		x
B.1.2.2: Control exotic plant species that threaten wetland resources.	x	x		x	x	x
B.1.2.3: Identify the effects of beaver activities in watersheds and develop a management plan to enhance watershed functions.	x					
B.1.4.2: Address long-term plans for the Wildlife Natural Resources Area.	x					
B.2.1.1: Address vegetation issues in Pine Canyon Lakes.	x	x	x	x	x	x
B.2.2.1: Enhance visitor access and educational facilities at Ocean Park.	x			x	x	
B.3.1.2: Encourage studies by university researchers and students on the health and monitoring of wetlands.	x					
C.1.1.5: Continue long-term seabird monitoring.		x				
D.1.2.2: Conduct monitoring, protection and restoration projects.	x	x		x	x	x
D.1.2.5: Conduct Western snowy plover predator management.	x					

<p style="text-align: center;">PROPOSED PROJECTS LISTED IN VANDENBERG AFB'S INRMP (Project numbers correspond with the numbers listed in Appendix C of the INRMP)</p>	ACTION TYPES					
	Ground/Vegetation Disturbance	Off-road Vehicle Use	Air Emissions	Chemical Use	Prescribed Burn	Noise
D.1.2.6: Implement Western snowy plover habitat restoration.	x		x	x	x	
D.2.1.4: Survey vernal pool fairy shrimp pools every five years.	x	x				
D.2.1.6: Monitor California least tern population.	x	x				
D.2.1.12: Inventory southern steelhead habitat to identify potential restoration opportunities.		x				
D.2.2.1, D.2.2.2, D.2.2.3, D.2.2.4: Conduct additional surveys for emergent threatened and endangered species in taxa identified within Appendix C.	x	x				
D.3.1.4: Conduct predatory bird management for protection of the California least tern breeding population.	x					
D.3.1.7: Continue a feral pig control program to reduce impacts of feral pigs on listed species and habitats.	x	x				x
D.3.1.9: Remove invasive species from threatened and endangered species habitats.	x	x	x	x	x	x
D.3.1.13: Produce signs and maintain standard and electronic fencing to avoid human and animal intrusion into the Purisima Point nesting area.	x	x				
D.3.1.15: In accordance with the Programmatic Biological Opinion (2011), areas that are significantly or permanently disturbed will receive protocol level surveys for vernal pool fairy shrimp within one year of the action.	x					
D.3.1.16: Survey for harvester ants that seemingly coexist with the ESBB.		x				
D.3.2.3: Map nest and roost sites for raptors and owl species and maintain cumulative records.		x				
D.3.2.4: Protect marine mammal haul-out sites by erecting signs at Spur Road haul-out area. See wildlife management section.	x	x				
E.1.1.2: Manage cropland acreage adjacent to riparian borders to maximize benefit for wildlife and water quality.	x	x		x		x
E.1.1.3: Evaluate sustainable agriculture (eco-farming) techniques and implement as practicable.	x					x
E.2.1.1: Manage erosion through application of best farming practices, including those applicable to sustainable agriculture techniques.	x	x		x	x	x
E.3.1.2: Establish grazing exclosures to monitor vegetation changes as a result of grazing management practices.	x	x				x

<p style="text-align: center;">PROPOSED PROJECTS LISTED IN VANDENBERG AFB'S INRMP (Project numbers correspond with the numbers listed in Appendix C of the INRMP)</p>	ACTION TYPES					
	Ground/Vegetation Disturbance	Off-road Vehicle Use	Air Emissions	Chemical Use	Prescribed Burn	Noise
E.3.3.1: Prioritize invasive plant infestations and apply appropriate management techniques in coordination with the Invasive Plant Species Management Plan.	x	x		x	x	x
E.3.3.2: Develop prescribed burn projects with wildland fire management to control invasive plants and manage native plant communities.	x	x	x		x	x
F.1.1.2: Develop, update, and maintain an inventory of forest tree cover and health and incorporate into base GIS.		x				
F.1.2.2: Develop and implement a forest integrated pest management program.	x	x		x	x	x
F.1.3.1: Plant native trees and plants.	x					
F.1.3.2: Monitor coast live oak woodlands for forest health and regeneration.	x					
F.2.1.1: Collaborate with academic professionals in regional institutions for the enhancement of the forests on Vandenberg AFB.	x			x	x	x
F.2.2.2: Ensure that diseased/infested wood and wood by-products are handled and disposed of in accordance with local, regional, state, and federal regulations.	x	x	x		x	x
F.2.3.2: Encourage the use of native plants in Vandenberg AFB landscaping.	x					
G.1.1.2: Continue trapping effort.	x					
G.2.1.1: In cooperation with Golf Course Environmental Management Plan (GCEMP), control feral pigs and other species.	x					x
G.2.2.1: Closely work with Civil Engineering (CE) pest shop on management of pigeons, household pests, and ground squirrels.	x			x		
H.1.1.3 and H.2.1.1: Investigate techniques to remove vegetation around the man-made lakes and ponds on Vandenberg AFB to facilitate angler access.	x			x	x	x
H.1.1.4: Identify interpretive signs to be produced to educate base personnel and the public on native ecosystems and wildlife and fisheries habitat.	x					
H.2.2.1 and H.2.2.2: Construct barriers around sensitive habitat areas in the designated off-road vehicle area.	x					
H.4.1.2: Provide educational signs and fences to prevent impacts on sensitive resources.	x					
I.1.2.3: Repair and upgrade Sudden Ranch Station Mounted Officer Command Center.	x					

<p style="text-align: center;">PROPOSED PROJECTS LISTED IN VANDENBERG AFB'S INRMP (Project numbers correspond with the numbers listed in Appendix C of the INRMP)</p>	ACTION TYPES					
	Ground/Vegetation Disturbance	Off-road Vehicle Use	Air Emissions	Chemical Use	Prescribed Burn	Noise
J.1.1.1: Develop, update, and maintain base-wide lands and grounds maintenance areas for improved, semi-improved, and unimproved landscapes with GIS support.	x	x		x		x
J. 1.1.5: Evaluate the status of known nonnative species on improved, semi-improved, and unimproved grounds.	x					
J.1.2.8: Develop habitat-specific revegetation programs for areas suitable for conversion to unimproved grounds.	x	x				
J.1.2.9: Evaluate the feasibility of establishing a Vandenberg AFB nursery and forming relationships with local growers and universities to increase the availability and reduce the cost of native species for landscaping and revegetation on Vandenberg AFB.	x	x		x		
J.1.2.10: Evaluate and minimize grounds maintenance activities on special-status species in the cantonment area.	x					
J.1.2.11: Assess alternative landscape practices for reducing the population of California ground squirrels in the cantonment area.	x	x		x		x
J.2.1.1: Identify sources of nonpoint source pollution associated with pesticides used for lands and grounds maintenance.				x		
K.1.1.2: Prioritize eradication efforts for invasive plant species in habitats supporting threatened or endangered species.	x	x		x	x	x
K.1.1.7: Increase eradication effort for pampas grass (<i>Cortaderia jubata</i>).	x			x	x	x
K.1.1.8: Remove invasive plants (other than pampas grass) based on priority level of threat.	x			x	x	x
K.1.1.9: Remove invasive plants based on early detection before invasive species become established or widespread.	x			x	x	x
K.1.1.10: Develop program with Lompoc Federal Penitentiary to assist with removing invasive species.	x			x	x	x
K.3.1.1: Expand current eradication methods to include the use of mechanical removal and increased herbicide application capabilities.	x	x	x	x	x	x
K.3.2.1: Conduct restoration in areas already treated with herbicide to allow for faster habitat recovery.	x	x		x	x	x
L.1.2.3: Work with BASH team and 30 SFS/S3SW on deer depredation, including design and possibly funding of fence around airfield.	x					x
M.1.1.3: Expand the Explosive Ordnance Disposal (EOD) range of cleared vegetation to accommodate fragmentation from larger explosives.	x					

<p style="text-align: center;">PROPOSED PROJECTS LISTED IN VANDENBERG AFB'S INRMP (Project numbers correspond with the numbers listed in Appendix C of the INRMP)</p>	ACTION TYPES					
	Ground/Vegetation Disturbance	Off-road Vehicle Use	Air Emissions	Chemical Use	Prescribed Burn	Noise
M.3.1.1: Reduce wildland fuel loads, minimize the risk of catastrophic wildfire and create zones of defensible space for firefighters using firebreaks for suppression.	x	x		x	x	
M.3.1.2: Use managed fire to enhance ecosystem condition and implement natural resource management goals.	x	x			x	
O.1.1.1: Maintain power lines, antennas, and towers to standards in accordance with the Avian Power Line Interaction Committee guidelines of 2006 at Geographically Separated Units (GSUs).	x	x				
O.3.2.1: Manage for ESBB at GSUs.	x					

Table 2-2: Minimization Measures

GENERAL MEASURES (GEN-1). A site-specific burn plan will be developed for each prescribed burn conducted on Vandenberg AFB. At a minimum, each burn plan will include the following:

- Burn objectives;
- Acceptable weather and fuel moisture parameters;
- Required personnel and equipment resources;
 - Burn area map, indicating the locations of smoke sensitive areas;
 - Smoke management plan;
- A hydrogeologic analysis, including recommendations to offset potential impacts on stormwater runoff and sediment loads to adjacent watersheds;
- Safety considerations, including evacuation routes, traffic control measures (e.g., flagmen and detours), and a contingency plan for controlling a fire outbreak; and
- Preburn authorization/notification checklist.

The burn plan, including the smoke management plan, will be reviewed and approved by the Santa Barbara County Air Pollution Control District (SBCAPCD), in accordance with SBCAPCD Rule 401 governing prescribed burns in Santa Barbara County. Vandenberg AFB will fully comply with SBCAPCD Rule 401 and will also obtain a burn permit from the SBCAPCD before a prescribed burn.

AIR QUALITY-1 (AIR-1). The following measures will be implemented to control fugitive dust emissions during ground-disturbing activities:

- Water trucks or sprinkler systems will be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this will include wetting down areas in the late morning and after work is completed for the day. Watering frequency will be increased when wind speeds exceed 15 miles per hour (mph). Whenever possible, reclaimed water will be used. The use of excessive amounts of water, which could cause runoff or erosion, will be avoided.
- The amount of disturbed area at any given time will be minimized.
- On-site vehicle speeds will be reduced to a maximum of 15 mph.
- Gravel pads or rumble plates will be installed at all access points to prevent tracking mud onto public roads.
- If fill material is to be imported, exported, or stockpiled for more than two days, it will be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill to and from the site will be covered with a tarp from the point of origin.
- After clearing, grading, earth moving, or excavation is completed, the disturbed area will be treated by watering, revegetating, or spreading soil binders until the area is replanted.
- Vandenberg AFB will designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transporting dust off-site.

AIR QUALITY-2 (AIR-2). The following measures will be implemented to reduce nitrogen oxides (NO_x) and fine particulate matter (PM_{2.5}) emissions from construction equipment:

- Before construction begins, portable equipment meeting the criteria defined in the Emergency Regulation Order, effective April 27, 2007 for the California Portable Equipment Registration Program will be registered in the program or have a valid SBCAPCD Permit to Operate.
- Whenever feasible, heavy-duty diesel-powered construction equipment manufactured after 1996 will be used.
- Construction equipment having the minimum practical engine size will be used.
- The number of pieces of construction equipment operating simultaneously will be minimized.
- Construction equipment will be maintained in accordance with manufacturer's specifications.
- Construction equipment equipped with two- to four-degree engine timing retard or precombustion chamber engines will be used.
- Catalytic converters on gasoline-powered equipment will be installed, if feasible.
- If available, diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters will be installed, as certified or verified by US Environmental Protection (EPA) Agency or California.
- Diesel-powered equipment will be replaced with electric equipment whenever feasible.
- Idling of heavy-duty diesel trucks during loading or unloading will be limited to five minutes, and auxiliary power units will be used whenever feasible.
- Worker trips will be minimized through carpooling.

BIOLOGICAL RESOURCES-1 (BIO-1A). The following measures will be implemented to minimize potential impacts on federally listed species protected under the jurisdiction of the USFWS:

- Through the internal project review process at Vandenberg AFB, 30 CES/CEA staff will identify projects that meet the scope and intensity of the anticipated work described in Vandenberg AFB's Programmatic Biological Opinion before any project activities begin, and will implement the minimization measures in the Programmatic Biological Opinion as applicable to each species.
- Only DoD-approved herbicides will be used. For herbicide management, all herbicides applied are to comply with the Armed Forces Pest Management Board (AFPMB) list of approved herbicides, and a list of those herbicides requested to be used must be submitted to the entomology shop 15 working days prior to application or at the beginning of the contract. Only certified personnel shall apply herbicides. Monthly reports must be submitted on herbicide usage. Compliance with the EPA injunction on pesticides for California red-legged frogs is also required on Vandenberg AFB.

BIOLOGICAL RESOURCES-1 (BIO-1B). The following measures will be implemented to minimize potential impacts on southern steelhead, a federally listed species protected under the jurisdiction of NOAA Fisheries:

- For projects in moving bodies of water (such as creeks, streams, rivers, and ditches), BMPs will be followed to reduce downstream transport and deposition of project-generated sediments and toxic compounds, such as cement.

- Cattle will be excluded from wetland and riparian habitats by installing and maintaining fencing.
- If herbicide spraying in wetland or riparian habitats is required, a glyphosate-based herbicide without toxic surfactants approved for use in aquatic environments will be used.
- Disturbance and removal of native vegetation and plant communities, particularly willow riparian woodland and freshwater marsh, will be minimized during project implementation.
- Ponding of water during and after project activities and removal of canopy vegetation will be avoided or minimized to prevent an increase in stream temperatures.
- Appropriate drainage techniques will be used to minimize the formation of erosion gullies by sheet flow or focused flow in stream channels.
- On completion of project activities, any temporary barriers to flow will be removed, allowing flow to resume with the least disturbance to the substrate.
- Fishing is prohibited in Jalama Creek and the Santa Ynez River and lagoon due to the presence of southern steelhead.

BIOLOGICAL RESOURCES-2 (BIO-2). The following measures will be implemented to minimize impacts on other non-federally listed special-status species:

- Project areas will be surveyed for special-status species if habitat that could support one or more species occurs in the region of influence (ROI) of the proposed project. Measures to minimize impacts will be incorporated into project design and planning where practicable, including avoidance of breeding periods and minimizing or avoiding permanent habitat loss.
- Measures to minimize entrapment hazards will be incorporated into projects involving trenching or other major excavation.
- Disturbance of grassland sites with known or potential occurrence of burrowing owls will be preceded by surveys to avoid death to owls from burrow destruction. If burrowing owls are found nesting on Vandenberg AFB, as they have in the past, disturbance will be avoided until young have fledged, and project operations will be modified to avoid death to owl adults and young and destruction of eggs and nests.
- The Air Force will apply all pesticides in accordance with the pesticide label and DoD recommendations. All applications in or next to aquatic resources will be appropriately labeled products only. All pesticides applied must be approved for use by the DoD.

BIOLOGICAL RESOURCES-3 (BIO-3). The following measures will be implemented to minimize potential impacts on migratory birds:

- Tree trimming and removal of shrubs and trees will be avoided to the extent possible during the nesting period of February 1 through August 15. If activities are necessary during this period, a nesting bird survey will be conducted in the impact areas to determine the presence of nesting native birds. If active nests are found, activities will not be conducted in that area until young have fledged.
- The Air Force will apply all pesticides in accordance with the pesticide label and DoD recommendations. All applications in or next to aquatic resources will be appropriately labeled products only. All pesticides applied must be approved for use by the DoD.

BIOLOGICAL RESOURCES-4 (BIO-4). The following measures will be implemented to minimize potential impacts on native plant communities:

- Native vegetation that is disturbed or removed will be revegetated with local natives from Vandenberg AFB's approved planting lists. Native species seeds or cuttings will be collected in the vicinity of the disturbed area and used for revegetation when feasible.
- Hydroseed mixes will be checked for the presence of potentially invasive species. To the maximum extent possible, hydroseed mixes composed of regional native species will be used.
- In cases where short-term access is necessary, rubber-tired vehicles will be used to leave native vegetation intact and to minimize soil disturbance.
- In areas that are not required to be maintained as cleared areas, stumps will be left in place to facilitate regeneration. If complete clearing is necessary, the width and extent of cleared areas will be kept to a minimum. The number and footprint of access routes to a given area will also be minimized.
- Where tall native vegetation may threaten power lines, an integrated vegetation management approach will be followed, where tall vegetation will be selectively removed and lower growing native species will be left in place. Openings created by selective removal will be revegetated with low-growing native species to prevent the establishment of tall vegetation that may again threaten lines.
- Vehicles and equipment will be inspected and cleaned before use at a new site. Clothing will likewise be cleaned and inspected between sites.
- Weed-free materials, such as gravel, mulch, fill, and hay, will be used for construction and erosion control.
- Following ground disturbance, follow-up monitoring will be conducted when funded and feasible to determine if invasive species are colonizing the disturbed area. If invasive weed species are detected, they will be removed.
- The Air Force will apply all pesticides in accordance with the pesticide label and DoD recommendations. All applications in or next to aquatic resources will be appropriately labeled products only. All pesticides applied must be approved for use by the DoD.

BIOLOGICAL RESOURCES-5 (BIO-5). The following measures will be implemented to minimize potential impacts on wetlands:

- Disturbances to wetland habitats will be avoided to the maximum extent possible. Base biologists will be consulted as part of the planning process for all projects that may potentially affect wetlands.
- All construction and grading that must occur in or near stream corridors or wetlands will be conducted so as to minimize impacts on these wetlands from increased runoff, sedimentation, and chemical degradation.
- Specific setback distances will be determined on a case-by-case basis and made after considering soil type, slope, and stability; surface water runoff and infiltration; location of floodplain boundaries; and potential upland use by special-status species.
- No dams or other structures will be placed in streams that would prevent migration of anadromous fish upstream, unless other measures are used to

bypass such obstacles.

- Diking, dredging, and filling in or next to wetlands will be minimized. Where such activity is unavoidable, it will be conducted in a manner that ensures the continued viability of the wetland habitat. Dredging will be prohibited in breeding and nursery areas for aquatic and wetland species during their breeding seasons. Designs for dredging and excavation projects will include protective measures to limit refuse, accidental spills, and silt materials in wetlands. Spoils will be stored only temporarily on dikes or designated spoil storage areas. Spoils will not be stored in areas subject to tidal influence.
- Contingency plans will be developed for protecting wetlands from disturbances, degradation, or loss due to accidents, such as oil spills or fires.
- Restoration and revegetation plans will be developed to mitigate both short-term project-specific impacts and long-term impacts on wetland habitats.
- The Air Force will apply all pesticides in accordance with the pesticide label and DoD recommendations. All applications in or next to aquatic resources will be appropriately labeled products only. All pesticides applied must be approved for use by the DoD.

CULTURAL RESOURCES-1 (CULT-1). In the event that cultural resources are encountered during project-related ground-disturbing activities, all excavation will be halted to avoid disturbing the site or any nearby area reasonably suspected to include cultural resources. The 30 CES/CEANC will be contacted so that the significance of the find can be assessed.

GEOLOGY and EARTH RESOURCES (GEO-1). The following measures will be implemented to minimize erosion and impacts on stormwater quality during ground-disturbing activities:

- Geotextile fabrics, erosion control blankets, drainage diversion structures, and siltation basins will be used to reduce erosion and siltation into storm drains .
- All entrances and exits to a construction site will be stabilized by, for example, using rumble plates, gravel beds, or other best available technology to reduce transport of sediment off-site. Any sediment or other materials tracked off-site will be removed within a reasonable time.
- Storm drain inlets will be protected from sediment-laden waters by the use of inlet protection devices, such as gravel bag barriers, filter fabric fences, block and gravel filters, and excavated inlet sediment traps.
- Construction staging and storage areas will be shown on project plans.
- Erosion and sediment control measures will be in place throughout grading and development of the site until all disturbed areas are permanently stabilized.
- Construction materials and waste, such as mortar, concrete slurry, and fuels, will be stored, handled, and disposed of in a manner that minimizes the potential for stormwater contamination. Bulk storage locations for construction materials and any measures proposed to contain the materials will be shown on project plans.

HAZARDOUS MATERIALS (HAZ-1). Coordination with 30 CES/CEA Restoration staff will be required for any work in the boundaries of areas of interest (AOIs), areas of concern (AOCs), or Installation Restoration Program (IRP) sites.

HUMAN HEALTH and SAFETY (SAFE-1). The following measures will be implemented to minimize the potential for adverse impacts on human health and safety:

- Specific safety measures will be established before implementation of any future projects in areas designated as having moderate or severe operational and safety constraints.
- Contractors and Vandenberg AFB personnel will comply with federal Occupational Safety and Health Administration (OSHA) requirements over the entire project.
- Contractors will supply a health and safety plan to Vandenberg AFB and will appoint a trained individual as safety officer.
- Contractors will coordinate with the EOD Flight before implementing a proposed project to ensure that no adverse effects on human health and safety would occur from unexploded ordnance issues.
- To minimize potential adverse impacts from biological hazards (such as from snakes and poison oak) and physical hazards (such as from rocky and slippery surfaces), awareness training will be incorporated into the worker health and safety protocol.

NOISE (NOISE-1). For projects involving heavy equipment within 1,600 feet of sensitive noise receptors (schools, residences, commercial lodging facilities, and hospitals or care facilities), the following measures will be implemented:

- Equipment will be muffled to the maximum extent and equipment, mufflers, and other machinery will be maintained according to manufacturer's specifications, and
- Construction will be limited to weekdays between 8 am and 5 pm, except for emergency actions.

SOLID WASTE (SW-1). Solid waste will be minimized by strict compliance with Vandenberg AFB's Integrated Solid Waste Management Plan. Implementing the following measures will further minimize the potential for adverse impacts associated with solid waste:

- Green waste will be taken to Vandenberg AFB's green waste recycling yard or will be mulched on-site.
- The party/unit responsible for diversion, recycling, or disposal must report all materials going off-base for these purposes to the 30 CES/CEA Solid Waste Manager. Additionally, any materials recycled on-base by processes other than the base landfill, must be reported to the 30 CES/CEA Solid Waste Manager at least quarterly, with copies of weight tickets and receipts provided.

TRANSPORTATION (TRANS-1). The following measures will be implemented to reduce the potential for adverse traffic impacts:

- Truck trips will be scheduled during peak traffic off-hours when possible;
- Roadway users will be provided with adequate notice when roadways will experience heavy construction use, so that users can plan for alternate routes when possible;
- Where roadways would experience heavy construction use or closures, contractors will supply a traffic control plan that will cover all conditions to be encountered during construction and that will be implemented to adequately facilitate the movement of traffic; and
- Project employees will be encouraged to carpool.

Chapter 3. Affected Environment

3.1 Introduction

This chapter provides information on the current conditions at Vandenberg AFB as it relates to each of the resource areas addressed in this PEA.

CHAPTER 3 EXPLAINS:

- **Current conditions at Vandenberg AFB for 17 issue areas.**

3.2 Air Quality

3.2.1 Regulatory Setting

3.2.1.1 Federal and State Clean Air Acts

The Clean Air Act (CAA) forms the basis for the national air pollution control effort. Under the CAA, attainment and maintenance of National Ambient Air Quality Standards (NAAQS) for major air pollutants, called criteria pollutants, is required. The current NAAQS for criteria pollutants are listed in Table 3-1.

The California Clean Air Act (CCAA) established California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress. The CCAA requires attainment of California Ambient Air Quality Standards (CAAQS) for criteria pollutants by the earliest practicable date. Generally, the CAAQS are more stringent than the NAAQS. The CAAQS are also summarized in Table 3-1.

Santa Barbara County is in attainment for all NAAQS but is in nonattainment with California's 8-hour standard for ozone (O₃) and California's standard for particulate

matter with a diameter of less than 10 micrometers (PM₁₀).

The US EPA is responsible for enforcing the CAA. The California Air Resources Board (CARB) is responsible for enforcing the CCAA and has also delegated responsibility to local air quality management districts, such as the SBCAPCD.

3.2.1.2 Federal Rules and Regulations

Criteria Pollutants

In areas in nonattainment of NAAQS or in maintenance areas (areas formerly in nonattainment but now in attainment), federal agencies are required to determine if their actions have the potential to cause an exceedance of a NAAQS. Two federal "conformity rules" dictate how a federal agency is required to conduct this evaluation. One conformity rule is applicable to transportation projects (the Transportation Conformity Rule) and the other, (the General Conformity Rule) is applicable to nontransportation projects, such as the Proposed Action. The General Conformity Rule regulations are contained in 40 Code of Federal Regulations (CFR), Part 51, Subpart W, and Part 93, Subpart B.

Specifically, a federal agency must demonstrate that emissions from federal actions are less than certain threshold levels for those criteria pollutants in which the area is in nonattainment or maintenance. If project emissions are expected to exceed threshold levels, then a more detailed quantitative conformity determination is required to demonstrate that the federal action would not cause an exceedance of a NAAQS.

Although Santa Barbara County is in attainment for all federal air quality standards, as a conservative approach,

Vandenberg AFB believes that the General Conformity Rule's threshold levels are still relevant as thresholds for determining if air

quality impacts would be significant (see Chapter 4 for a more detailed discussion of impacts).

**Table 3-1
NAAQS, CAAQS, and Santa Barbara County's Attainment Status**

Criteria Pollutant	Averaging Time	California Standards		Federal Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 hour	0.070 ppm	N	0.075 ppm	A
	1 hour	0.09 ppm (180 µg/m ³)	A	revoked	A
Carbon monoxide (CO)	8 hour	9.0 ppm (10 mg/m ³)	A	9.0 ppm (10 m/m ³)	A
	1 hour	20.0 ppm (23 mg/m ³)	A	35.0 ppm (40 µg/m ³)	A
Nitrogen dioxide	annual average	0.030 ppm (56 µg/m ³)	A	0.053 ppm (100 µg/m ³)	A
	1 hour	0.18 ppm (338 µg/m ³)	A	--	--
sulfur dioxide	annual average	--	--	80 µg/m ³ (0.03 ppm)	A
	24 hour	0.04 ppm (105 µg/m ³)	A	0.14 ppm (365 µg/m ³)	A
	1 hour	0.25 ppm (655 µg/m ³)	A	--	--
PM ₁₀	annual arithmetic mean	20 µg/m ³	N	revoked	A
	24 hour	50 µg/m ³	N	150 µg/m ³	A
PM _{2.5}	annual arithmetic mean	12 µg/m ³	U	15 µg/m ³	A
	24 hour	--	--	35 µg/m ³	A

Notes

µg/m³ = micrograms per cubic meter

mg/m³ = milligrams per cubic meter

ppm = parts per million

A = Attainment

N = Nonattainment

U = Unclassified

-- = no standard established

Greenhouse Gases

The US EPA has made regulations (40 CFR, Part 98) that require mandatory reporting of greenhouse gas (GHG) emissions (i.e., carbon dioxide [CO₂], methane [CH₄], nitrous oxide [N₂O], sulfur hexafluoride, hydrofluorocarbons, and other fluorinated gases) for certain industrial operations. Most of these industrial operations are large emitters of GHGs, such as electricity generation facilities, oil refineries, or manufacturing operations. However, mandatory reporting is also required for combustion sources, such as boilers and stationary engines, which emit more than 25,000 metric tons of CO₂-equivalents (CO₂e) per year.

3.2.1.3 State Rules and Regulations

Greenhouse Gases

On 27 September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32 (California Global Warming Solutions Act 2006), which requires CARB to develop and implement regulations to reduce GHG emissions. Regulations that CARB has developed or that are in development and that may be applicable to INRMP projects are as follows:

- Requirement for heavy-duty vehicle GHG emission reductions;
- Requirement for use of alternative suppressants in fire protection systems (pending); and
- Limitations on the use of high “global warming potential” chemicals in consumer products.

3.2.1.4 Local Rules and Regulations

Operations at Vandenberg AFB are subject to various rules and regulations of the

SBCAPCD. The rules that potentially relate to INRMP projects are listed in Table 3-2. .

Rule 345 would not allow construction activities that would cause visible dust emissions of 20 percent opacity or greater for a period or periods of more than three minutes in any 60-minute period. Rule 345 requires implementation of specific air pollution control measures during truck hauling and grading to minimize air emissions (e.g., watering the site during grading and properly covering truck beds when hauling soil or other material).

Rule 401 requires that a burn permit be obtained from the SBCAPCD for each planned prescribed burn and that the SBCAPCD give authorization for each planned burn day. As part of the burn permit application process, a smoke management plan must be submitted to SBCAPCD for review and approval. As detailed in Rule 401, the required contents of the smoke management plan vary, depending on the proposed size of the prescribed burn, but the plan must contain particulate matter emissions calculations for the prescribed burn. The provisions of Rule 401 also implement CARB’s smoke management guidelines for agricultural and prescribed burning, which contain the meteorological criteria for the South Central Coast Air Basin, which must be met in order to implement a prescribed burn. In addition, the SBCAPCD will only issue one burn permit on the same day in the same general region.

**Table 3-2
Applicable SBCAPCD Rules**

Rule	Title
201	Permits Required
202	Exemptions to Rule 201
302	Visible Emissions
303	Nuisance
311	Sulfur Content of Fuels
313	Fires Set Under Public Authority
333	Control of Emissions from Reciprocating Internal Combustion Engines
345	Control of Fugitive Dust from Construction and Demolition Activities
401	Agricultural and Prescribed Burning

3.2.2 Air Quality Setting

Santa Barbara County’s air quality is influenced by both local topography and meteorological conditions. Inversion conditions are common to the area and can affect the vertical mixing and dispersion of pollutants.

The SBCAPCD monitors air quality across Santa Barbara County and maintains a network of 17 air quality monitoring stations across the county. The closest monitoring station is the Vandenberg AFB-STS Power monitoring station.

3.3 Agricultural Resources

3.3.1 Regulatory Setting

The Farmland Protection Policy Act of 1994 directs the Department of Agriculture and other federal agencies to “take steps to assure that the actions of the federal government do not cause United States farmland to be irreversibly converted to nonagricultural uses in cases [in] which other national interests do not override the importance of the protection of farmland nor otherwise outweigh the benefits of

maintaining farmland resources” (US Air Force 2011).

The Public Rangelands Improvement Act of 1978 provides direction to federal agencies to inventory, manage, maintain, and improve rangeland conditions for all rangeland values, according to management objectives of the Federal Land Policy and Management Act of 1976.

Air Force lands may be outgranted in the form of lease, license, or permit for agricultural purposes, in accordance with AFI 32-9003, Granting Temporary Use of Air Force Real Property.

3.3.2 Agricultural Setting

Vandenberg AFB has established an Agricultural Outleasing Management Program, which is required in the INRMP, in accordance with the Sikes Act and AFI 32-7064.

Leased cropland areas on Vandenberg AFB encompass approximately 1,104 acres of the 99,579-acre base. Thirty-three agricultural fields comprise the cropland management areas on Vandenberg AFB. Portions of these cropland areas could also be grazed for forage stubble.

Cropland on Vandenberg AFB has been mapped as “prime farmland,” “farmland of statewide importance,” and “farmland of local importance,” according to the 2002 California Department of Conservation’s Important Farmlands Map. Descriptions of these categories are as follows:

- **Prime Farmland** has the best combination of physical and chemical features to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply to produce sustained high yields. Land must have been used for irrigated agricultural production at some time

during the four years before the mapping date.

- **Farmland of Statewide Importance** is similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years before the mapping date.
- **Farmland of Local Importance** is all dryland farming areas and permanent pasture. Dryland farming includes various cereal grains (e.g., wheat, barley, and oats), Sudan grass (used for hay and fodder), and many varieties of beans.

Because croplands can be considered prime farmland or farmland of statewide Importance only if they are irrigated and because agricultural land on Vandenberg AFB is not currently irrigated, only farmland of local importance exists on the base.

Leased grazing lands on Vandenberg AFB occupy approximately 23,502 acres, divided into six management units. The Bureau of Prisons, US Penitentiary at Lompoc is the only entity that has livestock grazing on Vandenberg AFB.

Rangeland on Vandenberg AFB has been mapped as “grazing land” or “other land,” according to the 2002 California Department of Conservation’s Important Farmlands Map. Descriptions of these categories are as follows:

- **Grazing Land** is that on which existing vegetation is suitable for grazing livestock. The minimum mapping unit is 40 acres.
- **Other Land** is that not included in any other mapping category. Common examples are low-density rural

developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing.

3.4 Biological Resources

3.4.1 Regulatory Setting

The federal ESA requires the USFWS and NOAA Fisheries to identify species of wildlife and plants that are endangered, threatened, or proposed endangered or threatened, based on the best scientific and commercial data available. In addition, species that are being considered for federal listing are known as candidates.

The California Endangered Species Act (CESA), codified in the California Fish and Game Code, also requires the CDFG to identify plant and wildlife species that are listed as rare (for plants only), threatened, or endangered or that are candidates for listing.

In addition, “fully protected” wildlife species are protected by the CDFG, in accordance with another section of the California Fish and Game Code.

Although not protected by law, sensitive plant species are also tracked by the CDFG and California Native Plant Society (CNPS), which maintains a list of these species in five main categories and three subcategories for their threat ranking: List 1A species are presumed extinct in California; List 1B species are rare or endangered in California and elsewhere; List 2 species are rare or endangered in California but are more common elsewhere; List 3 species include those for which more information is needed; and List 4 plants are those with limited distribution. For each list, there are also three possible threat codes: 1 for seriously endangered in California, 2 for fairly endangered in California, and 3 for not very endangered in California.

Although not protected by law, the status of other sensitive non-listed or candidate wildlife species are tracked by CDFG and are called California Species of Special Concern. CDFG also identifies and tracks sensitive plant communities in the state, such as wetlands.

Vandenberg AFB is subject to the requirements of the federal ESA. Section 7 of the ESA requires federal agencies to consult with the USFWS and NOAA Fisheries to ensure that actions authorized, funded, or carried out do not jeopardize the continued existence of federal endangered species and threatened species. Although not subject to the requirements of CESA, as a goal of its INRMP, Vandenberg AFB also protects and conserves species and plant communities considered sensitive by the state.

Vandenberg AFB is also subject to the requirements of the Marine Mammal Protection Act, which regulates the incidental take of marine mammals, and the Migratory Bird Treaty Act (MBTA), which protects native migratory birds, including their eggs, active nests, and young.

Bald eagles and golden eagles are protected under the Bald and Golden Eagle Protection Act. Other bird species are also considered Federal Birds of Conservation Concern by the USFWS.

Wetlands and waters of the US are protected under Sections 404 and 401 of the Clean Water Act (CWA) and Section 1600 of the California Fish and Game Code. For projects that would discharge dredged or fill material into wetlands or waters of the US under the jurisdiction of these laws, permits would be required from the US Army Corps of Engineers (USACE), RWQCB, and CDFG.

In addition, Executive Order 11990 directs all federal agencies to avoid, to the extent possible, the long- and short-term adverse

impacts associated with destroying or modifying wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Therefore, preparation of a Finding of No Practicable Alternative (FONPA) would be required for Air Force projects having the potential to impact wetlands, in accordance with this Executive Order.

Finally, Executive Order 13112 directs federal agencies to prevent the introduction of invasive species, to provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

3.4.2 Biological Setting

3.4.2.1 Vegetation Communities

Vandenberg AFB contains diverse biological resources of considerable significance. Its location in the transitional geographic zone between central and southern coastal California has resulted in the formation of numerous unique biological habitats. Within this region, populations of many plant and animal species overlap at their southern or northern distributional limits.

The preservation of biodiversity and conservation of biological resources at Vandenberg AFB are important issues in natural resources planning on base. The native habitats of Vandenberg AFB require long-term protection, both because of their unique nature and because they are a refuge for many threatened and endangered plant and animal species. The disturbance and subsequent loss of habitats affects population size and stability of sensitive species. Exotic plant and animal species often invade native habitats and replace native species or occupy space previously used by them. Large areas of the base have been impacted by nonnative plant species, such as iceplant, veldt grass,

European beach grass, and pampas grass; and by pest animal species, such as beaver, feral pig, bullfrogs, and species of nonnative fish. The control or eradication of invasive exotics and the protection of native habitats and sensitive species are major issues of management concern on Vandenberg AFB.

There are approximately 14 major vegetation communities at Vandenberg AFB: bishop pine forest, tanbark oak forest, oak woodland, riparian woodland, wetlands, central coast maritime chaparral, coastal scrub, coastal strand, freshwater marsh, grasslands, saltwater (including coastal salt marsh and estuarine) and freshwater habitats, coastal bluffs and rocky headlands, and ruderal areas. These habitats are described in more detail in the INRMP (US Air Force 2011).

A base-wide flora inventory was completed in 1996 and found diverse plant resources within Vandenberg AFB (Holland and Keil 1996). More than 850 plant species from more than 400 genera belonging to 96 plant families were found during the inventory. Researchers from San Diego State University carried out the most comprehensive study of fauna on-base in the mid-1970s (Coulombe and Cooper 1976; Coulombe and Mahrtdt 1976). Vertebrate animal species observed on Vandenberg AFB and in the nearshore marine environment include 53 species of mammals, 315 species of birds (115 of which have been known to breed on Vandenberg AFB), 17 species of reptiles, and 10 species of amphibians.

3.4.2.2 Special-Status Species

The following are considered special-status biological resources:

- Plant and wildlife species that are federally listed, proposed for listing, or candidates for listing;
- Plant and wildlife species that have been delisted;
- Plant and wildlife species that are state-listed or candidates for listing;
- California fully protected species;
- Wildlife species considered California Species of Special Concern by the CDFG;
- Plant species listed as sensitive by the CNPS;
- Marine mammals protected under the Marine Mammal Protection Act (MMPA); and
- Nesting birds protected by the MBTA;
- Golden eagles and bald eagles protected under the Bald and Golden Eagle Protection Act; and
- Birds considered Federal Birds of Conservation Concern.

Federally listed, proposed listed, or candidate plant and wildlife species that are known to occur at Vandenberg AFB are listed below. In addition, the INRMP discusses several other special-status plant and animal species that occur on Vandenberg AFB.

Federally Listed Plant Species

The following federally listed plant species occur on Vandenberg AFB:

- Beach layia (federally endangered, state endangered);
- Gambel's watercress (federally endangered, state threatened);
- Lompoc yerba santa (federally endangered, state rare); and

- Gaviota tarplant (federally endangered, state endangered).

In addition, the state-listed endangered seaside bird's-beak and state-threatened surf thistle and beach spectaclepod occur at Vandenberg AFB. La Graciosa thistle, a federally endangered species and state threatened species, occurred at Vandenberg AFB in the past. In addition, Least Bell's vireo, a state and federally endangered species, occurred at Vandenberg AFB in the past.

Details on the distribution and habitat requirements of each of these species are discussed in more detail in the INRMP.

Federally Listed Wildlife Species

The following federally listed wildlife species currently occur on Vandenberg AFB:

- Vernal pool fairy shrimp (federally threatened);
- El Segundo blue butterfly (federally endangered);
- Unarmored threespine stickleback (federally endangered, state endangered, California fully protected species);
- Tidewater goby (federally endangered);
- Southern steelhead (federally endangered);
- California red-legged frog (federally threatened);
- Western snowy plover (federally threatened);
- California least tern (federally endangered, state endangered; California fully protected species);
- Southwestern willow flycatcher (federally endangered, state endangered);
- Southern sea otter (federally threatened, California fully protected species); and
- Black abalone (federally endangered).

Details on the distribution and habitat requirements of each of these species are discussed in more detail in the INRMP.

3.4.2.3 Wetlands and Waters of the United States

Wetlands comprise approximately five percent of Vandenberg AFB (5,110 acres). Vandenberg AFB contains a variety of relatively undisturbed wetlands, ranging from estuaries and rivers to freshwater marshes and intermittent streams. Major wetland areas include Barka Slough; the Santa Ynez River and the Santa Ynez River estuary; San Antonio, Canada Honda, Jalama, and Shuman Creeks, and Pine Canyon and Punchbowl Lakes.

Vernal pools are among the least understood habitats on Vandenberg AFB, where they often occur near roadsides. Vernal pools and seasonal wetlands provide important habitat for birds and other vertebrate species, as well as many invertebrates (insects and crustaceans). Vernal pools have been estimated to cover between 10 and 114 acres on Vandenberg AFB, depending on the year of the survey.

All of the mainstem creeks and rivers on Vandenberg AFB are considered waters of the US, such as the Santa Ynez River and San Antonio Creek, as defined in Section 404 of the CWA.

3.5 Cultural Resources

3.5.1 Regulatory Setting

The following federal regulations, policies, and laws protect archaeological and other historic resources on federal land:

- Antiquities Act of 1906 (16 USC, 431-433);
- Historic Sites Act of 1935 (16 USC, 461-467);
- Sections 106 and 110 of the NHPA (Public Law [PL] 89-665 and 16 USC, 470-470W, 36 CFR, 800);
- Archaeological and Historic Preservation Act of 1974 (16 USC, 469);
- Archaeological Resources Protection Act (as amended, PL 96-95 and 16 USC, 470aa-470mm);
- Native American Graves Protection and Repatriation Act (PL 101-601 and 25 USC, 3001-3013);
- American Indian Religious Freedom Act (as amended, PL 95-341 and 42 USC, 1996-1996a);
- Executive Order 11593, Protection and Enhancement of the Cultural Environment (13 May 1971);
- Executive Order 13007, Indian Sacred Sites (24 May 1996);
- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (6 November 2000);
- Memorandum for Heads of Executive Departments and Agencies re: Government-to-Government Relations with Native American Tribal Governments (29 April 1994); and

- DoD's Annotated Policy on American Indians and Alaska Natives (27 October 1999).

Vandenberg AFB's Integrated Cultural Resources Management Plan (ICRMP) provides additional direction and policy specific to properties owned and managed by Vandenberg AFB.

Under Section 106 of the NHPA, Vandenberg AFB must consult with the State Historic Preservation Officer (SHPO) and other interested parties for projects that could affect a historic property (i.e., an archaeological or architectural resource or district that is eligible for or included on the National Register of Historic Places). Section 106 of the NHPA also requires that representatives of ethnic groups potentially affected by a project be contacted to solicit their concerns and viewpoints about potential impacts to resources significant to them.

3.5.2 Cultural Setting

3.5.2.1 Archaeological Resources

Most of Vandenberg AFB has been surveyed for archaeological resources. Those efforts reveal that it contains an exceptionally large number of archaeological resources, a testament to intensive human use of the region for more than 10,000 years. As of 1999, when the number of archaeological resources was last tallied for the ICRMP, the base had records for 1,368 archaeological sites and 879 isolated artifacts (Lebow and Moratto 2005). Most of the archaeological sites (1,320 sites) are prehistoric or have prehistoric components.

Isolated artifacts are archaeological resources that do not contain sufficient numbers of cultural remains to meet the California Office of Historic Preservation definition of a site. In some cases, these

isolated specimens might simply reflect aboriginal activities that left few physical reminders. In other instances, isolated artifacts might be surface expressions of more substantial archaeological deposits that are buried or obscured by ground cover. Due to their potential to represent more substantial archaeological deposits, isolated artifacts on Vandenberg AFB are considered potential sites, unless subsurface probing and intensive surface examination confirm that they are, in fact, isolated (Lebow and Moratto 2005).

3.5.2.2 Historic Architectural Resources

Palmer (1999, 2000) completed an inventory of historical buildings and structures on Vandenberg AFB. A range of architectural resources were identified, as follows:

- Spanish/Mexican-era adobe sites; the Marshallia Ranch and Sudden Ranch complexes;
- The Coast Guard Lifeboat Rescue Station;
- The remains of several wharves and associated communities;
- Bridges, stone walls; mining features,
- Masonry structures, such as culvert headers and other features constructed by German Prisoners of War during World War II; and
- Permanent or unusual World War II buildings or structures and Cold War sites (Palmer 1999).

Besides Palmer's study, the Tri-Services Cultural Resources Research Center at the US Army Construction Engineering Research Laboratory completed a three-phase inventory and evaluation of Cold War

facilities on Vandenberg AFB to help the installation comply with Section 106 of the NHPA (Nowlan et al. 1996; Nowlan and McCullough 1997; McCullough and Nowlan 1997). That effort found that some but not all space launch complexes, missile launch facilities, and supporting facilities are eligible for listing on the National Register of Historic Places (NRHP). The study resulted in a historic preservation plan for management and treatment of Cold War properties and a programmatic agreement between Vandenberg AFB and the California SHPO for managing exceptionally important Cold War historic properties on-base.

Space Launch Complex 10 on Vandenberg AFB is a National Historic Landmark. It was built in 1958 to test ballistic missiles and was designated as a landmark in 1986.

3.5.2.3 Paleontological Resources

Paleontological resources are organic remains or their traces (e.g., fossils), usually older than 11,000 years, that are naturally preserved and imbedded in rocks or rock-like material, such as amber (Gray 2005). Organisms that possess hard parts (e.g., bone or shell) are most typically preserved, but fossils can represent soft parts, hard parts, tracks, trails, molds, casts, and trace indications, such as burrows. Fossils occur primarily in sedimentary rocks, but some have been excavated from other rock types, especially volcanic rocks.

There is a temporal threshold for an entity to become a fossil. If the organic material is 5,000 years old, it is not considered a fossil by most paleontologists. If it is 10,000 years old, it may be deemed a fossil. If it dates to 100,000 years before present (BP), there is no question about its classification as a fossil if the organic material is found in rocks preserved by natural processes (Gray 2005).

Paleontological resources may be significant under the following criteria:

- Provide important information about evolutionary trends, the development of biological communities, or relationships between vegetation and fauna;
- Demonstrate unusual or spectacular circumstances in the history of life;
- Are in short supply and jeopardized;
- Are recognized as an aspect of our natural heritage; or
- Qualify as “objects of scientific interest” (Gray 2005).

Vertebrate fossils are almost always significant because they occur so rarely. Each additional vertebrate fossil provides considerable scientific information. Invertebrate fossils and plant fossils tend to be more abundant than vertebrate fossils. They generally are ranked lower in significance than vertebrates, unless they are in short supply, are age-diagnostic, or their paleo-environmental framework is unique.

Paleontological resources on Vandenberg AFB include remains of both invertebrate and vertebrate fossils and plant fossils. The occurrence and relative abundance of the fossils are closely associated with particular geological formations (rock units) and their associated depositional environments.

The paleontological sensitivity of the rock units on Vandenberg AFB is classified as high, moderate, low, or none, as described below (Gray 2005):

- **High sensitivity** rock units are Quaternary alluvium (Qal), Quaternary Older alluvium (Qoa), Quaternary continental terrace deposits (Qt₂), and

Quaternary stream deposits (Qt). These rock units contain terrestrial vertebrate fossils, such as the western horse, American mastodon, ground sloth, camel, and others. High-sensitivity areas not only have the potential to yield abundant vertebrate fossils but also may produce a few significant fossils, large or small, vertebrate or invertebrate, that could provide new and important taxonomic, phylogenetic, or stratigraphic data.

- **Moderate sensitivity** rock units are the Miocene Lower Monterey (Tml) and Monterey (Tm) Formations, along with the Miocene/Pliocene Sisquoc Formation (Tsq, Tsqd). In the Lompoc vicinity, these marine diatomite and limestone units contain whale, porpoise, seal, and fish fossils. However, very few marine vertebrate localities are known on Vandenberg AFB. Kelp algae and other paleobotanical fossils are known from a few localities on the base.

In the Bear Creek vicinity, the Quaternary Orcutt Formation, middle to late Pleistocene eolianite unit (Qo) is referred to colloquially as the “petrified forest.” This area also is classified as one of moderate sensitivity. The remainder of the Orcutt Formation in this area has not yielded fossils, with the exception of an occasional root stem.

- **Low sensitivity.** The Lower Miocene Vaqueros Formation (Tvq) is classified as low sensitivity. This formation is widespread throughout Santa Barbara and Ventura Counties, where it has yielded numerous invertebrates (mostly clams and snails) and a few vertebrates. No vertebrate fossil sites are known from this formation on Vandenberg AFB, where the outcrops are very narrow and restricted in distribution.

- **No sensitivity.** All other rock units on Vandenberg AFB contain little or no fossil material or contain fossils that are so common or widespread that a sensitivity designation is not warranted. Some rock units are igneous (resulting from volcanic magma) and thus have no potential to contain fossils. Others are known to contain marine fossils, but better and more abundant localities are present throughout Santa Barbara County.

3.6 Geology and Earth Resources

Vandenberg AFB is a geologically complex area in the transition zone between the Southern Coast Range and Western Transverse Range Geomorphic Provinces. Marine sedimentary rocks of the Late Mesozoic age (140 to 70 million years BP) and Cenozoic age (70 million years BP to the present) underlie Vandenberg AFB (Dibblee 1950).

The dominant soil types on Vandenberg AFB are as follows (Shipman 1981):

- The Tangair-Narlon association, characterized by sands and loamy sands;
- The Marina-Oceano association, made up of sands;
- The Chamise-Arnold-Crow Hill association, characterized by sand to clay loams;
- The Concepcion-Botella association, characterized by loamy sands, fine sandy loams, and silty clay loams;
- The Sorrento-Mocho Camarillo association, characterized by sandy loams to silty clay loams;

- The Shedd-Santa Lucia-Diablo association, characterized by shaley clay loams accompanied by silty clays; and
- The Los Osos-San Andreas-Tierra association, which ranges from fine sandy loams to sandy loams with clay loams.

Vandenberg AFB is in Seismic Hazard Zone 4, as defined by the Uniform Building Code, which is the most severe seismic region and is characterized by areas likely to experience earthquakes of a magnitude of 7 or higher on the Modified Mercalli Scale and to consequently sustain major damage from earthquakes.

Numerous onshore and offshore faults have been mapped in the vicinity of Vandenberg AFB; most are inactive and incapable of surface fault rupture or are unlikely to generate earthquakes. Four major faults have been mapped on Vandenberg AFB: the Lion's Head fault on north Vandenberg AFB and the Hosgri, Santa Ynez River, and Honda Faults on south Vandenberg AFB.

Other geologic hazards at Vandenberg AFB are the potential for surface erosion, landslides, seacliff retreat, streambank erosion, tsunamis, and liquefaction.

3.7 Hazardous Materials and Hazardous Waste Management

3.7.1 Regulatory Setting

Hazardous materials and hazardous wastes are those substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health and welfare or to the environment when released into the environment. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Toxic Substances Control Act (TSCA),

the Resource Conservation and Recovery Act (RCRA), and Title 22 of the California Code of Regulations (CCR) ensure that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste caused by federal facility activities.

3.7.2 Hazardous Materials at Vandenberg AFB

Hazardous materials potentially used during implementation of INRMP projects include pesticides (e.g., herbicides and rodenticides); diesel fuel for backup power generators and other equipment and vehicles; and oils and lubricants for equipment and vehicles.

Hazardous material use on Vandenberg AFB is regulated by a Hazardous Materials Management Plan (US Air Force 2006a), and emergency response procedures for hazardous materials spills are established in Vandenberg AFB's Hazardous Materials Emergency Response Plan (US Air Force 2005). In accordance with the Hazardous Materials Management Plan, Vandenberg AFB requires that all hazardous materials be obtained through the HAZMART, a base function that centrally manages the procurement of hazardous materials. Specifically, the HAZMART approves the use of hazardous materials only after it reviews the composition of the commodity and how it is to be used to ensure compliance with environmental, safety, and occupational health regulations and policies.

In addition, the use of pesticides on Vandenberg AFB is strictly controlled. Pesticide applicators must adhere to the rules and regulations contained in AFI 32-1053, Pest Management Program, and Vandenberg AFB's Integrated Pest Management Plan (which is a component of the INRMP). Specifically, pesticide applicators must hold the appropriate

California Department of Pesticide Regulation licenses, all pesticide users must follow label recommendations for application, storage, and mixing, and pesticides used on base must be on a DoD-approved list.

3.7.3 Installation Restoration Program at Vandenberg AFB

The federal IRP was implemented at DoD facilities to identify, characterize, and restore hazardous substance release sites. Remedial investigations and remediation at multiple IRP sites at Vandenberg AFB are underway. In addition to IRP sites, there are also identified AOCs, where potential hazardous material releases are suspected, and AOIs, defined as areas with the potential for use or presence of a hazardous waste. Various contaminants could be present in surface and subsurface soils, groundwater, or surface water at these IRP sites, AOCs, or AOIs, including trichloroethylene (TCE), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), total petroleum hydrocarbons (TPHs), and other hazardous contaminants.

3.7.4 Hazardous Waste at Vandenberg AFB

The handling, storage, transport, and disposal of hazardous waste at Vandenberg AFB is regulated by a Hazardous Waste Management Plan (US Air Force 2002).

3.8 Human Health and Safety

Hazards associated with some past and present mission activities and operations on Vandenberg AFB can constrain locations where projects can be sited in order to ensure the health and safety of workers.

The following hazard zones have been established on Vandenberg AFB to protect workers from various hazards:

- **Toxic hazard zones** are areas established downwind of launch site operations to protect workers from exposure to toxic vapors emitted during the transfer or loading of liquid propellants or maintenance of launch systems. These zones can extend 20,000 or more feet from a launch site.
- **Missile/Space Launch Vehicle Flight Hazard Zones and Explosive Safety Zones** are established under the flight path of missile or space launch vehicle launches to protect personnel from debris fall-out under the launch trajectory. Explosive safety zones are established from 75 to 5,000 feet around launch sites and buildings where rocket propellants are stored to protect personnel from potential explosive hazards. Both of these hazard zones must be evacuated before any launch.
- **Radiofrequency Radiation Hazard Areas** are established around transmitters on Vandenberg AFB that can present radiation hazards to people and potentially detonate electro-explosive devices. The size of the hazard areas vary, depending on the transmitter power and antenna reception.
- **Airfield Clear Zones, Lateral Clear Zones (LCZs), and Accident Potential Zones (APZs)** are established around the Vandenberg AFB airfield runway and contain restrictions on certain land uses. Clear zones and LCZs are areas where the accident potential is so high that land use restrictions prohibit reasonable use of the land. Clear zones occur at both ends of the runway, and LCZs extend 1,000 feet from both sides of the centerline along the length of the runway. The ground surface within the LCZ must be graded to certain requirements and kept clear of fixed or mobile objects, except for necessary navigational aids and meteorological equipment.
- There are two APZs, APZs I and II, which are less critical than clear zones but still possess significant potential for accidents. Acceptable uses within APZ I areas include industrial or manufacturing, communication and utilities transportation, wholesale trade, open space, recreation, and agriculture, but not uses that concentrate people in small areas. Acceptable uses within APZ II areas include low business services and commercial retail trade uses of low intensity or scale of operation, but not high density operations.
- **Air Installation Compatible Use Zones (AICUZs)** are areas where certain land uses are restricted due to the combination of the potential for accidents and noise and the need for clearance of obstacles.
- **Unexploded Ordnance Closure Areas** are areas on Vandenberg AFB that were used as ordnance training ranges and have the potential to contain unexploded ordnance (UXO). On 27 September 2010, all areas known or suspected to contain UXO on Vandenberg AFB were closed to non-mission/recreational activities. Any proposed work in these areas must be coordinated with the Weapons Safety and Explosive Ordnance Disposal offices. Depending on the area, escorts may or may not be required.

In addition to the above hazards, other physical hazards (e.g., confined spaces, uneven terrain, holes, and ditches) and biological hazards (e.g., rattlesnakes, ticks, black widow spiders, and poison oak) can occur at a project site.

All activities on Vandenberg AFB are subject to the requirements of OSHA, Air Force Occupational Safety and Health, and California's Division of Occupational Safety and Health (Cal/OSHA) regulations and procedures.

3.9 Land Use and Coastal Zone Resources

The 2010 General Plan for Vandenberg AFB is the primary comprehensive planning document for the installation and guides future growth and development of the installation. Under the 2010 General Plan, there are 12 land use designations for Vandenberg AFB:

- Administrative;
- Air Education and Training Command (AETC);
- Agriculture/Grazing;
- Airfield;
- Community (Commercial and Service);
- Housing;
- Industrial;
- Launch Operations;
- Medical;
- Open Space;
- Outdoor Recreation; and
- Water/Coastal.

In addition, portions of Vandenberg AFB lie within the coastal zone. The California Coastal Act defines the coastal zone as the water extending seaward to the outer limits of the state's jurisdiction; land extending inland approximately 1,000 yards from the

mean high tide line; or land in significant coastal estuarine, habitat, and recreational areas, extending inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less.

Projects that could affect areas within the coastal zone are subject to the Coastal Zone Management Act (CZMA), the federal law that protects the nation's coastlines. Section 106(d)(6) of the CZMA gave the California Coastal Commission (CCC) authority over activities within the coastal zone. The CCC subsequently developed the California Coastal Management Program, the key policy component of which is the California Coastal Act. The CCC ensures the public concerns of statewide importance are reflected in local decisions regarding coastal development.

Coastal Act policies are as follows:

- Providing for maximum public access to the coast;
- Protecting marine and land resources, including environmentally sensitive habitat areas, such as wetlands, riparian corridors and creeks, rare and endangered species habitat, and marine habitat, such as tidepools;
- Protecting the scenic beauty of the coastal landscape;
- Maintaining productive coastal agricultural lands; and
- Locating coastal energy and industrial facilities and other development where they will have the least adverse impact.

Coastal Consistency Determinations must be completed for all federal actions conducted within or potentially affecting coastal resources within the coastal zone, in accordance with the CZMA and following

the procedures outlined in NOAA's Federal Consistency Regulations (15 CFR, 930). A Negative Determination would be prepared if a proposed action would not affect coastal resources. As required by 15 CFR, Section 930.57(b), for projects requiring a Coastal Consistency Determination, Vandenberg AFB must prepare and submit a Coastal Consistency Determination to the CCC that contains findings that the proposed project is consistent with the enforceable policies of the California Coastal Act to the maximum extent practicable. The NEPA document for the project is incorporated by reference into the Coastal Consistency Determination and provides the basis for this finding.

California Coastal Act policies that are applicable to the Proposed Action are provided in Table 3-3.

3.10 Noise

Noise is often defined as unwanted sound that can interfere with normal activities or otherwise diminish the quality of the environment. Depending on the noise level, it has the potential to disrupt sleep, interfere with speech, or cause temporary or permanent changes in hearing sensitivity in humans and wildlife. Noise sources can be continuous (e.g., constant noise from traffic or air conditioning units) or transient (e.g., a jet overflight or an explosion). Noise sources also have a broad range of frequency content (pitch) and can be nondescript, such as noise from traffic, or be specific and readily definable, such as a whistle or a horn. The way the acoustic environment is perceived by a receptor (animal or person) depends on the hearing capabilities of the receptor at the frequency of the noise and their perception of the noise.

Human hearing varies in sensitivity to different sound frequencies. The amplitude of sound is described in a unit called the decibel (dB). Because the human ear

covers a broad range of sound frequencies, the dB scale simplifies this range of sound frequencies to a scale of zero to 140 dB and allows the measurement of sound to be more easily understood. The "A-weighted" decibel scale (dBA) is normally used to approximate human hearing response to sound. In general, a fluctuation in sound of 1 dBA is noticeable only under laboratory conditions and a change of 3 dBA is just noticeable in field conditions.

Average noise exposure over a 24-hour period is often presented as a community noise equivalent level (CNEL). CNEL values are calculated from hourly noise levels (or equivalent noise levels [Leq]), where hourly noise levels measured during the evening (7 PM to 10 PM) are increased by 5 dB and hourly noise levels measured during the nighttime (10 PM to 7 AM) are increased by 10 dB to reflect the greater disturbance potential from nighttime noises.

Existing noise levels on Vandenberg AFB are generally low due to the large areas of undeveloped landscape and relatively sparse noise sources. Background noise levels are primarily driven by wind or surf noise; however, louder noise levels can be found near industrial facilities and transportation routes. Rocket launches and aircraft overflights create louder intermittent noise levels. On Vandenberg AFB, general ambient hourly noise measurements have been found to range from around 35 to 60 dB (US Air Force 2008).

Noise sensitive land uses on and near Vandenberg AFB include residential areas, hospitals, schools, and libraries.

**Table 3-3
Applicable California Coastal Act
Policies**

➤ Section 30210 Access; recreational opportunities; posting
➤ Section 30220 Protection of certain water-oriented activities
➤ Section 30230 Marine resources; maintenance
➤ Section 30231 Biological productivity; water quality
➤ Section 30233 Diking, filling or dredging; continued movement of sediment and nutrients
➤ Section 30240 Environmentally sensitive habitat areas; adjacent developments
➤ Section 30241 Prime agricultural land; maintenance in agricultural production
➤ Section 30242 Lands suitable for agricultural use; conversion
➤ Section 30244 Archaeological or paleontological resources

3.11 Recreation

Vandenberg AFB provides recreation opportunities for about 15,000 active duty, retired, and dependent personnel and for 4,500 civilian workers (US Air Force 2011). Despite Vandenberg AFB's mission and resource conservation priorities, the base accommodates a variety of recreation activities, including camping, picnicking, hunting, fishing, horseback riding, birding, hiking, whale watching, and ORV use.

Two of the major recreation activities, hunting and fishing, are conducted through a Fish and Wildlife Cooperative Agreement and are regulated by the 30 SFS/S3SW, in coordination with the CDFG. Game species on Vandenberg AFB are mule deer (black-tail deer), feral pig, California quail, mourning dove, brush rabbit, and various waterfowl species. Seasons and bag limits are set by the California Fish and Game

Commission and are enforced by 30 SFS/S3SW.

Vandenberg AFB provides fishing opportunities along the Pacific coast. The establishment of a Marine Ecological Reserve in 1994 permanently prohibited all forms of fishing along the coast between Point Pedernales and the historic boathouse. The Vandenberg State Marine Reserve, designated in 2007, prohibits fishing from Purisima Point to Point Arguello, except for active duty military personnel. Freshwater fishing is permitted 24 hours a day at Punchbowl Lake, Mod III Lake, Pine Canyon Lakes, Rawlison Pond, and El Rancho Pond on north Vandenberg AFB. All anglers must possess a valid state fishing license and all applicable federal, state, and base fishing stamps while fishing on Vandenberg AFB.

The area from Spur Road north to approximately 0.5 mile north of Purisima Point is closed for the gathering of abalone.

Developed recreation areas are managed to accommodate intensive recreation. Class I areas are somewhat developed or disturbed, comprising parking areas, large areas of cleared vegetation, buildings, or sanitation facilities requiring regular maintenance. Activities occurring within Class I areas are camping, picnicking, beach sports, and ORV riding. Managed facilities include base picnic grounds and campgrounds, the Marshallia Ranch Golf Course, the Saddle Club, the Rod and Gun Club, the ORV Area, and the Boathouse picnic and fishing areas.

Class II recreation areas on Vandenberg AFB are undeveloped areas suitable for such activities as hunting, fishing, bird watching, hiking, and sightseeing. Primary emphasis is on maintaining these areas in a natural state.

Class III Special Interest Areas are undeveloped areas that contain valuable

archaeological, botanical, ecological, geological, historic, zoological, scenic, or other features that require protection. The protection of resources through interpretive displays and education programs is emphasized in Class III areas.

On south base, access to the coastline is very restricted due to security, safety, and sensitive wildlife resources. The beach from the mouth of Jalama Creek north for approximately 1.5 miles is open to the public.

West Ocean Avenue leads to 38-acre Ocean Beach County Park, near the mouth of the Santa Ynez River, and to Surf Station, an unstaffed Amtrak passenger rail station next to the beach (known locally as Surf Beach). Vandenberg AFB allows beach access, consistent with necessary protection measures for the federally threatened Western snowy plover. Since 2000, public access is permitted during the nesting season (March 1 to September 30) along approximately half a mile near Surf Station. Military recreational access is available to portions of Wall and Minuteman beaches during the nesting season.

Through an agreement with the County of Santa Barbara, public access to Point Sal State Park is permitted by foot traffic only through the extreme northern portion of Vandenberg AFB on Brown Road.

Surfing, swimming, and general water sports activities are permitted at public access beaches only, due to safety hazards associated with the powerful undertow and riptides along the remainder of Vandenberg AFB's coastline. Scuba activity is restricted to members of the Vandenberg AFB dive club, and surfing is limited to members of the Vandenberg AFB surfing club.

3.12 Socioeconomics and Environmental Justice

As described in the CEQ regulations implementing NEPA, potential economic impacts must be addressed only to the extent that they are interrelated with the natural or physical effects. Socioeconomic factors considered for the proposed project include population, employment statistics, and availability of housing in the region.

Environmental justice is defined by the US EPA as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Executive Order 12898, General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. The Air Force regulations for implementing the EIAP require that a project proponent comply with Executive Order 12898 to ensure that these types of impacts be considered in EAs and other NEPA documents.

According to the US Census Bureau, Lompoc had an estimated population of 39,465 in 2008, a decrease of four percent since 2000 (US Census Bureau 2010a, 2010b). In 2008, Lompoc had an estimated 14,004 housing units, with an average of 2.78 persons per household (US Census Bureau 2010a). The current unemployment rate in Lompoc is 15.5 percent (California Employment Development Department 2010).

The US Census Bureau reports numbers of minority residents. Minority populations are identified as Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian/Other Pacific Islander, Hispanic, or Other. Of the total estimated population in 2008, 43 percent were minority (US Census Bureau 2010a). In addition, 17.5 percent of the population of

Lompoc was estimated to be living below the poverty level (US Census Bureau 2010a).

3.13 Solid Waste

In 1989, the California Integrated Waste Management Act was enacted as AB 939. It mandated a reduction in the quantity of solid waste disposed of in landfills, including a goal of 50 percent reduction of generated solid waste from a 1990 baseline, by January 1, 2000. The most recent Air Force mandate regarding solid waste diversion came from Headquarters Air Force Space Command (HQ AFSC) in 2008, requiring a 50 percent diversion rate for all solid waste generated at AFSC installations (US Air Force 2009b).

In addition, on March 1, 2004, the California Integrated Waste Management Board promulgated a model ordinance for local agencies to follow for implementing a 50 to 75 percent diversion of construction and demolition waste from landfills, in accordance with California Senate Bill 1374. Currently, the local enforcement agency, the Santa Barbara County Environmental Health Services Division, has not promulgated its final model ordinance. However, a locally adopted diversion ordinance would affect requirements and operations at the base landfill because the Federal Facilities Compliance Act waived sovereign immunity with respect to California solid waste programs.

Since 1998, waste diversion at Vandenberg AFB has been greater than 70 percent (US Air Force 2009). According to Vandenberg AFB's Integrated Solid Waste Management Plan (US Air Force 2009b), the 172-acre Class III Landfill at Vandenberg AFB has approximately 2,179,447 cubic yards of remaining capacity and is expected to remain viable for waste disposal until 2089. Although permitted for a peak daily tonnage of 400 tons, the average tonnage received

is approximately 35 tons per operating day (US Air Force 2008).

The base landfill has several designated disposal areas: the active face of the landfill, a nonfriable asbestos disposal area, an animal cemetery, and a wood yard. The landfill is prohibited from accepting designated or liquid wastes, including grease, sewage, sludge, septic tank pumping, burning waste, hot ashes, restaurant grease, car bodies, appliances, untreated medical waste, cathode ray tubes, consumer electronic devices, and radioactive waste. The landfill does not accept hazardous waste. Finally, noxious plant material, such as pampas grass, ice plant, or star thistle, must be segregated, bagged in trash bags, and immediately disposed of on the active face of the base landfill (US Air Force 2009b).

Due to the detailed tracking requirements for waste disposal and diversion levied by the State of California, Vandenberg AFB is required to track all materials going off-base for diversion, recycling, or disposal. Vandenberg AFB must report the weight (in tons), the type of material, and the destination. Additionally, any materials recycled on-base by processes other than the base landfill must be reported to the 30 CES/CEA Solid Waste Manager at least quarterly, with copies of weight tickets and receipts provided. The party/unit responsible for the diversion, disposal, or recycling, reports the information to the Solid Waste Manager.

3.14 Transportation

Vandenberg AFB is approximately five miles west of Lompoc. Two main highways connect Vandenberg AFB and metropolitan areas in the region: US Highway 1 and State Route 246. North-south US Highway 1 traverses Vandenberg AFB and provides access to Santa Maria to the northeast and Santa Barbara to the southeast when used

in conjunction with US Highway 101. East-west State Route 246 provides access to Lompoc to the east and Santa Barbara to the southeast when used in conjunction with US Highway 101.

Vehicles enter Vandenberg AFB from several gates. North base and its cantonment area are primarily accessed from the Main Gate (also known as the Santa Maria Gate), Solvang Gate, and Lompoc Gate,. The Main Gate is accessed via US Highway 1, which provides access to the northern side of the main cantonment area. The Utah Gate is immediately northwest of the Santa Maria Gate.

The Solvang Gate is accessed via State Route 246, which is known as Ocean Avenue in Lompoc. South Gate (also known as Buellton Gate), the primary access for south base, is directly across from the Solvang Gate. Farther west, at the terminus of State Route 246, is the Coast Gate, which is closed to the public but is occasionally opened for south base operational activities.

On Vandenberg AFB, roads are categorized as highways and primary, local (secondary roads), or patrol roadways (US Air Force 2010a). Primary roadways serve large volumes of traffic, are divided, and provide limited access to adjacent land uses. They are the main circulation routes into and through the cantonment areas and connect to local streets. Local streets provide for traffic movement between primary roads and access roads and provide access to community facilities, parking lots, and housing and service areas. They make up most of the road network in the cantonment area and have frequent traffic stops and low speeds. Remote patrol roads are paved or unpaved and are used for security and for monitoring infrastructure.

Roadway conditions are evaluated based on roadway capacity and traffic volume. The capacity, which reflects the ability of the

network to serve the traffic demand of a roadway, depends on the roadway width, number of lanes, intersection control, and other physical factors. A road's ability to accommodate different volumes of traffic is generally expressed in terms of Level of Service (LOS). The LOS scale ranges from A to F, where LOS A, B, and C are considered good operating conditions, with minor to tolerable delays experienced by motorists. LOS D represents below-average conditions. LOS E reflects a roadway at maximum capacity, and LOS F represents traffic congestion.

All primary roads on Vandenberg AFB operate between LOS A and C. Local (secondary) roads operate between LOS A and B. Informal traffic studies indicate gates operate between LOS A to C (US Air Force 2010a). According to a 2000 traffic study performed at 22 key intersections at Vandenberg AFB, most of the intersections were estimated to operate at LOS C or better in 2010.

3.15 Utilities

3.15.1 Potable Water

The potable water supply for Vandenberg AFB was historically obtained solely from groundwater sources. Since 1997, most of Vandenberg AFB's potable water is purchased from the State Water Project, which does not draw from local aquifers. Vandenberg AFB can purchase up to 1.46 billion gallons of water per year from the State Water Project.

According to the 2010 General Plan for Vandenberg AFB, the maximum daily demand for potable water is 5,600 gallons per minute, which cannot be met by the 5,500 gallons per minute that the State Water Project can provide (US Air Force 2010a). However, during times of peak demand, four groundwater wells in the San Antonio Creek aquifer (see Section 3.17

below for more details on this aquifer), are used for supplemental water. These wells have a remaining capacity of 3,800 gallons per minute (US Air Force 2010a).

3.15.2 Wastewater

Domestic wastewater from the main cantonment area at Vandenberg AFB is conveyed and treated at Lompoc's Regional Wastewater Treatment Plant (WWTP) (US Air Force 2010a). Domestic wastewater from facilities outside the main cantonment area on both north and south base are treated by on-site wastewater treatment systems; in most cases, septic tanks are used. The average sewage flow at Vandenberg AFB is approximately 1.3 million gallons per day (US Air Force 2010a).

Lompoc's WWTP and the on-site wastewater treatment systems have adequate capacity to meet current needs, but a large number of the septic systems on-base have reached their life expectancy and have either been replaced or are in need of replacing (US Air Force 2010a).

3.15.3 Electricity and Natural Gas

Vandenberg AFB is served by a 70-kilovolt (kV) power supply from Pacific Gas and Electric through 391 miles of electrical lines (US Air Force 2010a). Natural gas is supplied by the Southern California Gas Company.

3.15.4 Communications

The communications system at Vandenberg AFB consists of telephone, radio, and microwave systems transmitted with copper wire, optical fiber, and coaxial type cables, as well as microwave, satellite, and other antennas.

3.16 Visual Resources

Visual resources are natural and man-made features that give a particular environment its aesthetic qualities. An impact analysis on visual resources considers visual sensitivity, which is the degree of public interest in a visual resource and concern over adverse changes in the quality of the resource.

The visual environment in the vicinity of Vandenberg AFB is characterized by rolling hills covered with chaparral and oak trees, valleys used for grazing or more intensive agriculture, and urbanized areas of the Lompoc Valley. Topography is largely dominated by the east-west-trending Santa Ynez Mountains, which narrow toward the coast and terminate at Point Arguello. Views of the coastline are generally not available from inland locations due to access limitations and intervening topography, and most of Vandenberg AFB is not visible from public vantage points (there are only limited public views of the base from Ocean Avenue and Highway 1). The marine traffic off the western border of Vandenberg AFB consists primarily of fishing vessels and occasional pleasure boats. Visibility from the ocean is limited. Passenger railroad traffic provides the closest views of Vandenberg AFB.

3.17 Water Resources

3.17.1 Regulatory Setting

The CWA defines the standards for water quality and mandates that water discharged to surface water or to the ocean is regulated under the NPDES, including point source discharges and stormwater discharges. The Central Coast RWQCB is responsible for enforcing the CWA at Vandenberg AFB and issues two types of National Pollutant Discharge Elimination System (NPDES) permits to protect stormwater quality: a NPDES General Stormwater Permit for Construction Activities and a NPDES General Stormwater Permit for Small

Municipal Separate Stormwater Sewer Systems (MS4s).

Vandenberg AFB is considered an MS4. Under this permit, MS4s are required to prepare stormwater management plans that contain BMPs. BMPs can include conducting public education and public participation in protecting stormwater quality, detecting and eliminating illicit discharge, controlling stormwater runoff at construction sites, managing post-construction stormwater, and providing good housekeeping for municipal operations. A Stormwater Management Plan has been developed for Vandenberg AFB (US Air Force 2010b).

A General Permit for Construction Activities is required for all construction projects equal to or greater than one acre in size and requires the development of a Stormwater Pollution Prevention Plan (SWPPP), which describes BMPs to prevent pollutant and sediment discharges from the construction site.

In addition, Executive Order 11988 directs all federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Therefore, preparation of a FONPA would be required for Air Force projects having the potential to impact floodplains, in accordance with this Executive Order.

3.17.2 Surface Water and Floodplains

The major freshwater resources of the Vandenberg AFB region include six streams, composed of two major and four minor drainages. The major drainages are San Antonio Creek and the Santa Ynez River; the minor drainages are Shuman, Bear, Cañada Honda, and Jalama Creeks.

High discharge and flooding may occur in the Santa Ynez River and San Antonio Creeks from November through April, and there may be very little or no discharge during the drier months. The presence of high levels of total dissolved solids, sulfates, chlorides, and iron causes poor water quality in San Antonio Creek and the Santa Ynez River (US Air Force 2010a).

Vandenberg AFB's stormwater system diverts stormwater to low-lying areas as surface flow via streets, concrete-lined gutters, earthen ditches, and natural drainage systems. The stormwater drainage system is composed of predominantly concrete-lined channels and subsurface piping, which generally divert the water to several natural drainages that discharge into the Santa Ynez River, San Antonio Creek, or the minor drainages listed above.

3.17.3 Groundwater

Vandenberg AFB includes parts of two major groundwater basins and at least two subbasins. Most of the northern third of the base is within the San Antonio Creek Basin, while most of the southern two-thirds of the base are within the Santa Ynez River Basin and associated Lompoc Terrace and Cañada Honda subbasins. The San Antonio Creek Basin and drainage basin is approximately 25 miles long, extending from four miles east of Los Alamos, west to the Pacific Ocean, and is a maximum of one mile wide. The water-bearing units in the San Antonio Creek Basin are composed of unconsolidated sediments up to 4,000 feet thick and that overlie consolidated Tertiary rocks.

The Santa Ynez River Basin is approximately 70 miles long and a maximum of 15 miles wide. It extends west from about half a mile east of the Santa Barbara County line to the coast. The Santa Ynez Mountains and Lompoc Terrace

bound the basin to the south, and the San Rafael Mountains, the lower Purisima Hills, and Burton Mesa bound it to the north. The Lompoc Plain represents the westernmost reach of the Santa Ynez River Basin. The most productive water-bearing zones of the entire Santa Ynez River Basin underlie this alluvial plain. Groundwater in the Lompoc Plain area is divided into a shallow unconfined body and a deep confined body. These two groundwater bodies are generally not hydrologically connected but do appear to be connected in a few restricted areas.

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Chapter 4. Environmental Consequences

4.1 Introduction

This section presents the results of the analysis of potential environmental effects associated with the Proposed Action and No-Action alternative. Changes to the natural and human environments that may result from the Proposed Action and No-Action alternative were evaluated relative to the existing environmental conditions described in Chapter 3.

CHAPTER 4 EXPLAINS:

- **Potential impacts on 17 issue areas.**

4.2 Air Quality

Significance Thresholds

Criteria Pollutants

Impacts would be considered significant if project emissions were to increase ambient pollutant concentrations from below the NAAQS or CAAQS to above these standards, or if they were to contribute measurably to an existing or projected ambient air quality standard violation.

Although Santa Barbara County is in attainment of all federal air quality standards, Vandenberg AFB believes that the General Conformity Rules' threshold levels are also still relevant as thresholds for determining if air quality impacts would be significant. The rationale used by the US EPA to develop thresholds for nonattainment areas is no less applicable for areas in attainment. Although Vandenberg AFB is no longer required to observe the significance levels required in conformity determinations, voluntary use of

them provides a conservative approach to determining air quality impacts.

Maintenance areas have threshold levels of 100 tons per year for NO_x and 50 tons per year for VOCs. Using a 365-day year, these threshold levels equate to 548 pounds per day of NO_x and 274 pounds per day of VOCs. These are the levels Vandenberg AFB will use for determining whether air quality impacts are significant.

Greenhouse Gases

There are no formal federal thresholds of significance for GHG emissions. However, on 18 February 2010, the CEQ released draft guidance for consideration of the effects of GHG emissions in NEPA documents (CEQ 2010). Within this guidance document, CEQ recommends that, for annual construction and operation emissions of 25,000 metric tons or more of CO₂e of GHGs, "federal agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." CEQ also recommends that, for long-term actions that have annual direct emissions of less than 25,000 metric tons of CO₂e, they "encourage federal agencies to consider whether the action's long-term emissions should receive similar analysis." These are not thresholds of significance, but rather, thresholds indicating that further analysis may be warranted in a NEPA document.

Impact Analysis

The Proposed Action

Criteria Pollutants

Under the Proposed Action, implementation of a number of INRMP projects has the potential to emit air pollutants. Specifically,

those projects with the potential to involve ground disturbance or that involve implementation of prescribed burns could emit air pollutants.

Projects involving ground disturbance could result in minor or major ground disturbance. Minor ground disturbances include digging soil pits (e.g., for wetlands delineations and installation of signs), installation of new water structures for cattle, use of ORVs to access areas on Vandenberg AFB for biological investigations, or minor vegetation clearing using hand tools, such as chain saws. Although some of these minor ground-disturbing activities do generate air pollutants (e.g., diesel exhaust from chain saws), emissions from these minor activities would be negligible and would not exceed NAAQS, CAAQS, or General Conformity thresholds for NO_x or VOCs. Therefore, air quality impacts from these activities would be less than significant.

Projects involving major ground disturbance (e.g., grading of new fire breaks) would involve the use of heavy equipment (e.g., dump trucks, loaders, and scrapers) and therefore would result in air pollutant emissions during operation of this equipment that could have significant air quality impacts. Specifically, use of heavy equipment has the potential to generate precursors to ozone (NO_x and VOCs) as well as fugitive dust. Of the list of projects proposed in the INRMP, potential installation of new fire breaks as a result of recommendations in the WFMP in Tab M (e.g., project M.3.1.1 in Table 2-1), has the potential to disturb the largest amount of acreage.

Implementation of minimization measure AIR-1 listed in Table 2-2, however, would ensure that fugitive dust is controlled through daily watering of graded areas during vehicle movement, reduction of equipment speeds in graded areas, and implementation of other dust control

measures. Therefore, with implementation of this measure during all major ground-disturbing activities, fugitive dust emissions would be less than significant.

In terms of NO_x and VOC emissions, air emissions have been calculated for construction of other capital improvement projects on Vandenberg AFB, which provide an estimate of worst-case emissions that might be expected from major ground-disturbing activities proposed in the INRMP. For example, in the PEA for implementation of the 2007 General Plan for Vandenberg AFB (US Air Force 2008), combined worst-case construction emissions were calculated for the two largest projects projected to be completed under the 2007 General Plan (e.g., a new 30th Space Wing Headquarters and a new Mission Support Group Headquarters. involving a total of 21.4 acres of disturbance and construction of approximately 11,000 square feet of new facilities). The combined daily emissions from these two projects were calculated to be 156.05 pounds per day of NO_x and 14.52 pounds per day of VOCs, which are both well below General Conformity thresholds. In addition, NO_x and VOC emissions were recently calculated for the construction of an approximately 229,000-square-foot Joint Space Operations Center at Vandenberg AFB, involving over nine acres of disturbance (Tetra Tech 2010). For this project, emissions were calculated to be 4.54 tons per year of NO_x and 3.53 tons per year of VOCs, which are also well below General Conformity thresholds. Because INRMP projects involving major ground disturbance are not anticipated to disturb any more acreage than the above example projects, NO_x and VOC emissions from INRMP projects are not anticipated to exceed General Conformity thresholds either. Therefore, impacts would be less than significant. In addition, implementation of minimization measure AIR-2 (Table 2-2) would further ensure that pollutant

emissions from heavy equipment would be minimized.

Smoke from prescribed burns could result in potentially significant air quality impacts from emissions of fine particulate matter (PM₁₀ or PM_{2.5}). This can cause serious health effects, especially for sensitive receptors, such as asthmatics and people with cardiopulmonary diseases or preexisting respiratory diseases, such as pneumonia. This smoke also can reduce visibility to drivers and potentially result in an exceedance of NAAQS or CAAQS (National Wildfire Coordinating Group 2001). Eighty to ninety percent of wildfire smoke is PM_{2.5}, making public exposure to smoke a significant concern. In addition, wildfire smoke can contain other toxic air pollutants of concern, including polycyclic aromatic hydrocarbons (PAHs) and CO.

As described in Chapter 3 and required in minimization measure GEN-1 (Table 2-2), preparation of a burn plan for each prescribed burn and SBCAPCD approval of that plan would be required. As part of the burn permit application, a smoke management plan must be prepared, and particulate matter emissions from the prescribed burn must be calculated. According to SBCAPCD's Rule 401, for projects greater than 100 acres and estimated to produce 10 tons of particulate matter, alternatives to burning must be considered. Therefore, for these projects, additional impact analysis would be required. In addition, according to Rule 401, smoke management plans must include appropriate monitoring (e.g., visual and ambient particulate matter monitoring) for projects greater than 250 acres, projects that would continue burning or producing smoke overnight, projects conducted near smoke sensitive areas, or projects where the SBCAPCD's Control Officer determines that monitoring is necessary for public health and safety. For prescribed burns that fall under these conditions, additional

impact analysis would be required. For prescribed burns less than 100 acres and producing less than 10 tons of particulate matter that would not involve producing smoke overnight and that would not affect smoke sensitive areas, obtaining approval of a smoke management plan from the SBCAPCD and complying with all requirements and conditions of the burn plan (implementation of minimization measure GEN-1) would ensure that significant air quality impacts associated with prescribed burns would be reduced to less than significant levels.

Finally, implementation of INRMP projects would not involve the installation of any new permanent stationary sources of air pollutants (e.g., new stationary emergency generators and new boilers) and would not involve the long-term generation of any air pollutant emissions. Therefore, there would be no long-term air quality impacts under Alternative A.

Greenhouse Gases

The use of heavy equipment during major ground-disturbing activities would also generate greenhouse gas emissions (e.g., CO₂). CO₂e emissions were also calculated for the construction and operation of the Joint Space Operations Center at Vandenberg AFB (Tetra Tech 2010) and were estimated to be 2,325.1 tons per year of CO₂e, which is well below the 25,000 metric tons of CO₂e that would warrant further analysis, according to the CEQ. Therefore, because implementation of the INRMP projects is expected to involve less ground disturbance than construction of the Joint Space Operations Center, and because implementation of INRMP projects would not generate any long-term air emissions, impacts from greenhouse gas emissions would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no air quality impacts under the No-Action alternative.

4.3 Agricultural Resources

Significance Thresholds

Impacts on agricultural resources would be considered significant if the project were to result in any of the following:

- Convert prime farmland, unique farmland, or farmland of statewide importance to nonagricultural use;
- Convert a site zoned for agricultural use;
- Conflict with agricultural operations on adjacent properties in agricultural use; or
- Involve other changes that could result in the conversion of farmland to nonagricultural use.

Impact Analysis

The Proposed Action

Two projects proposed in the INRMP (projects B.1.3.1 and E.1.1.2 in Table 2-1) involve the potential loss of cropland and rangeland in order to protect riparian or wetland habitat at Vandenberg AFB. However, according to the Cropland and Grazing Management Plans (Tabs E1 and E2), it is already Vandenberg AFB's practice to protect these areas from disturbance following the Natural Resource Conservation Service's (NRCS) standard conservation management practices. Therefore, the amount of acreage of cropland and rangeland that would be set aside for the further protection of sensitive habitat is likely to be minimal, compared

with the overall cropland and rangeland at Vandenberg AFB. In addition, this conservation management practice ultimately would help preserve cropland and rangeland because it would help to minimize bank erosion near creeks, which could result in the loss of much more cropland and rangeland. Therefore, impacts on agricultural resources from implementation of these INRMP projects would be less than significant.

Implementation of prescribed burns could result in the short-term reduction in the use of agricultural land on Vandenberg AFB, if prescribed burns are conducted in these areas. However, prescribed burns are expected to benefit the productivity of agricultural lands in the long term. In addition, it is not anticipated that large acreages of agricultural land on Vandenberg AFB would be burned at any one time; therefore, impacts on agricultural resources from prescribed burns would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no agricultural impacts under the No-Action alternative.

4.4 Biological Resources

Significance Thresholds

Impacts on biological resources would be considered significant if special-status species or their habitats, as designated by federal, state, or local agencies, were affected directly or indirectly by project-related activities. In addition, impacts on biological resources would be considered significant if a substantial loss, reduction, degradation, disturbance, or fragmentation occurred to a native species' habitat or to its

population. Finally, impacts would be considered significant if project-related activities would temporarily or permanently disturb wetlands or waters of the US.

Impact Analysis

The Proposed Action

Although all of the projects proposed in the INRMP are designed to ultimately benefit biological resources, implementation of many of them also could result in unintended impacts on “nontarget” biological resources. Specifically, those projects with the potential to involve ground disturbance, that involve the use of pesticides, or that involve implementation of prescribed burns all could significantly impact sensitive biological resources, such as native vegetation communities, special-status species, and wetlands or waters of the US.

Ground-disturbing activities, including minor ground-disturbing activities, use of pesticides, and implementation of prescribed burns associated with proposed INRMP projects, could unintentionally injure or kill special-status species. Minimization measures BIO-1a, BIO-1b, BIO-2, and BIO-3 would ensure that the presence or absence of special-status species in a project area would be determined before the project began and that standard precautions would be taken to ensure that the potential for impacts on special-status species is minimized (e.g., season restrictions for implementation of projects, avoidance of breeding habitat, standard operating procedures for equipment maintenance, and erosion control). In addition, each project listed in Table 2-1 would be subject to the Air Force’s EIAP, whereby either an Air Force Form 813 or Work Request (Air Force Form 332/103) must be filled out and reviewed by 30 CES/CEANC. During this process, 30 CES/CEANC would determine if a project has the potential to directly

impact a special-status species and would coordinate with the project proponent to avoid or minimize impacts. If, through implementation of measures BIO-1a through BIO-3 and the Air Force’s EIAP, it is determined that a project is unlikely to injure or kill a special-status species, then impacts would be reduced to less than significant levels. For individual projects where injury or death of special-status species could still occur, additional environmental impact analysis would be required. For individual projects that would have potential adverse effects on one or more federally listed species, section 7 consultation with the USFWS or NOAA Fisheries would be necessary.

Ground-disturbing activities, including minor ground-disturbing activities, use of pesticides, and implementation of prescribed burns associated with proposed INRMP projects also could significantly impact (e.g., remove or degrade) native vegetation communities. This includes sensitive vegetation communities, such as wetlands or waters of the US and habitat for special-status species. Minimization measures BIO-4 and BIO-5 would ensure that potential impacts on native vegetation communities are minimized or avoided to the maximum extent and that they were properly restored when feasible. Again, each project listed in Table 2-1 would be subject to the Air Force’s EIAP, whereby 30 CES/CEANC would determine if a project has the potential to directly impact a native vegetation community and would coordinate with the project proponent to avoid or minimize impacts.

If, through implementation of measures BIO-4 and BIO-5 and the Air Force’s EIAP, it is determined that a project continues to could temporarily or permanently impact a wetland or waters of the US (or floodplain; see Section 4.17, Water Resources), an alternatives analysis must be performed and a FONPA must be prepared for the project,

as required by Executive Orders 11990 and 11988 and the Air Force's EIAP. In addition, permits may be needed from the USACE, the RWQCB, and the CDFG. Therefore, for these projects, additional impact analysis would be required. In addition, for projects where there would still be permanent residual impacts on native vegetation communities (e.g., where restoration is not feasible or desired), additional impact analysis would be required. For all other projects, implementation of measures BIO-4 and BIO-5 and completion of the Air Force's EIAP would ensure that impacts on native vegetation communities are reduced to less than significant levels.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Under the No-Action alternative, basic protection measures and recovery efforts for federally listed species would not be implemented. Basic protection measures and enhancement measures for native vegetation communities would not be implemented either. Nonnative invasive species would be expected to proliferate. In addition, Vandenberg AFB would be more vulnerable to large-scale destruction of native vegetation communities and wildlife as a result of wildland fires. As a result, the No-Action alternative would result in significant unmitigable impacts on biological resources. In addition, Vandenberg AFB would be out of compliance with the Sikes Act and DoD and Air Force policies and regulations.

4.5 Cultural Resources

Significance Thresholds

Cultural resources would be adversely affected if the proposed project were to cause the permanent loss of a significant

cultural resource or the value or characteristics that qualify a historic resource for listing on the NRHP or if the proposed project were to substantially alter the natural environment or access to it in such a way that traditional cultural or religious activities were restricted. Criteria used to evaluate the significance of cultural resources and to assess potential adverse project effects are set forth in the NHPA.

Impact Analysis

The Proposed Action

Archaeological Resources

INRMP projects that disturb the ground, whether the disturbance is minor or major, could adversely affect significant cultural resources. Thus, those projects with minor or major ground or vegetation disturbance would require further project-specific consideration of cultural resources.

Prescribed burns can adversely affect significant cultural resources by damaging artifacts and ecofacts on the ground surface and through ground disturbance associated with fire preparation or suppression. Prescribed burns can also affect plants and animals in traditional gathering areas; consequently, prescribed burns would require further consideration of cultural resources.

Herbicide and pesticide applications have little potential to adversely affect archaeological resources if the application does not involve ground disturbance, such as off-road driving. However, widespread herbicide and pesticide application could affect cultural and religious activities if applied to traditional hunting or gathering areas. Any widespread application of herbicides or pesticides would require consideration of adverse effects on culturally significant hunting or gathering areas. Because it is targeted, spot

application of herbicides and pesticides to control invasive plants and animals would not affect culturally significant hunting or gathering areas. Consequently, herbicides and pesticides applied directly and specifically to individual invasive plants and animals would not require further consideration.

Vandenberg AFB is required to consult with Native Americans and other interested parties under Section 106 of the NHPA. That consultation includes solicitation of input on Air Force actions with the potential to affect archaeological resources and traditional/religious activity areas. Thus, any major or minor ground-disturbing projects, prescribed burns, and widespread application of herbicides or pesticides would require consultation with Native Americans and other interested parties.

Historic Architectural Resources

Because construction, demolition, or refurbishment of structures is not included in this PEA, there would be no potential impacts on historic architectural resources.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, cultural resources would not be affected by the No-Action alternative.

Paleontological Resources

Major ground-disturbing activities and implementation of prescribed burns associated with proposed INRMP projects could significantly impact significant paleontological resources in areas of high paleontological sensitivity (as discussed in Chapter 3).

Each project listed in Table 2-1 would be subject to the Air Force's EIAP, whereby 30

CES/CEANC would determine if a project is in an area of high sensitivity and would require conditions of approval that must be met to avoid or minimize impacts, such as paleontological monitoring. In addition, implementation of minimization measure CULT-1 would ensure that ground-disturbing activities are halted and resources are further evaluated in the event that any unanticipated paleontological resources were discovered during project activities. However, for those projects with the continued potential to permanently disturb a significant paleontological resource, further environmental impact analysis would be required.

Projects in areas of low or no paleontological sensitivity are unlikely to impact significant paleontological resources; therefore, project impacts on paleontological resources in these areas would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no impacts on paleontological resources.

4.6 Geology and Earth Resources

Significance Thresholds

Impacts would be considered potentially significant if the project were to result in substantially increased erosion, landslides, soil creep, mudslides, and unstable slopes. Impacts would also be considered significant if they were to increase the likelihood of or resulted in exposure to earthquake damage, slope failure, foundation instability, land subsidence, or other severe geologic hazards. Geologic impacts may also be considered significant if they were to result in the loss of the use of

soil for agriculture or habitat, the loss of aesthetic value from a unique landform, or the loss of mineral resources.

Impact Analysis

The Proposed Action

Major ground-disturbing activities from implementing INRMP projects (e.g., installation of new fire breaks) and prescribed burns could result in significant short-term and long-term erosion. For projects greater than one acre, the Air Force must prepare a SWPPP and file a Notice of Intent to obtain a NPDES General Stormwater Permit for Construction Activities from the RWQCB. In addition, implementation of standard erosion control measures would be implemented under minimization measure GEO-1 during ground-disturbing activities. Additional erosion control BMPs may also be required through the Air Force's EIAP. With implementation of these measures, short-term erosion impacts would be reduced to less than significant levels.

Under Vandenberg AFB's Stormwater Management Plan, the Air Force is required to implement appropriate post-construction BMPs to prevent erosion from its project areas as well. Appropriate post-construction BMPs would be determined through the Air Force's EIAP. In addition, minimization measure GEN-1 would ensure that a hydrogeologic assessment is performed in the burn plan for each prescribed burn to determine what BMPs would be necessary to offset potential impacts on stormwater runoff and sediment loads to nearby watersheds. Therefore, with implementation of these measures, long-term erosion impacts would be reduced to less than significant levels.

Major ground-disturbing activities and prescribed burns also could exacerbate geohazardous conditions such as

landslides, bluff erosion, or streambank erosion, which would be considered a potentially significant impact. Through the Air Force's EIAP, it is determined if proposed projects are located in geohazardous areas (e.g., active landslides, on coastal bluffs, on stream banks, or in stream channels), and additional special studies may be required. If INRMP projects are proposed in these areas, additional environmental analysis would be required.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no impacts on geology and earth resources.

4.7 Hazardous Materials and Hazardous Waste Management

Significance Thresholds

An impact involving hazardous materials and hazardous waste would be considered significant if their transport, use, or disposal were to pose a serious hazard to the public or the environment. Issues include the potential for accidents to release hazardous materials, emissions of hazardous materials especially within one-quarter mile of a school, and violation of any associated federal, California, or Santa Barbara County regulation or applicable permit condition.

Impact Analysis

The Proposed Action

Operation and maintenance of heavy equipment during major ground-disturbing activities could accidentally release hazardous materials used in these vehicles, such as oil, fuel, and lubricants. However, project staging and storage areas are reviewed and approved by 30 CES/CEA during the Air Force's EIAP and are

required to be located in areas where minimal environmental impacts would occur in the event of a spill. In addition, Vandenberg AFB's Hazardous Materials Emergency Response Plan ensures that proper procedures are implemented for conducting emergency response to accidents involving hazardous materials. Therefore, with implementation of these measures, impacts would be less than significant.

Pesticides are also considered hazardous materials, but the Air Force has strict requirements that pesticides be used according to label instructions and that all pesticides used at Vandenberg AFB must be DoD-approved. Therefore, impacts associated with pesticide use are less than significant.

Implementation of ground-disturbing activities, including minor ground-disturbing activities, and prescribed burns could encounter contaminated soils, surface water, or groundwater at Vandenberg AFB's IRP sites, AOCs, or AOIs, which would be considered a potentially significant impact. Implementation of minimization measure HAZ-1 would ensure that the Environmental Restoration Division of 30 CES/CEA is coordinated with for all INRMP projects proposed within these areas. The Air Force's EIAP would ensure that this measure is implemented as well. For projects that can avoid direct impacts on contaminated media (e.g., soil, surface water, or groundwater) in these areas, impacts would be reduced to less than significant levels. However, where projects could not avoid potential impacts on contaminated media in these areas, additional impact analysis would be required.

Finally, implementation of INRMP projects is not anticipated to generate any hazardous waste.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no impacts on hazardous materials and hazardous waste management.

4.8 Human Health and Safety

Significance Thresholds

An impact would be considered significant if it were to create a potential public health hazard or to involve the improper use, production, or disposal of materials that pose a hazard to people in the affected area. An impact would also be considered significant if project activities were to pose a serious risk of fire, especially wildland fires, or were to involve potential obstruction of emergency response or evacuation routes in and around the project area.

Impact Analysis

The Proposed Action

During implementation of INRMP projects, workers may be exposed to the various chemical, physical, and biological hazards at Vandenberg AFB (as described in Chapter 3), including hazards within the various hazard zones discussed in Chapter 3, such as UXO closure areas. All workers on Vandenberg AFB, including contractors, are required to follow all OSHA, Cal/OSHA, and Air Force Occupational Safety and Health regulations, which would ensure that precautions are taken to avoid various chemical, physical, and biological hazards on-base to the extent possible. In addition, the Air Force's EIAP would ensure that workers either avoid the various hazard zones at Vandenberg AFB or that special precautions are taken to protect worker safety in these areas (e.g., workers are accompanied by specially trained escorts

through these areas). Minimization measure SAFE-1 would also be implemented to minimize health and safety impacts. With implementation of these measures, impacts on worker health and safety would be less than significant.

Implementation of prescribed burns could result in an outbreak of a wildland fire if the prescribed burn were to get out of control. Impacts on health and safety for workers and the population in the surrounding area could be significant. Implementation of a burn plan for each prescribed burn (minimization measure GEN-1) would ensure that evacuation routes are established for workers and members of the public that could be impacted by a fire outbreak. The burn plan would also establish the proper meteorological conditions under which a prescribed burn should be conducted and under which a prescribed burn should be halted. Finally, the burn plan would include a contingency plan that would be implemented in the event of a fire outbreak. Therefore, with implementation of this minimization measure, potential impacts on health and safety would be minimized and would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no impacts on health and safety.

4.9 Land Use and Coastal Zone Resources

Significance Thresholds

An impact on land use and coastal resources would be considered significant if a project were to conflict with the 2010 General Plan's designated land uses for the

project area or were inconsistent with the policies of the California Coastal Act.

Impact Analysis

The Proposed Action

Implementation of the INRMP projects would not involve introducing new land uses into areas, which would be incompatible with the Vandenberg AFB 2010 General Plan's land use designations for those areas. By design, the INRMP must also be integrated with the base mission and base comprehensive planning.

As discussed in Sections 4.3, Agricultural Resources, and 4.11, Recreational Resources, implementation of INRMP projects would have less than significant impacts on agricultural resources and recreation, which would also ensure that the projects would be consistent with the California Coastal Act policies listed in Table 3-3 protecting these resources.

As discussed in Sections 4.4, Biological Resources, and 4.5, Cultural Resources, with implementation of minimization measures and other standard BMPs, implementation of most of the INRMP projects would have less than significant impacts on biological and cultural resources and therefore would ensure that these projects would also be consistent with the California Coastal Act policies listed in Table 3-3 protecting these resources. However, projects that continue to potentially result in the following impacts, even after implementation of minimization measures and standard BMPs, would require further impact analysis:

- Projects with the potential to injure or kill a special-status species;
- Projects that would result in temporary and permanent impacts on aquatic

habitat, including wetlands, waters of the US, or floodplains;

- Projects that would result in permanent impacts on other native vegetation communities; and
- Projects that would result in permanent impacts on a significant cultural resource.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized and none of the projects listed in Table 2-1 would be implemented. Under the No-Action alternative, basic protection measures and recovery efforts for federally listed species would not be implemented. Basic protection measures and enhancement measures for native vegetation communities would not be implemented either. Nonnative invasive species would be expected to proliferate. In addition, Vandenberg AFB would be more vulnerable to large-scale destruction of native vegetation communities and wildlife as a result of wildland fires. As a result, the No-Action alternative would result in significant unmitigable impacts on biological resources and therefore would be inconsistent with California Coastal Act policies protecting these resources as well.

4.10 Noise

Significance Thresholds

Noise impacts from a project would be considered significant if a project were to generate noise levels in excess of 65 dBA CNEL that could affect sensitive receptors, such as schools, residences, commercial lodging facilities, hospitals, or care facilities. A potentially significant impact would also occur if indoor noise levels could not be reduced below 45 dBA.

Impact Analysis

The Proposed Action

Heavy equipment used for major ground-disturbing activities associated with implementation of INRMP projects could generate potentially significant noise impacts. According to US EPA guidelines (Santa Barbara County 2008), average noise is 95 dBA at 50 feet from activities involving heavy equipment. However, noise levels diminish as the distance from the source increases. Specifically, noise levels drop by 6 dB for every doubling of the distance from the source (Santa Barbara County 2008). Therefore, at 1,600 feet from activities involving heavy equipment, outdoor noise levels would be at 65 dBA; beyond this distance, outdoor noise levels would be less than 65 dBA. Where outdoor noise levels are 65 dBA or less, indoor conditions would be at or lower than 45 dBA as well when doors and windows are closed (Santa Barbara County 2008).

Most noise-generating activities associated with implementation of INRMP projects would be conducted in remote areas on-base and would not be conducted within 1,600 feet of sensitive receptors. However, in the event that these activities were conducted within 1,600 feet of sensitive receptors, implementation of minimization measure NOISE-1 would ensure that activities involving heavy equipment would be limited to weekdays only, and between 8 AM and 5 PM, which would ensure that CNEL levels are below 65 dBA at the sensitive receptor locations. Therefore, with implementation of this measure, impacts would be less than significant.

Implementation of INRMP projects is not expected to introduce any long-term sources of noise at Vandenberg AFB.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no noise impacts.

4.11 Recreation

Significance Thresholds

A project would have a significant impact on recreation if it were to restrict public access to the beach or access to recreation areas on Vandenberg AFB for active duty, retired and dependent personnel and civilian workers.

Impact Analysis

The Proposed Action

In general, implementation of INRMP projects would enhance recreation opportunities for active duty, retired and dependent personnel, and civilian workers at Vandenberg AFB or the quality of their recreation experiences by protecting open space and biological resources. Implementation of the proposed INRMP projects would not involve closure of any recreation areas on Vandenberg AFB beyond those that are already restricted. In addition, it would not close any public recreation areas beyond those that are already restricted (e.g., areas at Surf Beach that are restricted due to the Beach Management Plan for Western snowy plovers).

Implementation of prescribed burns could result in temporary restrictions of access to recreational areas, including public access to the beach (depending on the location of the prescribed burn). However, because implementation of prescribed burns would not be expected to last more than a few days at most, this temporary disruption of recreational access would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Because some of the INRMP projects would enhance recreation opportunities at Vandenberg AFB, implementation of the No-Action alternative would not have a benefit on recreation opportunities as would the Proposed Action.

4.12 Socioeconomics and Environmental Justice

Significance Thresholds

A project would be considered to have a significant socioeconomic impact if it were to substantially alter the location and distribution of the region's population, were to cause the population to exceed its historic growth rates, were to decrease jobs so as to substantially raise the regional unemployment rates or reduce income generation, were to substantially affect the local housing market and vacancy rates, or were to result in the need for new school services.

A significant impact on environmental justice would occur under the following circumstances:

- There were a significant adverse impact on the natural or physical environment or on health that affected a minority or low-income population or children;
- There were a significant adverse environmental impact on minority or low-income populations or children that appreciably exceeded those on the general population or other comparison group;
- The risk or rate of exposure to environmental hazards by a minority or low-income population were substantial

and exceeded those of the general population or other comparison group; or

- A health or environmental effect were to occur in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

Impact Analysis

The Proposed Action

Implementation of each INRMP project would require a small number of workers that would likely be from the local area. Because only a small number of workers would be needed and only for short time frames, implementation of INRMP projects would not significantly affect the workforce in the area. Therefore, the Proposed Action would have less than significant socioeconomic impacts.

In addition, implementation of INRMP projects would not have disproportionate impacts on low-income or minority populations or children. Therefore, there would be no environmental justice impacts.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no socioeconomic or environmental justice impacts.

4.13 Solid Waste

Significance Thresholds

Impacts from solid waste generation would be considered significant if a project were to result in noncompliance with applicable regulatory guidelines or if the volumes of solid waste generated by the project were to

exceed available waste management capacities.

Impact Analysis

The Proposed Action

Clearing vegetation associated with implementation of INRMP projects would generate green waste, including nonnative invasive plant species, which could result in significant solid waste impacts. However, implementation of minimization measure SW-1 would ensure that all green waste would be minimized at Vandenberg AFB. In addition, nonnative invasive plant species are disposed of according to Vandenberg AFB's Integrated Solid Waste Management Plan and Integrated Pest Management Plan to prevent the spread of these species. Therefore, with implementation of these measures, solid waste impacts would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no solid waste impacts.

4.14 Transportation

Significance Thresholds

Project impacts on transportation would be considered significant if a project were to cause a substantial increase in traffic in relation to existing traffic load and capacity of the street system; if it were to exceed an established level of service standard; if it were to substantially increase hazards due to a design feature; if it were to result in inadequate emergency access or in inadequate parking capacity; or if it were to conflict with adopted policies, plans, or programs supporting alternative transportation.

Impact Analysis

The Proposed Action

Traffic associated with implementation of INRMP projects is not anticipated to be large enough to affect local area roadways outside of Vandenberg AFB. However, traffic could affect traffic flow within the road system at Vandenberg AFB, which could be considered a significant impact.

Implementation of minimization measure TRANS-1 would ensure that truck trips are scheduled during non-peak traffic hours when possible and that a traffic control plan would be prepared when roadways experience heavy truck traffic or road closures. Therefore, with implementation of this measure, impacts would be reduced to less than significant levels.

Implementation of prescribed burns could result in temporary road or lane closures in proximity to the prescribed burns, including road or lane closures on roadways outside of Vandenberg AFB (depending on the location of the prescribed burn).

Minimization measure GEN-1 would require that the burn plan for each prescribed burn identify traffic control measures (e.g., flagmen, detours) that may be required during a prescribed burn. In addition, because implementation of prescribed burns would not be expected to last more than a few days at most, this temporary disruption would be less than significant.

There would no long-term impacts on traffic and transportation with implementation of INRMP projects.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no transportation impacts.

4.15 Utilities

Significance Thresholds

Impacts on utility systems from the proposed project would be considered significant if the project were to exceed the wastewater treatment requirements of the RWQCB, if it were to require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, or if it were to require or result in the construction of new stormwater drainage facilities or expansion of existing facilities. Impacts would also be considered significant if a project were to require utility supplies (such as water, natural gas, or electricity) that could not be met by existing entitlements or resources.

Impact Analysis

The Proposed Action

Implementation of INRMP projects would not require any new water, wastewater, or drainage facilities and would not require any new utility supplies (e.g., electricity or natural gas).

Implementation of INRMP projects would not involve an increased use of potable water, with the exception of implementation of prescribed burns where potable water may be used to extinguish the fire. However, because implementation of prescribed burns would not be expected to last more than a few days at most and would not be expected to involve a large acreage, this use would not significantly increase Vandenberg AFB's demand for potable water, and impacts would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be

implemented. Therefore, there would be no impacts on utilities.

4.16 Visual Resources

Significance Thresholds

A visual impact would be considered significant if it were to interfere with or to block views of aesthetically pleasing areas, such as the ocean, open space areas, or other scenic areas. A visual impact would also be considered significant if a project were to be aesthetically incompatible with surrounding areas, if a project were to substantially alter the natural character of an area, or if a project were to introduce a substantial amount of night lighting or glare to an area.

Impact Analysis

The Proposed Action

No INRMP project would block or interfere with views of or views Vandenberg AFB (e.g., views of the ocean), nor would any INRMP project introduce permanent structures or introduce substantial permanent night lighting or glare.

Major ground-disturbing activities (e.g., development of new fire breaks) and implementation of prescribed burns could involve the removal of large acreages of vegetation, which would substantially alter the natural character of the area. Fire breaks would constitute a small percentage of the viewshed. Prescribed burns could remove the greatest amount of vegetation; however vegetation in these areas would regrow. Therefore, impacts would be less than significant.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized and none of the projects listed in Table 2-1 would be

implemented. Restoration of natural plant communities at selected sites on Vandenberg AFB would not occur and the visual complexity within these areas would continue to decrease as invasive species continue to spread, and vegetative succession would continue to advance. As a result, the No-Action alternative would result in significant unmitigable impacts on visual resources.

4.17 Water Resources

Significance Thresholds

Impacts on water resources would be considered significant if a project were to cause substantial flooding or erosion, were to adversely affect any significant water body, such as a stream, lake, or bay, were to expose people to hydrologic hazards, such as flooding or tsunamis, or were to adversely affect surface water or groundwater quality or quantity. Impacts would also be considered significant if existing drainage patterns of the site or area would be substantially altered.

Impact Analysis

The Proposed Action

As discussed in Section 4.6, Geology and Earth Resources, major ground-disturbing activities associated with implementing INRMP projects (e.g., installation of new fire breaks) and prescribed burns could result in potentially significant short-term and long-term erosion, which could subsequently significantly affect stormwater quality. For projects greater than one acre, the Air Force must prepare a SWPPP and file a Notice of Intent to obtain a NPDES General Stormwater Permit for Construction Activities from the RWQCB. In addition, standard erosion control measures would be implemented under minimization measure GEO-1 during ground-disturbing activities. Additional erosion control BMPs

may also be required through the Air Force's EIAP. With implementation of these measures, short-term impacts would be reduced to less than significant levels.

Under Vandenberg AFB's Stormwater Management Plan, the Air Force is required to implement appropriate post-construction BMPs to prevent erosion from its project areas as well. Appropriate post-construction BMPs would be determined through the Air Force's EIAP. In addition, minimization measure GEN-1 would ensure that a hydrogeologic assessment is performed in each burn plan for a prescribed burn to determine what BMPs would be necessary to offset potential impacts on stormwater runoff and sediment loads to nearby watersheds. Therefore, with implementation of these measures, long-term erosion impacts would be reduced to less than significant levels.

Ground-disturbing activities, use of pesticides, and implementation of prescribed burns associated with proposed INRMP projects, also could unintentionally impact (e.g., remove or degrade) aquatic habitat. This includes sensitive vegetation communities, such as wetlands or waters of the US and floodplains. Impacts would be potentially significant. Minimization measures BIO-4 and BIO-5 would ensure that potential impacts are minimized or avoided to the maximum extent. Each project listed in Table 2-1 would be subject to the Air Force's EIAP, whereby 30 CES/CEANC would determine if a project has the potential to directly impact aquatic habitat, wetlands or waters of the US, or a floodplain and would require conditions of approval that must be met to avoid or minimize impacts.

If, through implementation of measures BIO-4 and BIO-5 and the Air Force's EIAP, it is determined that a project could temporarily or permanently impact a wetland, waters of the US, or floodplain, an

alternatives analysis must be performed and a FONPA must be prepared for the project, as required by Executive Orders 11990 and 11988 and the Air Force's EIAP. In addition, permits may be needed from the USACE, the RWQCB, and the CDFG. Therefore, for these projects, additional impact analysis would be required. In addition, for projects where there would still be permanent residual impacts on aquatic habitat or floodplains (e.g., where restoration is not feasible or desired), additional impact analysis would be required. For all other projects, implementation of measures BIO-4 and BIO-5 and completion of the Air Force's EIAP would ensure that impacts are reduced to less than significant levels.

Finally, implementation of INRMP projects would not affect groundwater.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. Therefore, there would be no impacts on water resources.

4.18 Cumulative Impacts

Significance Thresholds

The CEQ regulations define a cumulative impact as the impact on the environment that results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time. A significant impact would occur if an individual project were to have a considerable contribution to cumulative impacts on the environment.

Past, Present, and Reasonably Foreseeable Actions in the Region of Influence

Construction and maintenance activities routinely occur at Vandenberg AFB and contribute to cumulative impacts on the environment. Construction projects scheduled on Vandenberg AFB in the foreseeable future, other than those proposed in the INRMP, include those that are planned in the 2010 General Plan for Vandenberg AFB.

In addition, launch activities and airfield and helicopter operations at Vandenberg AFB contribute to cumulative impacts on the environment. Finally, other prescribed burns in Santa Barbara County would contribute to cumulative impacts on air quality in the region.

Impact Analysis

The Proposed Action

As discussed in Sections 4.2 through 4.17, for most of the proposed INRMP projects, implementation of minimization measures listed in Table 2-2 and other standard BMPs would ensure that impacts on the environment would be either avoided or minimized to the point where residual impacts would be considered to have only a minor contribution to cumulative impacts on the environment.

However, as also discussed above, projects that continue to potentially result in the following impacts, even after implementation of minimization measures and standard BMPs, would require further impact analysis:

- Projects with the potential to injure or kill a special-status species as defined in Section 3.4;

- Projects that would result in temporary or permanent impacts on aquatic habitat, wetlands or waters of the US, or floodplains;
- Projects that would result in permanent impacts on other native vegetation communities at Vandenberg AFB (e.g., oak woodland, coastal scrub) as described in Section 3.4 of the PEA;
- Projects that would result in permanent impacts on a significant cultural resource as defined in the NHPA;
- Projects in geohazardous areas (or areas with geologic conditions that are capable of causing damage or loss of property and life) such as active landslide areas, coastal bluffs, streambanks, or stream channels;
- Projects that would disturb contaminated media such as soil through excavation with mechanized equipment or hand tools, or extraction of contaminated surface water or groundwater; and
- Prescribed burns greater than 100 acres that are calculated to produce greater than 10 tons of particulate matter, would produce smoke at night, are near smoke sensitive areas, or where the SBCAPCD determines that monitoring is necessary for public health and safety.

The No-Action Alternative

Under the No-Action alternative, the INRMP would not be finalized, and none of the projects listed in Table 2-1 would be implemented. As discussed in Section 4.3, implementation of the No-Action alternative would result in unmitigable significant impacts on biological resources and visual resources. Given the importance of Vandenberg AFB as an area on the Central Coast, with large acreages of relatively

undisturbed native vegetation communities, implementation of the No-Action alternative would contribute considerably to cumulative impacts on biological resources and visual resources in the region. Cumulative impacts on biological resources and visual resources would be significant under the No-Action alternative.

For all other issue areas, because there would be no impacts or minor impacts (e.g., on recreation), implementation of the No-Action alternative would not contribute considerably to cumulative impacts on these resources.

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