



ENVIRONMENTAL ASSESSMENT

SSM-1 KAI Missile Testing at
San Nicolas Island

March 2007

U.S. Navy

ACRONYMS

AGL	above ground level	MMPA	Marine Mammal Protection Act
APE	area of potential effect	MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
Cal/EPA	California Environmental Protection Agency	MSL	mean sea level
CCU	Command Control Unit	NAWCWD	Naval Air Warfare Center Weapons Division
CDFG	California Department of Fish and Game	NAWS	Naval Air Weapons Station
CEQ	Council on Environmental Quality	NEPA	National Environmental Policy Act
CESA	California Endangered Species Act	NHPA	National Historic Preservation Act
CFR	Code of Federal Regulations	NM	nautical mile(s)
cm	centimeter(s)	NMFS	National Marine Fisheries Service
CNEL	community noise equivalent level	NOAA	National Oceanic and Atmospheric Administration
CO	carbon monoxide	NOTAM	Notices to Airmen
dB	decibel	NOTMAR	Notices to Marines
dba	A-weighted decibel	NO ₂	nitrogen dioxide
DoD	Department of Defense	NO _x	oxides of nitrogen
EA	Environmental Assessment	O ₃	ozone
EMR	Electromagnetic Radiation	PM ₁₀	particulate matter ≤ 10 microns in diameter
ESA	Endangered Species Act	RRD	Radio Relay Device
ESQD	Explosive Safety Quantity Distance	RV	recreation vehicle
FCD	Fire Control Device	RWQCB	Regional Water Quality Control Board
FOCUS	Fiber-Optic Communications Underwater System	S&A	safety and arming
ft	foot/feet	SEL	sound exposure level
FTS	flight termination system	SHPO	State Historic Preservation Office
EFH	Essential Fish Habitat	SO ₂	sulfur dioxide
EIS	Environmental Impact Statement	SO _x	oxides of sulfur
INL	island night lizard	SRU	Search Radar Unit
JP	jet petroleum	SSM	surface-to-surface missile
ha	hectare(s)	SWRCB	State Water Resources Control Board
IHA	Incidental Harassment Authorization	USC	U.S. Code
INRMP	Integrated Natural Resources Management Plan	USEPA	U.S. Environmental Protection Agency
kg	kilogram(s)	USFWS	U.S. Fish and Wildlife Service
km	kilometer(s)	VOC	Volatile Organic Compounds
m	meter(s)		
LOA	Letter of Authorization		

FINAL

ENVIRONMENTAL ASSESSMENT

Lead Agency for the EA: Department of the Navy
Title of Proposed Action: SSM-1 KAI Missile Testing at San Nicolas Island
Affected Jurisdiction: Ventura County
Designation: Environmental Assessment

Abstract

The U.S. Navy proposes to accommodate testing of the surface-to-surface missile (the SSM-1 KAI missile) at San Nicolas Island, California. The proposed action is needed to test the sea-shore interface capabilities of the SSM-1 KAI missile. Missile testing would include 5 missile tests, including launches from San Nicolas Island and missile flights over varied terrain at the island, the sea-shore interface, and open water. Three primary phases of the testing consist of pre-test site preparation activities, missile launch and flight, and post-test activities. This EA utilizes analysis from the Point Mugu Sea Range Environmental Impact Statement to address components of SSM-1 KAI testing that would occur at least 1 nautical mile (NM) (1.9 kilometers [km]) offshore. The EA provides additional analysis for those components of the proposed SSM-1 KAI missile testing that would occur less than 1 NM offshore from the island, including missile and aircraft overflights of the island.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] § 4321, as amended); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500-1508, 1 July 1986); and Department of the Navy Procedures for Implementing NEPA (32 CFR § 775). The NEPA process ensures that environmental impacts of proposed major federal actions are considered in the decision-making process. Potential environmental impacts have been analyzed for land use, public safety, geological resources, water resources, biological resources, air quality, noise, and cultural resources. No significant environmental impacts have been identified for the action alternatives or the No-Action Alternative.

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EXECUTIVE SUMMARY

The U.S. Navy proposes to accommodate testing of the surface-to-surface missile (the SSM-1 KAI missile) at San Nicolas Island, California. Missile testing would include 5 missile tests, including launches from San Nicolas Island and missile flights over varied land terrain at the island, the sea-shore interface, and open water. Three primary phases of the testing consist of pre-test site preparation activities, missile launch and flight, and post-test activities. This EA utilizes analysis from the Point Mugu Sea Range Environmental Impact Statement to address components of SSM-1 KAI testing that would occur at least 1 nautical mile (NM) (1.9 kilometers [km]) offshore. Missile testing would include 5 missile tests, involving launches from San Nicolas Island, missile flights over varied terrain at the island, the sea-shore interface, and open water. The EA provides additional analysis for those components of the proposed SSM-1 KAI missile testing that would occur less than 1 NM (1.9 km) offshore from the island. This would include launches from San Nicolas Island; missile flights over varied terrain at the island, the sea-shore interface, and open water; and facilities additions and modifications at the island. The EA addresses 2 testing scenarios distinguished by missile flight profiles over San Nicolas Island. The proposed action would include the implementation of conservation measures in order to minimize any potential impact to biological and cultural resources.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to accommodate testing of the SSM-1 KAI missile at San Nicolas Island. The proposed action is needed to test the sea-shore interface capabilities of the SSM-1 KAI missile. Testing would be conducted to evaluate the performance of a dual launch, sea-skimming maneuvers, target discrimination, and simultaneous interception. Specifically, testing includes: booster tests, Global Positioning System guidance tests, and monitoring for desired lengths of time over land and water. Current efforts to schedule the program at other locations have not been successful due to scheduling difficulties (San Clemente Island) or lack of a sea-shore interface (China Lake).

ALTERNATIVES

Operational and facility siting criteria were used to develop alternatives to the proposed action. Facilities must be capable of providing necessary testing support and be properly located to fulfill testing objectives. One alternative consists of using facilities at the Building 807 Launch Complex, located on the far west side of San Nicolas Island, as the launch site. This launch site is located along the shoreline and would decrease flight distances and times over the island. However, it lacks infrastructure to support testing operations, so additional support facilities would be necessary. This alternative is carried forward for analysis in this EA. This EA addresses the 2 action alternatives as well as the No-Action Alternative. Under the No-Action Alternative, SSM-1 KAI missile testing would not occur at San Nicolas Island.

ENVIRONMENTAL CONSEQUENCES

Potential environmental consequences of the proposed action and alternatives have been analyzed for the following resources: land use, public safety, geological resources, water resources, biological resources, air quality, noise, and cultural resources. Table ES-1 summarizes the environmental consequences of the action alternatives and the No-Action Alternative. No significant environmental impacts have been identified for the action alternatives or the No-Action Alternative.

Table ES-1. Comparison of Environmental Consequences of Alternatives.

<i>Resource Area</i>	<i>Proposed Action</i>	<i>Building 807 Launch Complex Alternative</i>	<i>No-Action Alternative</i>
Land Use	○	○	○
Public Safety	○	○	○
Geological Resources	○	○	○
Water Resources	○	○	○
Biological Resources	○	○	○
Land Use	○	○	○
Air Quality	○	○	○
Noise	○	○	○
Cultural Resources	○	○	○

Notes: ○ = No significant impact

● = Potentially Significant impact

*Final***ENVIRONMENTAL ASSESSMENT
SSM-1 KAI Missile Testing at San Nicolas Island****TABLE OF CONTENTS**

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CHAPTER 1

PURPOSE AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

The U.S. Navy proposes to accommodate testing of the surface-to-surface missile (the SSM-1 KAI missile) at San Nicolas Island, California. Figure 1-1 provides a regional site map showing the proposed project location (San Nicolas Island) within the Naval Air Warfare Center Weapons Division (NAWCWD) Point Mugu Sea Range. A more detailed description of the proposed action is provided in Chapter 2. This Environmental Assessment (EA) addresses the potential environmental impacts of the proposed action and alternatives. This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] § 4321, as amended); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500-1508, 1 July 1986); and Department of the Navy Procedures for Implementing NEPA (32 CFR § 775). The NEPA process ensures that environmental impacts of proposed major federal actions are considered in the decision-making process.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to accommodate testing of the SSM-1 KAI missile at San Nicolas Island. The proposed action is needed to test the sea-shore interface capabilities of the SSM-1 KAI missile. Missile testing would include 5 missile tests, involving launches from San Nicolas Island, missile flights over varied terrain at the island, the sea-shore interface, and open water. Testing would be conducted to evaluate the performance of a dual launch, sea-skimming maneuvers, target discrimination, and simultaneous interception. Specifically, testing includes: booster tests, Global Positioning System guidance tests, and monitoring for desired lengths of time over land and water.

1.3 BACKGROUND

1.3.1 Point Mugu Sea Range

The 36,000-square-mile (93,240-square-kilometer [km²]) Point Mugu Sea Range is a critical component in the training and readiness of U.S. and allied military services (NAWCWD Point Mugu 2002a). It is used to test and evaluate sea, land, and air weapon systems; to provide realistic training opportunities; and to maintain operational readiness of military forces. This test and evaluation and training process is critical to the successful assessment, safe operation, and improvement of the capabilities of current and future weapon systems. A previous version of the SSM-1 KAI missile has been tested on the Point Mugu Sea Range for 12 years, with approximately 8 to 9 launches conducted from Point Mugu per year. These activities are addressed in the EIS/OEIS (NAWCWD Point Mugu 2002a).

1.3.2 SSM-1 KAI

The SSM-1 KAI, an improved version of the SSM-1, is an anti-ship missile deployed from a mobile ground launcher. The missile (Figure 1-2) is 212 inches (5.39 meters [m]) long, has a diameter of 14 inches (35 centimeters [cm]), and weighs approximately 1,576 pounds (715 kilograms [kg]). Missile components consist of the following: a destructor, a safety and arming (S&A) device, missile booster, and power cartridge. The booster uses solid propellant, while the sustainer motor in the missile uses jet petroleum (JP)-4 fuel.

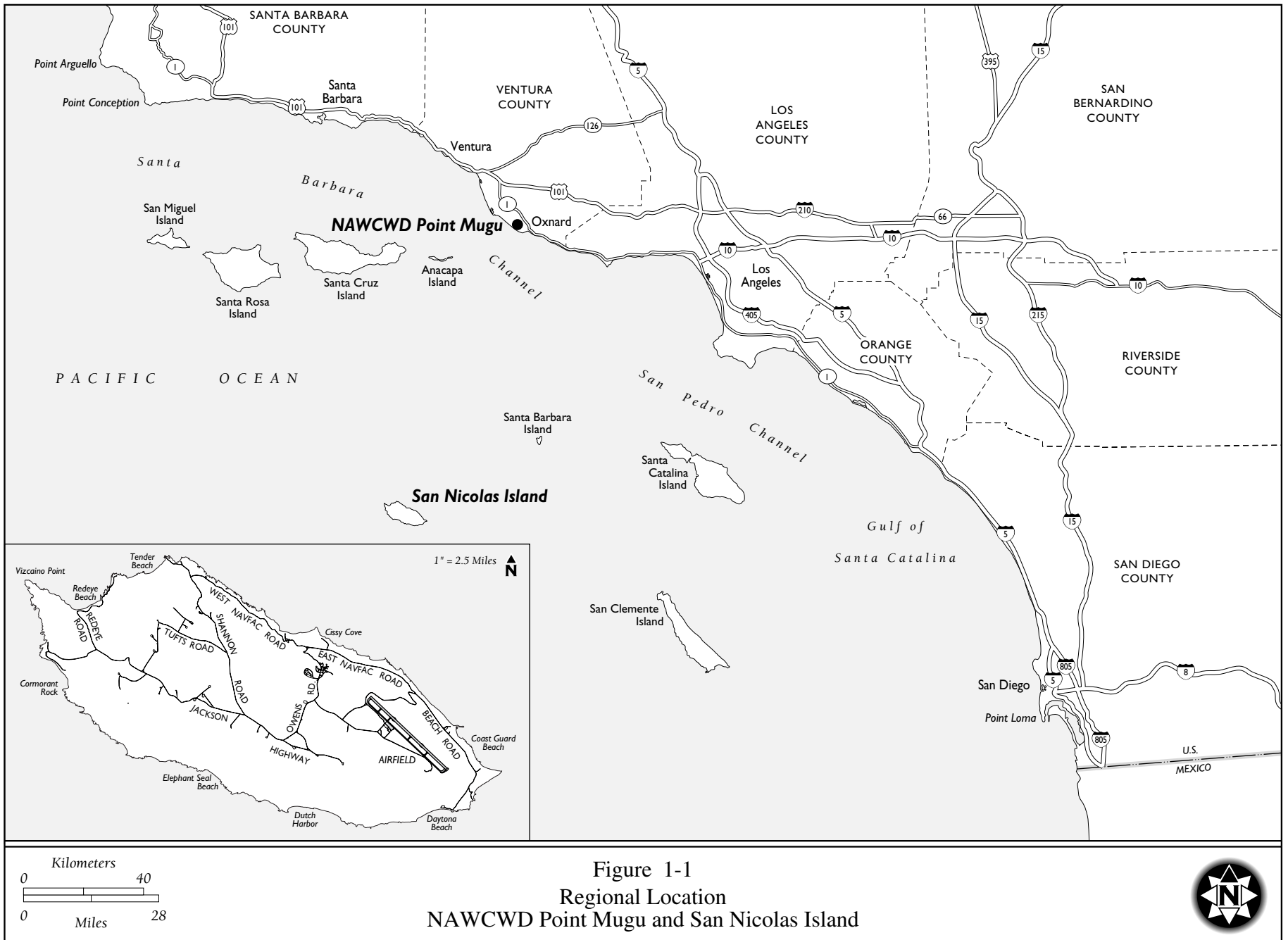


Figure 1-1
Regional Location
NAWCWD Point Mugu and San Nicolas Island

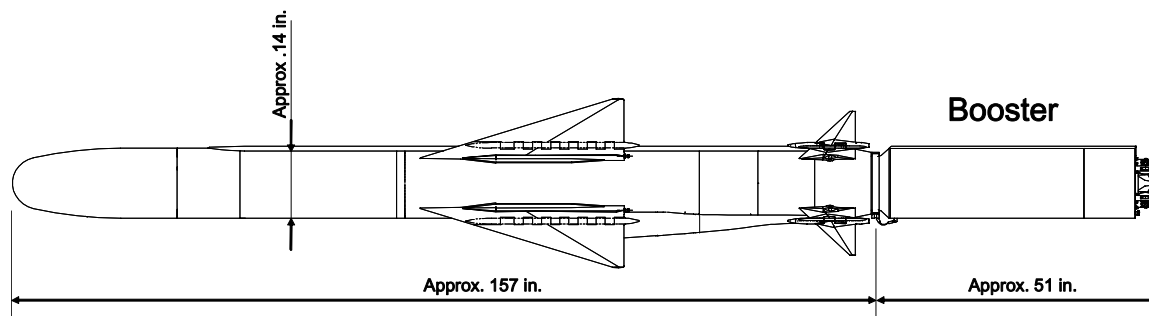


Figure 1-2 SSM-1 KAI Missile

1.4 PROJECT LOCATION

Located approximately 60 miles (97 km) southwest of Point Mugu, San Nicolas Island is owned and operated by the Navy as a major element of the Point Mugu Sea Range. The island is 9 miles (14 km) long by 3.6 miles (6 km) wide, encompassing approximately 21 square miles (54 km²). The island is extensively instrumented with metric tracking radar, electro-optical devices, telemetry, and communications equipment to support Fleet training and weapons testing. An airfield is located at the southeastern edge of the island's central mesa. Facilities and areas across the island will be used to support SSM-1 KAI testing operations, including areas to be used for maintenance, administration, preparation, lab testing, and the firing of the SSM-1 KAI missile.

1.5 SCOPE OF THE EA

The U.S. Navy has prepared a Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) (NAWCWD Point Mugu 2002a) addressing test and training operations on the Point Mugu Sea Range. The EIS/OEIS assesses a variety of missile testing activities including missile launches and nearshore intercept test and training events proposed to occur at least 1 nautical mile (NM) (1.9 km) off the southern and western shores of the island. Components of SSM-1 KAI testing that would occur at least 1 NM (1.9 km) offshore have been analyzed in the EIS/OEIS and are not carried forward for further analysis. This EA focuses on those components of the proposed SSM-1 KAI missile testing that would occur less than 1 NM (1.9 km) offshore from the island. This would include launches from San Nicolas Island; missile flights over varied terrain at the island, the sea-shore interface, and open water; and facilities additions and modifications at the island.

NEPA, CEQ regulations, and Navy procedures for implementing NEPA specify that an EA should address only those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. Resources analyzed in this EA include land use, public safety, geological resources, water resources, biological resources, air quality, noise, and cultural resources.

Several resource areas have not been carried forward for detailed analysis in this EA since potential impacts were considered negligible. Resources not addressed further in this EA are: socioeconomics, transportation, and visual resources. Environmental justice and protection of children are topics addressed in Sections 5.5 and 5.6.

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CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

The proposed SSM-1 KAI missile testing at San Nicolas Island would be conducted to determine the effectiveness of the SSM-1 KAI missile at the sea-shore interface. Testing would be conducted to evaluate the performance of a dual launch, sea-skimming maneuvers, target discrimination, and simultaneous interception. Specifically, testing would include: booster tests, Global Positioning System guidance tests, and monitoring for desired lengths of time over land and water. Three primary phases of the testing consist of:

- pre-test site preparation activities,
- missile launch and flight, and
- post-test activities.

Details of the proposed action are discussed in Section 2.1. Alternatives for the proposed testing are described in Section 2.2.

2.1 PROPOSED ACTION

2.1.1 Pre-Test Site Preparation Activities

Site preparation would require placement of temporary facilities and the modification of existing facilities at San Nicolas Island to support launch operations. These include facilities to support the following functions: food and housing facilities for phased deployment of personnel; administrative offices; logistics/communications support for implementation of the project's security plan, safety procedures, and emergency medical support; air transportation (primarily from Point Mugu); ground transportation; berthing for barges (primarily at Port Hueneme); and explosive ordnance disposal. Preparation for testing would last about 3 months and would likely begin with additions to logistics facilities. These facilities would consist of modular units and support facilities (e.g., generators and antennas) on temporary pads, all of which would be removed following completion of the SSM-1 KAI testing activities. Some modification of existing facilities would also occur. Removal of the facilities once testing was complete would also last approximately 4 months.

Facilities to be created or modified under the proposed action are shown in Figure 2-1 and described in Table 2-1. (Note: existing structures are designated by number preceded by an "N.") Detailed site maps of each location and facilities requirements are shown in Appendix A. Of the 9 areas used to support SSM-1 KAI testing, 2 would involve use of existing facilities with no modifications, 1 would involve a modification to a facility, and 6 would involve placement of temporary components adjacent to existing facilities. The number of modular facilities to be placed on temporary pads would be 2 for living quarters functions, 9 for office and administrative functions, and 7 for equipment storage functions (see Table 2-1). Two of the 9 areas used to support SSM-1 KAI testing would experience disturbance on previously undisturbed land (see Table 2-1): the Ordnance Assembly Building area (N110), and the Command Control Unit (CCU) and Radio Relay Device (RRD) area (N127). Approximately 1.24 acres (0.5 hectare [ha]) would need to be graded to support facility additions and modifications in these areas.

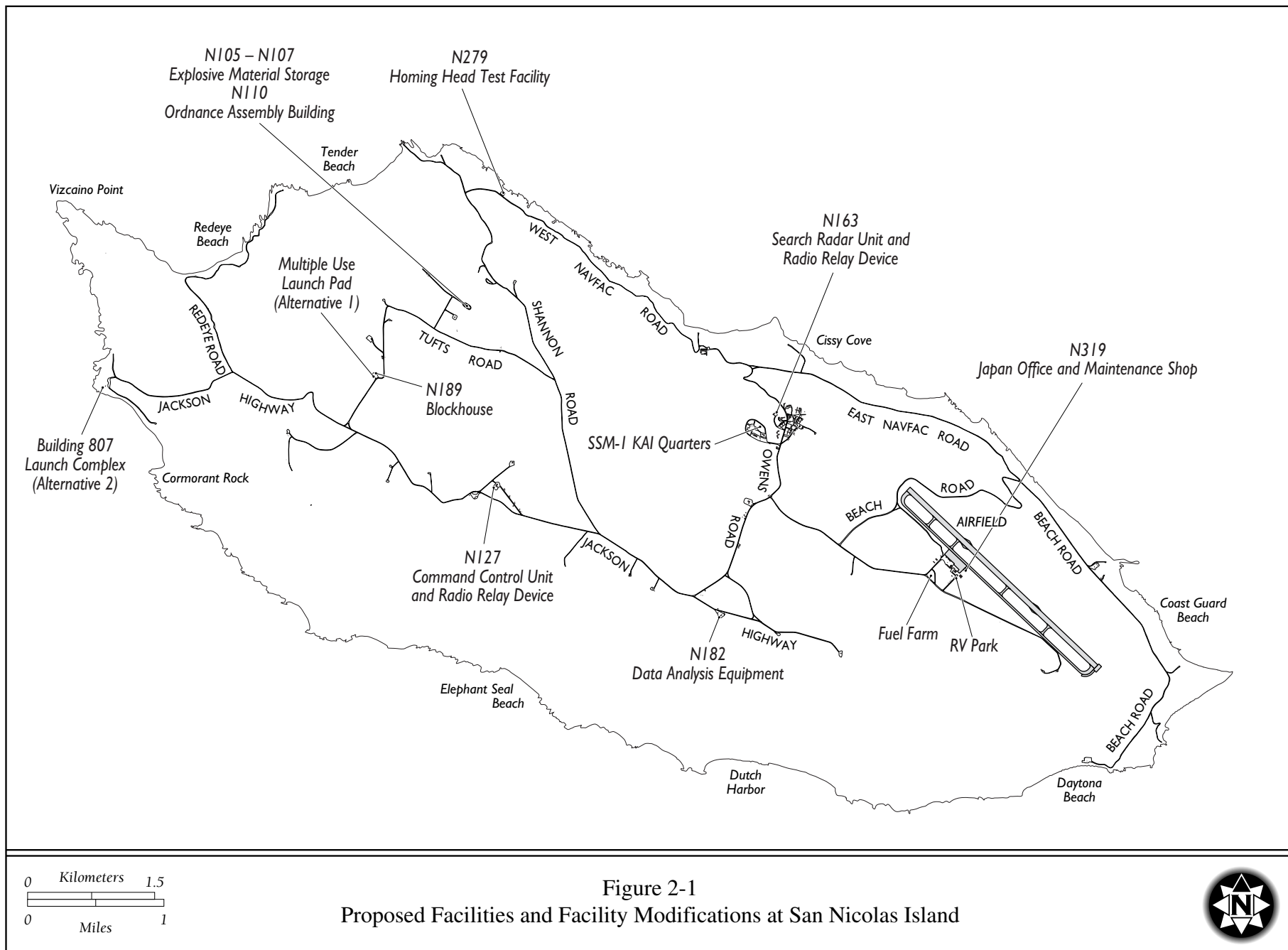


Figure 2-1
Proposed Facilities and Facility Modifications at San Nicolas Island



Table 2-1. Existing and Proposed Support Facilities

Existing Area	Proposed Components	# Proposed Modules	# Proposed Personnel	Proposed Facility Function	Previously Disturbed Area?
N105-N107 Explosive Material Storage	Explosive Material Storage	Existing	0	Store explosive missile components	Yes
N110 Ordnance Assembly Building	SSM-1 KAI Office Building	1	20	Administration/logistics	No
	SSM-1 KAI Equipment Module	1	0	Equipment storage	No
	Extension Shelter (to N110)	1	0	Administration/logistics	Yes
N127 CCU and RRD	CCU parking area	0	15	Administration/logistics	No
	CCU and RRD Office	1	6	Communications	No
	Test Control Room	Existing	14	Communications/logistics	No
	CCU Antennas	Pad	0	Communications/operations	No
	RRD Antennas	Pad	0	Communications/operations	No
N163 SRU and RRD	SRU Operating Area	Pad	0	Testing/operations	Yes
	RRD Antennas	Pad	0	Communications/operations	Yes
	SRU Antennas	Pad	0	Communications/operations	Yes
	SRU Office	1	12	Communications/operations	Yes
	RRD Office	Existing	7	Administrative offices	Yes
N189 FCD Blockhouse	FCD Office	1	8	Administrative office	Yes
	FCD Antennas	Existing	0	Communications/logistics	Yes
	FCD Equipment Rack	Existing	0	Equipment storage	Yes
Multiple Use Launch Pad	Launch Pad	Existing	0	Missile launch	Yes
N279 Homing Head Test Facility	Homing Head Function Test Facility	1 plus 10'x10' deck	?	Testing/operations	Yes
N319 Japan Office and Maintenance Shop	Japan Office	Existing	8	Administrative offices	Yes
	Maintenance Shop	Existing	20	Machine shop	Yes
	Hangar Bay	Existing	20	Missile preparation	Yes
	Conference Room	1	50	Meeting areas	Yes
	Conference Room	1	30	Meeting areas	Yes
	Contractor Office	1	10	Administrative offices	Yes
	5 Storage Units (RV Park)	4	10	Components storage	Yes
	Test Team Office	1	20	Administrative offices	Yes
Camp KAI	Living Quarters	2	100	Personnel quarters	Yes
Fuel Farm	Fuel Storage Area	Existing	0	Flammable material and fuel storage	Yes
N807 Launch Complex*	FCD Office	1	8	Administrative office	Yes
	FCD Antennas	Pad	0	Communications/logistics	Yes
	FCD Equipment Rack	Pad	0	Equipment storage	Yes
	Launch Pad	Existing	0	Missile launch	

* Note: the Building 807 Launch Complex Alternative involves use of the launch facilities at N807 in place of Multiple Use Launch Pad and N189.

Other facilities and equipment required for the proposed action include 31 generators (each less than 50 horsepower), a diesel fuel tank (double-walled with alarms), 30-40 vehicles, and up to 5 military vehicles. The generators would supply much of the needed power for the support facilities. All other utility requirements (e.g., water, waste water, solid waste, etc.) can be met by existing infrastructure on the island.

Support activities for the pre-test portion of the proposed action would occur in several previously disturbed areas around the island (see Table 2-1). Personnel quarters and support facilities would be located at Nicktown in the northern portion of the island, as would some logistics support and communications functions. Other operational communications functions would be located on the northern portion of the island (Homing Head Test Facility) and along Jackson Highway. Various communications, administration, maintenance, and storage functions would be located near the airfield. This would include fuel storage, which would occur at the current Fuel Farm. Fuel stored in these areas would include gasoline for vehicles (in 5-gallon [19-liter] fuel cans), JP-4 fuel for missiles (in 45-gallon [170-liter] fuel cans), and JP-5 fuel for generators (in 5-gallon [19-liter] fuel cans and in a central diesel fuel tank). Missile fuel would be transported, stored, and handled in accordance with Department of Defense (DoD) guidelines. Ordnance storage and missile assembly activities would occur on the western end of the island at facilities with currently established Explosive Safety Quantity Distance (ESQD) arcs in compliance with Department of Defense guidelines.

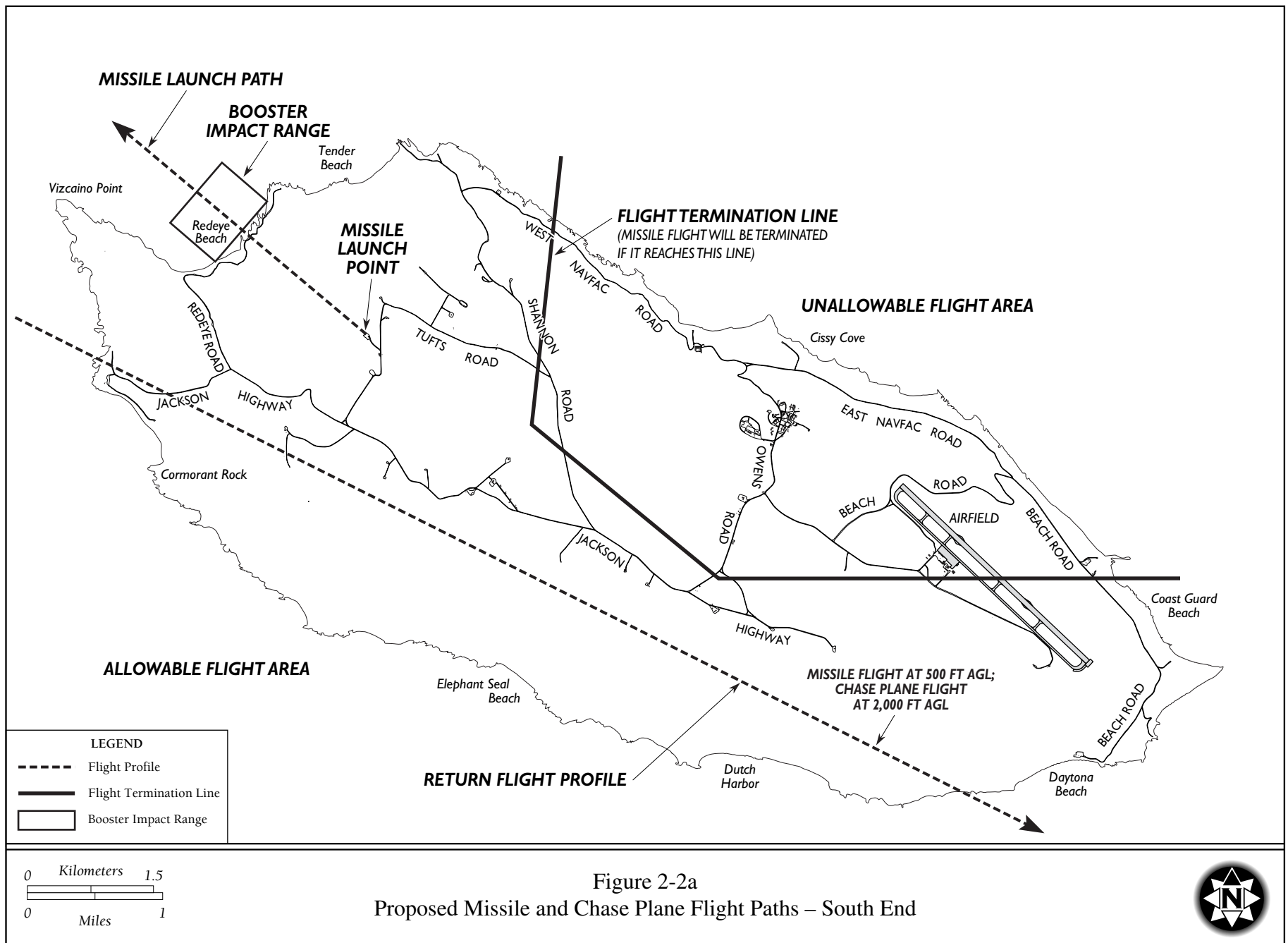
Approximately 44 people would be transported to and from the island daily via aircraft, with about twice as many personnel (up to 100) transported at the beginning and end of each week. Approximately 20 barge trips to the island would occur for support logistics for the duration of pre-test activities.

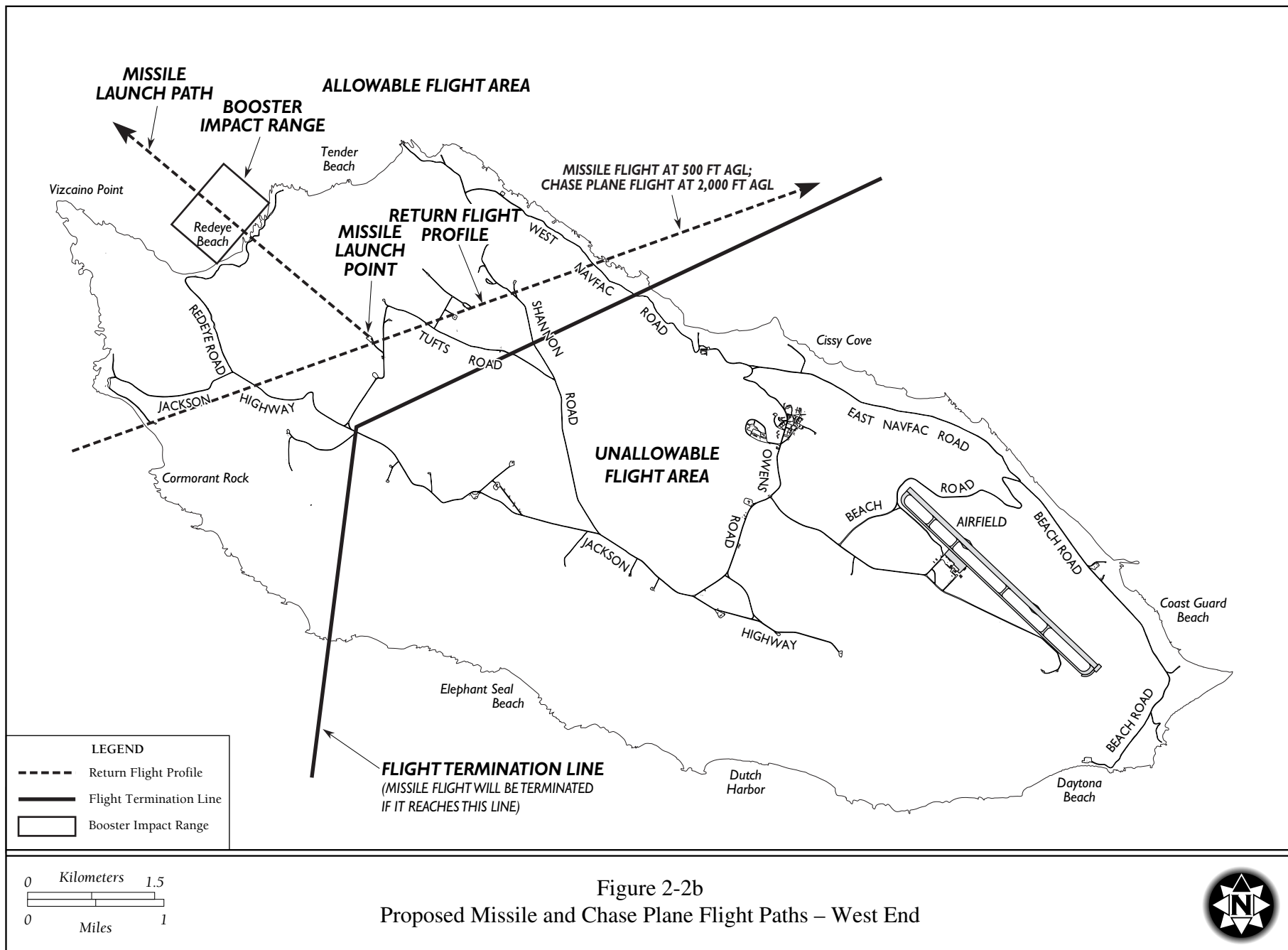
2.1.2 Missile Launch and Flight

2.1.2.1 Missile Tests

Testing would include up to 5 launches from the western portion of San Nicolas Island from a mobile launch unit at the Multiple Use Launch Pad (see Figure 2-1). The missile would be launched vertically (about 75°) towards the northwest (Figures 2-2a and 2-2b). The launch would be conducted such that the first-stage solid rocket booster would fall from the missile approximately 1.1 to 1.5 miles (1.8 to 2.5 km) from the launch site. Thus, the boosters would end up sinking and resting on the seafloor of in the nearshore waters off the western end of the island. The boosters would not be recovered following the tests.

As described in Section 1.5, this EA addresses only those components of the proposed SSM-1 KAI missile testing that would occur less than 1 NM (1.9 km) offshore from the island. This would include launches from San Nicolas Island; missile flights over varied terrain at the island, the sea-shore interface, and open water; and facilities additions and modifications at the island. The total flight time is estimated to be between 7 to 10 minutes, and the missile would fly at subsonic speeds (0.9 mach). The flight paths for the missiles would follow various waypoints after leaving the launch site and circling back to San Nicolas Island. Once the missile returned to a distance of 1 NM (1.9 km) from the shore, there would be 2 possible scenarios. In the first missile flight scenario (Figure 2-2a), the missile would overfly the southern portion of the island, going from northwest to southeast about 0.6 miles (1 km) inland from the coastline. In the other missile flight scenario (Figure 2-2b), the missile would overfly the northwestern end of the island, going from southwest to northeast and crossing over the Multiple Use Launch Pad. Missile altitude over land would be 500 ft (152 m) or more above ground level (AGL) at all points on the route. Since the elevation at the island is up to 900 ft (274 m) above mean sea level (MSL), the missile would probably cross the beach at about 1,500 ft (457 m) MSL. Each missile would be followed by an F-





18 chase plane for safety purposes (see Section 2.1.2.2) flying at 2,000 ft (610 m) AGL or higher. The chase plane (F-18 aircraft) would overfly land and nearshore waters at this minimum altitude to minimize potential noise disturbance to marine mammals and nesting seabirds. Missiles would not be recovered from the ocean floor.

2.1.2.2 Safety Procedures

San Nicolas Island is Navy-owned property where public access is strictly controlled both for security reasons and to safeguard against potential hazards associated with military operations. Unlike SSM-1 missiles that have historically been tested off of Point Mugu, the SSM-1 KAI does not have a booster flight termination system (FTS) and therefore cannot be launched from the Point Mugu mainland facility, thus requiring all test launches to occur at San Nicolas Island. However, the SSM-1 KAI does have an FTS in the main body of the missile that can be activated to terminate the flight in case of complications (e.g., if the missile turns drastically off course).

Established range clearance procedures would be implemented prior to each SSM-1 missile launch to ensure that safety hazard patterns and impact areas are kept clear of nonparticipants. These procedures include advance notice to mariners, clearance of non-participating boats from the safety hazard pattern, standard range surveillance by aircraft prior to the missile launch, and use of chase planes during the missile flight. Road closure procedures are currently in place at San Nicolas Island since many of the ongoing test and training operations require road closures to ensure the safety of non-participants on the island. The gate to the west end of island would be closed prior to the missile launch, allowing only test personnel in designated locations.

All explosive components would be stored in the N105-107 facilities, which are currently used for explosives storage, or temporarily in facility 110 during missile assembly. These facilities have an associated 1,855-foot (ft) (565-m) ESQD arc. These facilities would be used to store missile power cartridges, destructors, and boosters.

Although there is a remote possibility that a missile could hit the island due to unforeseen circumstances, safety procedures are designed to minimize this risk to the greatest extent possible. A chase plane would follow the missile during flight and would activate the missile's on-board FTS in the event that the missile turns drastically off course. The FTS functions by shutting off fuel and ejecting the missile wings in the case of complications. If missile flight is terminated using the FTS, the missile would likely proceed up to an additional 0.5 mile (0.8 km) in a straight line and would fall to the surface. It is assumed that the JP-8 fuel in the sustainer motor would be nearly empty by this point. In addition, established "flight termination lines," safety boundaries at which missile flight would be terminated, would be utilized during test launches in order to further reduce risks to sensitive areas on the island (see Figures 2-2a and 2-2b).

2.1.3 Post-Test Activities

As described in Section 2.1.1.1, support facilities would consist largely of modular units on temporary pads. Following completion of the proposed missile tests, these facilities and associated equipment (e.g., generators) would be removed from San Nicolas Island and barged back to Port Hueneme or flown to Point Mugu. Facility and equipment removal would likely be completed by December 2008.

2.1.4 Conservation Measures

The proposed action would include the implementation of the following conservation measures in order to minimize any potential impacts to biological and cultural resources. The biological resource conservation

measures are based upon a previous biological opinion from the U.S. Fish and Wildlife Service (USFWS) and accompanying terms and conditions (e.g., USFWS 2001). The cultural resource conservation measure is based on the use of cultural resource siting information to make necessary adjustments to facility locations.

- 1) Upon arrival on San Nicolas Island, all project personnel will be briefed by environmental staff, with translation if necessary, on procedures to follow to avoid inadvertent impacts on the island's natural and cultural resources.
- 2) All terms, conditions, and requirements of the Letter of Authorization (LOA) issued by the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) for the taking of marine mammals incidental to missile launch operations from San Nicolas Island (NMFS 2003) will apply. Monitoring of pinniped populations and acoustic monitoring will be conducted by the Navy for each SSM-1 KAI missile launch as specified in the LOA. As required by the LOA, if injurious or lethal take is discovered during monitoring, the Navy will contact the Regional Administrator, Southwest Region, NMFS, or his/her designee, at (562) 980-4023 within 48 hours and, in cooperation with the NMFS, launch procedure, mitigation measures, and monitoring methods will be reviewed and appropriate changes made prior to the next launch.
- 3) In accordance with mitigation measures identified in the Point Mugu Sea Range EIS/OEIS (NAWCWD Point Mugu 2002a), applicable terms and conditions of the Biological Opinion issued by USFWS (USFWS 2001) for missile launch activities on the island, seabird colonies, western snowy plovers, and marine mammals will be monitored during each launch test and throughout the subsequent flight of the missile. Monitoring results will be reported to USFWS (birds). Any observations that indicate harm to individuals or the substantial disruption of critical activities such as the feeding and protection of young will be reported to the responsible agency within 48 hours, and subsequent launches will be postponed pending consultation with the agency to identify appropriate mitigation measures.
- 4) To avoid the introduction of non-native species to San Nicolas Island, all portable facilities and equipment shall be inspected and cleaned prior to being transported to the island.
- 5) To lessen the spread of invasive weeds on the island, construction equipment will be washed or brushed off to remove weed seeds prior to leaving sites where invasive weeds are known to occur. This includes construction equipment being moved from 1 facility site to another. The sequence of grading activities should proceed from the area of fewest invasive weeds to the area with the most invasive weeds. Project personnel will consult with environmental staff to determine where and when these procedures will apply.
- 6) For facility preparation involving use of fill material, the fill should be obtained from a weed-free source.
- 7) Rare native plant species would be salvaged from construction sites where possible.
- 8) Prior to any project-related grading or clearing of debris or vegetation, sites of new construction or activity will be surveyed for the federally threatened island night lizard (*Xantusia riversiana*). The same procedure will be followed prior to removal of facilities and equipment. A qualified biologist will conduct the surveys and relocate any island night lizards that could otherwise be disturbed or harmed during the proposed construction and removal activities. Operational areas will be demarcated to prevent their expansion and avoid the possibility of take in areas where island night lizards occur.

- 9) Following the removal of temporary facilities and equipment, each site is expected to recover naturally to preconstruction conditions given the recontouring and weed eradication. Weed eradication will be conducted where necessary by or under direction of the environmental staff.

2.2 ALTERNATIVES

This section includes a description of the criteria used in developing alternatives, lists the combination of siting options that form the action alternatives evaluated in this EA, and describes the No-Action Alternative.

2.2.1 Operational Criteria

Unique characteristics of the SSM-1 KAI missile require specific testing criteria and conditions. The ideal testing location must supply the following: land-launch location with sufficient safety clearance area, missile overflight over a combination of water and of varied land terrain (i.e., a sea-shore interface), and moving water targets. In addition, the launch location needs to have a large enough area surrounding it to accommodate booster and missile safety hazard pattern restrictions for the missile launch because the booster does not have an FTS, and the general testing location needs to accommodate the logistics of equipment and personnel.

2.2.2 Facility Siting Criteria

Four locations were considered, but 3 were found to be inadequate for testing the SSM-1 KAI missile. Launches from the Point Mugu mainland would not meet safety requirements due to the SSM-1 KAI missile's lack of a booster FTS. San Clemente Island does not meet logistical requirements (e.g., missile launch area, instrumentation, existing RDT&E range, ordnance storage/handling facilities) and scheduling requirements (e.g., range time conflicts with other higher-priority training uses at San Clemente Island) necessary for the missile testing and support logistics. China Lake does not fulfill testing requirements because it does not provide adequate sea-surface conditions over which missiles can fly.

2.2.3 Facility Siting Alternative

Some grading would be necessary in order to construct the facilities and facility modifications required to test the SSM-1 KAI missile; however, potential support facility locations have been sited to avoid potential impacts to sensitive natural and cultural resources. Potential support facility locations have been sited to avoid potential impacts to sensitive natural and cultural resources. For example, the Search Radar Unit (SRU) and RRD function would be located in proximity to a known archaeological resource site. Using this siting constraint information, the RRD antennas and the SRU Operating area have been relocated to avoid direct ground disturbance at this archaeological site. This arrangement of facility siting minimizes the use of previously undisturbed locations, thus lessening the potential for environmental effects. The resulting amount of previously undisturbed areas affected by proposed facility siting is relatively small. Therefore, there are no alternative facility locations.

2.2.4 Building 807 Launch Complex Alternative

Based on defined operational and facility siting criteria, 2 potential launch sites were identified: the Multiple Use Launch Pad (proposed action) and facilities at the Building 807 Launch Complex. The Building 807 Launch Complex alternative consists of using facilities at the complex, located on the far west side of San Nicolas Island, as the launch site rather than the Multiple Use Launch Pad and the associated support functions at N189. Upon review of operational and facility siting construction criteria, the proposed action was selected as the preferred alternative because more infrastructure currently exists near the Multiple Use Launch Pad to support launch operations. The Building 807 Launch Complex

Alternative is located in a more remote location and would require more facility modifications to support launch operations. However, this alternative is carried forward for analysis in this EA.

2.2.5 No-Action Alternative

Under the No-Action Alternative, the SSM-1 KAI missile testing would not occur at San Nicolas Island. This alternative would not meet the purpose and need for the proposed action. However, the No-Action Alternative is carried forward for analysis in this EA in accordance with NEPA requirements.

CHAPTER 3

AFFECTED ENVIRONMENT

This chapter includes a description of the existing environmental conditions at San Nicolas Island. Information presented in this chapter serves as baseline data to identify and evaluate any potential impacts that could result from the various action alternatives or the No-Action Alternative. Components of SSM-1 KAI testing that would occur at least 1 NM (1.9 km) offshore have been analyzed in the Sea Range EIS/OEIS (NAWCWD 2002a). Therefore, the region of influence consists of areas where facilities will be added or modified, proposed and alternative missile launch locations, and proposed missile overflight areas at San Nicolas Island and out to 1 NM (1.9 km) from shore. Under the action alternatives, facility modifications would occur at 11 areas across San Nicolas Island, missile and chase plane overflights would occur over the western and southern portion of the island, and the missile booster would fall into nearshore waters off the western or southwestern shore of the island. Background and site-specific information presented for each resource section has been focused to describe only those resource components addressed in the analysis of potential impacts in Chapter 4.

3.1 LAND USE

Land use is defined as the natural condition or human-modified activities (i.e., developments, military operations) occurring at a particular location. The term “land use” can also refer to the use of an area by recreational, commercial, and military users.

3.1.1 San Nicolas Island

Located approximately 57 NM (106 km) southwest of Point Mugu, San Nicolas Island is owned and operated by the Navy as a major element of the Sea Range. Although San Nicolas Island is part of Ventura County, all development on the island is associated with the military and associated land use classification is either considered military-support or open space. The island has 1 minor population center, Nicktown, which is located on the north side of the island. No permanent residences are established on the island; however, approximately 200 people live as part-time residents at Nicktown.

There are 156 buildings located on San Nicolas Island with facilities to transport, house, and support personnel and related materials, in addition to a 10,000-ft (3,048-m) long asphalt runway and facilities to support testing operations. Adjoining the airfield are a control tower, hangars, ground control approach capabilities, and 2 fire stations: 1 at the airport and 1 near the main military complex. Additional facilities include extensive range, support, and fuel storage facilities; machine/repair shops and storage buildings; and ordnance and launching facilities. Infrastructure includes water wells, a desalination plant, water distribution and sewage systems, and a power plant and power distribution system. The island has a total of 47 miles (75.6 km) of roads, of which 21.6 miles (34.8 km) are paved. A total of 7 permanent barracks are available, containing 255 rooms with a capacity for 417 people. Large items are barged to the island at Daytona Beach from the Navy’s deep-water harbor at Port Hueneme, California. The barge landing area enables sea transport of material and equipment to and from the island. Barge landings at Daytona Beach occur about once every 2 weeks, on average.

In addition to the island’s military uses, the waters off San Nicolas Island are also used for commercial fishing and recreation. Most types of inshore fisheries common in southern California can occur in the nearshore waters of San Nicolas Island (Ventura County Commercial Fisherman’s Association 1997). Occasional fisheries occurring near the island include drift sea bass fishing, live fish trapping, hook and line bottom fishing (rock cod), hook-and-line trolling (halibut and sea bass), open-water trolling (albacore

and swordfish), squid purse seining, and crab trapping. However, primary nearshore fisheries at the island are urchins and lobster (abalone fisheries are currently closed). These fisheries occur in less than 120 ft (37 m) of water around the island; fall and winter are the heaviest seasons for these fisheries. Commercial passenger fishing vessels frequently offer 1-day sport fishing excursions either from the Ventura or Santa Barbara harbor. Examples of other common offshore recreational activities include sailing, boating, swimming, and diving. Offshore recreational activities are generally allowed at San Nicolas Island during periods of limited military activity. Restrictions are enacted to clear the appropriate range areas of non-participants before military operations are conducted.

3.1.2 Facility Locations

Proposed facility modifications and additions would occur within 11 developed areas of San Nicolas Island. All areas proposed for facility modifications or additions are designated for military uses. Facility additions or modifications would occur at or around the following existing facilities (see Figure 2-1):

- Buildings N105-N107, explosive material storage;
- Building N110, an ordnance assembly building;
- Building N127, a range operations and communications office;
- Building N163, a photographic building (also near N98, a range office);
- Building N189 and Multiple Use Launch Pad, an area for conducting and supporting missile and target launches;
- Building N279, a facility historically used for inflating weather balloons;
- Building N319, a special projects hangar adjacent to the airfield;
- Fuel Farm, the existing Public Works fuel storage area; and
- Building N807, a missile launch control blockhouse.

3.1.3 Missile and Chase Plane Overflight Areas

San Nicolas Island lies in area M3 of the Point Mugu Sea Range. This area experiences between 530 to 1,299 aircraft sortie operations per year (NAWCWD Point Mugu 2002a). Aircraft and missile activities do not typically occur over the western and southern portions of the island, the areas currently proposed for missile and chase plane overflights.

3.2 PUBLIC SAFETY

Public safety issues include potential hazards inherent in flight operations, missile firings, operation of Navy vessels, issues of public proximity and access, effects of electromagnetic radiation (EMR), potential ordnance hazards, and potential fuel hazards. The safety policy of NAWCWD is to observe every reasonable precaution in the planning and execution of all operations that occur on the Sea Range to prevent injury to people and damage to property.

3.2.1 Safety Procedures

The Sea Range safety policy, procedures, and guidance are covered in NAWCWD Instruction 5100.2A, *Range Safety*, dated 28 January 2000 (NAWCWD 2000). This document defines range safety requirements, criteria, the safety planning process, and operational procedures. Although the Commander

of NAWCWD has the ultimate responsibility for range safety, the authority for execution of these safety programs is delegated to the Sea Range Safety Officer in the Range Safety Office.

Prior to any missile launch, a Message of Instruction is prepared. This document establishes precise guidelines for the safe and successful execution of the exercise. Any test participant that observes an unsafe situation can communicate an order over any voice communication system to terminate the exercise. Notices to Mariners (NOTMARs) and Airmen (NOTAMs) are published to inform the public of training activities and exercises that may pose hazards. When non-participating aircraft and surface vessels are present in these areas prior to a scheduled activity, hazardous operations are suspended until the area is clear. In addition, all activities involving use of live or inert ordnance in the nearshore area are conducted under control of either an airborne or ground Range Safety Officer.

3.2.2 Public Access and Proximity

San Nicolas Island is owned and operated by the Navy and access is strictly controlled. Access is granted for military-related activities and for pre-approved, non-military users, primarily for scientific purposes. A scheduled contract aircraft shuttle operates between Point Mugu and San Nicolas Island to bring personnel to the island. Because of San Nicolas Island's remote location in relation to civilian communities, the airfield does not require an Air Installation Compatible Use Zone study. Therefore, accident potential zones have not been identified.

Three surface restricted areas are located around San Nicolas Island: Alpha, Bravo, and Charlie (Figure 3-1). In addition, NAWCWD has established 2 airspace Restricted Areas over San Nicolas Island that extend 3 NM (5.6 km) around the island. The 2 areas are divided by an imaginary line from the north side to the south side of the island where the Bravo boundaries intersect the shorelines; they extend from the surface to 100,000 ft (30,500 m) MSL. Figure 3-1 shows warning zones associated with missile and target launches from the west end of San Nicolas Island. Naval security personnel secure on-land restricted access zones prior to and during launch activities at the west end of the island to prevent unauthorized personnel and non-participants from entering the area. Roads into Warning Zone 2 are blocked during launches, and personnel in Warning Zone 2 are required to be in protected block houses or shelters during launches. No personnel are allowed in Warning Zone 1 during missile or target launches or during missile impacts at nearby targets during testing. In addition, clearance areas are cleared of all non-participating fishing or recreational boats prior to launch activities (NAWCWD Point Mugu 2002a).

NAWCWD issues NOTAMs and NOTMARs 24 hours in advance of Navy activities that require exclusive use of an area. In addition, NAWCWD has established a special phone number to allow commercial fishermen to be informed in advance of military activities at San Nicolas Island (Ventura County Commercial Fisherman's Association 1997). Despite these procedures, non-participants (e.g., commercial fishing vessels) occasionally are present in offshore areas of the island prior to scheduled operations. In these cases, a helicopter or Navy vessel contacts non-participants directly by radio to ensure that the area is clear prior to commencing a scheduled operation. In some cases, only 1 of the 3 areas (A, B, and C) surrounding the island must be clear. However, there are certain situations that require 2 or all 3 areas to be clear during a scheduled operation. The number of closures per year can fluctuate substantially. There are occasional periods of several months or more with no closures, while several closures can sometimes occur in a 2 to 3 week period (Ventura County Commercial Fisherman's Association 1997).

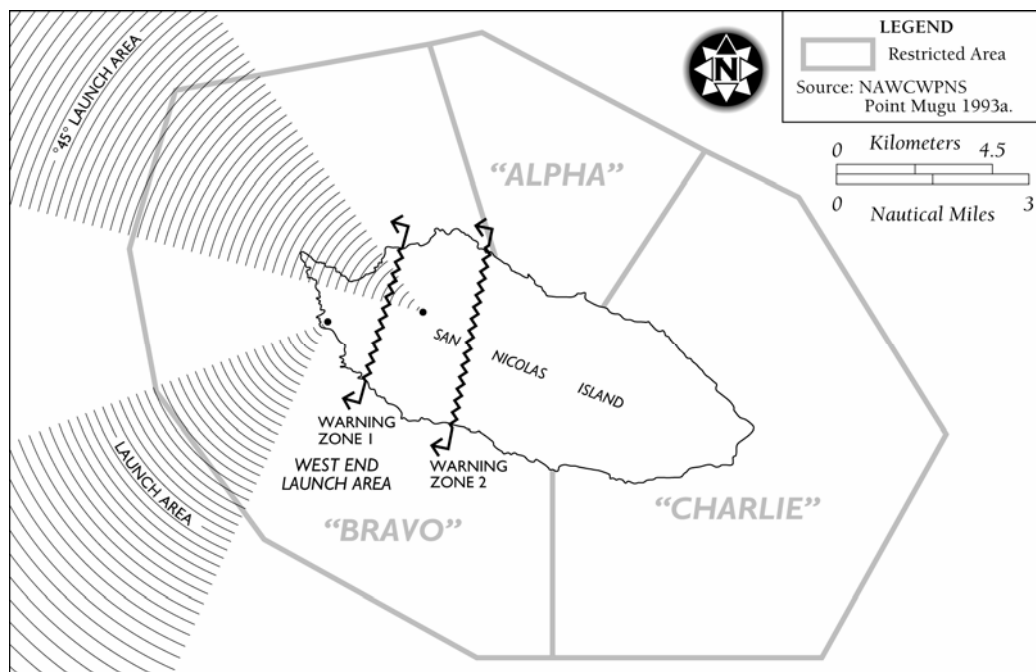


Figure 3-1 Warning Zones for Missile and Target Launches at San Nicolas Island

3.2.3 Electromagnetic Radiation

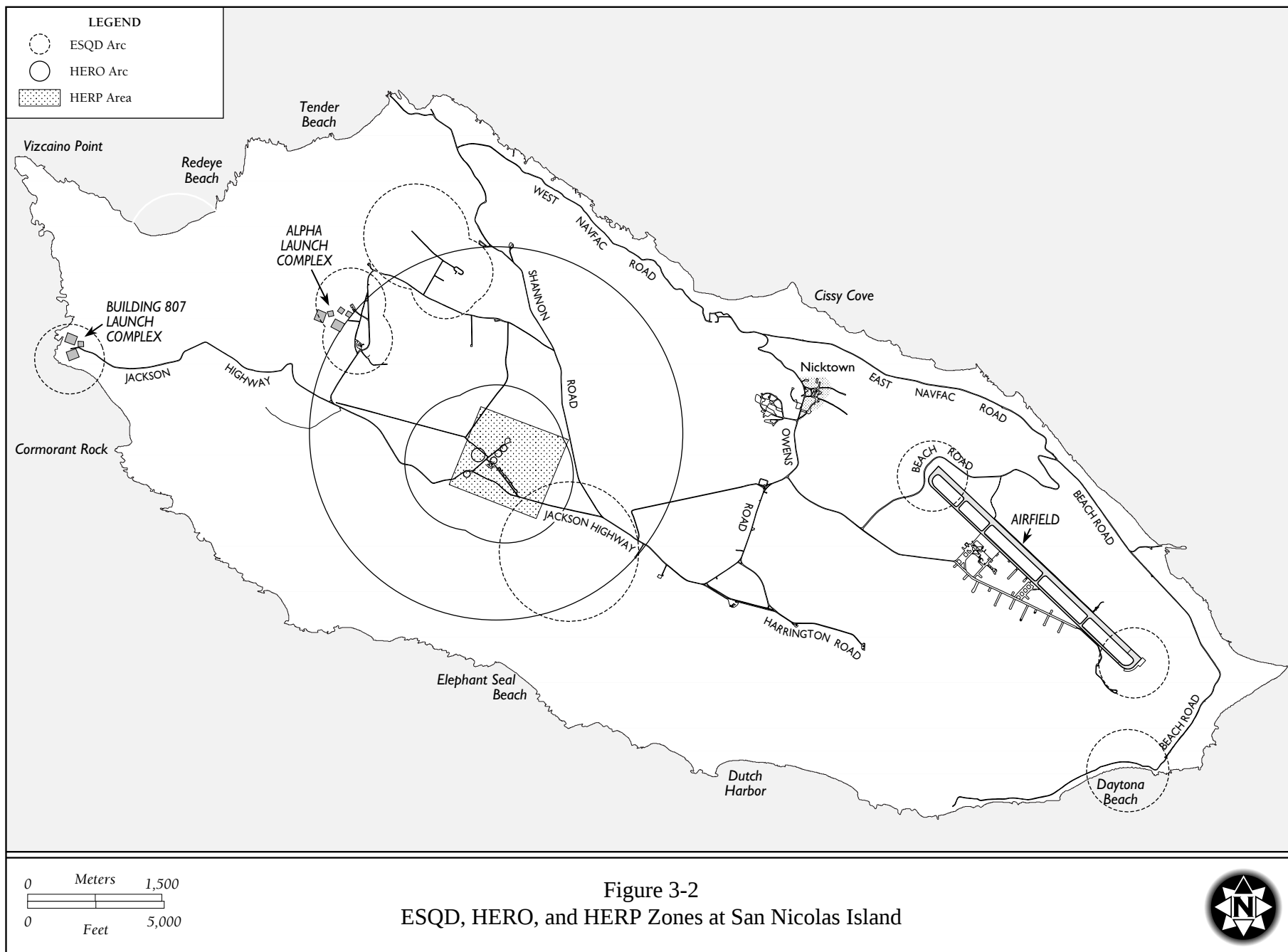
The Navy operates a variety of equipment and facilities at San Nicolas Island which generate EMR. These EMR sources include radar, communication facilities, and power utility lines. As shown on Figure 3-2, the majority of the Hazards of Electromagnetic Radiation to Ordnance (HERO) and Hazards of Electromagnetic Radiation to Personnel (HERP) arcs at San Nicolas Island are located toward the middle and west end of the island.

3.2.4 Explosive Safety Quantity Distance Arcs

Various munitions and targets susceptible to the effects of EMR are stored and maintained at San Nicolas Island. These include missile warheads, rocket motors, high explosives, and other types of ordnance used in the testing or training activities occurring on the Sea Range. Munitions arrive on the island either by surface ship or by air transport. ESQD arcs for the safety of personnel and equipment have been established around the munitions storage and assembly areas (see Figure 3-2).

3.3 GEOLOGICAL RESOURCES

Geological resources are generally defined as the geology, soils, and topography of a given area. The geology of an area includes bedrock materials and mineral deposits. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Topography is typically described with respect to the elevation, slope, aspect, and surface features found within a given area. Because the proposed action has an offshore component, geological resources also refers to sediments and rock outcroppings in the nearshore and open ocean environment.



3.3.1 Geology

San Nicolas Island is the outermost island of the southern Channel Islands in the Peninsular Range geomorphic province. The most notable geologic feature of San Nicolas Island is the series of Eocene marine terraces that formed as a result of sea level changes and tectonic uplift. A map of the geologic features and inner margins of marine terraces is shown in Figure 3-3. The numerous terrace levels range from underwater depths of approximately 400 ft (120 m) to an elevation of over 900 ft (270 m). The terraces are covered by windblown sand (dune) deposits that decrease in depth from northwest to southeast (NAWCWD Point Mugu 2002a).

3.3.2 Soils

Soils on San Nicolas Island are predominantly sedimentary in origin with sandstone as their major constituent; the soils also tend to contain a large concentration of ocean salts (U.S. Forest Service 2002). However, San Nicolas Island soils are extremely diverse, due largely to the varied terrain. Soils generally form a thin layer over bedrock material. Along the steep southern edge of the island, the soil layer is virtually nonexistent. Longitudinal sand dune deposits cover the west end of the island and are composed of wind-transported quartzitic sand. The majority of the rest of the island is covered by sandy loams with scattered sandy beaches along the coast. Most of the island soils are rated as severely limited for construction, are highly susceptible to erosion by wind, and are moderately erodable by water (NAWCWD Point Mugu 2002a). Soils in the vicinity of proposed facility modifications have all proven suitable for construction and support existing facilities. Soils in the vicinity of the proposed facility modifications are primarily dune sand deposits on the western portion of the island or marine terrace deposits on the eastern portion of the island.

3.3.3 Offshore Geology

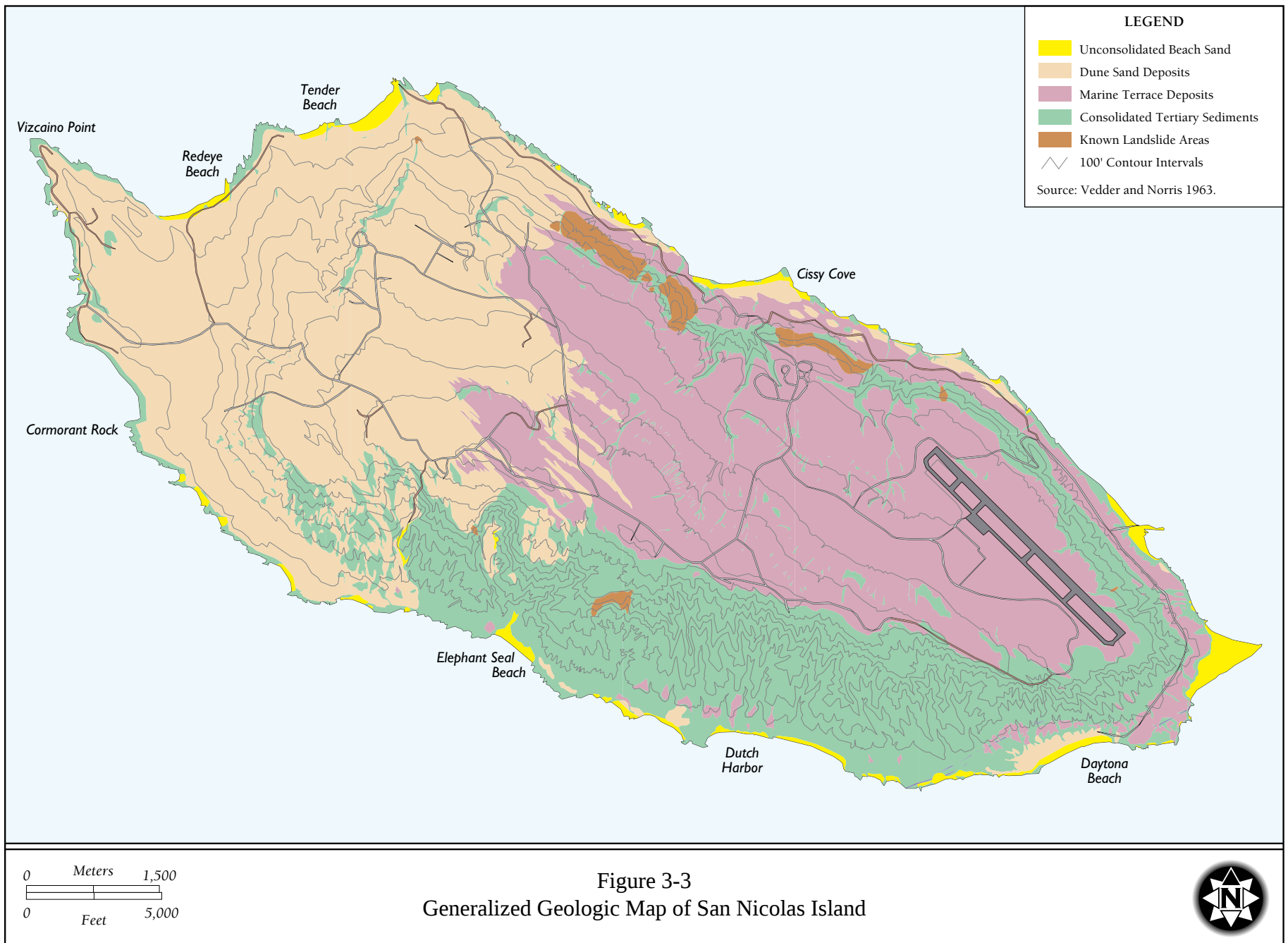
The specific subsurface geology offshore from Redeye Beach (Figure 3-4) is comprised of sedimentary bedrock. The surface geology of the sub tidal area is characterized by sand, bedrock, or boulder. Rock outcrop, hard-ground bottom is generally covered by less than 3 feet (1 m) of sediment in this portion of nearshore waters.

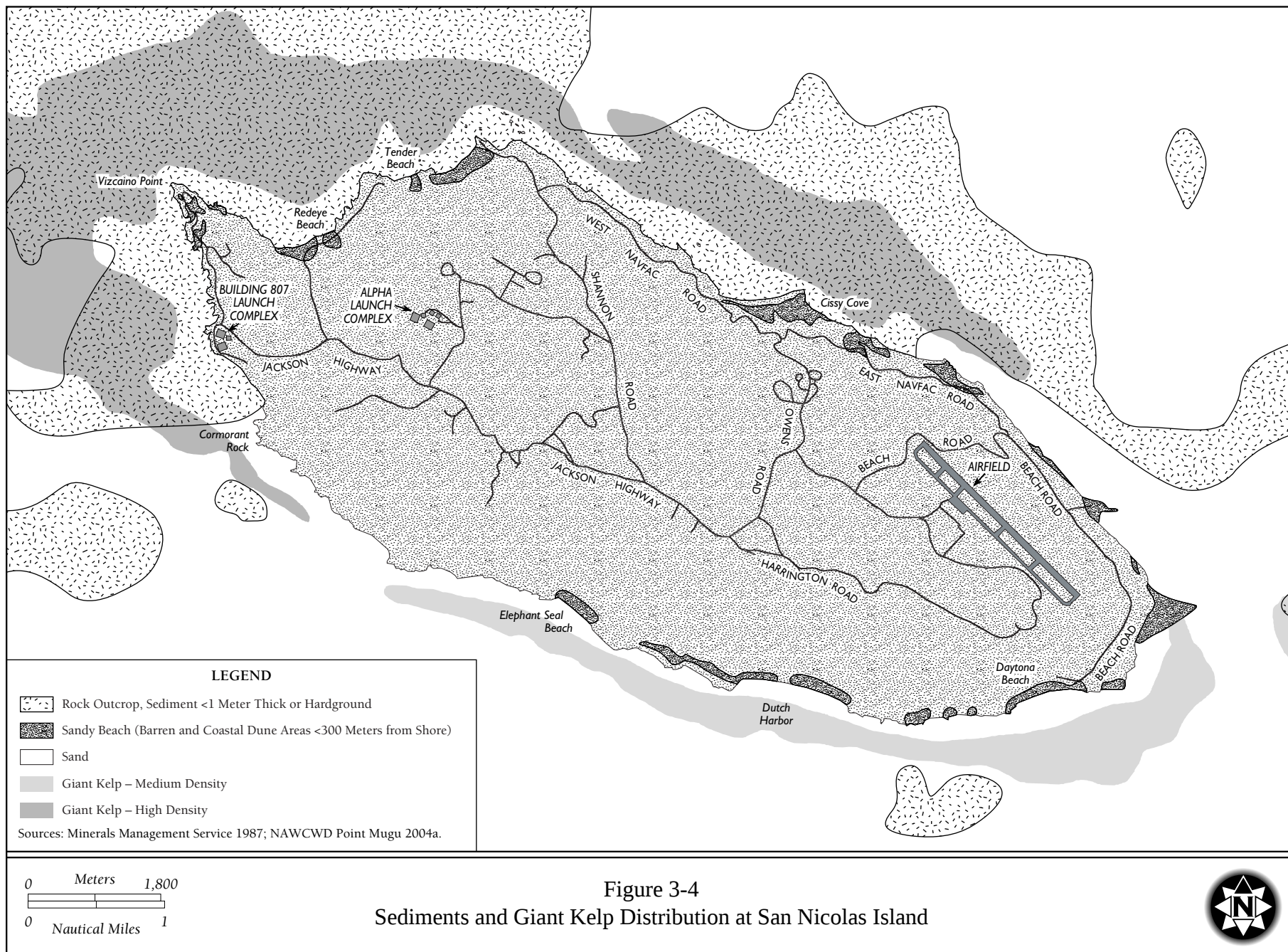
3.4 WATER RESOURCES

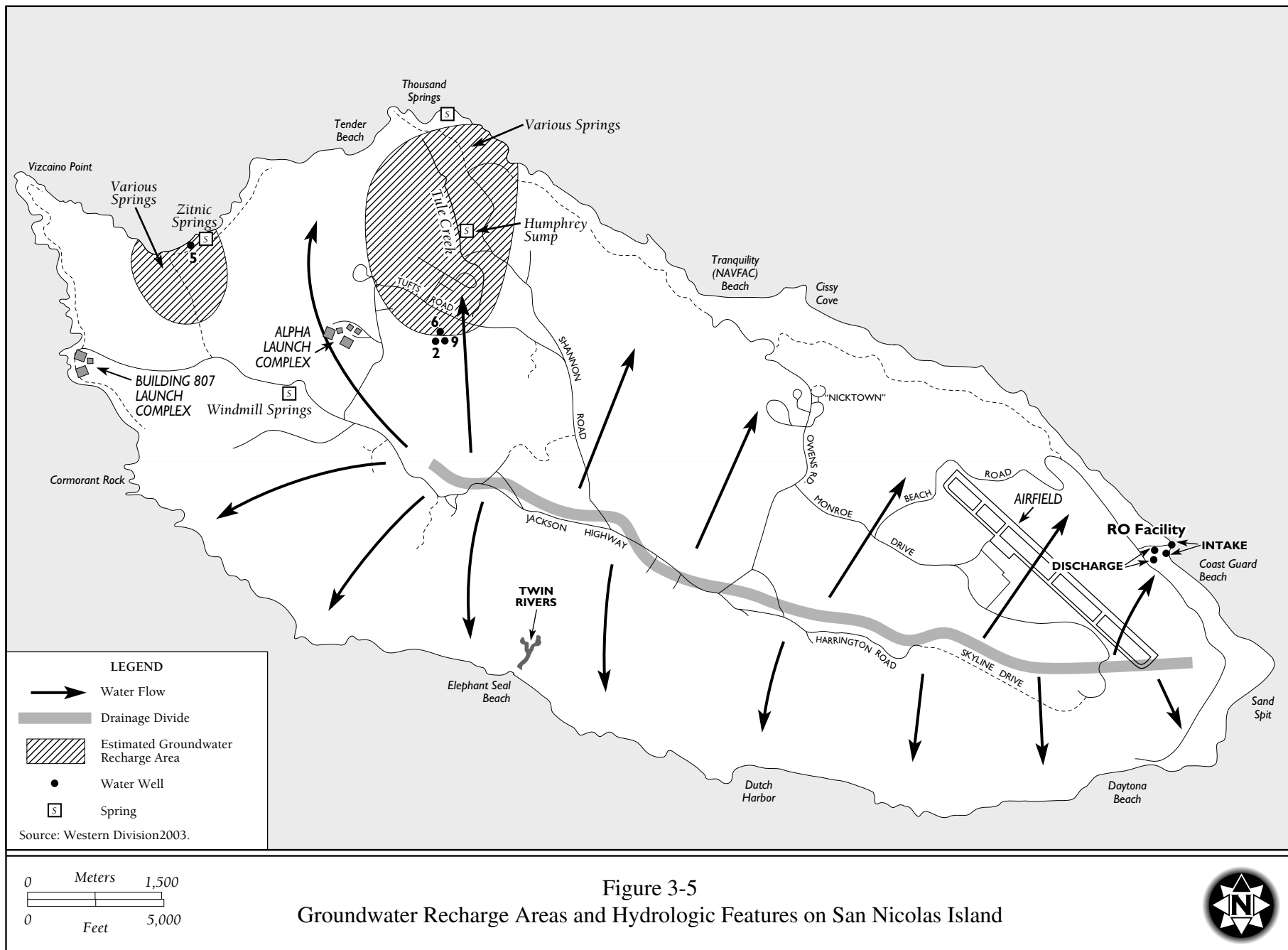
This section describes the surface water and groundwater resources, as well as marine water quality potentially impacted by action alternatives and the No-Action Alternative at San Nicolas Island. Oceanographic conditions include tidal currents and cycles, while marine water quality includes the chemical and physical composition of water as affected by natural conditions and human activities. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed.

3.4.1 Surface Water

San Nicolas Island is situated in Watershed 11 of Ventura County which also includes Anacapa, Santa Barbara, San Clemente, and Santa Catalina islands (California Regional Water Quality Control Board [RWQCB] 1994). With an average annual rainfall of approximately 8 inches (20 cm), San Nicolas Island contains no year-round surface bodies of water. The only perennial stream, Tule Creek, is located at the northern portion of the island; it is fed by natural springs that flow during most of the year except during periods of drought. Zitnic Springs is located in the groundwater recharge area near Redeye Beach (NAWCWD Point Mugu 2002a). Runoff on the island generally flows outward toward the ocean through several unnamed ephemeral streams, gullies, and washes (Figure 3-5). Wetlands areas exist at Sand Spit,







Twin Rivers, and Tule Creek. No wetlands have been identified within areas affected by action alternatives. While surface water on San Nicolas Island is not used as a potable water supply source, it does recharge the groundwater supply (NAWCWD Point Mugu 2002a).

3.4.2 Groundwater

San Nicolas Island has a limited capacity for groundwater storage, due to the consolidated marine sediments that comprise the majority of the island. Groundwater storage occurs mainly at the western end of the island (see Figure 3-5). Potable water for San Nicolas Island is obtained from 4 wells, 3 springs, and a desalination plant located on the northeast side of the island near Coast Guard Beach. Due to the lack of precipitation and the prevalence of soils with low porosity, conditions within the proposed facilities modification areas are unlikely to support groundwater resources. In addition, there are no springs, wells, or catchments located within these areas.

3.4.3 Nearshore Water Quality

The quality of ocean water in the immediate area of the island is high. The distance of the island from the mainland, the large diluting volume of the ocean, and the shelves and basins near the mainland where many pollutants settle ensure high water quality at the island.

The Clean Water Act prohibits discharge of hazardous substances into or upon U.S. waters out to 200 NM (370 km). In addition, the State Water Resources Control Board (SWRCB) adopted the *Water Quality Control Plan for Ocean Waters of California* (SWRCB and California Environmental Protection Agency [Cal/EPA] 2001). The amended plan (*Ocean Plan*) establishes beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California Coast outside of enclosed bays, estuaries, and coastal lagoons. It also contains a prohibition against discharge of specific hazardous substances and sludge, bypass of untreated waste, and discharges that impact state water quality protection areas. However, the SWRCB may grant exceptions to allow a discharge into state water quality protection areas provided that the exception will not compromise protection of ocean waters for beneficial uses and that the public interest will be served (California CRWQCB 1994).

The designation of state water quality protection areas is based on the presence of certain species or biological communities that, because of their value or fragility, deserve special protection including preservation and maintenance of natural water quality conditions to the extent practicable (Water Resources Control Board and RWQCB 1970). The state water quality protection area surrounding San Nicolas Island includes the greater of either a distance of 1 NM (1.9 km) offshore or up to the 300-ft (91-m) “isobath” (i.e., contour line linking region of the same depth).

3.5 BIOLOGICAL RESOURCES

Biological resources include native and naturalized plants and animals and the habitats in which they occur. This section describes biological resources that may potentially be affected by the Proposed Action at San Nicolas Island and in surrounding waters up to 1 NM (1.9 km) from shore. Separate subsections address terrestrial and marine biological resources, respectively.

3.5.1 Terrestrial Biological Resources

This subsection describes the occurrence of (1) vegetation communities, (2) wildlife, and (3) special-status species, generally on San Nicolas Island and specifically in areas that may be affected by the Proposed Action. Biological resource information for each location of proposed construction or project-related activity is summarized in Table 3-1.

Table 3-1. Biological Resources at Proposed Support Facilities

Area	Proposed Grading	Vegetation	Invasive Species (Veg.)	Special-Status Species
N105-N107 – Explosive Material Storage	None	Coastal scrub	N/A	None
N110 – Ordnance Assembly Building	0.21 acre	Coastal scrub, 90% native vegetation	No	INL (island night lizard) possible
N127 – CCU and RRD	0.50 acre	Developed, 25% native vegetation	Yes	None
N163 – SRU and RRD	None	Developed/disturbed	Yes	INL low-moderate density
N189 – FCD Blockhouse	0.06 acre	Developed, 50% native vegetation	Yes	None
Multiple Use Launch Pad	None	Developed	N/A	None
N279 – Homing Head Test Facility	None	Coreopsis scrub	N/A	None
N319 – Japan Office and Maintenance Shop	None	Developed and grassland, 40% native vegetation	No	INL very low numbers
Camp KAI	0.48 acre	Coreopsis scrub, 20% native vegetation including <i>Dudleya virens</i>	Yes	INL low-moderate density
Fuel Farm	None	Developed	N/A	None
N807* – Launch Complex	None	Developed	N/A	Western snowy plover

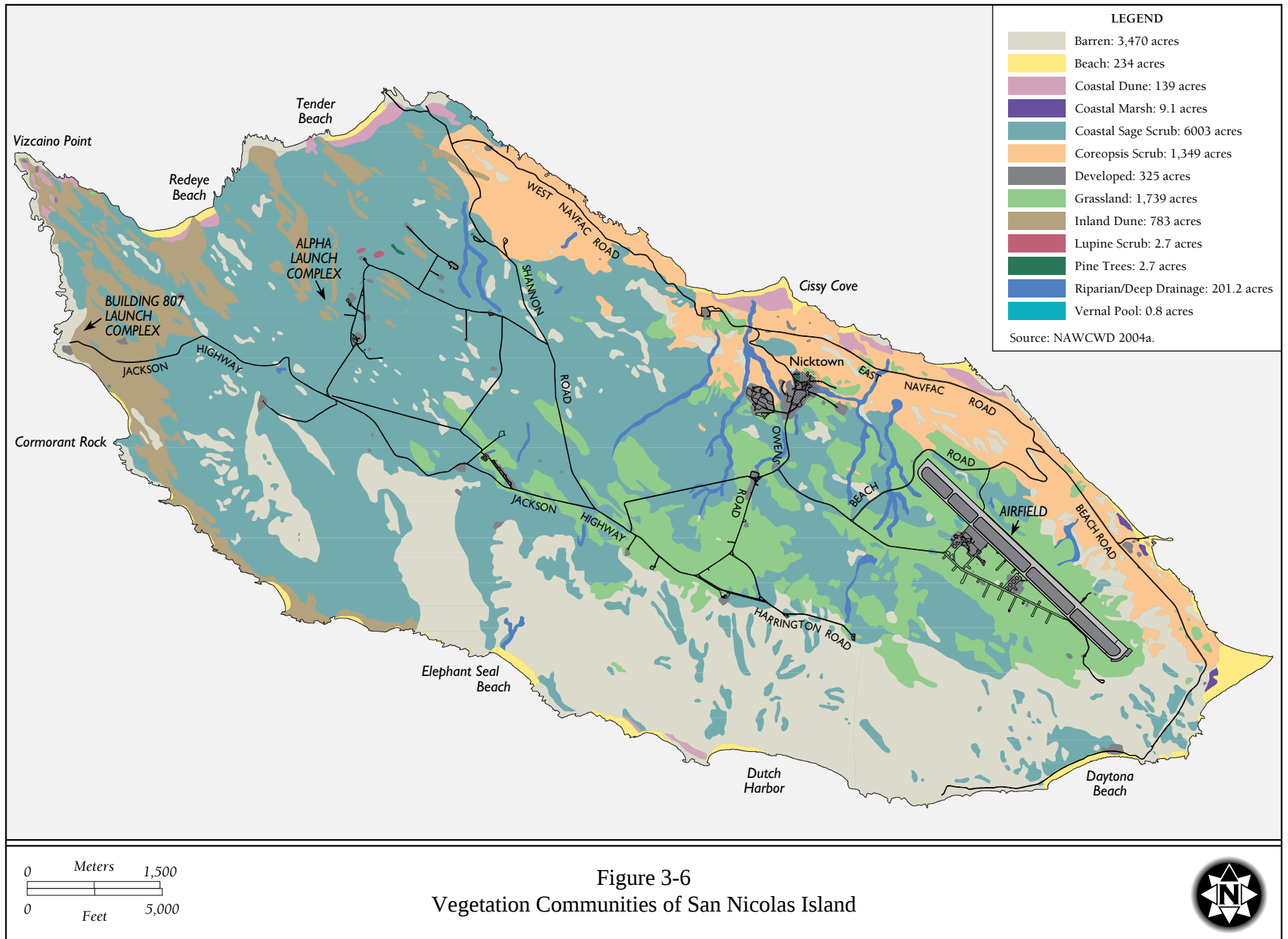
* Note: the Building 807 Launch Complex Alternative involves use of facilities at N807 in place of Multiple Use Launch Pad and N189.

3.5.1.1 Vegetation Communities

Figure 3-6 shows the vegetation of San Nicolas Island based on classification and mapping by Halvorson et al. (1996). Unvegetated and developed areas are included. Vegetation communities include 5 scrub (=shrub-dominated) communities (caliche, *Isocoma*, *Baccharis*, *Lupinus*, and *Coreopsis* scrub) covering 7,349 acres (2,974 ha). Freshwater aquatic vegetation communities include vernal pools and riparian habitats. Coastal and inland dunes are found along the coastline of San Nicolas Island and coastal marsh is found in 3 small areas. Annual iceplant, native and non-native grasslands, and disturbed and developed communities also occur. Barren areas which support no vegetation cover 3,468 acres (1,476 ha). Additional details on the distribution and floristic composition of vegetation communities are provided in the Integrated Natural Resources Management Plan (INRMP) for San Nicolas Island (Naval Air Weapons Station [NAWS] China Lake 2003).

3.5.1.2 Wildlife

An overview of wildlife and lists of species documented on San Nicolas Island are provided in the INRMP (NAWS China Lake 2003). Terrestrial invertebrates (land snails, insects, and other arthropods) on the island include a number of species or subspecies that appear to be unique to the Channel Islands, along with native species that also occur on the mainland and introduced non-native species. Reptiles on the island include 3 species of lizards: side-blotched lizard (*Uta stansburiana*), southern alligator lizard



(*Elgaria multicarinatus*), and island night lizard (*Xantusia riversiana*, discussed below). The island supports 2 native species of mammals, both of which can occur throughout the island: San Nicolas Island deer mouse (*Peromyscus maniculatus eximius*) and San Nicolas island fox (*Urocyon littoralis dickeyi*, discussed below).

Over 300 species of birds have been documented on the island, including 17 (14 native, 3 non-native) species that breed on the island. Of particular note are 3 Channel Island endemic subspecies: island horned lark (*Eremophila alpestris insularis*), San Clemente Island house finch (*Carpodacus mexicanus clementae*), and dusky orange-crowned warbler (*Vermivora celata sordida*). In addition, the island also supports a wintering population of burrowing owls (*Athene cunicularia*).

The island provides important resting areas for seabirds that forage in surrounding waters, including the brown pelican (*Pelecanus occidentalis*). Seabirds that breed on the island include the western gull (*Larus occidentalis*), Brandt's cormorant (*Phalacrocorax penicillatus*), black oystercatcher (*Haematopus bachmani*), and western snowy plover (*Charadrius alexandrinus nivosus*, discussed below). Nesting and roosting areas of these species are present along the southern and western coastal areas of the island that would be overflown during proposed missile tests (NAWCWD Point Mugu 2002a).

All of the island's native breeding bird species, and essentially all of the migratory species that use the island and surrounding waters are protected under the Migratory Bird Treaty Act. Additional federal responsibilities to consider migratory birds in conjunction with NEPA compliance and to promote migratory bird conservation in general are set forth in Executive Order (EO) 13186.

3.5.1.3 Special-Status Species

Special-status species include those species that are listed, proposed for listing, or are active candidates for listing as threatened or endangered under the Endangered Species Act (ESA) by the USFWS; or as rare, threatened, or endangered under the California ESA (CESA) by the California Department of Fish and Game (CDFG). Table 3-2 lists special-status species on San Nicolas Island.

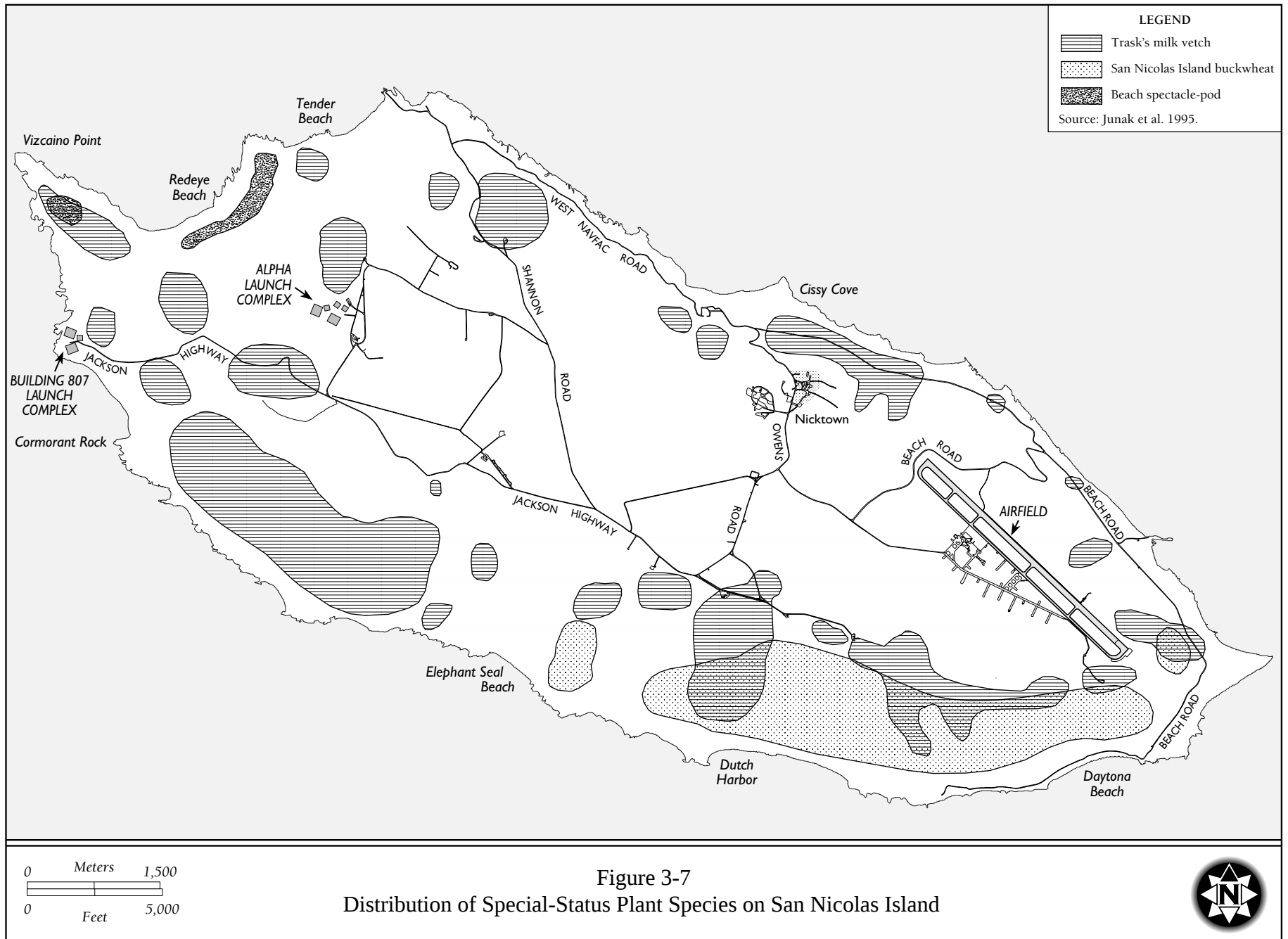
Table 3-2. Special-Status Terrestrial Species Occurring on San Nicolas Island

<i>Common Name</i>	<i>Scientific Name</i>	<i>Status*</i> <i>Fed/State</i>	<i>Habitat</i>
PLANTS			
Trask's milkvetch	<i>Astragalus traskiae</i>	-/R	Coastal dunes, sandstone
Beach spectacle pod	<i>Dithyrea maritima</i>	-/T	Coastal dunes
San Nicolas Island buckwheat	<i>Eriogonum grande timorum</i>	-/E	Coastal scrub
REPTILES AND AMPHIBIANS			
Island night lizard	<i>Xantusia riversiana</i>	T/-	All terrestrial habitats
BIRDS			
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T/-	Sandy beaches and adjacent coastal strand
American peregrine falcon	<i>Falco peregrinus anatum</i>	-/E	Open water and terrestrial habitats
California brown pelican	<i>Pelecanus occidentalis californicus</i>	E/E	Open water
MAMMALS			
San Nicolas Island fox	<i>Urocyon littoralis dickeyi</i>	-/T	All terrestrial habitats

Notes: * E = Endangered, R = Rare, T = Threatened.

Source: NAWCWD Point Mugu 2002a

Areas where special-status plants occur are shown in Figure 3-7. No special-status plants are known or likely to occur in the vicinity of proposed construction sites for support facilities.



The only special-status wildlife species that may occur in the vicinity of proposed construction for support facilities are the San Nicolas island fox and the island night lizard. The island fox may occur virtually anywhere on the island. Relative densities of the island night lizard vary across the island as shown in Figure 3-8. The species should be considered possible in undisturbed areas labeled “absent” in the figure.

The western snowy plover inhabits shoreline beaches that would be overflowed. Designated critical habitat areas for this species (based on nesting locations) are shown in Figure 3-8. The California brown pelican also roosts along the shoreline and forages throughout the nearshore waters of the island (NAWCWD Point Mugu 2002a; NAWCWS China Lake 2003). The peregrine falcon is an uncommon winter visitor that could occur along the shoreline (NAWCWS China Lake 2003).

3.5.2 Marine Biological Resources

This section describes marine biological resources from the shoreline to 1 NM (1.9 km) offshore. These waters are included within a state water quality protection area designated by the RWQCB.

3.5.2.1 Marine Habitats and Flora

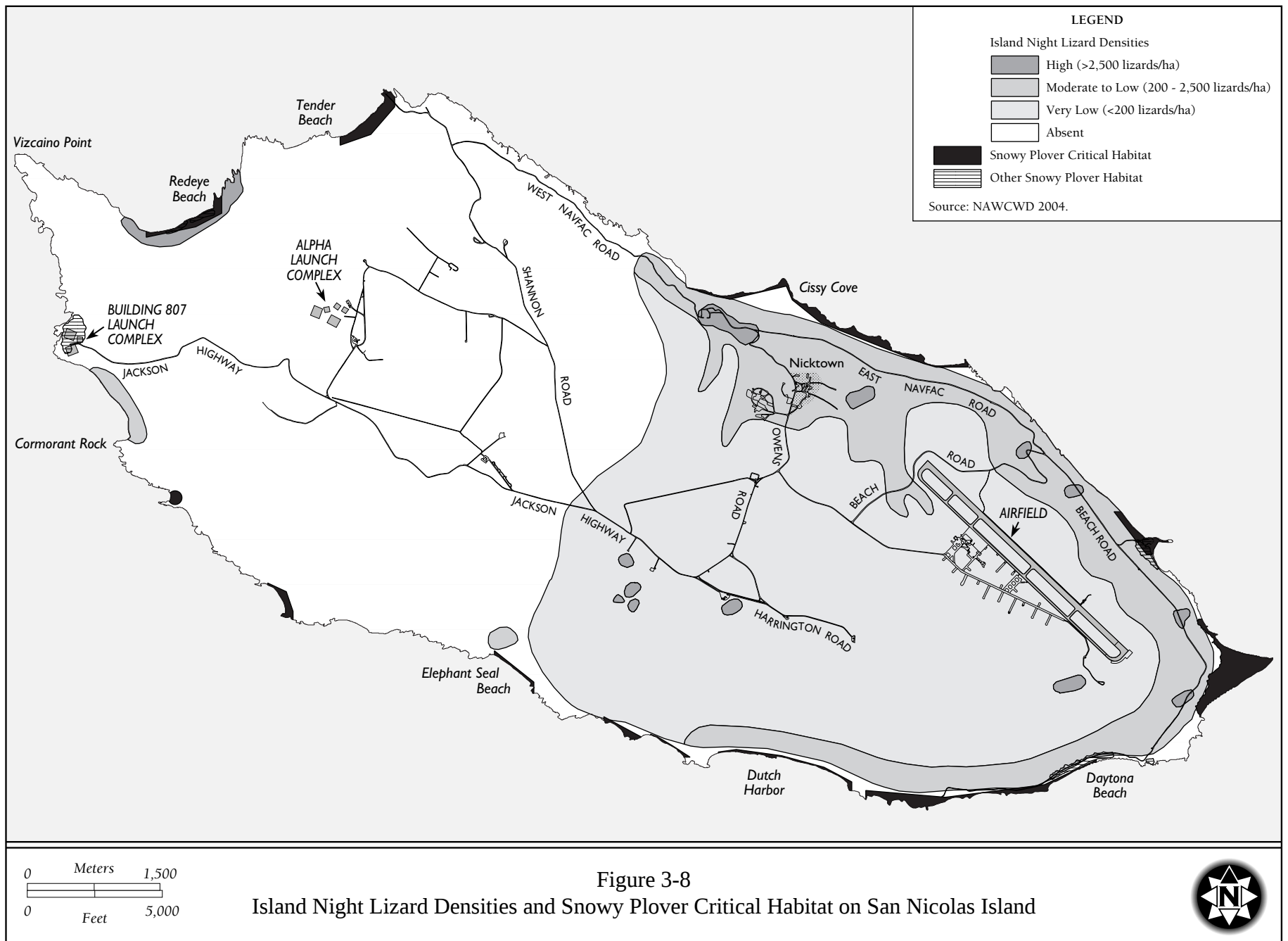
Large areas of giant kelp (*Macrocystis pyrifera*) and numerous species of red, green, and brown algae typically occur in the abundant rocky sub tidal habitat around San Nicolas Island (NAWCWD Point Mugu 2002a). San Nicolas Island supports a large percentage (14%) of the total giant kelp canopy of the entire Southern California Bight (Dailey et al. 1993) and about 30% of the giant kelp found in the California Channel Islands (Engle 1994). Kelp forests are an important part of the marine ecosystem because they serve as food, shelter, substrate, and nursery habitat to migratory and resident species of fish and invertebrates.

Unlike the rocky habitats, sandy beaches (e.g., Coast Guard Beach) do not support rich assemblages of macroflora, the exception being surfgrass (*Phyllospadix torreyi*). In sandy areas, surfgrass is important habitat for fish and invertebrates as it is used for food and refuge. Although surfgrass is found offshore of sandy beaches, it requires hard substrate for its root structure to hold. This implies that the subtidal areas offshore of the sandy beaches have hard substrate that is buried just below the sand surface.

3.5.2.2 Marine Fauna

San Nicolas Island has few coves and is located far from the wave shadow of the other islands. Consequently, species that typically occur in calm waters are rare or absent (Engle 1994). Since the island presents an obstruction to the prevailing flow of wind and swell, the southeastern shore is the most sheltered portion of the island. San Nicolas Island is far enough offshore to receive cold water from the California Current, yet far enough south to receive warm water from the California Countercurrent. Therefore, the subtidal species are considered to be intermediate (a combination of both northern and southern species) in relation to the other California Channel Islands (Engle 1994).

Another major influence on marine species distribution at San Nicolas Island is the geologic composition of the marine habitat. Bedrock is the dominant habitat type in shallow water around the Channel Islands, followed by boulder and sand. San Nicolas Island’s shoreline consists of about 61% bedrock and 33% sandy beach (Engle 1994).



Benthic Invertebrates

Benthic invertebrates are characterized by the habitat type (i.e., rocky or sandy) in which they are found. Because rocky habitats are ideal for attachment of sessile (non-motile) invertebrates and are generally more stable than sandy beaches, rocky habitats support more invertebrate species than sandy habitats. Rocky habitat is common off San Nicolas Island, and over 150 invertebrates have been identified at the island (NAWCWD Point Mugu 2002a). Invertebrates that inhabit rocky areas include sea stars, snails, nudibranchs, urchins, abalone, anemones, barnacles, mussels, worms, lobsters, crabs, and bryozoans. The invertebrate species that inhabit the shallow sandy areas of San Nicolas Island include polychaetes, sea stars, olive snails (*Olivella biplicata*), and the spiny mole crab (*Blepharipoda occidentalis*).

Fish

Although the fish fauna of San Nicolas Island contain both northern and southern species, many southern species are noticeably absent in the kelp forests. The southern species are better represented along the mainland and inner islands than they are at San Nicolas Island (Cowen and Bodkin 1993). Engle (1993) classified the subtidal rocky fish fauna of San Nicolas Island as “old intermediate” in that only 45% of the relative abundance of species was represented by southern forms.

During 2 studies at San Nicolas Island, 50 species of fish were recorded in the immediate vicinity of the island (Cowen and Bodkin 1993; Engle 1993). However, this number under-represents the actual number by about 50% since sand dwellers, rare and cryptic species, and some species that are hard to identify in the field were not counted (Engle 1993). Several pelagic species can be found in nearshore waters. These include queenfish (*Seriphus politus*), Pacific butterflyfish (*Peprilus simillimus*), juvenile lingcod (*Ophiodon elongatus*), and white croaker (*Genyonemus lineatus*). The following nearshore pelagic species can also be found in the kelp canopy: walleye surfperch (*Hyperprosopon argenteum*), silversides (*Atherinidae*), jack mackerel (*Trachurus symmetricus*), northern anchovy (*Engraulis mordax*), salema (*Xenistius californiensis*), blacksmith, ocean whitefish (*Caulolatus princeps*), Pacific bonito (*Sarda chiliensis*), and Pacific mackerel (Feder et al. 1974).

Essential Fish Habitat (EFH). The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA; 16 USC 1801-1882) were implemented “to identify and protect important marine and anadromous fish habitat.” In accordance with these amendments, NOAA Fisheries developed Fishery Conservation Management Plans that identify EFH. EFH is defined in the MSFCMA as “...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The MSFCMA requires federal agencies to consult with NMFS to ensure that their actions do not adversely affect EFH.

Three EFH zones have been identified off the west coast of the United States: 1) Coastal Pelagic, 2) Groundfish, and 3) Pacific Salmon. Two of the EFH zones (Coastal Pelagic and Groundfish) include the waters surrounding San Nicolas Island, both extending from the coastline out to 200 miles (322 km) offshore along the entire length of the west coast of the U.S. (i.e., from the Mexican to the Canadian border). The Coastal Pelagic EFH includes surface waters or, more specifically, waters above the thermocline where sea surface temperatures range from 50° F to 79° F. The Groundfish EFH includes surface waters and benthos, encompassing all waters from the mean higher high water line and the upriver extent of saltwater intrusion in river mouths seaward to the 200-mile (322-km) boundary.

Seabirds

As noted above, several species of seabirds nest on the island and forage in surrounding waters. Over 195 species of seabirds are known to occur in the waters off southern California and may occur at least

temporarily off San Nicolas Island. Like the other Channel Islands, San Nicolas Island and its surrounding waters support a relatively high density of seabirds (NAWCWD Point Mugu 2002a).

3.5.2.3 Special-Status Marine Species

Special-status marine species addressed here include state- and federally listed, proposed, or candidate threatened and endangered species, and other legally protected species (marine mammals) that are reasonably likely to be present (depending on time of year) in the marine environment within 1 NM (1.9 km) of San Nicolas Island. This includes 1 species of marine invertebrate, 4 species of sea turtles, 1 species of birds, and 11 species of marine mammals (Table 3-3).

Table 3-3. Special-Status Marine Species Occurring within 1 NM of San Nicolas Island

<i>Common Name</i>	<i>Scientific Name</i>	<i>Status*</i> <i>Fed/State</i>
MARINE INVERTEBRATES		
White abalone	<i>Haliotis sorenseni</i>	E/-
SEA TURTLES		
Loggerhead sea turtle	<i>Caretta caretta</i>	T/-
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E/-
Eastern Pacific green sea turtle	<i>Chelonia mydas</i>	T/-
Olive ridley sea turtle	<i>Lepidochelys olivacea</i>	T/-
MARINE BIRDS		
Xantus' murrelet	<i>Synthlinoramphus hypoleucus</i>	-/T
MARINE MAMMALS		
Northern right whale dolphin	<i>Lissodelphis borealis</i>	*/-
Dall's porpoise	<i>Phocoenoides dalli</i>	*/-
Gray whale	<i>Eschrichtius robustus</i>	*/-
Humpback whale	<i>Megaptera novaeangliae</i>	E*/-
Blue whale	<i>Balaenoptera musculus</i>	E*/-
Sperm whale	<i>Physeter macrocephalus</i>	E*/-
California sea lion	<i>Zalophus californianus</i>	*/-
Northern elephant seal	<i>Mirounga angustirostris</i>	*/-
Harbor seal	<i>Phoca vitulina</i>	*/-
Northern fur seal	<i>Callorhinus ursinus</i>	*/-
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	T*/-
Steller sea lion	<i>Eumetopias jubatus</i>	T*/-
Southern sea otter	<i>Enhydra lutris nereis</i>	T (XN)*/-

Notes: *E = endangered, T = threatened, XN = experimental, non-essential population; * = Protected under the MMPA

Source: NAWCWD Point Mugu 2002a.

Marine Invertebrates

The white abalone (*Haliotis sorenseni*) was federally listed as an endangered species in May 2001 (NMFS 2001). It was commercially harvested in southern California waters beginning in the late 1960s, peaking in 1973, and diminishing thereafter until the early 1990s, by which time it had become extremely rare (Hobday and Tegner 2000). The white abalone is susceptible to withering syndrome; a chronic wasting disease that has played a significant role in the demise of some Southern California abalone species (Ruediger and VanBlaricom 1993). Like all abalones, the white abalone feeds on drifting and attached algae, which are especially plentiful in kelp beds. It is slow-growing and has a relatively long life span (~ 30 years), reaching a maximum length of 10 inches (25 cm). Young abalones seek cover in

rocky crevices and under rocks, while adults are found in open, low-relief rock or boulder habitat. White abalones are typically found in relatively deep waters (i.e., 65-200 feet [20-60 m]) and are historically most abundant from 80-100 feet (25-30 m) (NMFS 2001). No data are available on the recent occurrence of this species off San Nicolas Island. It could be present given its historical occurrence and the suitability of the habitat (Hobday and Tegner 2000), although the presence of sea otters would limit its abundance.

Sea Turtles

Four threatened or endangered species of sea turtles potentially occur within the waters surrounding San Nicolas Island: loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), eastern Pacific green (*Chelonia agassizi*), and olive ridley (*Lepidochelys olivacea*) (see Table 3-3). It is possible that small numbers of sea turtles could be encountered in waters surrounding San Nicolas Island, especially during summer. The kelp beds off western San Nicolas Island may attract some leatherback sea turtles and perhaps green sea turtles. However, there are no known sea turtle nesting beaches at San Nicolas Island.

Marine Birds

The California brown pelican forages throughout the nearshore area of San Nicolas Island (NAWCWD Point Mugu 2002a). The state-listed threatened Xantus' murrelet is not known to occur on the island but is likely to forage occasionally in the surrounding waters.

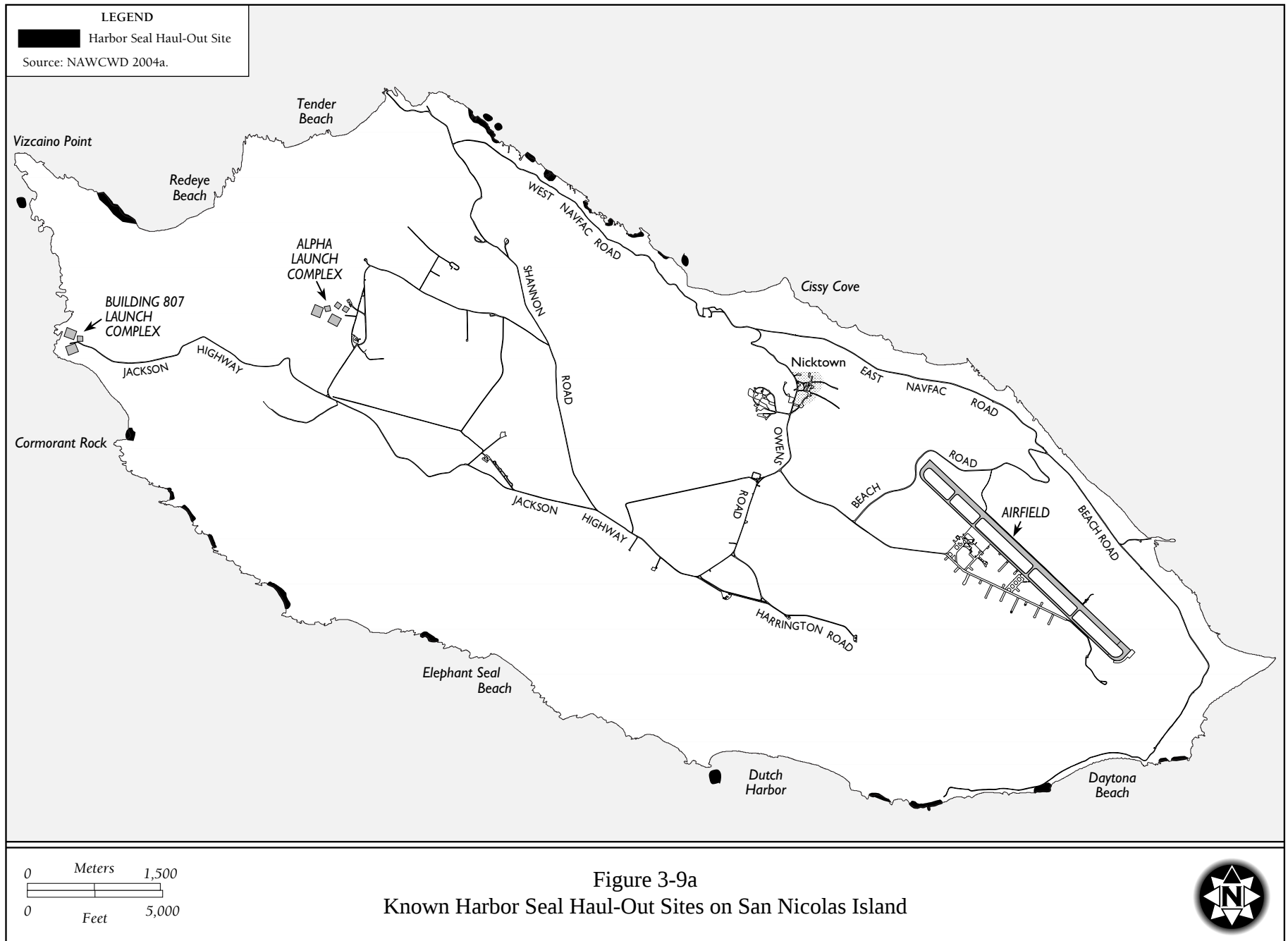
Marine Mammals

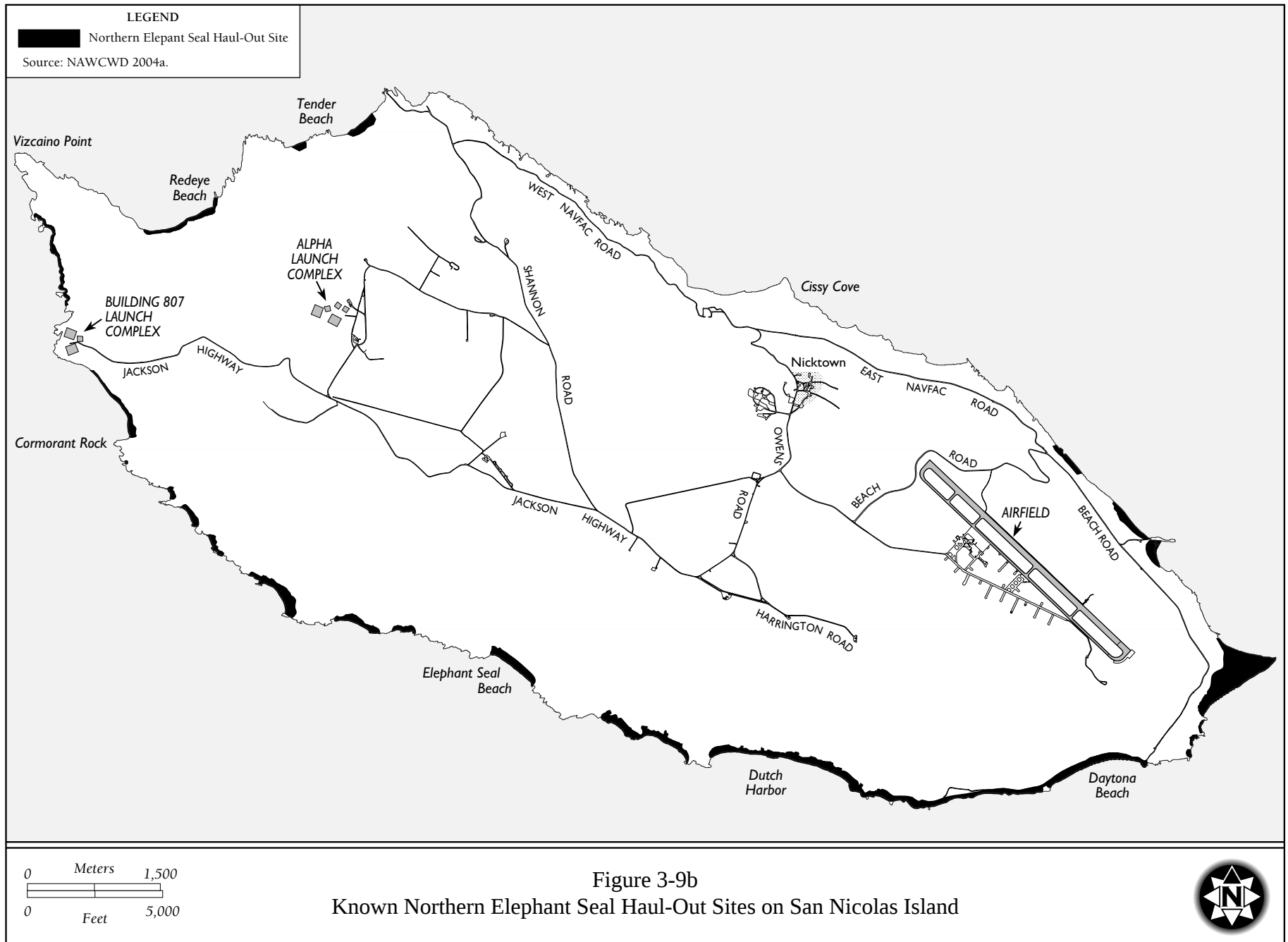
All marine mammals are protected under the Marine Mammal Protection Act (MMPA) of 1972 as amended (16 USC 1431 *et seq.*), and some species are also protected by the ESA of 1973 (16 USC 1531). Based on documented sightings within 3 NM (5.6 km) of the island, there are 11 marine mammal species that could occur within 1 NM (1.9 km) of shore (NAWCWD Point Mugu 2002a).

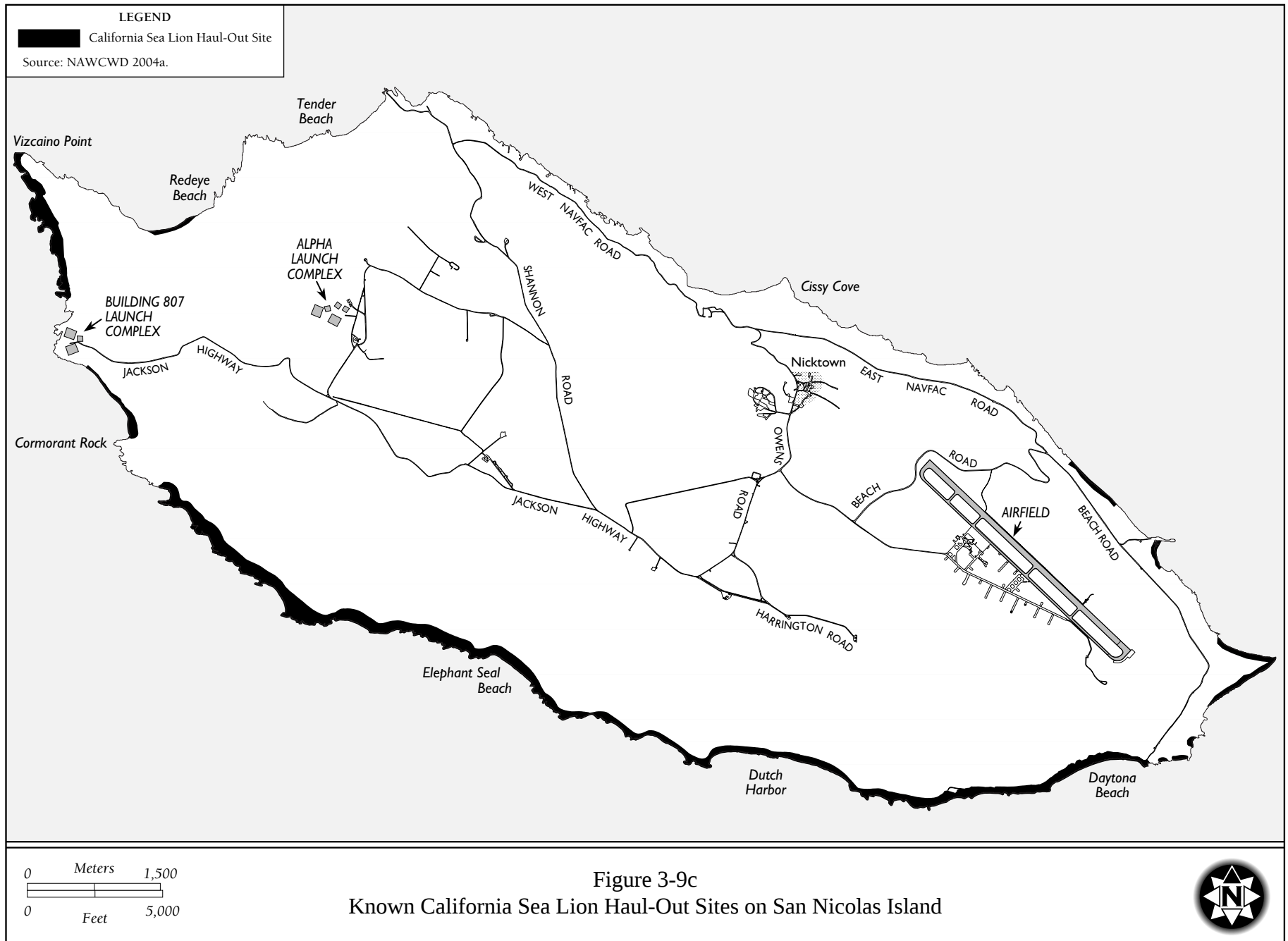
Two species of odontocetes (toothed whales), Dall's porpoise (*Phocoenoides dalli*) and northern right whale dolphin (*Lissodelphis borealis*), have been sighted (although rarely) in waters near the island. Both are more common farther offshore (NAWCWD 2002a). Two species of mysticetes (baleen whales), gray whale (*Eschrichtius robustus*) and humpback whale (*Megaptera novaeangliae*), have been recorded near the island. The humpback whale is represented by a single sighting. Gray whales pass close to San Nicolas Island during migration, and may be expected with regularity nearshore during the migration seasons (November-January for southward migration and February-March for northward migration). Some individuals may remain in the vicinity through the spring (NAWCWD Point Mugu 2002a).

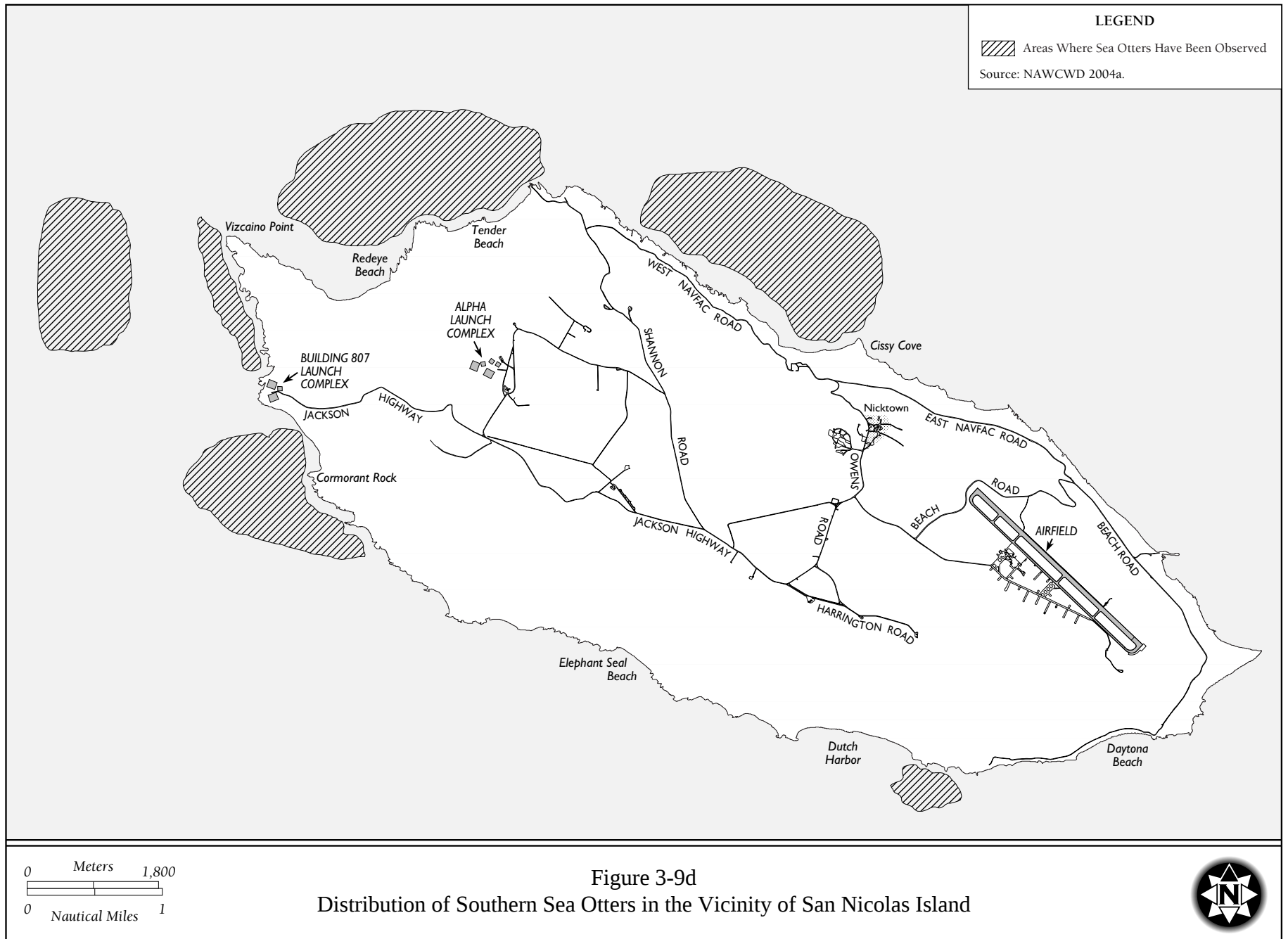
The island and surrounding waters provide important foraging, breeding, and haul-out areas for 3 species of pinnipeds: harbor seal (*Phoca vitulina*), northern elephant seal (*Mirounga angustirostris*), and California sea lion (*Zalophus californianus*) (Figures 3-9a, b, and c). A 1994 aerial count of harbor seals found 457 animals on the island. As of 1995, there were approximately 23,000 northern elephant seals in the breeding population on San Nicolas Island. The number of California sea lions on the island was estimated at 78,000 to 88,000 in 1995 (NAWCWD 2002a).

The northern fur seal (*Callorhinus ursinus*) has been sighted on the island a few times during the last 10 years. The Guadalupe fur seal (*Arctocephalus townsendi*) may have bred there historically and has been an occasional recent visitor. Steller sea lions (*Eumetopias jubatus*) have been sighted on the island in the past (Bartholomew 1951) but apparently did not breed there (Stewart and Yochem 1984). They are not likely to occur there now given their general abandonment of Southern California waters (NAWCWD Point Mugu 2002a).









The southern sea otter is federally listed as threatened under the ESA and designated as depleted under the MMPA. From 1987 to 1990, 139 California sea otters were translocated from central California to San Nicolas Island in an attempt to re-establish a sea otter population there. In accordance with Section 10(j) of the ESA, the introduced population of sea otters is considered as an experimental/non-essential population and is treated as if it were proposed for listing. Since the translocation, the population has never exceeded 32 individuals. Currently, a stable population of approximately 29 adults is found within the nearshore waters along the western and northern shoreline (NAWCWD Point Mugu 2002a). Sea otters occur throughout the year at San Nicolas Island in subtidal kelp beds that provide primary cover and foraging areas (see Figures 3-4 and 3-9d).

3.6 AIR QUALITY

This section addresses existing air quality conditions in the vicinity of San Nicolas Island and includes a description of common air quality terminology. The region of influence for air quality includes the South Central Coast Air Basin which encompasses Ventura County and San Nicolas Island.

3.6.1 Definition of Resource

3.6.1.1 Air Quality Standards

Air quality is defined as the ambient air concentrations of specific criteria pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern to the health and welfare of the general public. These criteria pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than or equal to 10 microns in diameter (PM_{10}), and lead. Both California and the federal government have established ambient air quality standards (California Ambient Air Quality Standards and National Ambient Air Quality Standards, respectively) for several pollutants, often referred to as criteria pollutants. These standards identify the maximum allowable concentrations of criteria pollutants that are considered safe, with an additional adequate margin of safety to protect human health and welfare. Depending upon the type of pollutant, these maximum concentrations may not be exceeded at any time, or may not be exceeded more than once per year (USEPA 2002a). The California standards are more stringent than federal standards.

3.6.1.2 Emissions

Air quality within a region is a function of the type and amount of pollutants emitted, size and topography of the air basin, and prevailing meteorological conditions. Criteria pollutants affecting air quality in a given region can be characterized as being either stationary or mobile sources. Stationary sources of emissions are typified by emissions from smokestacks. Mobile sources of emissions include emissions from vehicles and aircraft.

Emissions are often characterized as being “primary” or “secondary” pollutants. Primary pollutants are those emitted directly into the atmosphere such as CO, SO_2 , and PM_{10} . Secondary pollutants are those formed through chemical reactions in the atmosphere such as O_3 and NO_2 . Volatile organic compounds (VOCs) (also referred to as hydrocarbons or reactive organic gases) are precursors to the production of O_3 . SO_2 and NO_2 are commonly referred to and reported as oxides of sulfur (SO_x) and oxides of nitrogen (NO_x), respectively, as SO_2 and NO_2 constitute the majority of their respective oxides.

Areas that violate ambient air quality standards are designated as nonattainment areas. Nonattainment designations for O_3 , CO, and PM_{10} include subcategories indicating the severity of the air quality problem (e.g., the classifications range from moderate to serious for CO and PM_{10} , and from marginal to severe for O_3). Areas that comply with federal air quality standards are designated as attainment areas. Areas that

have been redesignated from O₃ nonattainment to attainment for the 1-hour O₃ standard are designated as maintenance areas. Areas that lack monitoring data to demonstrate attainment or nonattainment status are designated as unclassified and are considered to be in attainment for regulatory purposes.

3.6.2 Existing Conditions

3.6.2.1 Attainment Status

San Nicolas Island is unclassified or in attainment of the California and National Ambient Air Quality Standards (California Air Resources Board 2004). Due to the lack of major emitting sources on the island in conjunction with predominantly strong winds from the northwest, the likelihood of pollutants remaining in the ambient air of the island is very low.

3.6.2.2 Emissions from Stationary Sources

Stationary sources on San Nicolas Island consist of a power plant, a gasoline refueling station and underground storage tank, small boilers, several internal combustion engines, and various adhesive and sealant operations. All non-exempt emitting sources on San Nicolas Island are permitted under Title V Part 70 Permit, Number 1207 (Ventura County Air Pollution Control District 2001). The permit limits the total hourly and monthly emissions of criteria pollutants by these sources, as well as total fuel use, total power produced, and amount of sealant and adhesive product used (NAWCWD Point Mugu 2002a).

3.6.2.3 Emissions from Mobile Sources

Mobile sources of emissions on San Nicolas Island consist of aircraft operations as well as combustion emissions from military vehicles on the island. In addition, Sea Range activities include test and training operations that involve launching missiles and/or targets from San Nicolas Island. Emissions are associated with combustion of propellants and/or fuels used to propel the missiles and targets. Table 3-4 shows the baseline air emissions for San Nicolas Island.

Table 3-4. Summary of Baseline Air Emissions at San Nicolas Island

<i>Emissions, tons/year</i>				
<i>CO</i>	<i>NO_x</i>	<i>VOC</i>	<i>SO_x</i>	<i>PM₁₀</i>
33.92	151.75	11.45	5.17	11.65

Source: NAWCWD Point Mugu 2002a.

3.7 NOISE

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying. Response to noise varies by the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day. Noise receptors can include humans as well as terrestrial and marine animals.

The physical characteristics of sound include its level, frequency, and duration. Sound is commonly measured with instruments that record instantaneous sound levels in decibels (dB), which are based on a logarithmic scale (e.g., a 10-dB increase corresponds to a 100% increase in perceived sound). A-weighted sound level measurements (dBA), which de-emphasize low and high frequencies and emphasize mid-range frequencies, are used to characterize sound levels that are heard especially well by the human ear. Average noise exposure over a 24-hour period is often presented as community noise equivalent level (CNEL). The CNEL is the energy-averaged sound level of all sound exposure level values within a

24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 P.M. and 7:00 A.M. to compensate for the increased annoyance associated with the occurrence of nighttime noise events. In addition, applications of the CNEL metric to measure noise levels in California include an additional 5-dB annoyance penalty for nighttime.

3.7.1 San Nicolas Island

Baseline noise conditions at San Nicolas Island are dominated by jet aircraft activity, and the highest noise levels occur on or immediately adjacent to the runway. Average aircraft-generated noise in the vicinity of the proposed facility modifications is estimated to be less than 65 dB (CNEL) for all areas except for area N319, which experiences 80-85 CNEL due to noise associated with airfield activities (NAWCWD Point Mugu 2002a). Otherwise, noise in the areas of the proposed facility modifications is generated mostly by wind. Additional noise sources at San Nicolas Island include transitory airborne noise sources such as missile and target launches and aircraft overflights in support of test operations. These activities are typically concentrated on the western portion of the island.

3.7.2 SSM-1 KAI and Chase Plane Overflight Areas

Areas beneath the proposed missile and chase plane flight paths include land areas over the western and southern portions of San Nicolas Island and the open ocean waters around the island. Aircraft overflights in support of test operations occur at various locations away from the airfield at San Nicolas Island (NAWCWD Point Mugu 1998a). Measurements were conducted for F/A-18 overflight sounds at San Nicolas Island for overflights at airspeeds of 300 to 500 knots (560 to 930 km per hour). The A-weighted sound pressure level for the loudest flyover (500 knots [930 km per hour] at 2,000 ft [610 m] AGL) was approximately 90 dB re 20 μ Pa (μ Pa = micro Pascal). The A-weighted sound exposure level (SEL) was approximately 96 dB re (20 μ Pa)²·s.

Many types of missiles and targets are launched from San Nicolas Island. The largest target currently launched at the island is the Vandal missile. Sound measurements were conducted for 2 Vandal missile target launches from the Alpha Launch Complex at San Nicolas Island (NAWCWD Point Mugu 1998b). The A-weighted sound pressure level observed for the Vandals ranged from 87 dB re 20 μ Pa at a range of 5,500 ft (1,700 m) to 133 dB re 20 μ Pa at a range of 230 ft (70 m). The results of these measurements are shown in Table 3-5.

Table 3-5. Vandal Target Launch Noise

Location	Range (ft)	Duration (sec)	Peak (dB re 20 μ Pa)	Sound Pressure Level (dB re 20 μ Pa)	SEL (dB re [20 μ Pa] ² ·s)
Near launch pad	230	0.76	153.68	133.13	131.75
Redeye Beach	2,900	2.06	148.84	119.45	122.59
Vizcaino South ¹	3,100	0.17	140.04	118.74	110.96
Vizcaino South ²	1,100	0.62	149.06	120.94	118.86
Bachelor Beach	5,500	4.58	109.70	87.20	93.89

Notes: ¹ Measured 2 July 1997.

² Measured 2 December 1997.

Source: NAWCWD Point Mugu 1998c.

3.8 CULTURAL RESOURCES

Cultural resources include prehistoric and historic archeological sites (including submerged sites); historic objects, structures, buildings, sites, and districts; shipwrecks; and sites which have cultural/traditional

significance to Native Americans or other groups. Only significant cultural resources, known or unknown, warrant consideration with regard to adverse impacts resulting from a proposed action. To be considered significant under the National Historic Preservation Act (NHPA), archaeological or architectural resources must meet 1 or more criteria as defined in 36 CFR 60.4 for inclusion in the NRHP. The cultural resources ROI (hereinafter referred to in this section as area of potential effect [APE], for compliance with State Historic Preservation Office [SHPO] standards) includes only those areas potentially subject to ground disturbance (i.e., facilities addition and modification locations and areas where the booster could potentially drop).

3.8.1 Overview

San Nicolas Island has been the subject of archaeological investigations for the last 100 years, including a complete archaeological survey of the island. During the course of these archaeological investigations more than 530 prehistoric sites and 48 historic sites have been recorded across the island (Reinman and Lauter 1984, Schwartz and Rossback 1993, Schwartz 1995).

Prehistoric archaeological sites on San Nicolas Island consist primarily of middens (shellfish or multi-use processing sites) located on large, stabilized dunes less than 980 ft (300 m) from the shoreline (Martz 2002). These sites contain an abundance of fish, marine mammal, and shellfish remains and tools used to prepare the marine resources for consumption. Other prehistoric sites on San Nicolas Island include habitation sites, lithic reduction areas, rock art, isolated hearths, human burials, and an aqueduct.

From the mid-1850s until the Navy began using the island for training missions in 1943, San Nicolas Island was an important fishing and ranching location. Historical archaeological sites reflecting this cultural heritage consist of fishing camps on the northwestern and southeastern tips of the island, ranching base camps on the terraces above “NAVFAC” Beach, and multiple Chinese abalone collecting sites along the northwestern and southern coastlines.

3.8.2 Facility Locations

3.8.2.1 Prehistoric Resources

Prehistoric sites have been documented in the immediate vicinity of proposed facility addition and modification areas at Buildings N163 and N189. The proposed facility locations at N163 have been sited away from the nearby prehistoric archaeological sites. The proposed location for antennas at N189 would be at a prehistoric site, but this site has been previously disturbed (NAWCWD Point Mugu 2004a). No prehistoric sites have been documented in the vicinity of the other proposed facility sites.

3.8.2.2 Historic Resources and Architectural Resources

No known historic or architectural resources are located on or near any of the proposed or alternate facilities modification and addition sites.

3.8.3 Offshore Locations

3.8.3.1 Shipwrecks

Archaeological studies focusing on underwater resources have identified 20 ships known to have sunk off the coast of San Nicolas Island. Most shipwreck remains are likely to be found at harbors and at hazards on the western and eastern ends of the islands. No shipwrecks have been recorded in the nearshore waters of Redeye Beach or Building N807, near the areas where the booster would drop.

3.8.3.2 Underwater Archaeological Resources

There is a possibility that submerged archaeological sites could exist in nearshore waters surrounding San Nicolas Island. These sites would have been occupied over 7,000 years ago when sea levels were lower than current levels. Submerged archaeological sites off the coast of San Nicolas Island are most likely to occur within 1,640 to 3,280 ft (500 to 1,000 m) of fish habitat, within 1,640 ft (500 m) of rocky shore habitat, and within 1,640 ft (500 m) of a drinking water source (NAWCWD Point Mugu 2002b). However, no underwater archaeological resources have been documented in the vicinity of the areas where the booster would drop; these areas are characterized as having a low potential for submerged archeological sites (NAWCWD Point Mugu 2002b).

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

As introduced in Section 1, the U.S. Navy has recently prepared a Final EIS/OEIS (NAWCWD Point Mugu 2002a) addressing test and training operations on the Point Mugu Sea Range. The EIS/OEIS includes a variety of missile testing activities including nearshore intercept test and training events proposed to occur at least 1 NM (1.9 km) off the southern and western shores of the island, in addition to some components on the island, such as missile launches from the Miscellaneous Launch Pad. Components of SSM-1 KAI testing that would occur at least 1 NM (1.9 km) offshore have been analyzed in the EIS/OEIS and are not carried forward for further analysis. This EA incorporates by reference the analysis from the EIS/OEIS and focuses on those components of the proposed SSM-1 KAI missile testing that would occur less than 1 NM (1.9 km) offshore from the island, including missile and aircraft overflights of the island and facility additions and modifications at the island.

Potential environmental consequences of the project alternatives have been analyzed for the following resources, consistent with the organization of Chapter 3: land use, public safety, geological resources, water resources, biological resources, air quality, noise, and cultural resources. For the proposed action, the impact discussions are organized by the 2 proposed project component areas (facility locations, and missile and chase plane overflight areas). The effects of the No-Action Alternative are addressed collectively for all resources at the end of this chapter (Section 4.8).

4.1 LAND USE

The primary factors considered in determining the significance of land use effects include the extent or degree to which the action alternatives would disrupt the current use of land and if they would result in conflicts with planned or adopted land use designations.

4.1.1 Proposed Action

4.1.1.1 Facility Locations

Although up to 100 additional personnel would be using San Nicolas Island during the pre-testing, testing, and post-testing phases, these personnel would be supported by existing infrastructure and proposed facilities. Proposed activities at the facility locations (listed in Table 2-1) would be consistent with current land uses in these areas. In addition, all facility modifications and additions would be temporary and would be removed upon project completion. No permanent changes would occur to land uses under the proposed action. Therefore, land use impacts from proposed facility modifications under the proposed action would not be significant.

4.1.1.2 Missile and Chase Plane Overflight Areas

There would be a temporary disruption to all non-testing activities on portions of San Nicolas Island west and north of flight termination lines (shown in Figures 2-2a and 2-2b) and within 1 NM (1.9 km) of the island (e.g., commercial fishing activities) on days when the 5 test launches would occur. However, this would require cessation of fishing activities for only 8 hours per each closure day. It would be likely that lost revenue would be temporary and could be recaptured at another time (i.e., a “lost” day would not preclude fisherman from maximizing revenues over the course of the fishing season). In addition, NAWCWD personnel have implemented successful communication procedures with commercial fishermen at San Nicolas Island to minimize effects on commercial activities (Ventura County

Commercial Fisherman's Association 1997). Long-term use of the island's waters for fishing would not be impacted.

In accordance with existing safety procedures (see Sections 3.2.1 and 3.2.2), access to portions of the island and sea range would be temporarily restricted during testing operations. Regular activities at other parts of the island (e.g., Nicktown) would be allowed to continue during testing operations. The island lies in an area on the Point Mugu Sea Range that is designated for these testing activities, and closures of portions of the island and nearshore waters are common. The only authorized air traffic into the San Nicolas Island airfield is approved by NAWCWD; consequently, airspace at San Nicolas Island would not be adversely affected by the addition of chase plane overflights during testing operations. In addition, noise associated with the missile launch and the missile and chase plane overflights (see Section 4.7) would not adversely affect land use at the island due to the lack of sensitive human receptors in the launch area, the small number of proposed launch events, and the transient nature of the sounds produced. Thus, the test launches would be consistent with current land uses at and within 1 NM (1.9 km) of San Nicolas Island. Therefore, land use impacts due to missile and chase plane overflights would not be significant.

4.1.2 Building 807 Launch Complex Alternative

The Building 807 Launch Complex is currently used for missile launching activities. Therefore, SSM-1 KAI missile launches would be consistent with existing land use at this location. Implementation of the Building 807 Launch Complex Alternative would not result in significant impacts to land use.

4.2 PUBLIC SAFETY

This section evaluates potential public safety effects associated with the proposed action. The primary factor considered in determining the significance of these is the extent or degree to which the proposed action would create a substantial risk to public safety.

4.2.1 Proposed Action

4.2.1.1 Facility Locations

Under the proposed action, facility additions and modifications at all proposed locations would be designed and implemented to be in compliance with all current safety related regulations and procedures. Any new EMR sources would be placed such that they would not affect personnel, ordnance, or fuel per established safety requirements. All fuels associated with the proposed action (including gasoline for automobiles, JP-5 for generators, and JP-4 for the SSM-1 KAI missile) would be transported and stored in compliance with established DoD and Point Mugu Sea Range safety regulations. In addition, explosive missile components would be stored and assembled in facilities designated for explosive material storage (Buildings N105-N107 and N110) and would not change ESQD arcs. Therefore, impacts to public safety at proposed facility locations would not be significant.

4.2.1.2 Missile and Chase Plane Overflight Areas

As described in Chapter 2, the proposed action would involve up to 5 missile launch operations. Although there is a remote possibility that a missile could hit the island due to unforeseen circumstances, safety procedures are designed to minimize this risk to the greatest extent possible. A chase plane would follow the missile during flight, and the missile's on-board FTS would be activated in the unlikely event that the missile turns drastically off course. Activation of the FTS would be implemented far enough offshore, if at all possible, to maximize the possibility of the missile landing in the ocean rather than on land. In addition, established "flight termination lines," safety boundaries at which missile flight would

be terminated, would be utilized during test launches in order to further reduce risks to sensitive areas on the island (see Figures 2-2a and 2-2b).

Safety procedures regularly conducted on the Sea Range include advance notice system via NOTAMs and NOTMARs, as well as other range safety procedures (see Sections 3.2.1 and 3.2.2). These and other standard range safety clearance procedures would be implemented to ensure that non-participants are outside of the clearance area. In addition, missile launches would not be conducted until all non-participating aircraft and vessels are clear of the area. Based on the use of established safety clearance procedures for missile testing, the proposed action would not have a significant impact on public safety at San Nicolas Island or in the offshore areas surrounding the island.

4.2.2 Building 807 Launch Complex Alternative

Public safety conditions for the Building 807 Launch Complex Alternative are similar to those under the proposed action. As a result, public safety issues would be the same as those described for the proposed action. Therefore, implementation of the Building 807 Launch Complex Alternative would not have a significant impact on public safety at San Nicolas Island or in the offshore areas surrounding the island.

4.3 GEOLOGICAL RESOURCES

The protection of unique geological features, minimization of soil erosion, and changes to sediment quality are considered when evaluating the potential impacts of an action on geological resources. Generally, geological resource impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering components are incorporated into project design.

4.3.1 Proposed Action

4.3.1.1 Facility Locations

Some grading would be necessary in order to construct the facilities and facility modifications required to test the SSM-1 KAI missile; however, potential support facility locations have been sited to avoid potential impacts to sensitive natural and cultural resources. Proposed site grading to create a flat area for the modular units and support facilities (e.g., generators, antennas, etc.). Under the proposed action, approximately 1.24 acres (0.5 ha) would need to be graded to support facility additions and modifications, and 2 of the 11 sites proposed for support facilities include previously undisturbed land (see Table 2-1). All other facility modifications and additions would occur on previously disturbed land. Because grading activities could temporarily increase erosion, and the construction area is greater than 1 acre (0.4 ha) a National Pollutant Discharge Elimination System (NPDES) permit would be required. NAWCWD has an NPDES General Permit for grading activities less than 5 acres (2 ha). The permit requirements include controlling runoff, implementation of best management practices to minimize erosion, and creation of a storm water pollution prevention plan. These measures would be implemented and grading would be done in accordance with a stormwater pollution prevention plan. Therefore, erosion would not be an issue since standard erosion control measures would be implemented. Also, the proposed construction activities would be brief in duration and would take place for the most part in previously disturbed areas. Therefore, impacts to geological resources at facility modification areas would not be significant.

4.3.1.2 Missile and Chase Plane Overflight Areas

The only surface effect of the missile launch and subsequent missile and chase plane overflights would be associated with the booster. The first-stage solid rocket booster would fall from the missile approximately 1.1 to 1.5 miles (1.8 to 2.5 km) from the launch site; thus, the booster would fall into the nearshore waters off the western end of the island and sink to the ocean bottom. Nearly all (99 percent)

of the solid propellant contained in the SSM-1 KAI boosters would be incinerated prior to the booster striking the ocean surface (NAWCWPNS Surface Launch Division 1994, NAWS Point Mugu 1998c). Resultant sediment quality concentrations are expected to be similar to those associated with other missiles launched on the Sea Range and below federal guidelines for marine sediment quality (NAWCWD Point Mugu 2002a). Thus, the rocket propellant would pose little to no concern to sediments. Impacts to sediment quality would result primarily from the booster casings. Given that the casings are not soluble and that a maximum of 5 would be used for the proposed action, the spent boosters would pose only a remote contamination hazard to sediments. A chase plane would follow the missile during flight, and the missile's on-board FTS would be activated in the unlikely event that the missile turns drastically off course. Activation of the FTS would be implemented far enough offshore, if at all possible, to maximize the possibility of the missile landing in the ocean rather than on land. In addition, established "flight termination lines," safety boundaries at which missile flight would be terminated, would be utilized during test launches in order to further reduce risks to sensitive areas on the island (see Figures 2-2a and 2-2b). Some hazardous constituent residue (such as battery constituents or residual fuel) could remain on some of the debris pieces when they settle onto ocean bottom sediments. However, resultant water quality and sediment concentrations would be below federal guidelines for marine water quality and sediment quality, so impacts on ocean bottom sediment quality would not be significant. In such a scenario, effects to sediment quality would be identical to those addressed in the Point Mugu Sea Range EIS/OEIS for the nearshore intercept test (NAWCWD Point Mugu 2002a, Section 4.1.3.1). Also, the probability of the same area of marine sediments being affected more than once in a given year by missile or booster components is very low. Therefore, impacts to geological resources due to missile launches and missile and chase plane overflights would not be significant.

4.3.2 Building 807 Launch Complex Alternative

Geological conditions for the Building 807 Launch Complex Alternative are similar to those under the proposed action. As a result, impacts to geological resources would be the same as those described for the proposed action. Therefore, implementation of the Building 807 Launch Complex Alternative would not have a significant impact on geological resources.

4.4 WATER RESOURCES

Water quality impacts are evaluated based on the potential for long-term effects to aquatic resources. Impacts to hydrology and water quality would occur if implementation of the action alternatives would substantially degrade surface water, groundwater, or marine water quality.

4.4.1 Proposed Action

4.4.1.1 Facility Locations

Under the proposed action, facility modifications and additions would not occur within any known groundwater recharge areas, except at buildings N105-N107 and N110 (see Figures 2-1 and 3-4). These existing explosives storage facilities would be used to store equipment and explosive missile components, along with a pre-existing extension shelter at Building N110. An extension shelter would be added to Building N110. No activities associated with the proposed action at these facilities would pose a risk to groundwater, and all hazardous materials would be stored in sealed containers. Existing infrastructure would be used to supply potable water and to treat and dispose wastewater generated as a result of the proposed action, and any hazardous substances would be disposed of in accordance with DoD hazardous waste disposal guidelines. The Navy has created a specific fuel plan for the SSM-1 KAI program detailing how fuel will be managed for the proposed action (NAWCWD Point Mugu 2004c). In addition,

the proposed facility grading activities would be conducted in compliance with the existing NPDES General Permit for grading activities less than 5 acres (see Section 4.3). Therefore, implementation of the proposed facility modifications and associated support activities would not result in significant impacts to water resources.

4.4.1.2 Missile and Chase Plane Overflight Areas

As described in Section 4.3.1.2, the only surface effect of the missile launch and subsequent missile and chase plane overflights would be associated with the booster. Nearly all (99 percent) of the solid propellant contained in the SSM-1 KAI boosters would be incinerated prior to the boosters striking the ocean surface. Resultant water quality concentrations are expected to be similar to those associated with other missiles launched on the Sea Range and below federal guidelines for marine water quality (NAWCWD Point Mugu 2002a). The spent boosters would pose only a remote contamination hazard to marine water quality because nearly all (99 percent) of the solid propellant would be incinerated prior to the booster striking the surface, booster casings are not soluble, and a maximum of 5 would be used for the proposed action. A chase plane would follow the missile during flight, and the missile's on-board FTS would be activated in the unlikely event that the missile turns drastically off course. Activation of the FTS would be implemented far enough offshore, if at all possible, to maximize the possibility of the missile landing in the ocean rather than on land. In addition, established "flight termination lines," safety boundaries at which missile flight would be terminated, would be utilized during test launches in order to further reduce risks to sensitive areas on the island (see Figures 2-2a and 2-2b). Some hazardous constituent residue (such as battery constituents or residual fuel) could remain on some of the debris pieces when they settle onto ocean bottom sediments. However, resultant water quality and sediment concentrations would be below federal guidelines for marine water quality and sediment quality, so impacts on water quality would not be significant. In such a scenario, effects to water quality would be identical to those addressed in the Point Mugu Sea Range EIS/OEIS for the nearshore intercept test (NAWCWD Point Mugu 2002a, Section 4.4.3.1). Also, the probability of the same area of marine sediments being affected more than once in a given year by missile or booster components is very low. Therefore, this discharge does not permanently degrade water quality or result in changes that would affect existing uses, so no adverse effects would occur within the state water quality protection area. No other impacts to water resources would occur during testing events. Therefore, the launch and overflight components of the proposed action would not result in a significant impact to water resources.

4.4.2 Building 807 Launch Complex Alternative

Potential impacts to water resources for the Building 807 Launch Complex Alternative are similar to those under the proposed action. Therefore, implementation of the Building 807 Launch Complex Alternative would not have a significant impact on water resources.

4.5 BIOLOGICAL RESOURCES

The factors used to assess the significance of impacts to biological resources include the extent or degree to which the action would either 1) cause the loss or degradation of a sensitive resource, defined as a habitat or species' population that is legally protected or otherwise of recognized social, economic, or ecological significance; or 2) cause mortality, harm, or disturbance to a rare, threatened, endangered, or otherwise legally protected species.

4.5.1 Proposed Action

4.5.1.1 Terrestrial Biological Resources

Negligible impacts are associated with the construction, use, and removal of facilities in existing developed areas. With the implementation of conservation measures listed in Section 2.1.4, impacts on vegetation would be limited to the removal of 0.21 acre of coastal scrub (at N110) and 0.48 acre of coreopsis scrub (at Camp KAI), which is expected to recover naturally given the recontouring and weed eradication. This vegetation removal would not occur in areas of sensitive plant species or critical habitat. Noise and activity in the immediate vicinity during construction and use of new facilities in previously undeveloped areas would cause localized disturbance of resident wildlife, but given the small areas affected and the temporary nature of the activities, impacts are considered less than significant. Revegetation and weed eradication measures to be implemented would assist the restoration of these areas, resulting in no long-term impacts on vegetation and wildlife habitat. Island night lizard survey and relocation measures at each construction site would prevent take of this species.

For a few seconds during each launch and again during the subsequent overflight, there would be some potential for noise or visual disturbance of wildlife, including marine mammals and nesting, roosting, or foraging seabirds. Section 4.7 describes the anticipated sound exposure levels associated with the initial launch and subsequent overflight. Additional data on sound levels associated with missile launches on San Nicolas Island have been collected under the terms of an IHA issued by NOAA Fisheries (NAWS China Lake 2004a). A-weighted SELs of 130-135 dB re 20 $\mu\text{Pa}^2\cdot\text{s}$ are expected to occur within 164 to 328 ft (50 to 100 m) of the launch pad during each launch. Noise of this magnitude occurs frequently in conjunction with missile launches (NAWCWD Point Mugu 2002a; NAWS China Lake 2004a). Given the near-vertical trajectory of the missile, launch noise would decrease rapidly with distance from the launch site. Based on comparison with data from other missile launches with lower trajectories, the A-weighted SELs during launches are expected to be much less than 100 dBA re 20 $\mu\text{Pa}^2\cdot\text{s}$ at locations of sensitive receptors (western snowy plover, seabirds and pinnipeds) along the coastline (NAWS China Lake 2004a). As scheduled, launches could occur during the nesting seasons of the western snowy plover, western gull, and Brandt's cormorant. Nesting locations of these species would be monitored during launches (conservation measure 10). The anticipated sound levels and visual stimuli may cause temporary alterations of behavior but, based on monitoring conducted for similar launch and overflight situations, are not expected to harm or endanger the animals or their young, affect reproduction, or have any lasting physiological effects (NAWCWD Point Mugu 1998a; NAWS China Lake 2004a). Therefore, no significant impacts would occur.

As discussed in Section 4.7, during the subsequent flyover of the island by the missile and chase plane (an FA-18), the noise of the jet would dominate. Noise levels on the ground directly under the missile and plane are expected to be less than 100 dBA in the worst case for the FA-18 flying at high power 2,000 ft (610 m) AGL (NAWCWD Point Mugu 1998a) but would diminish with increasing distance off the centerline of overflight. As for launch noise, these sound levels may cause temporary alterations of behavior but are not expected to harm or endanger the animals or have any lasting physiological effects (NAWCWD Point Mugu 1998a; NAWS China Lake 2004a). Therefore, no significant impacts would occur.

The launch would be conducted such that the first-stage solid rocket booster would fall from the missile approximately 1.1 to 1.5 miles (1.8 to 2.5 km) from the launch site. Thus, the boosters would end up in the nearshore waters, avoiding any potential impacts to sensitive habitats and species along the shoreline of the island.

Using the definitions and thresholds applicable to the Endangered Species Act (USFWS and NMFS 1998), the foregoing indicates that launch and subsequent overflight noise may affect but is not likely to adversely affect, or result in take of, any listed species. Accordingly, neither formal nor informal consultation with the USFWS and/or NOAA Fisheries are required.

4.5.1.2 Marine Biological Resources

Potential impacts to marine biological resources are limited to launch disturbance effects on sensitive marine wildlife, and the splashdown of the missile boosters or missile components in the nearshore waters. Launch disturbance effects would be monitored in compliance with USFWS and NOAA Fisheries requirements. Accordingly, neither formal nor informal consultation with the USFWS and/or NOAA Fisheries are required. Based on monitoring experience with other missile launches, temporary startle reactions may occur, but are not likely to cause any harm or otherwise affect the well-being of sensitive wildlife species (NAWCWD Point Mugu 1998a, NAWS China Lake 2004a).

The possibility that the falling boosters would strike a marine mammal in the nearshore environment is remote, being on the order of 1/10,000 to 1/1,000,000, based on the analysis of risks associated with comparable missile launches in the Point Mugu Sea Range EIS/OEIS (NAWCWD Point Mugu 2002a). This possibility is similarly remote if the missile's on-board FTS is activated in the unlikely event that the missile turns drastically off course. As Section 4.4 indicates, there would be no significant effects on water quality or substrate conditions. The action would not result in the loss or modification of marine habitats, and would have no effect on populations of marine invertebrates or fishery resources. Therefore, no significant impacts would occur to marine habitats, invertebrates, fishery resources, or EFH.

As discussed in the preceding section, noise effects on seabirds would not be significant. As scheduled, the proposed launches would occur after the breeding and pupping seasons of the harbor seal and northern elephant seal, but would likely overlap the June-July pupping season of the California sea lion, when large numbers of sea lions are likely to be hauled out, especially on the southern shore of the island (Figure 3-9c; NAWCWD Point Mugu 2002a). Direct observations of pinniped responses to comparable overflights by missiles and FA-18 aircraft on San Nicolas Island, reinforced by noise and visual impact assessments in other settings (NAWCWD Point Mugu 1998a, 2002a; NAWS China Lake 2004a), indicate the potential for startle responses and minor, temporary alterations of behavior but do not suggest any lasting physiological effects, effects on reproduction or distribution, or harm to the animals. The effects of noise and visual stimuli on marine mammals due to the proposed test launches would be consistent with those anticipated in the LOA issued by NMFS (2003) for missile launches on the island. As required by the LOA, monitoring, reporting, and other mitigation procedures would be conducted by the Navy in conjunction with the test launches to minimize the extent of potential harassment. Therefore, no significant impacts would occur.

4.5.2 Building 807 Launch Complex Alternative

Under this alternative, the effects on biological resources would be similar to those of the Proposed Action, except that launch noise and the potential for disturbance to sensitive wildlife would be slightly greater because of the location of the launch site (in the vicinity of N807) on the western coastline of the island. Western snowy plovers nest in the vicinity of the launch site, and terms and conditions of the programmatic BO (USFWS 2001) for activities on San Nicolas Island, including launches from Building 807 Launch Complex facilities, would apply to limit potential effects on this species. As a result, the use of this alternative site would not result in take, and is not likely to adversely affect the western snowy plover.

This location is less than 1 mile (1.6 km) from western gull and Brandt's cormorant breeding colonies and shoreline areas used by northern elephant seals and California sea lions (see Figures 3-9b and 3-9c). Other missile launches and weaponry testing occur regularly at the N807 site. Habituation is common among pinnipeds and birds exposed to noisy activities that are not associated with any negative consequences to the animals, so some acclimation or habituation of resident wildlife (e.g., birds and pinnipeds) to these types of disturbances can be presumed (reviewed in Richardson et al. 1995, pp.317-321; NAWCWD Point Mugu 1997). Monitoring conducted during similar launch and overflight activities indicates the potential for behavioral responses by seabirds and pinnipeds to noise and visual stimuli associated with SSM-1 KAI test launches from Building 807 Launch Complex facilities. These responses are likely to include startle responses and minor, temporary alterations of behavior. It is not expected that there would be any lasting physiological effects, effects on reproduction or distribution, or harm to the animals (NAWCWD Point Mugu 1998a; NAWCWD China Lake 2004a). In compliance with conservation measure 10 and the LOA issued by NMFS (2003), nesting seabird colonies and marine mammals on the adjacent coastline will be monitored during launches. If harm to individuals or the disruption of critical behaviors occurs, subsequent launches would be postponed pending consultation with USFWS or NOAA Fisheries as applicable.

As for the proposed action, launch and subsequent overflight noise may affect but is not likely to adversely affect, or result in take of, any listed species. The extent of marine mammal responses associated with the use of N807 facilities would not exceed what has previously been anticipated and authorized by NMFS (2003).

4.6 AIR QUALITY

Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. Impacts would occur if the action alternatives would directly or indirectly produce emissions that would be the primary cause of, or would significantly contribute to, a violation of state or federal ambient air quality standards. Emission thresholds associated with Clean Air Act conformity requirements are another means of assessing the significance of air quality impacts. A formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed thresholds or *de minimis* thresholds. Since San Nicolas Island and the offshore region proposed for the action alternatives are currently classified as "unclassified/attainment" for California and National Ambient Air Quality Standards, the provisions of the General Conformity Rule do not apply. However, emissions estimates for the proposed action have been provided for planning purposes.

4.6.1 Proposed Action

4.6.1.1 Facility Locations

Emission Calculation Assumptions

Emissions resulting from proposed site preparation and missile testing support activities have been estimated using data and procedures described by the USEPA and account for fugitive dust and vehicle exhaust emissions from support vehicles and generators. Site preparation and support vehicles used under the proposed action would consist of a mixture of loaders, trucks, backhoes, water trucks, and other vehicles and equipment typically associated with construction activities. In addition, approximately 45 support trucks would be used during the site preparation and testing operations. It has been conservatively estimated that the proposed action would disturb 1.24 acres (0.50 ha) and construction

would last 1 month. Site preparation for testing would last about 3 months and would involve the use of approximately 45 support trucks and 31 generators. The following assumptions were used to estimate air quality emissions for the proposed action:

- Facility construction would last approximately 1 month and would consist of typical construction equipment (loader, dozer, excavator, paver, support truck, and water truck) for approximately 6 hours a day.
- Proposed ground disturbance would be 1.24 acres (0.50 ha).
- The use of 45 support vehicles would last 3 months and each truck would travel approximately 10 miles per day.
- 31 diesel generators (each less than 50 horsepower) would operate for 8 hours a day for approximately 3 months.

Estimated Site Preparation and Support Equipment Emissions

Estimated emissions as a result of implementation of the proposed action are shown in Table 4-1. Emission sources associated with ground activities would include increased vehicular traffic and aircraft flights for the addition of up to 100 personnel at the island, in addition to the operation of 31 generators to supply electricity for additional facilities, equipment, and personnel. Given predominantly strong winds from the northwest, emissions resulting from these activities would result in minor changes to baseline air quality conditions and these changes would be temporary in nature, occurring between the spring and winter of 2007. In addition, since San Nicolas Island has been categorized as an unclassified/attainment area by the USEPA and California Air Resources Board; a formal conformity determination is not required. Estimated emissions would be below *de minimis* levels; so, even if the area were considered a nonattainment or maintenance area, a conformity analysis would not be necessary. No generators operating at or above 50 horsepower would be used, so no permits for generators would be required. Proposed site preparation and missile testing activities would be short-term in nature; no long-term increases in emissions would occur as no new stationary sources would be constructed. Fugitive dust (PM₁₀) emissions would be minimized by incorporating dust control measures (e.g., frequently applying water on surface grading areas). Therefore, no significant air quality impacts would occur with implementation of the proposed action.

Table 4-1. Estimated Emissions for the Proposed Action

<i>Category</i>	<i>Emissions (tons/year [metric tons/year])</i>				
	<i>VOC¹</i>	<i>NO_x¹</i>	<i>CO¹</i>	<i>SO_x¹</i>	<i>PM₁₀¹</i>
Site Preparation Emissions	0.60 (0.54)	6.86 (6.22)	2.42 (2.20)	0.48 (0.44)	0.24 (0.22)

Notes: ¹ San Nicolas Island and the offshore area under analysis are in attainment of the California and National Ambient Air Quality Standards for all criteria pollutants; emissions are below *de minimis* thresholds.

4.6.1.2 Missile and Chase Plane Overflight Areas

Up to 5 missiles would be launched and 1 F-18 chase plane would follow each missile during testing operations. These activities would be temporary and would contribute only a negligible amount of emissions to the local area. Emissions resulting from the proposed test would result in no measurable changes to Sea Range or San Nicolas Island baseline emissions as presented in Table 3-4. Air quality impacts from the proposed tests would not be significant.

4.6.2 Building 807 Launch Complex Alternative

Air quality conditions for the Building 807 Launch Complex Alternative are similar to those under the proposed action. As a result, impacts to air quality would be the same as those described for the proposed action. Therefore, implementation of the Building 807 Launch Complex Alternative would not have a significant impact on air quality.

4.7 NOISE

The primary factor considered in determining the significance of noise effects is the extent or degree to which implementation of the proposed action would affect baseline noise environments. In-air and noise effects are addressed in this section. The primary issue of concern with regard to in-air noise is the potential for impacts to humans and wildlife. This section discusses expected noise levels from the proposed action and alternatives but does not present impact conclusions. Impacts associated with noise are addressed separately in Section 4.1, Land Use, and Section 4.5, Biological Resources.

4.7.1 Proposed Action

4.7.1.1 Facility Locations

The construction of facility modifications and additions under the proposed action would generate some additional noise at San Nicolas Island. However, construction noise would be temporary and is not expected to substantially increase noises above baseline levels generated by strong winds at the island. Any additional noises associated with the operation of equipment under the proposed action, such as the operation of additional generators at the island, would be consistent with current military land use designations.

4.7.1.2 Missile and Chase Plane Overflight Areas

Surface to surface missile launches are a source of airborne noise during booster operation and during flight. Airborne noise data available for SSM-1 KAI missile launches indicate that approximately 55 yards (50 m) behind the booster to 80 degrees to the missile trajectory, noise levels of an SSM-1 KAI missile launch would reach between 130 and 135 dB (NAWS China Lake 2004a). These data are similar to those for the Vandal missile target, which is commonly launched from Alpha Complex near the Multiple Use Launch Pad. The Vandal missile has a sound exposure level of 132 dB approximately 77 yards (70m) from the launch site. Since SSM-1 KAI missiles would be launched vertically, at approximately 75 degrees, sound levels would rapidly diminish with distance from the island. Sound levels above 130 dB may last less than 1 second for each launch event, and these high sound levels would occur within the vicinity of the launch site. Human exposure to noise impacts from launch noise would be limited to authorized personnel at the launch site who are equipped with appropriate noise protection gear.

The greater sound levels at the island would occur from missile and chase plane overflights. Overflight noise data are not available for the SSM-1 KAI; however since it is a much smaller vehicle with a smaller jet engine than the F-18 aircraft, it is estimated that noise levels for the SSM-1 KAI at 500 ft (152 m) AGL would be roughly equivalent to the received noise levels of an F-18 chase plane at 2,000 ft (610 m) AGL;. Under 2 missile flight scenarios (Figures 2-2a and 2-2b), an F-18 would follow a missile at an altitude of 2,000 ft (610 m) AGL above the western and southern portions of the island. It is anticipated that since there will be some lateral separation between the F-18 chase plane and the missile, the received sound levels from the missile and aircraft overflight likely would not combine to produce a louder noise. Thus, the noise generated by both the chase plane and missile is expected to be similar to the measured A-

weighted SEL of the FA-18 aircraft at 2,000 ft (610 m) AGL; approximately 96 dB re 20 $\mu\text{Pa}^2\cdot\text{s}$. All non-participating personnel would be restricted from overflight areas and would not be impacted by these sound levels.

4.7.2 Building 807 Launch Complex Alternative

Noise conditions for the Building 807 Launch Complex Alternative are similar to those under the proposed action for all components of missile testing and support activities, including the launch events.

4.8 CULTURAL RESOURCES

The primary factors considered in determining the significance of potential effects on cultural resources include the extent or degree to which the proposed action would alter the characteristics or diminish the integrity of a significant prehistoric or historic resource. For this EA, cultural resources of concern are limited to prehistoric archaeological resources, historic and architectural resources, and underwater archaeological resources including submerged prehistoric sites, isolated prehistoric artifacts and submerged shipwrecks or portions of ship components.

4.8.1 Proposed Action

4.8.1.1 Facility Locations

Prehistoric sites have been documented in the immediate vicinity of proposed facility addition and modification areas at Buildings N163 and N189. The proposed facility locations at N163 have been sited away from the nearby prehistoric archaeological sites. The proposed location for antennas at N189 would be at a prehistoric site; however, the integrity of this site has been previously disturbed to the point that it has been assessed as ineligible for the National Register of Historic Places, and grading and placement of antennas at this location is expected to have no additional adverse effect to the cultural resources at this site. No prehistoric, historic, or architectural resources have been documented at any of the other areas proposed for facility modifications or additions (NAWCWD Point Mugu 2004b). If surface or subsurface archaeological deposits were encountered at any time during facilities construction, all work would cease until a qualified archaeologist had been consulted regarding the significance of the resource. The proposed action would have no adverse effect to registered or eligible sites under the NHPA. Section 106 consultation has been initiated with SHPO (NAWS China Lake 2004b), and SHPO concurs with this determination (see Appendix B). Therefore, impacts to cultural resources under the proposed action would not be significant.

4.8.1.2 Missile and Chase Plane Overflight Areas

Missile and chase plane overflights would occur in the air and would not affect cultural resources. No shipwrecks have been recorded in the nearshore waters of Redeye Beach, near the area where the booster would drop. Also, no underwater archaeological resources have been documented in the vicinity of this area, which is characterized as having a low potential for submerged archeological sites (NAWCWD Point Mugu 2002b). In the remote case that missile or booster debris settled on the surface of an underwater archaeological resource, damage to the resource would not be likely due to the size of the debris. If the debris fell on a resource, the impact on the scientific potential of the resource would be minimal and would not result in significant impacts. The proposed action would have no adverse effect to registered or eligible sites under the NHPA.

4.8.2 Building 807 Launch Complex Alternative

Under this alternative, the facilities associated with Building N189 would be relocated to the area near Building 807, thus reducing the likelihood of impact to any cultural resources. No known historic or prehistoric sites are located in this area. No shipwrecks have been recorded in the nearshore waters of Building 807, near the area where the booster would drop. Also, no underwater archaeological resources have been documented in the vicinity of this area, which is characterized as having a low potential for submerged archeological sites (NAWCWD Point Mugu 2002b). This alternative would have no adverse effect to registered or eligible sites under the NHPA. Therefore, implementation of the Building 807 Launch Complex Alternative would not have a significant impact on cultural resources.

4.9 NO-ACTION ALTERNATIVE

Under this alternative, the SSM-1 KAI would not be tested and existing environmental conditions would not be affected. Therefore, the No-Action Alternative would not result in significant impacts to land use, public safety, geological resources, water resources, biological resources, air quality, noise, or cultural resources.

CHAPTER 5

OTHER CONSIDERATIONS BY NEPA

This chapter addresses topics required by NEPA in an EA, including cumulative impacts, irreversible and irretrievable commitment of resources, and short-term vs. long-term productivity.

5.1 CUMULATIVE IMPACTS

CEQ regulations implementing the procedural provisions of NEPA define cumulative effects as:

“The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” (40 CFR § 1508.7)

In order to analyze cumulative effects, a cumulative effects region must be identified for which effects of the proposed action and other past, present, and reasonably foreseeable actions would be cumulatively recorded or experienced. Due to the remote location, the region where cumulative effects may occur includes only San Nicolas Island. Therefore, this analysis considers additional effects arising from the proposed action with effects of other known current and future actions at San Nicolas Island. Past, present, and reasonably foreseeable actions in the cumulative effects region are briefly described below.

5.1.1 Actions in the Cumulative Effects Region

5.1.1.1 Arrow System Improvement Program

The Arrow Weapon System (AWS) can detect and track incoming missiles as far away as 310 miles (500 km) and can intercept missiles 31-56 miles (50-90 km) away. Missile launches and necessary support activities are being conducted at San Nicolas Island and the Point Mugu Sea Range in order to test improvements to the AWS under the Arrow System Improvement Program. Targets are launched from either Vandenberg Air Force Base, California or an air launched platform flying in the vicinity of the Point Mugu Sea Range and the interceptor is launched from San Nicolas Island. A total of 4 test launches are scheduled over the next 5 years beginning in 2004. The first two launches were completed in 2004 and two more launches are currently scheduled for 2008. No cumulative impacts to San Nicolas have been identified in association with Arrow System Improvement Program testing.

5.1.2 Effects of the Proposed Action in Combination with Actions Identified

This section addresses the additive effects of the proposed action evaluated in this EA in combination with the relevant actions described above. Due to the short-term nature of the missile testing and support activities, impacts are typically not cumulative, nor do they cause off-site impacts. Cumulative projects planned for San Nicolas Island would mostly occur on the southeastern portion of the island. However, geographic overlap with these projects is minimal. Missile and chase plane overflights would occur along the southern and western ends of the island, but these activities would not conflict with the proposed action. Some co-location of activities would occur with the Arrow missile program (e.g., missile launch and use of N110 for missile assembly), but these activities would be scheduled to avoid interference, and they would not collectively create environmental impacts at these locations. In addition, no significant or permanent impacts have been identified for the proposed action evaluated in this EA. As a result, the proposed action would not measurably increase the degree of collective impact at San Nicolas Island, and cumulative impacts would not be significant.

5.2 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS

Implementation of the proposed action would be consistent with federal, regional, state and local plans, policies, and controls to the extent required by federal law and regulation. No potential conflicts have been identified. Table 5-1 provides a summary of environmental compliance for the proposed action.

Table 5-1. Status of Compliance with Relevant Land Use Plans, Policies, and Controls

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
National Environmental Policy Act (42 USC § 4321 <i>et seq.</i>) Department of the Navy Procedures for Implementing NEPA (32 CFR 775)	U.S. Navy	This EA has been prepared in accordance with the CEQ Regulations implementing NEPA and U.S. Navy NEPA procedures. The preparation of this EA has been conducted in compliance with NEPA.
Coastal Zone Management Act (16 CFR § 1451 <i>et seq.</i>) California Coastal Act (14 California Code of Regulations)	U.S. Navy	The U.S. Navy has prepared a Negative Determination (NAWCWD Point Mugu 2005) and has determined that the proposed action is consistent with the Coastal Zone Management Act. The California Coastal Commission has concurred with this determination.
Clean Water Act (§§ 401-402 and 404, 33 USC § 1251 <i>et seq.</i>)	USEPA/U.S. Army Corps of Engineers (USACE)	The proposed repair would not involve fill and would be in compliance with the Clean Water Act.
Rivers and Harbors Act (33 USC § 401 <i>et seq.</i>)	USACE	The proposed action would not involve “work” in navigable waters and would be in compliance with the River and Harbors Act.
Clean Air Act, as amended (42 USC § 7401 <i>et seq.</i>)	USEPA	Per Clean Air Act regulations, the proposed action would not compromise air quality attainment status in California or conflict with attainment status and maintenance goals established in its State Implementation Plan. Therefore, a Clean Air Act conformity determination is not required.
EO 11990, <i>Protection of Wetlands</i> (42 Federal Register 26961)	U.S. Navy	The proposed action would not impact wetlands (none are present at the project sites).
Endangered Species Act (16 USC § 1531)	USFWS/NMFS	The U.S. Navy is complying with the BO issued by USFWS for activities on San Nicolas Island. The proposed action is not likely to adversely affect any federally listed endangered or threatened species or critical habitat.
Magnuson-Stevens Fishery Conservation and Management Act (16 USC §§ 1801-1802)	NMFS	The U.S. Navy has determined that the proposed action would not adversely affect EFH; formal consultation with NMFS is not required.
Marine Mammal Protection Act (16 USC § 1431 <i>et seq.</i> and 50 CFR Part 216)	NMFS	The U.S. Navy is complying with the LOA issued by NMFS for Level B incidental harassment of marine mammals during launches.

Table 5-1. Status of Compliance with Relevant Land Use Plans, Policies, and Controls

<i>Plans, Policies, and Controls</i>	<i>Responsible Agency</i>	<i>Status of Compliance</i>
EO 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i> (59 Federal Register 7629)	U.S. Navy	There would be no disproportionately high and adverse human health or environmental effects on minority or low-income populations.
EO 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i> (62 Federal Register 19885)	U.S. Navy	The proposed action would not disproportionately expose children to environmental health risks or safety risks.
EO 13089, <i>Coral Reef Protection</i> (63 Federal Register 32701)	U.S. Navy	The proposed action would not affect any coral reef ecosystem.
California Coastal National Monument Designation (Presidential Proclamation, January 11, 2000)	Bureau of Land Management with management by California Department of Fish and Game	The California Coastal National Monument designation includes lands above water in an area on the California coast from mean high tide to a distance of 12 NM in Territorial Waters. San Nicolas Island is reserved for Naval purposes and is therefore not a part of the monument. Rocks offshore from Redeye Beach have only a negligible potential to be struck by the falling booster. Missile and aircraft overflights would not affect these rocks.
Marine Life Protection Act (California Department of Fish and Game Code Section 2852)	State Water Resources Control Board	The waters surrounding San Nicolas Island are designated as a state water quality protection area. No adverse effects would occur within this area.
EO 13158, <i>Marine Protected Areas</i> (65 Federal Register 34909)	U.S. Navy	Marine Protected Areas have not yet been officially designated under EO 13158.
National Marine Sanctuaries Act (16 USC § 1431 <i>et seq.</i>)	National Oceanic and Atmospheric Administration	The proposed action would not take place within a designated National Marine Sanctuary.
EO 13186, <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i> (66 Federal Register 3853)	U.S. Navy	The proposed action is not likely to have a measurable negative effect on migratory bird populations.
National Historic Preservation Act (§ 106, 16 USC 470 <i>et seq.</i>)	Advisory Council in Historic Preservation, California State Historic Preservation Office	The proposed action would be designed to avoid effects on National Register or eligible properties. Section 106 consultation has been initiated with SHPO (NAWS China Lake 2004b).
Sikes Act Improvement Act (16 USC § 670a <i>et seq.</i>)	U.S. Navy	The proposed action would occur in accordance with the <i>Integrated Natural Resources Management Plan, San Nicolas Island, California</i> (NAWS China Lake 2003).

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and other natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an

irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The proposed action would not result in a significant irreversible or irretrievable commitment of resources at San Nicolas Island. Construction activities would require the consumption of limited amounts of materials (including use of fresh water) typically associated with construction and stabilization. Test missiles, chase planes, construction vehicles, generators, and additional automobiles, along with the operation of infrastructure to support additional personnel at San Nicolas Island, would result in the consumption of fuel, oil, and lubricants. An undetermined amount of energy needed to conduct all phases of the proposed action would be expended and irreversibly lost.

5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing a single development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses being performed at that site.

The proposed action would, reversibly, dedicate parcels of land, equipment, and other resources to a particular use during a limited period of time. These resources would not be available for other productive uses throughout the duration of the proposed action. However, these impacts are considered negligible, as the facilities and land used for the proposed action are designated for the types of uses proposed. Upon the completion of the project no new land uses would be introduced or excluded at San Nicolas Island. Therefore, the proposed action would not result in any impacts that would reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

5.5 ENVIRONMENTAL JUSTICE IMPACTS

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-income Populations*, was issued to focus attention of federal agencies on human health and environmental conditions in minority and low-income communities to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed. No permanent population centers exist on San Nicolas Island. Given that there are no low-income or minority communities on the island, there would be no disproportionately high and adverse human health or environmental effects on minority or low-income populations.

5.6 PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each federal agency shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Environmental health and safety risks include risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or to ingest. This EO also focuses primarily on the noise environment around schools. San Nicolas Island is a Navy-owned island with a population of Navy personnel on assignment (no family housing exists); the proposed missile testing would occur in an area outside of population centers. Consequently, children would not be newly or disproportionately exposed to increased health or safety risks.

CHAPTER 6

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CHAPTER 7

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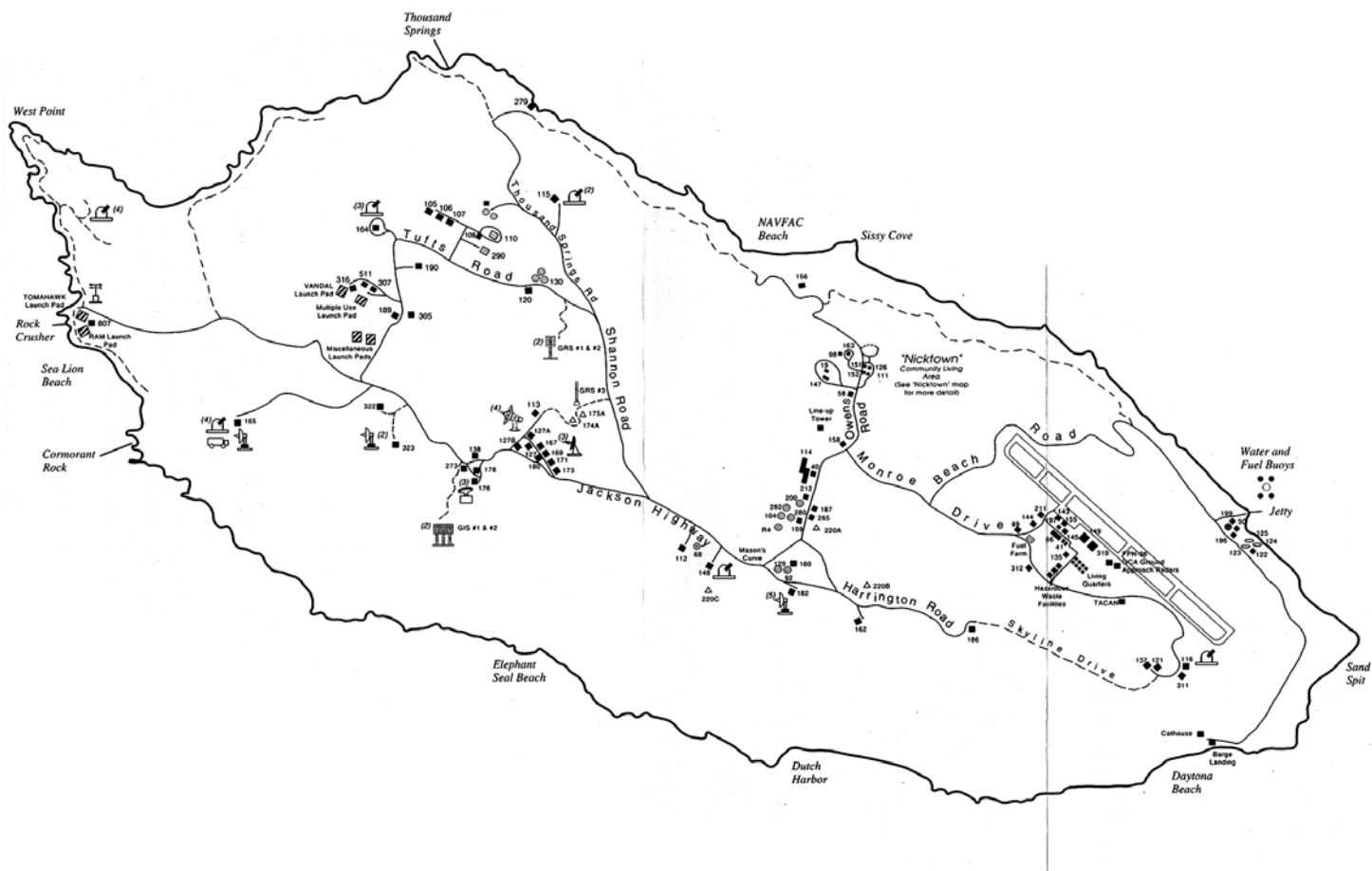
Appendix A

Proposed Facility Site Maps

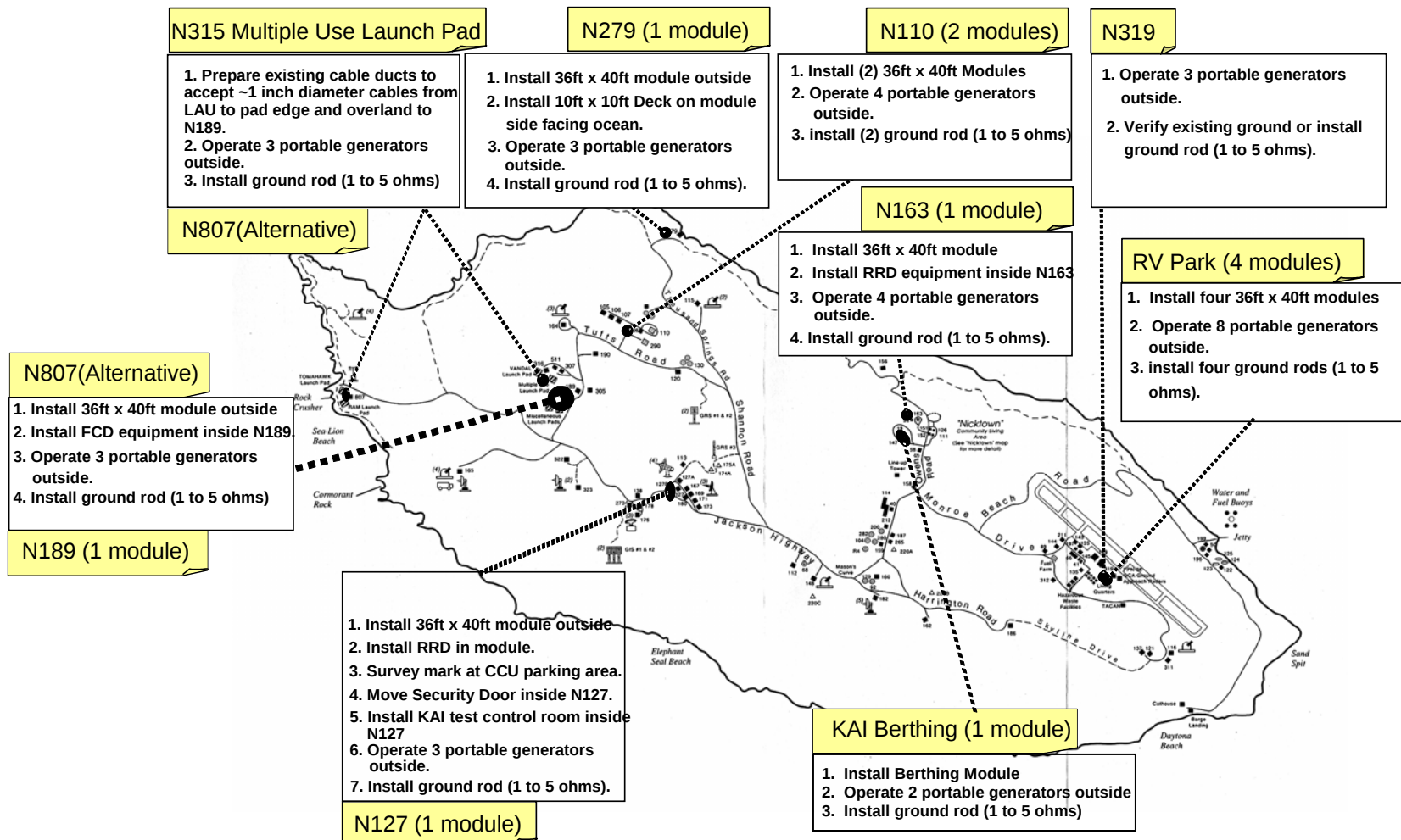
***SSM-1 KAI SNI
Facility Requirement
Overview***

***SSM-1 KAI 2007
29 June 2004***

San Nicolas Island

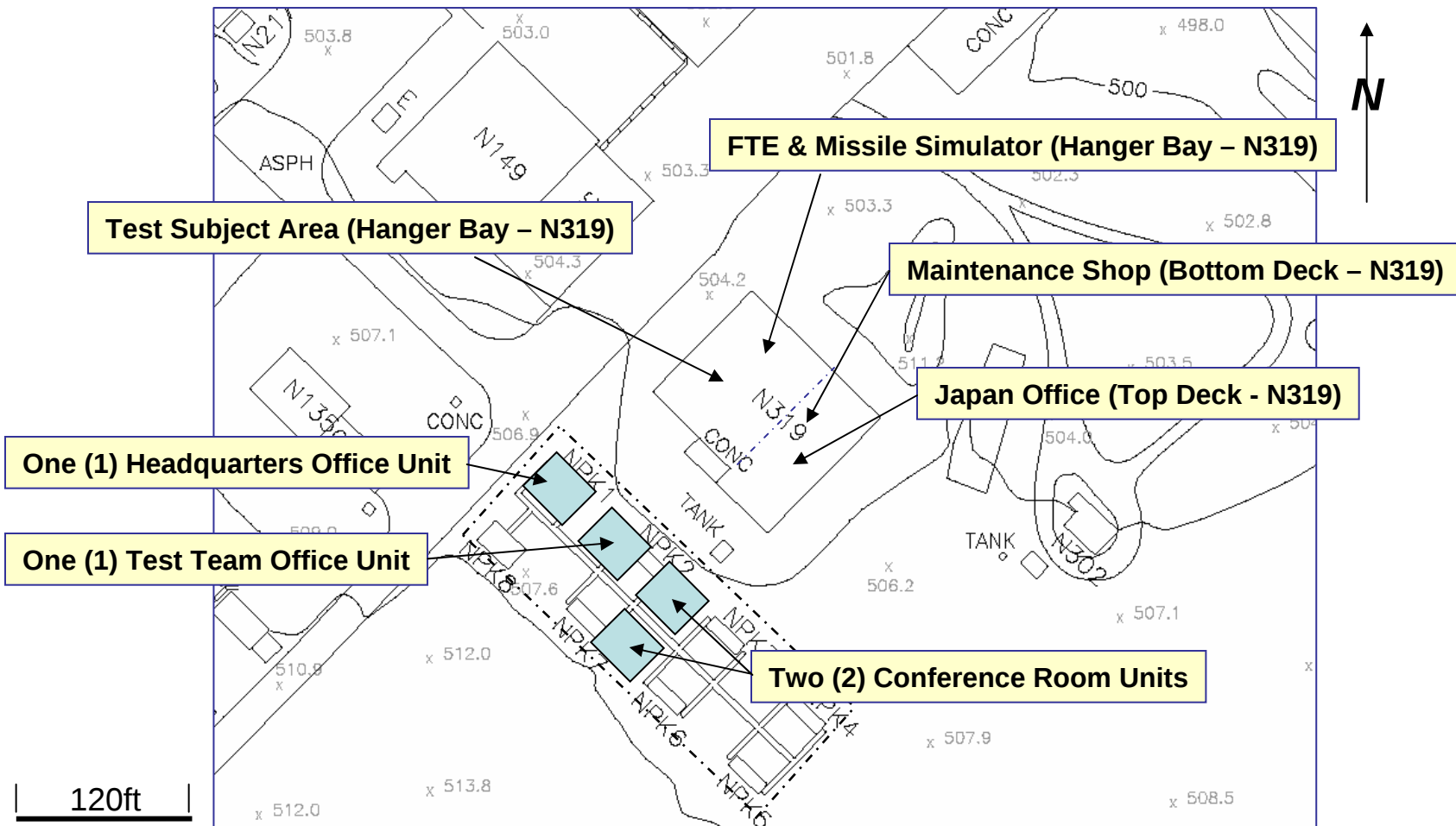


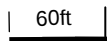
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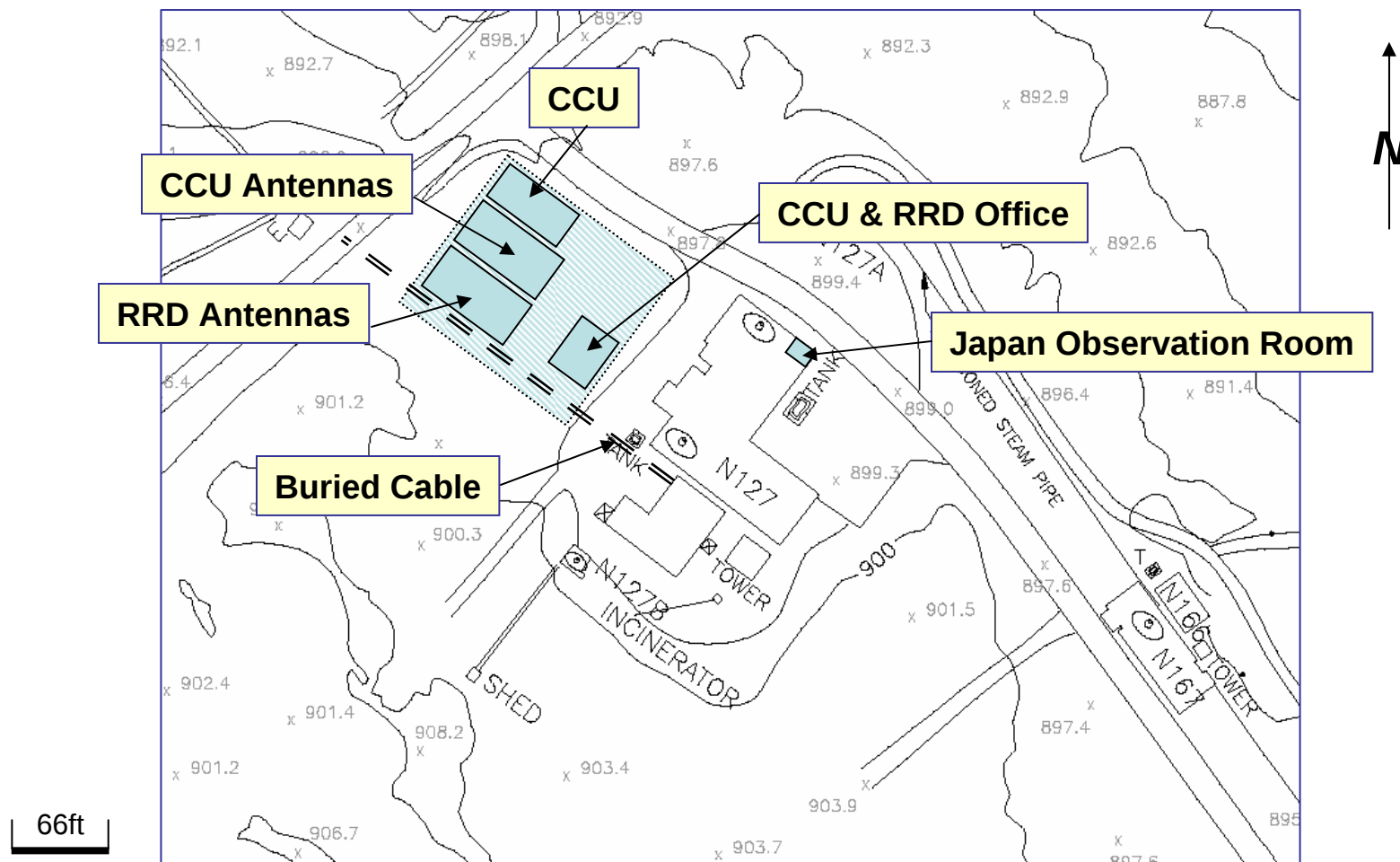


N319

Japan Office and Maintenance Shop Area Detail



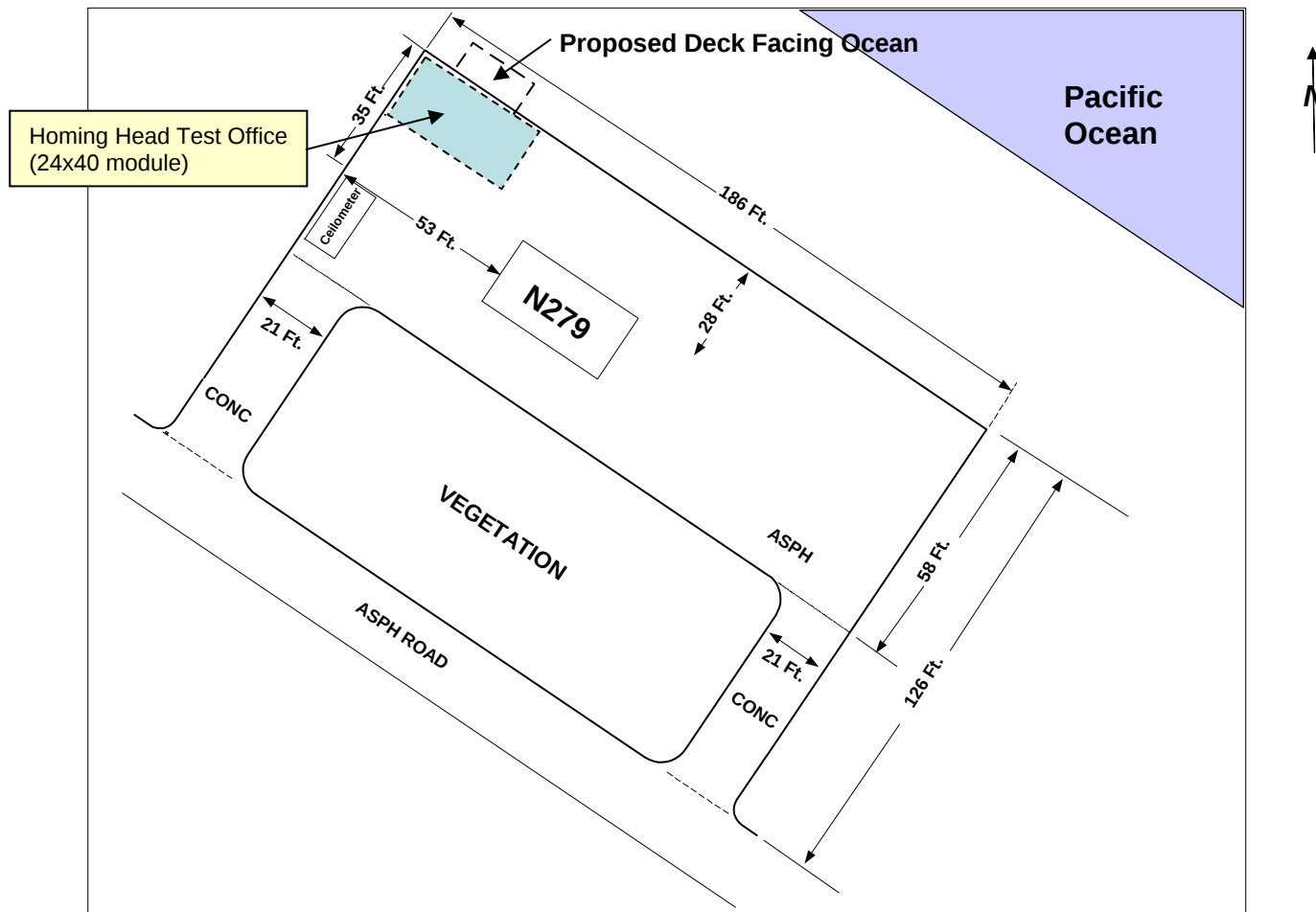




N279

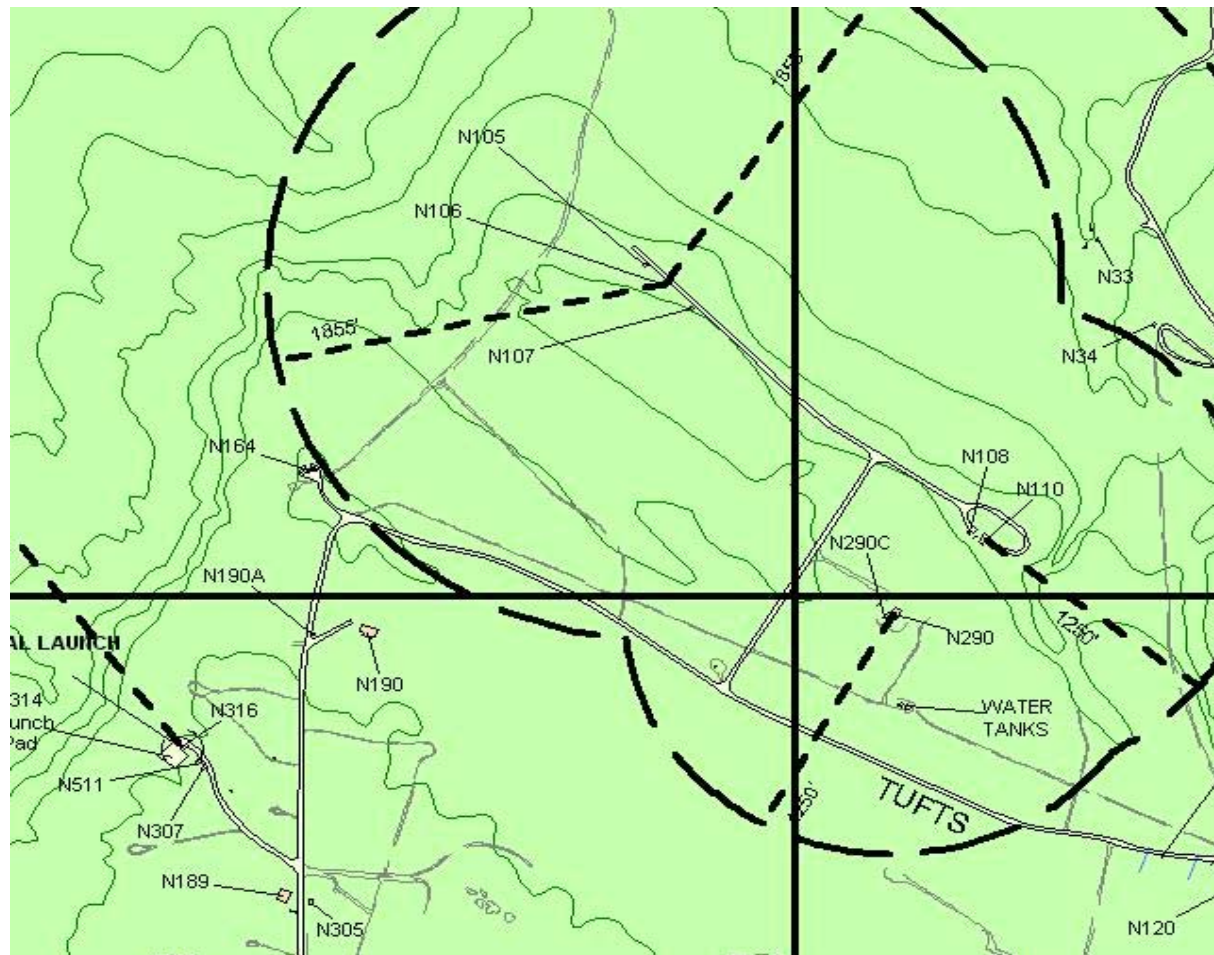
Homing Head Test Facility Area Detail

NAV  AIR



N105-N107

Explosive Material Storage Area



N105-N107

Explosive Material Storage Area Detail

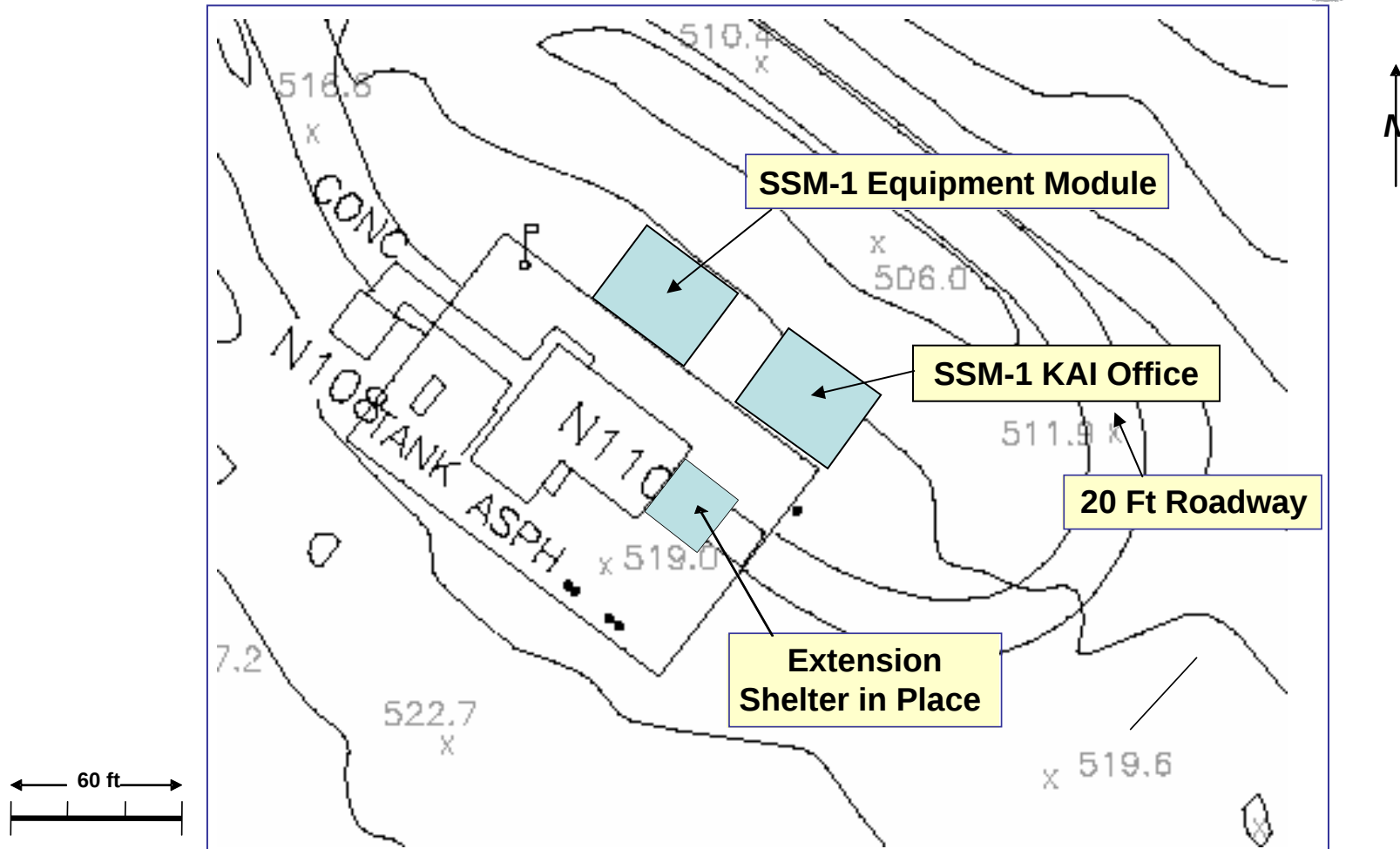


Ordnance Item	Area (Ft. ³)
Missile Canisters (5 Each)	108
S&A (Telemetry) (5ea)	1.1
S&A (Booster) (5ea)	1.1
Power Cartridge (5 ea)	0.7
Destructors (5 ea)	5
Boosters (5 ea)	121
Total Storage Area Required in Magazines	669

N110

Ordnance Assembly Building Area Detail

NAV  AIR



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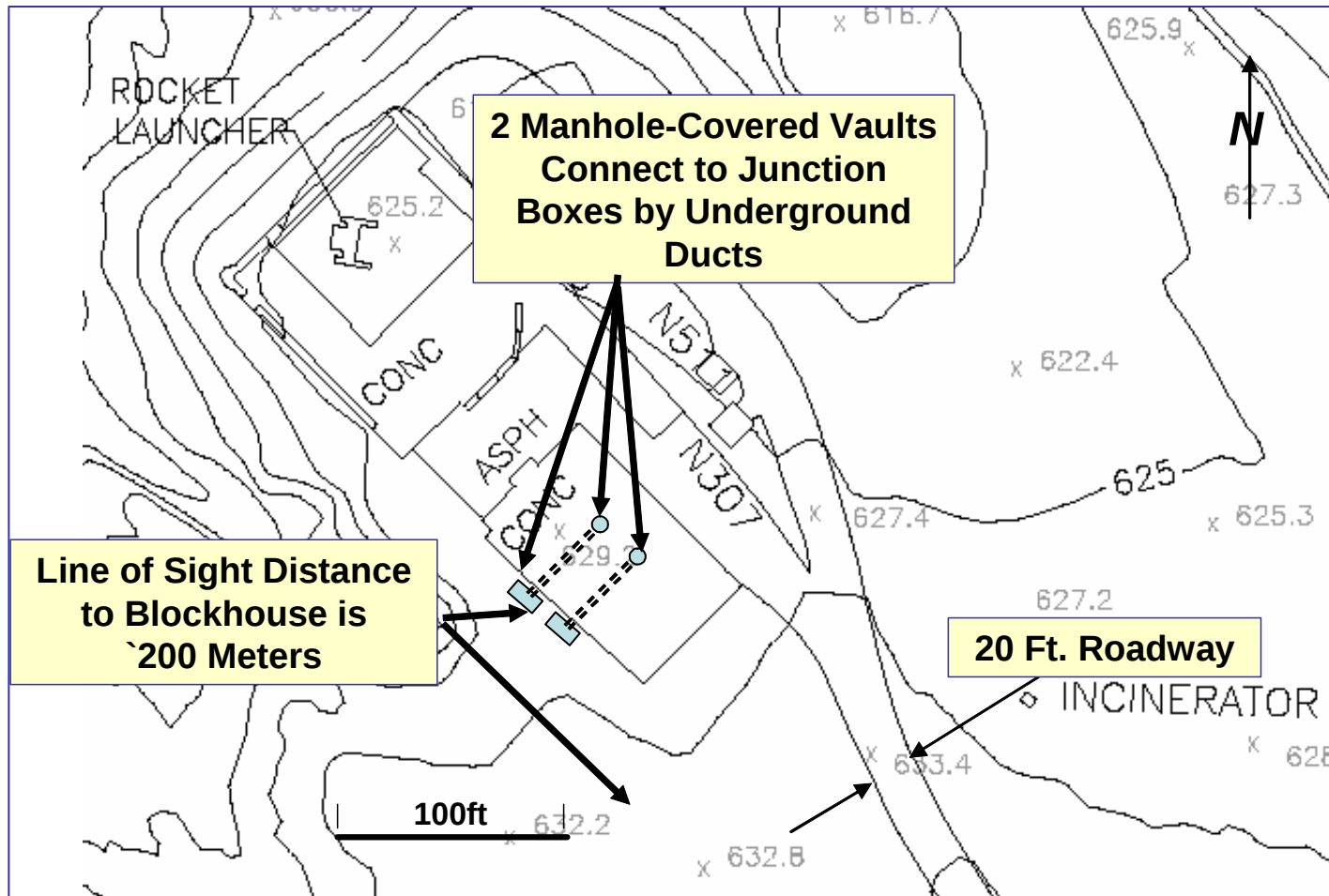
Movable Building Extension N110



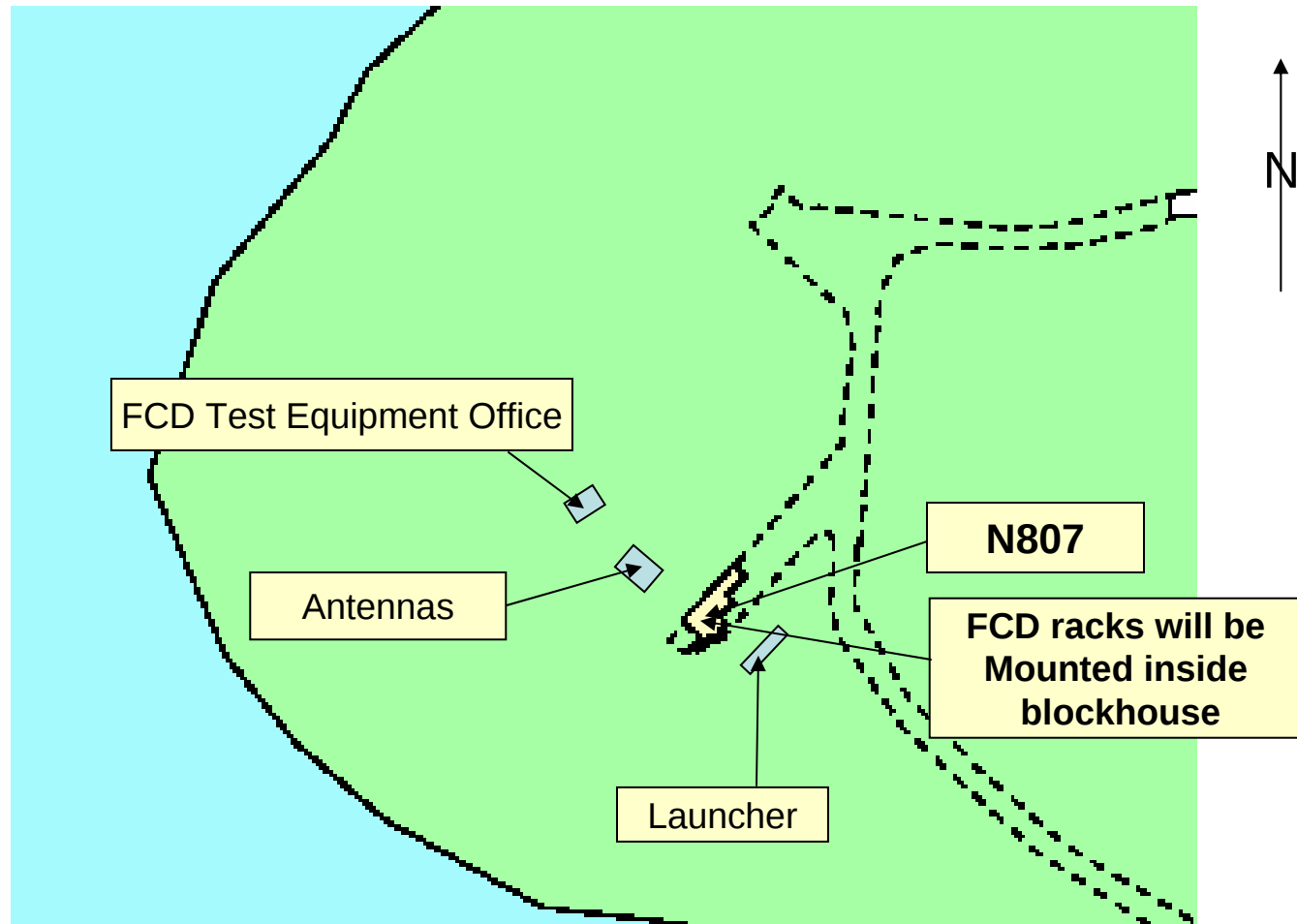
- ***Specifications for this unit will enable NAVAIRWD to provide the extension to Building N110 at San Nicolas Island.***



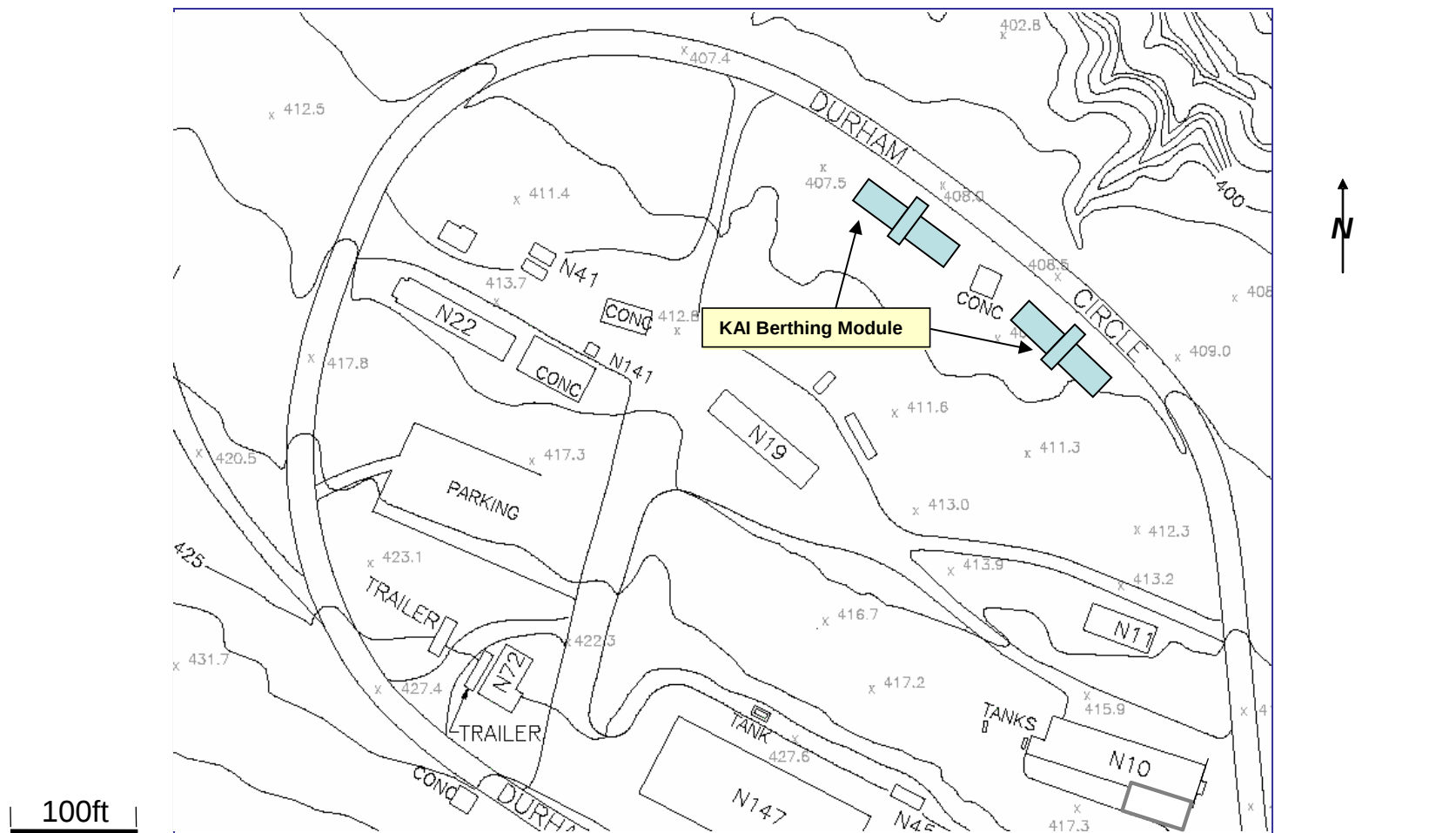
LAU - Multiple Use Launch Pad Area Detail



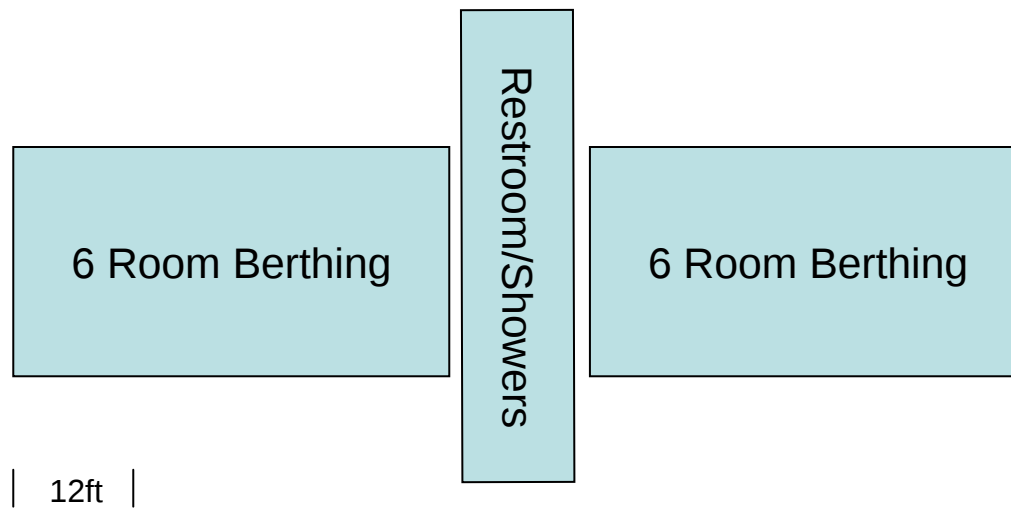
807 FCD Blockhouse Area (Alternative launch site)



KAI Berthing

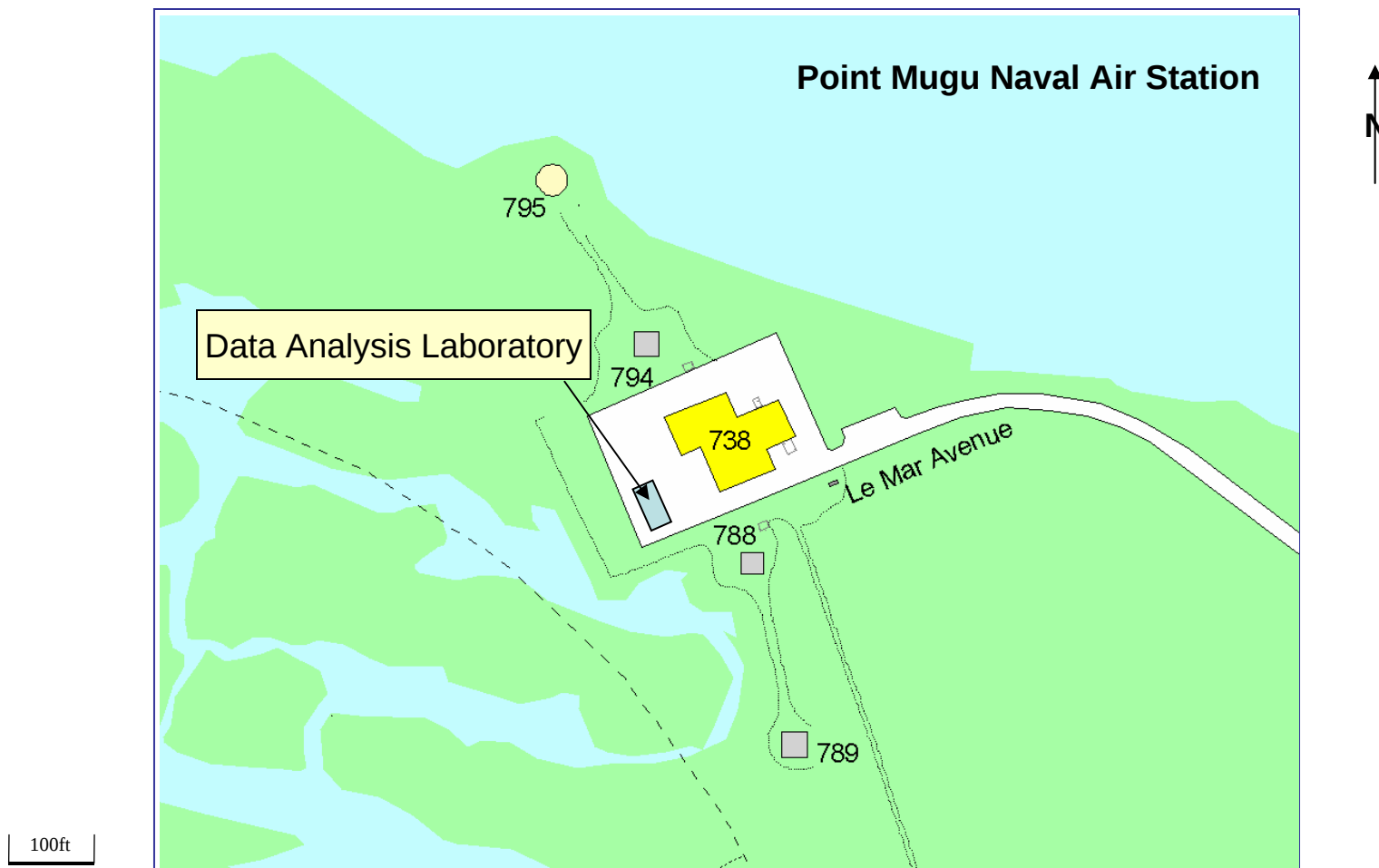


Berthing Unit Example



NOTE:
Sections of the module shown separated for the purpose of identification.
Sections will be attached to each other in construction.

PM738 Data Analysis Laboratory



Schedule of Modules



- ***Two 36ft x 40ft Conference Room Modules at N319***
- ***One 36ft x 40ft Contractor office at N319***
- ***One 36ft x 40ft Headquarters Office at N319***
- ***One 36ft x 40ft SRU and RRD Office at N163***
- ***One 36ft x 40ft RRD and CCU Office at N127***
- ***One 36ft x 40ft FCD/LAU Office at N189***
- ***One 36ft x 40ft OAB Office at N110***
- ***One 36ft x 40ft Equipment Facility at N110***
- ***One 36ft x 40ft Homing Head Test Office at N279***
- ***Two Berthing Units (4ea of 12ft x 60ft section, 1ea of 12ft x 50ft) at “Nicktown”***
- ***One 24ft x 60ft Data Analysis Laboratory***

JP-4 Fuel Storage Facility



- ***The JP-4 Fuel will be stored in Approved Hazardous Material Containers at the San Nicolas Island Public Works Fuel Farm.***

Appendix B

State Historic Preservation Office Correspondence



DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE, CALIFORNIA 93555-6100

IN REPLY REFER TO:

5090
Ser N45NCW/ 558
September 7, 2004

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296-0001

Dear Dr. Donaldson:

The Naval Air Weapons Station (NAWS) China Lake proposes to assist the Japanese Defense Force with testing of their SSM-1 KAI missile on San Nicolas Island. The testing involves launching five missiles from San Nicolas Island. Specifically, testing includes: booster separation tests, global positioning system guidance tests, and monitoring for desired flight times over land and water. The Area of Potential Effects (APE) includes several locations around the island where temporary facilities would be constructed and the booster impact area (enclosure 1). Missile boosters would fall into the nearshore area just off the northwest shoreline. For the most part, all of the facilities are being sited in previously disturbed areas to minimize impacts to natural and cultural resources.

This letter serves as documentation of the steps taken to identify National Register properties that may be affected by the proposed undertaking and documents a determination of effect for one National Register eligible property.

The entirety of San Nicolas Island has previously been surveyed for the presence of archaeological properties (Reinman and Lauter 1984). In 1996-98 a new survey effort was conducted to re-map all archaeological sites on the island using GPS technology. This work provides an up-to-date assessment of site integrity and research potential of each site on the island (Martz 2002). Some 540 prehistoric archaeological sites have been mapped and recorded through these efforts. Both of these reports and associated documentation have been transmitted to your office previously.

The entirety of San Nicolas Island has also previously been surveyed for the presence of historic architectural properties (JRP Historical Consulting Services 1998; on file with NAWS and OHP). This survey resulted in the identification of one Cold War structure that is eligible for the National Register of Historic Places. This structure, N138-Original Surveillance Radar-is located over one quarter mile from any of the facility sites and is outside the APE. All other structures were determined to be ineligible for the National Register at this time.

No shipwrecks are known to have occurred in the booster drop area. A shipwreck model prepared for the Navy (AMEC 1999; on file with NAWS and OHP) utilized known shipwreck locations and statistical analysis of where shipwrecks tend to occur to establish low, moderate,

and high probability zones of based on the likelihood of shipwrecks to be present. The study did not identify any known ship losses in the booster drop area.

Another predictive study (AMEC 2002; on file with NAWS and OHP) models the potential for the presence of prehistoric archaeological sites to be found around San Nicolas Island. The study extrapolates from the known settlement pattern and considers changes in the shoreline over the last 11,000 years. The study identifies low, moderate, and high probability zones based upon likelihood of the occurrence of prehistoric archaeological sites. Submerged prehistoric sites are unlikely to occur in the booster drop area due to the rocky nature of the shoreline in this area and high wave energy, both conditions are not conducive to the preservation of submerged archaeological sites.

Based on these studies, there are two known cultural properties located within in APE.

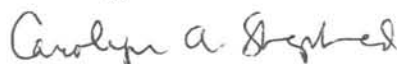
Radio antennas would be placed on a small portion of CA-SNI-61. This prehistoric site has been characterized as a habitation site with poor integrity. The main launch pad for the island, a launch control facility, communications building, and several roads were constructed on the site in the 1960s. This activity has severely impacted the integrity of this site to the point that it has been assessed as ineligible for the National Register (Martz 2002).

Antennas would also be placed on a portion of CA-SNI-316. This site has been characterized as a stone artifact manufacturing and shellfish processing location. Based on a limited test excavation of this site, which found the deposit to be intact with dateable materials, the site is considered to be eligible for the National Register (Martz 2002). A concrete pad was installed on the site in the 1960s. The antenna for the proposed project would be placed on this existing concrete pad; therefore, we have concluded that installation of an antenna on this concrete pad would not result in adverse effects to this resource.

Based upon the above facts, NAWS has determined that the proposed testing of the SSM-1 KAI missile at San Nicolas Island would have No Adverse Effect on National Register or eligible properties. In accordance with 36 CFR 800.5, we request your concurrence with this determination.

If you have any questions please contact Mr. Steven Schwartz at (805) 989-0644.

Sincerely,



CAROLYN A. SHEPHERD
Head, Environmental Planning & Mgmt. Dept.
By direction of
the Commanding Officer

Enclosure: 1. Area of Potential Effects maps

References Cited

AMEC

1999 Shipwreck Study. Report prepared for Naval Air Warfare Center, Point Mugu. AMEC Earth and Environmental Services, Santa Barbara. Prepared for Naval Air Warfare Center, Point Mugu.

2002 Underwater Archaeology Study. AMEC Earth and Environmental Services, Santa Barbara. Prepared for Naval Air Warfare Center Weapons Division, Point Mugu.

JRP Historical Consulting Services

1998 Inventory and Evaluation of National Register of Historic Places Eligibility for Buildings and Structures at Naval Air Weapons Station (NAWS) Point Mugu, Ventura County, California. 3 volumes. JRP Historical Consulting Services, Davis, CA. Prepared for Engineering Field Activity, West, San Bruno, CA.

Martz, Patricia

2002 San Nicolas Island Prehistoric Archaeological Sites Mapping and Recordation Project. California State University, Los Angeles. Prepared for Naval Air Weapons Station, China Lake.

Reinman, Fred M. and Gloria A. Lauter

1984 San Nicolas Island Cultural Resource Survey Report, 3 vols. F.M. Reinman & Associates, Glendale. Prepared for Pacific Missile Test Center, Point Mugu.

Appendix C

Coastal Consistency Negative Determination

CALIFORNIA COASTAL COMMISSION

46 FIRMONT STREET, SUITE 3000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200



March 15, 2005

C.H. Kiwus, Commander
Public Works Department
Department of the Navy
Naval Base Ventura
311 Main Road, Suite 1
Point Mugu, CA 93042-5033

Attn: James Danza

RE: ND-025-05, Negative Determination, Navy, SSM-1/KAI Missile test, San Nicolas Island

Dear Commander Kiwus:

The Coastal Commission staff has reviewed the above-referenced negative determination for the testing of surface-to-surface missiles and modifications to existing testing facilities at San Nicolas Island. The proposal includes up to five missile tests, for purposes of evaluating dual launch performance, sea-skimming maneuvers, target discrimination, and simultaneous interception. On-shore facility improvements would be temporary and limited to existing developed facilities on the island. Environmental restrictions and monitoring of sensitive habitat areas potentially affected would be the same as for previously-authorized missile tests on the island. Chase planes would follow the missiles and could divert or terminate the missiles if they depart from their planned course and threaten sensitive areas.

Under the federal consistency regulations (Section 930.35), a negative determination can be submitted for an activity "which is the same as or similar to activities for which consistency determinations have been prepared in the past." On February 14, 2001, the Commission concurred with a programmatic consistency determination for Navy training and missile testing activities on the Point Mugu Sea Range, which included testing and facility modifications at San Nicolas Island (CD-2-01). All existing and proposed new testing would comply with the terms of the Biological Opinion from the U.S. Fish and Wildlife Service and the Letter of Authorization from the National Marine Fisheries Service. In that previous review the Commission found:

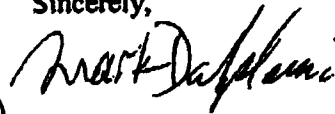
The proposed activities are within the range and scope of historic Navy activities conducted on the Sea Range. The primary coastal resource concerns are effects on marine mammals found throughout the Sea Range, and sensitive nearshore and land-based sensitive wildlife habitats at San Nicolas Island and Pt. Mugu. To address these concerns, the Navy is coordinating with the National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service. Through this coordination and the EIS process, and as summarized above, the Navy has committed to avoidance, minimization, mitigation and monitoring measures to assure the protection of important wildlife species, including: (1) assuring that activities on the Sea Range that could harass marine mammals do not occur when significant concentrations of marine

mammals are present; (2) monitoring launch activities on San Nicolas Island; (3) enhancing habitat for the western snowy plover, light-footed clapper rail, and island night lizard; (4) limiting effects on San Nicolas Island to previously disturbed areas; (5) population and density monitoring for a number of sensitive wildlife species; (6) training military personnel on wildlife issues; and (7) implementation of remedial measures, in the event monitoring efforts indicate listed species are not being protected. While a number of these measures are continuations of existing Navy mitigation and monitoring practices, for the purposes of this comprehensive Sea Range program they are being implemented within the context of two programmatic Biological Assessments, (one addressing overall Navy activities at Pt. Mugu, and the other overall activities on San Nicolas Island). In addition, at the request of the Commission staff the Navy has committed to submit all monitoring plans to the Commission staff, for its review prior to their finalization, and to provide regular monitoring results to the Commission staff on an ongoing basis as they become available. Moreover, the Commission staff has contacted NMFS and the U. S. Fish and Wildlife Service, which have not raised any major concerns over the Navy's proposal as long as the monitoring and other commitments remain in place. The Commission concludes that, with the monitoring and mitigation commitments the Navy has incorporated into the project, including the commitment to enable continuing Commission staff review of finalized monitoring plans and ongoing monitoring results, the project is consistent with the marine resources, environmentally sensitive habitat, and water quality policies (Sections 30230, 30240 and 30231) of the Coastal Act.

The Navy states: "Based on monitoring experience with other missile launches [at San Nicolas Island], temporary startle reactions may occur, but are not likely to cause any harm or otherwise affect the well-being of sensitive wildlife species." In addition, the Commission staff regularly reviews annual habitat monitoring reports published under these agreements and under the Navy's CD-2-01 commitments to provide the Commission staff with monitoring for all Sea Range testing.

In conclusion, the Coastal Commission staff agrees that the proposed project is the same as or similar to a consistency determination with which the Commission has previously concurred (CD-2-01), and does not raise any new issues warranting a new consistency determination. We therefore concur with your negative determination made pursuant to 15 CFR Section 930.35 of the NOAA implementing regulations. Please contact Mark Delaplaine of the Commission staff at (415) 904-5289 if you have any questions regarding this matter.

Sincerely,

(for) 
PETER M. DOUGLAS
Executive Director

cc: Ventura District Office

NEGATIVE DETERMINATION

INTRODUCTION

In accordance with the Federal Coastal Zone Management Act of 1972 as amended (Code of Federal Regulations [CFR] § 1451 et seq.), this Negative Determination is submitted for proposed testing of a surface-to-surface missile (SSM-1 KAI) and the addition and modification of facilities to support testing on the Point Mugu Sea Range at San Nicolas Island, California.

In 2002, the U.S. Navy prepared a Coastal Consistency Determination (CCD) for a Final Environmental Impact Statement/Overseas Environmental Impact Statement addressing test and training operations on the Point Mugu Sea Range. The CCD addressed a variety of missile testing activities including missile launches and nearshore intercept test and training events proposed to occur at least 1 nautical mile (NM) (1.9 km) off the southern and western shores of San Nicolas Island. This Negative Determination is submitted for those components of the proposed SSM-1 KAI missile testing that would occur less than 1 NM offshore from the island; this would include launches from San Nicolas Island; missile flights over varied terrain at the island, the sea-shore interface, and open water; and facilities additions and modifications at the island.

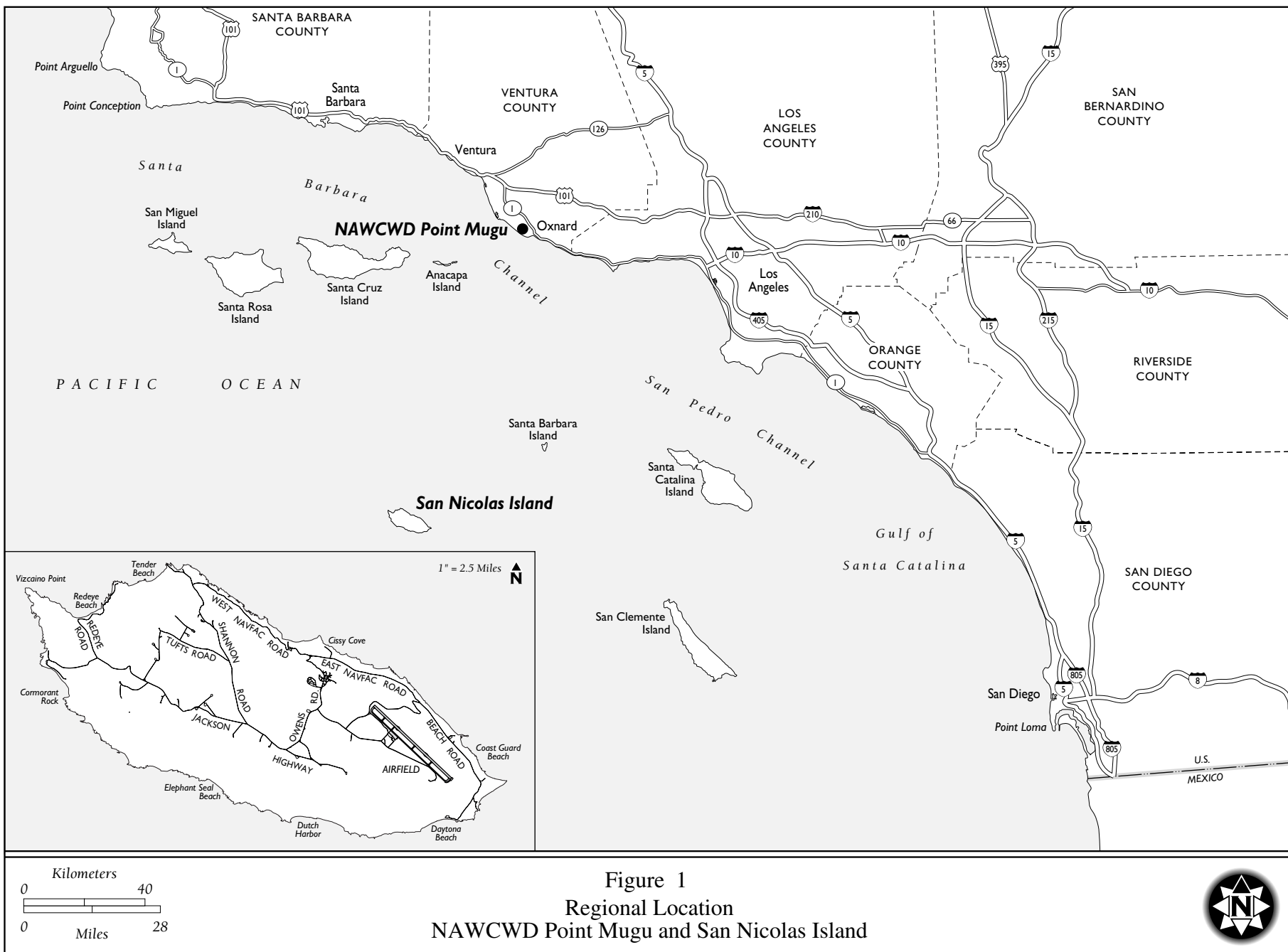
BACKGROUND

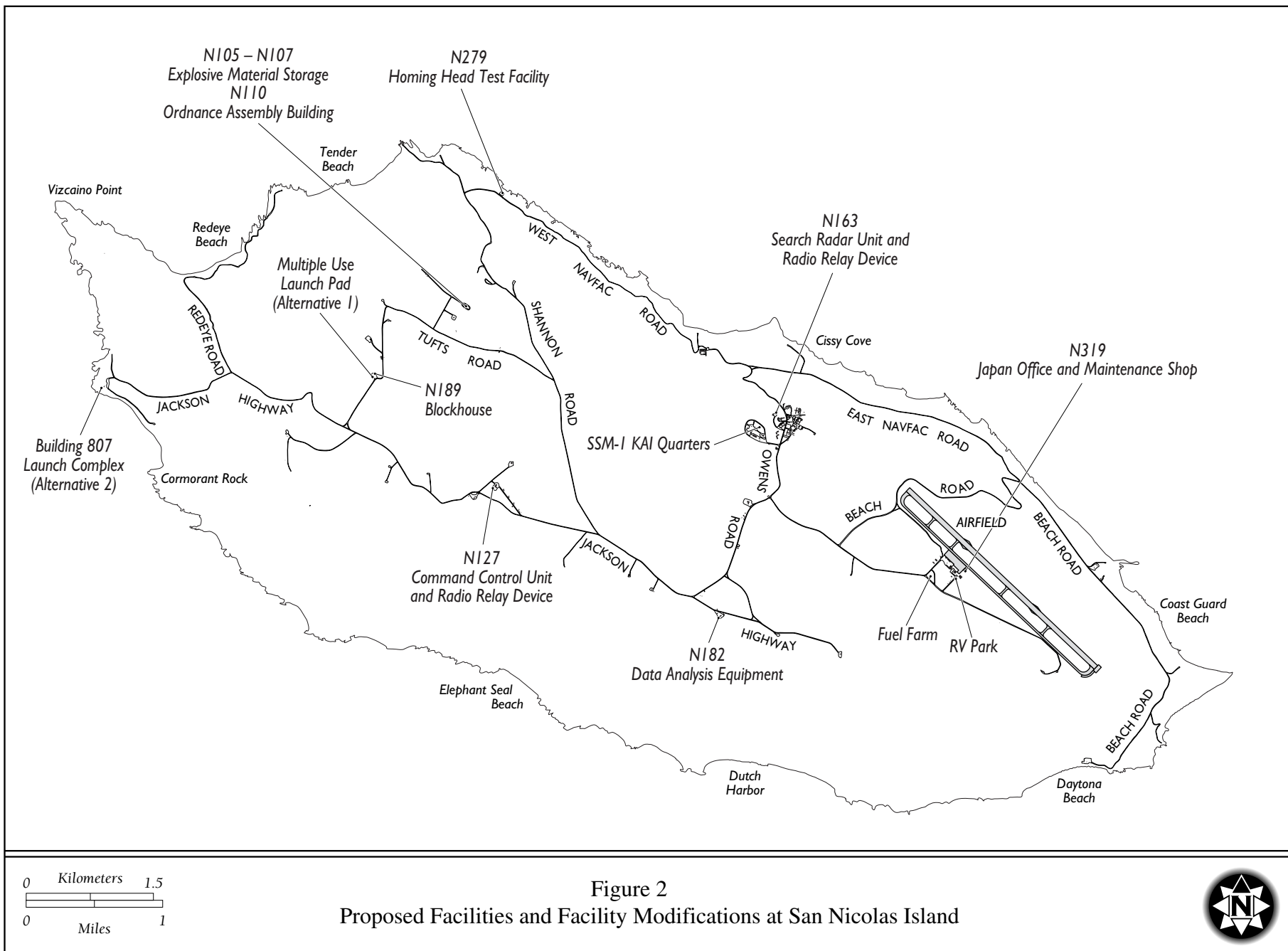
Located approximately 65 miles (105 kilometers [km]) southwest of Point Mugu (Figure 1), San Nicolas Island is owned and operated by the Navy as a major element of the Point Mugu Sea Range. The island is 9 miles (14 km) long by 3.6 miles (6 km) wide, encompassing approximately 21 square miles (54 square km). The island is extensively instrumented with metric tracking radar, electro-optical devices, telemetry, and communications equipment necessary to support Fleet training and weapons testing. An airfield is located at the southeastern edge of the island's central mesa.

PROJECT DESCRIPTION

The purpose of the proposed action is to accommodate testing of the SSM-1 KAI missile at San Nicolas Island. The proposed action is needed to determine the effectiveness of the SSM-1 KAI at the sea-shore interface. Missile testing would include 5 missile tests, involving launches from San Nicolas Island and missile flights over varied terrain at the island, the sea-shore interface, and open water. Testing would be conducted to evaluate the performance of dual launch, sea-skimming maneuvers, target discrimination, and simultaneous interception. Specifically, testing includes: booster tests, Global Positioning System guidance tests, and monitoring for desired lengths of time over land and water. The proposed action would include the implementation of conservation measures in order to minimize any potential impact to biological and cultural resources.

Three primary phases of the testing consist of pre-test site preparation activities, missile launch and flight, and post-test activities. Pre-test site preparation activities would involve facility modifications or additions (Figure 2), almost all of which would be temporary in nature. Of the 9 areas used to support SSM-1 KAI testing, 2 would involve use of existing facilities with no modifications, 1 would involve a modification to a facility, and 6 would involve placement of temporary components adjacent to existing facilities. Approximately 1.24 acres (0.5 hectare [ha]) would need to be graded to support facility additions and modifications. Preparation for testing would last about 3 months.





Testing would include up to 5 launches from the western portion of San Nicolas Island from a mobile launch facility at the Multiple Use Launch Pad. The total flight time is between 7 to 10 minutes, and the missiles would fly at subsonic speeds (0.9 mach). Once the missile returns to a distance of 1 NM (1.9 km) from the shore, the missile would overfly either the southern portion of the island or the northwestern end of the island (Figures 3 and 4). Missile altitude over land would be 500 ft (152 m) or more above ground level (AGL) at all points on the route. Each missile would be followed by an F-18 chase plane for safety purposes flying at 2,000 ft (610 m) AGL or higher. The chase plane (F-18 aircraft) would overfly land and nearshore waters at this minimum altitude to minimize potential noise disturbance to marine mammals and nesting seabirds. Following completion of the proposed missile tests, facilities and associated equipment would be removed from San Nicolas Island during the post-test phase. Facility and equipment removal would likely be completed by December 2005.

Some grading would be necessary in order to construct the facilities and facility modifications required to test the SSM-1 KAI missile; however, potential support facility locations have been sited to avoid potential impacts to sensitive natural and cultural resources. Therefore, there are no alternative facility locations. Based on defined operational and facility siting criteria, 2 potential launch sites were identified: the Multiple Use Launch Pad and facilities at the Building 807 Launch Complex. Therefore, there are 2 action alternatives addressed in the EA: the proposed action (launching from the Multiple Use Launch Pad) and the Building 807 Launch Complex Alternative. Upon review of operational and facility siting criteria, the proposed action was selected as the preferred alternative because more infrastructure currently exists near the Multiple Use Launch Pad to support launch operations. The Building 807 Launch Complex Alternative is in a more remote location and is limited by lack of existing facilities needed to support launch operations. The EA addresses both action alternatives as well as the No-Action Alternative. Under the No-Action Alternative, no SSM-1 KAI testing and support activities would occur.

ANALYSIS

Potential effects of the proposed action were analyzed for land use, public safety, geological resources, water resources, biological resources, air quality, noise, and cultural resources as summarized below.

Land Use. There would be a temporary disruption to all non-testing activities near the island (e.g., commercial fishing activities) on days when the test launches would occur. However, current communication procedures with commercial fishermen at San Nicolas Island would be continued to minimize effects on commercial activities. Proposed activities at the facility locations would be consistent with current land uses in these areas. In addition, all facility modifications and additions would be temporary and would be removed upon project completion; no permanent changes would occur to land uses under the proposed action.

Public Safety. Any new electromagnetic radiation sources would be placed such that they would not affect personnel, ordnance, or fuel per established safety requirements. All fuels associated with the proposed action would be transported and stored in compliance with established safety regulations. In addition, explosive missile components would be stored and assembled in facilities designated for explosive material storage and would not change explosive safety quantity distance arcs. Although there is a remote possibility that a missile could hit the island due to unforeseen circumstances, safety procedures are designed to minimize this risk to the greatest extent possible. A chase plane would follow the missile during flight, and the missile's on-board FTS would be activated in the event that the missile turns drastically off course. In addition, established "flight termination lines," safety boundaries at which missile flight would be terminated, would be utilized during test launches in order to further reduce risks to sensitive areas on the island. Standard range safety clearance procedures would be implemented to ensure that non-participants, including non-participating aircraft and ships, are outside of the clearance area.

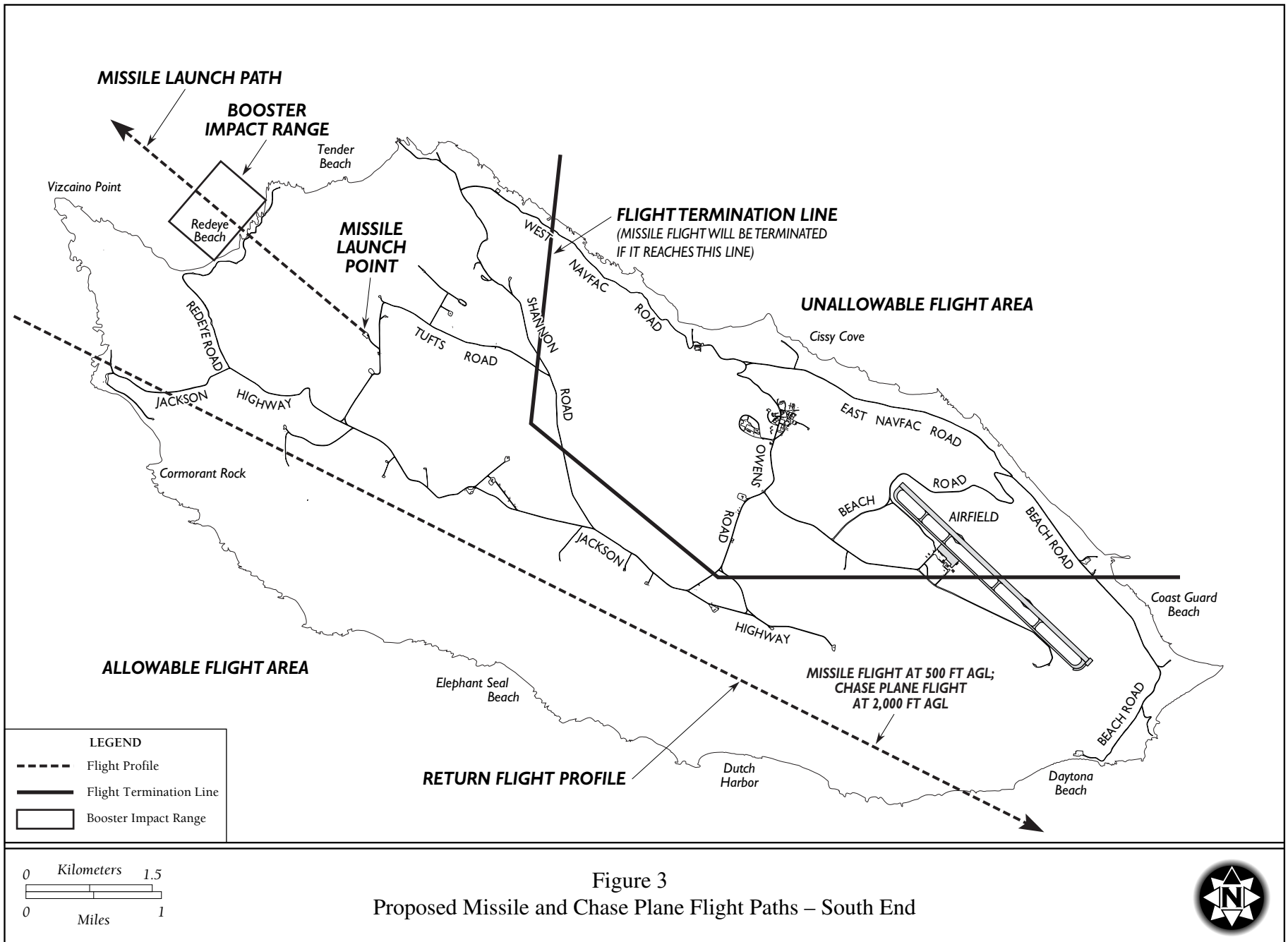
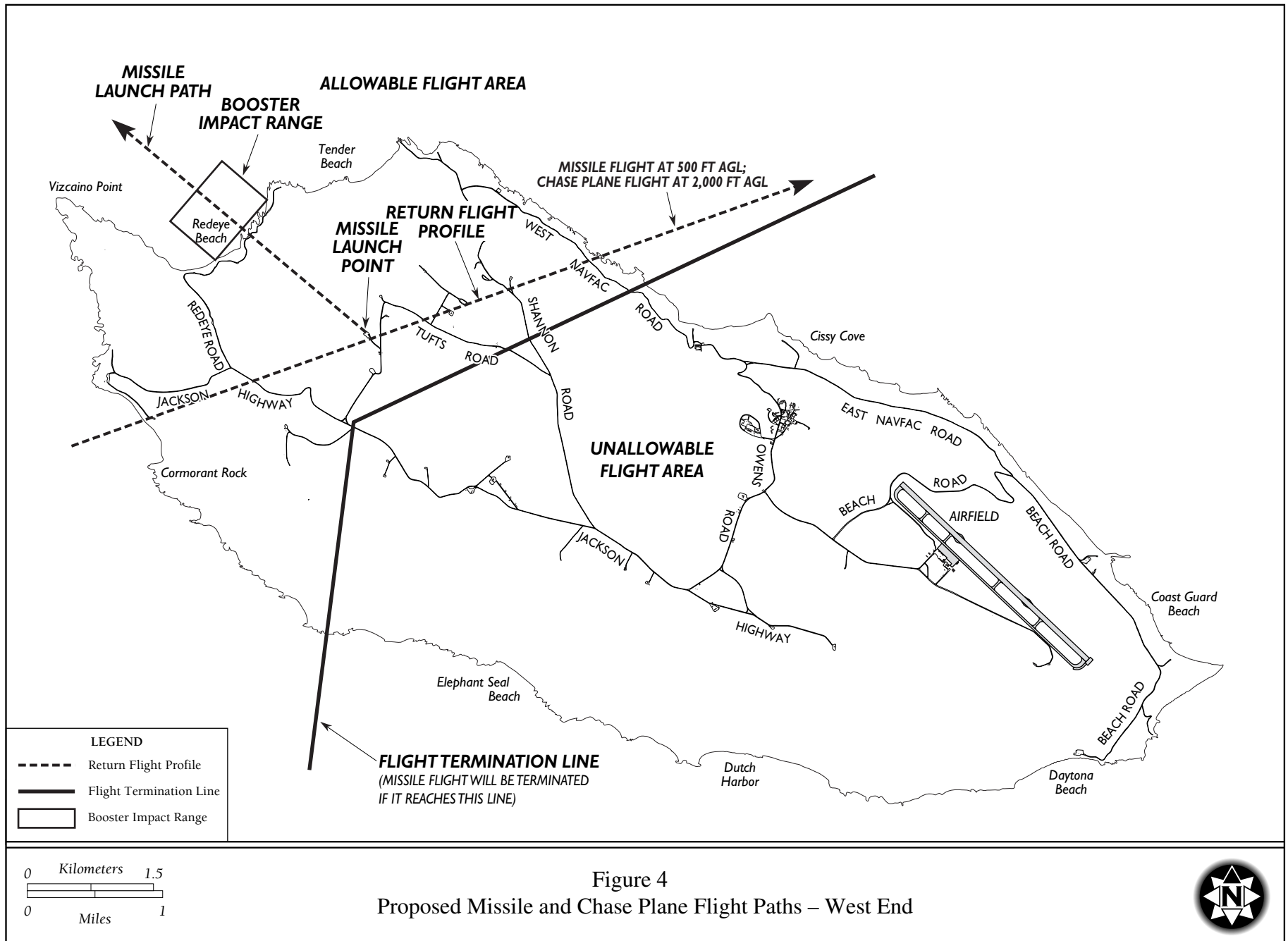


Figure 3
Proposed Missile and Chase Plane Flight Paths – South End





Geological Resources. Grading activities could temporarily increase erosion. NAWCWD has a National Pollutant Discharge Elimination System General Permit for grading activities less than 5 acres (2 ha). The requirements include controlling runoff, implementing best management practices to minimize erosion, and implementation of a storm water pollution prevention plan. The spent boosters would pose only a remote contamination hazard to sediments because nearly all (99 percent) of the solid propellant would be incinerated prior to the booster striking the surface, booster casings are not soluble, and a maximum of 5 would be used for the proposed action. There is a remote chance that a missile could fall into the ocean if the flight termination system (FTS) needed to be activated. Some hazardous constituent residue (such as battery constituents or residual fuel) could remain on some of the debris pieces when they settle onto ocean bottom sediments. However, resultant water quality and sediment concentrations would be below federal guidelines for marine water quality and sediment quality, so impacts on ocean bottom sediment quality would not be significant.

Water Quality. Proposed facility modifications and additions would not occur within any estimated groundwater recharge areas, except at buildings N105-N107 and N110. These existing facilities are currently used to store explosive materials and would be used to store equipment and explosive missile components under the proposed action. An extension shelter would be added to Building N110. No activities associated with the proposed action at these facilities would pose a risk to groundwater, and all hazardous materials would be stored in sealed containers. The spent boosters would pose a remote contamination hazard to marine water quality because nearly all of the solid propellant would be incinerated prior to the booster striking the surface, booster casings are not soluble, and a maximum of 5 would be used for the proposed action. The spent missile boosters would not pose a contamination hazard in the waters off of San Nicolas Island. There is a remote chance that a missile could fall into the ocean if the flight termination system (FTS) needed to be activated. Some hazardous constituent residue (such as battery constituents or residual fuel) could remain on some of the debris pieces when they settle onto ocean bottom sediments. However, resultant water quality and sediment concentrations would be below federal guidelines for marine water quality and sediment quality, so impacts on marine water quality would not be significant.

Biological Resources. Proposed missile testing would be conducted in compliance with the biological opinion (BO) issued by the U.S. Fish and Wildlife Service for activities on San Nicolas Island (2001) and the Letter of Authorization (LOA) issued by the National Marine Fisheries Service for missile launch effects on marine mammals (2003). Negligible effects are associated with the construction and use of facilities in existing developed areas. Noise and activity in the immediate vicinity during construction and use of new facilities in previously undeveloped areas would cause localized disturbance of resident wildlife, but given the small areas affected and the temporary nature of the activities, effects are considered less than significant. Island night lizard survey and relocation measures at each construction site would prevent take of this species. For a few seconds during each launch and again during the subsequent overflight, there would be some potential for noise or visual disturbance of wildlife, including marine mammals and nesting, roosting, or foraging seabirds. Splashdown of the spent missile boosters or missile components in the nearshore waters is not likely to affect any marine wildlife or habitats, including Essential Fish Habitat. Launch disturbance effects would be monitored in compliance with the BO and LOA. Accordingly, neither formal nor informal consultation with the USFWS and/or NOAA Fisheries are required. Based on monitoring experience with other missile launches, temporary startle reactions may occur, but are not likely to cause any harm or otherwise affect the well-being of sensitive wildlife species.

Air Quality. The proposed activities would be temporary, would contribute only a negligible amount of emissions to the local area, and would result in no measurable changes to San Nicolas Island baseline emissions. In addition, no permanent emission source would be associated with the proposed action; all testing and other construction equipment would be removed upon completion of the proposed action. No

generators operating at or above 50 horsepower would be used, so no permits for generators would be required. The proposed action would not compromise air quality attainment status in California or conflict with attainment status and maintenance goals established in its State Implementation Plan. Consequently, a Clean Air Act conformity determination is not required.

Noise. The construction of facility modifications and additions under the proposed action would generate some additional noise at San Nicolas Island. However, construction noise would be temporary and is not expected to greatly increase noises above baseline levels generated by strong winds at the island. Any additional noise associated with the operation of equipment under the proposed action, such as the operation of additional generators at the island, would be consistent with current military land use designations. All non-participating personnel would be restricted from launch and overflight areas and would not be adversely affected by these sound levels.

Cultural Resources. Prehistoric sites have been documented in the immediate vicinity of Buildings N163 and N189. Due to prior coordination of facility siting, the proposed facility locations at N163 have been sited away from nearby prehistoric archaeological sites. The proposed location for antennas at N189 would be at a prehistoric site; however, the integrity of this site has been previously disturbed to the point that it has been assessed as ineligible for the National Register of Historic Places, and grading and placement of antennas at this location is expected to have no additional adverse effect to the cultural resources at this site. No prehistoric, historic, or architectural resources have been documented at any of the other proposed facility modifications or additions areas. No shipwrecks or underwater archaeological resources have been recorded in the nearshore waters near the area where the booster would drop. In the remote case that missile or booster debris settled on the surface of an underwater archaeological resource, damage to the resource would not be likely due to the size of the debris. If the debris fell on a resource, the impact on the scientific potential of the resource would be minimal and would not result in significant impacts.

CONCLUSION

In summary, the Navy has determined that the proposed SSM-1 KAI testing and support activities would not have an effect on the coastal zone. The project is consistent with existing land use at San Nicolas Island and in the nearshore waters. The project is also consistent with existing federal and state land use plans, policies, and controls. Therefore, in accordance with the Federal Coastal Zone Management Act of 1972 as amended, this negative determination is submitted for the proposed SSM-1 KAI testing and support activities. If additional information is required, please contact Steve Schwartz at (805) 989-0644.