

The Environmental Reality of Training

CSC 2004

Subject Area Topical Issues

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PREFACE

For the remainder of this century the Marine Corps will face the environmental issues discussed in this paper. Colonel Richard M. Nixon, Director for Logistics Vision and Strategy, Installation and Logistics Department, Headquarters Marine Corps, recommended this topic as an area that requires study, analysis, and consideration.

Originally assigned duties of hazardous material/hazardous waste officer within the logistics section of Marine Aircraft Group 16, Marine Corps Air Station Tustin, California, during 1991, a more appropriate title would have been the Environmental Officer. Recycling, hazardous material, hazardous waste, and any work that resulted from an Environmental Protection Agency regulation were assigned to the logistics section, and the hazardous material/hazardous waste billet. This has been the case since 1991 as well, and environmental duties continue to be assigned to the unit's logistics section.

The topic of environmental legislation can be sensitive, but as it continues to grow in both quantity and specificity, a realistic balance must be struck between beneficial protection for the environment, the dollar cost associated with operating and enforcing environmental programs, and the conduct of military training.

EXECUTIVE SUMMARY

Title: The Environmental Reality of Training

Author: Major Mark M. Walter, United States Marine Corps

Thesis: Current and increasing environmental legislative restrictions impact the United States Marine Corps, and could eventually impact the ability to conduct required training. The Marine Corps must use training areas, devise new and alternative methods for effectively training Marines, all the while maintaining high training standards, and continuing to protect the environment as warranted by applicable laws and regulations.

Discussion: The National Environmental Policy Act of 1969 initiated the federal government's obligation to protect the environment, and formed the Environmental Protection Agency in 1970. This began an increasing tide of environmental legislation that the Marine Corps must comply with every day. Today we have the Endangered Species Act, the Clean Air Act, the Clean Water Act, and many other pieces of environmental legislation that impact the military at both the state and federal level of government. Environmental legislation has a profound impact on the Marine Corps, especially with regard to the issue of encroachment, which inhibits training. Environmental legislation restrains and limits military training.

Recommendations: The Marine Corps has short, mid, and long-term solutions to address today's environmental challenges. Short-term solutions include: seek temporary relief of legislative requirements, increase use of simulator training, and share training areas with other services. Mid-term solutions include: seek continued relief from legislation, purchase surrounding lands of current bases, continue use of simulation and purchase improved simulation to enable better training. Long-term solutions: seek permanent legislative relief, replace Marines filling hazardous material/hazardous waste billets with civilians, develop environmentally friendlier equipment, purchase new training areas, or realign forces to existing installations.

Introduction

The Marine Corps has tremendous environmental responsibilities as a military service within the Department of Defense. The Marine Corps uses 2.5 million acres of land that they must manage properly, and which is subject to all federal and state environmental legislation. The Marine Corps is entrusted with the requirement to train the sons and daughters of America to be prepared to fight this nation's wars. This requires Marine commanders to realistically prepare their unit for the range of military operations around the world, complete the mission, and return the unit safely home.

Current and increasing environmental legislative restrictions impact the Marine Corps, and could eventually impact the ability to conduct required training. As environmental regulations and policies continue to expand, what is the priority for environmental protection versus military readiness? Will the current and increasing environmental restrictions prevent the Marine Corps from conducting required training for future crises? The Marine Corps must aggressively pursue solutions to legislated environmental challenges; continue to coordinate training areas, devise new and alternative methods for effectively training Marines, and maintain its high training standards, all the while continuing to protect the environment.

There are occasions during training operations when the

execution must be delayed, inconvenienced, or even cancelled entirely due to environmental considerations. For example, families of red-cockaded woodpeckers inhabit a particular training area at Camp Lejeune, North Carolina. Units that schedule the area may not be able to train, or might have to modify their training in that area so that the trees occupied by these woodpeckers are not aggravated. Meanwhile, other units already occupy the other available training areas. Which responsibility is more important? Training Marines for combat operations, or saving woodpeckers from being an endangered species? Training Marines should be the number one priority. This is especially true during times of war, or real world operations when environmental regulations must be relaxed. During peacetime, training plans are adjusted for environmental considerations, but often to the detriment of the original training objectives. The military is viewed as environmentally conscious when environmental considerations take precedence over required training to accomplish the mission and survive in combat.

Encroachment

A major concern existing among all military services is the issue of encroachment. Encroachment is defined by the Department of Defense as "the cumulative result of any and all

outside influences that inhibit live-fire training and testing."¹

The increased development of land near military facilities increases the difficulty to conduct military training.

Encroachment has several negative affects. The first affect is the continued development of land surrounding military bases forcing animals onto bases because the base provides a safe predator-free environment, with natural food, and plenty of space.

A second affect occurs with the growth of private housing, which introduces the human factor associated with neighbors. Humans want to live in quiet neighborhoods. Neighbors do not want helicopter or machine gun noises at night. These surrounding neighbors demand less noise from military training, which requires limiting the time of day when training can be conducted. This limits training opportunities, and restricts the potential benefits of training at night. Marine Corps Air Station Tustin, California provides an example; a former Marine helicopter base that slowly became surrounded by housing and industry in Orange County, California. The units were moved to Miramar, California, which provided the training air space needed, but the same industrial and home growth is now occurring around Miramar as well.

¹ Cahlink, George (2002). "Green Troops," *Government Executive*, Vol 34(14): p 40.

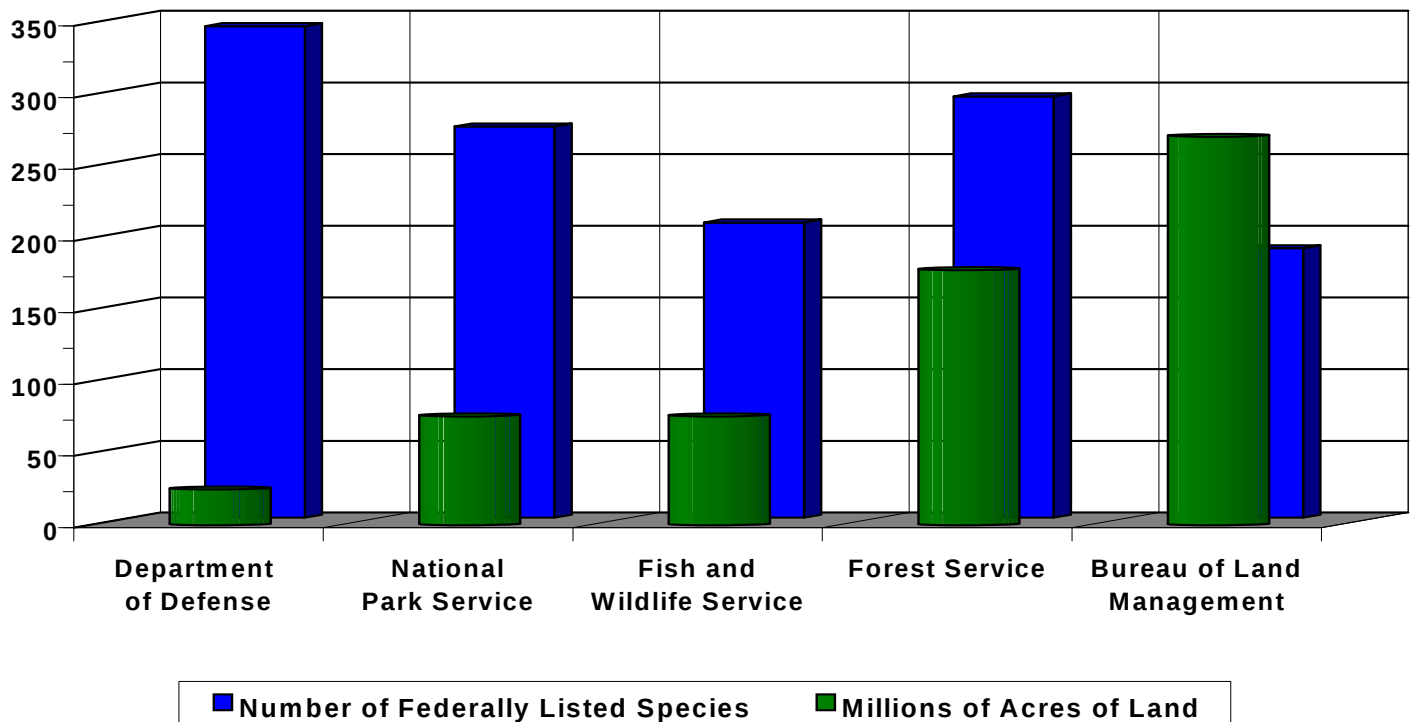


Figure 1: Threatened & Endangered Listed Species on Federal Lands²

Environmental regulations affect military training operations. From protected wildlife, plants, and nature to clean air, clean water, and proper disposal of hazardous waste, the military has felt the impact in both training and budgetary requirements.

The National Environmental Policy Act of 1969 initiated the federal government's obligation to protect the environment, and formed the Environmental Protection Agency in 1970. The quantity of environmental regulations has grown dramatically from 1970 to 2004. In 1990, former Secretary of Defense Dick Cheney stated “[d]efense and the environment is not an either/or

² Threatened & Endangered Species on DoD Lands: Office of the Deputy Under Secretary of Defense (Installations & Environment) Conservation Data Source: NatureServe and its Natural Heritage member programs.

proposition... to choose between them is impossible in this real world of serious defense threats and genuine environmental concerns."³ Figure 1 displays the number of threatened and endangered species on federal land. Note that the Department of Defense, despite having a fraction of the total land owned by the federal government, has the highest number of threatened and endangered species. The Department of the Interior manages 250 million acres of land, of which 25 million acres are managed by the Department of Defense, to include 2.5 million acres managed by the Marine Corps.

The Marine Corps Installations 2020 vision states that "in 2020...the Marine Corps owns and manages its training ranges...the Corps has expanded range capability to meet new requirements and guard against encroachment."⁴ What will the training range requirements be in 2020? What technology will the military require in 2020? With technological advances, how can the Marine Corps know if range requirements will change? Where can they expand, if required? The Marine Corps may not know definitively, especially with generational leaps in technology being proposed and discussed, but they must take

³ Lenny Siegel, Statement before the subcommittee on Readiness, House Armed Services Committee, United States House of Representatives, March 13, 2003. Accessed Jan 19, 2004; <http://armedservices.house.gov/openingstatementsandpressreleases/108thcongress/03-03-13siegel.html>

⁴ Marine Corps Installations 2020 (2001), [http://www.hqmc.usmc.mil/LFWeb.nsf/6949e9aa9c286fe5852569dc0061a4c3/15564ab8ad05a9d685256a9900678586/\\$FILE/I2020+Final.pdf](http://www.hqmc.usmc.mil/LFWeb.nsf/6949e9aa9c286fe5852569dc0061a4c3/15564ab8ad05a9d685256a9900678586/$FILE/I2020+Final.pdf); accessed December, 2002, p 6.

appropriate measures to plan with currently identified future training requirements.

Perhaps the most dramatic change in legislation was the approval for each state Environmental Protection Agency to inspect federal properties and military bases within that state. Between 1991 and 1993, federal and state Environmental Protection Agency inspectors conducted annual inspections of hazardous material and hazardous waste site operations aboard Marine Corps Air Station Tustin. Inspections took a week to conduct. When states were granted authority to inspect federal sites, the California inspectors lost no time getting to the Marine Corps Air Station. They quickly inspected all military bases in southern California. They inspected annually, and whenever they wanted to do a surprise inspection of the base. During that time, the base was inspected by either the state or federal Environmental Protection Agency every quarter, vice the previous annual inspection. Every state or federal inspection required a pre-inspection by the station civilian personnel. All the inspections required every unit hazardous material/hazardous waste officer and Non-Commissioned Officer to be at each inspection. This was a substantial drain on resources considering the daily inspection checklist, the weekly inspection checklist, the required logbook entries, the handling of the hazardous materials and hazardous wastes that had to be

issued and collected.

The Marine Corps had to adjust significantly to the fiscal changes required to remain in environmental compliance. New requirements for training, facilities, and supplies cost money. Sending Marines to learn the new environmental responsibilities at training classes required money. Specific sites for hazardous material storage and hazardous waste disposal were required, and had to be constructed. There were approximately sixteen separate hazardous material/hazardous waste sites built at Marine Corps Air Station Tustin, California alone, and each site required daily maintenance to comply with environmental regulations. Supplies, to include 55-gallon drums, specific hazardous waste labels for each drum, and the fiscal obligation for these requirements came from each unit's operating funds. These fiscal requirements continue to grow, and during fiscal year 2002, the Marine Corps allocated \$118 million in funding for personnel requirements and operation of environmental compliance programs.⁵ That money could have been invested in training opportunities, or to purchase new training areas. Instead, the Marine Corps sacrificed the opportunity to support increased or improved training opportunities to assure proper management of the land impacted by environmental legislation.

⁵ Environmental Programs. Accessed January 19, 2004; http://www.dod.mil/comptroller/defbudget/fy2003/budget_justification/pdfs/operation/overview/25_Environmental_Programs.pdf.

The Marine Corps has a moral responsibility to protect the land where it operates, trains, and lives. It also has the moral responsibility to protect the individual Marines, sailors, and their families. Family housing areas are provided on all Marine bases and stations, and are subject to the same environmental requirements and standards as the work areas. The Marine Corps has dealt with tough environmental issues: lead paint in homes, asbestos in work buildings, and impure air from paint booths. Base commanders are responsible for the serious considerations that can affect the health of our Marines and their families.

An unfortunate example of a Marine Corps failure to adhere to these responsibilities occurred at Camp Lejeune, North Carolina. There is an estimate that 10,000 children that were born at Camp Lejeune between 1968 and 1985 may have consumed drinking water that was contaminated.⁶ The contaminants, which came from a dry cleaning business, are "linked to birth defects and childhood cancers such as leukemia."⁷

Marine Corps commanders have enormous responsibilities for environmental compliance. According to Marine Corps Order 5090.2, every Marine should "know and comply with the

⁶ Burns, Robert, "Marines Seek Camp LeJeune Parents," http://home.att.net/~vet_updates/usmcwatr.htm, accessed April, 2004.

⁷ Ibid.

environmental rules and regulations that apply to their duties."⁸ Unit commanders must comply with the specific state and base environmental regulations at every base used for training. That is an enormous amount of information that commanders must ensure each Marine knows. Specifically, base commanders must publish an "environmental compliance and protection standard operating procedures" that must address both federal and state regulations that apply to the base.⁹

Environmental requirements legislated by Congress, and published in the Code of Federal Regulations to protect the environment, have had a large impact on military operations. There were so many new requirements from the legislation that an additional military occupational specialty of Hazardous Materiel/Hazardous Waste (Officer /Enlisted) was created. This new occupational specialty created additional training requirements, and reflected the additional work now required by Marines and civilians to maintain environmental compliance.

Units had to designate Marines to serve as the hazardous material/hazardous waste officer, staff non-commissioned officer, or non-commissioned officer. Each of these positions required forty hours of initial environmental training. The Marine Corps experienced increased costs in training personnel,

⁸ *Marine Corps Order P5090.2A, Environmental Compliance and Protection Manual*, 10 Jul 1998, p 1-9.

⁹ *Ibid.*

and increased time requirements of those personnel away from their primary military occupational specialty. Marines from every unit were assigned additional collateral duties, and their time was required to maintain environmental compliance, vice work in their trained military occupational specialty. These requirements are still in place today.

The Marine Corps has provided solid environmental stewardship for all their land, animal, and plant resources at every base and station during the past fifteen years. During 1989, the Secretary of Defense issued an Environmental Management Policy Statement directing the Department of Defense to "be the Federal leader in agency environmental compliance and protection."¹⁰ Solid environmental stewardship may not have been the case during previous decades, and much of the legislative reform occurred because of environmental problems that both civilian industry and the military caused during previous decades of abuse. Several military bases have been identified as Superfund sites. These sites require major clean up from damage caused to the environment by improper disposal of hazardous material/hazardous waste. The Superfund program began in 1980 when citizens concerned about industries dumping chemical wastes pressured Congress to establish a program to "locate,

¹⁰ Environmental Programs. Accessed January 19, 2004; http://www.dod.mil/comptroller/defbudget/fy2003/budget_justification/pdfs/operation/overview/25_Environmental_Programs.pdf.

investigate, and clean up the worst sites nationwide."¹¹ As a result, every Marine Corps base and station has developed an environmental section that is knowledgeable and helps their tenant organizations understand and comply with state and federal environmental regulations.

The federal Environmental Protection Agency administers the Superfund program, but must cooperate with individual states and military bases for practical application. Marine Corps Air Station Tustin, along with Marine Corps Air Station El Toro, were designated superfund sites because of the damage done by improper disposal of hydraulic fluid used by the helicopters on the base. Damage to the environment came from many years of unregulated disposal of hazardous materials and hazardous waste. Marines made every effort to comply, once disposal regulations were in place, but it is dependent upon leaders to educate all Marines about their stewardship and environmental responsibilities.

The National Environmental Policy Act of 1969 "requires all federal agencies to appraise and document environmental impacts in planning and decision-making."¹² Before the construction of a new building, or the development of a new training area, the Marine Corps must conduct a study and submit an environmental

¹¹ About Superfund, <http://www.epa.gov/superfund/about.htm>; accessed April 15, 2004.

¹² National Environmental Policy Act. Accessed January 10, 2004; <http://www.lejeune.usmc.mil/emd/NEPA/HomeNEPA.htm>

impact statement for review. If the potential impact on the environment is negative, the action must be modified, or the project will not be approved. While preventing significant impacts to the environment, it has added months, and sometimes years, to the length of time it takes to get a facility or project approved.

The 1973 Endangered Species Act has had a major impact on Marine Corps training. The restrictions of this legislation are evident at several training locations, to include Red Beach, Camp Pendleton, California. The beach was used to train Marines for amphibious landings that took place in such famous locations as Guadalcanal, Saipan, and Iwo Jima. The Camp Pendleton beaches are still used today for amphibious training. However, today's training restricts vehicles to designated exit areas after the conduct of an amphibious landing. Marine actions on the beach are limited to getting across the beach without disrupting habitat. In addition, Marines cannot dig fighting positions because of seventeen plants and endangered species, and the nesting area of the California least terns. This eliminates the reality of an amphibious landing and prevents Marines from training in an environment that requires quick decision-making. Training must simulate the stress and decision making associated with an amphibious landing: being fired upon, digging foxholes, calling for close air support, helping a

wounded comrade, and general chaos.

Sea turtles annually lay eggs on the beaches of Camp Lejeune, North Carolina and Camp Pendleton, California. If sea turtles use a beach located on a military base, that specific area is off limits for training due to the Endangered Species Act. This legislation's policy oftentimes requires the closure of identified training areas. Ranges are closed when animals wander through the live fire ranges at Camp Pendleton.

The desert tortoise is a protected species that has altered training at multiple military installations in southern California due to the Endangered Species Act. If a convoy of vehicles driving across a desert training area encounters a tortoise, the convoy, and therefore the training comes to a halt, while the installation environmental staff is notified. The base environmental staff must inspect the site to ensure the tortoise is not unnecessarily moved, injured, or killed. The local authorities do not want tortoises moved or handled, as a tortoise urinates to protect itself when handled. When that happens, the turtle loses vital hydration that it needs to survive. There is a \$50,000 fine and up to one year in prison for killing a desert tortoise, and it is enforced on Marine Corps Air Ground Combat Center.¹³

¹³ Combat Center Order P3120.4B, Marine Corps Air Ground Combat Center.

The implications are no different on the east coast in North Carolina, as another animal has altered training at Fort Bragg, and at Camp Lejeune: the red-cockaded woodpecker. According to the Endangered Species Act, it is a requirement to maintain the habitat indefinitely once an endangered species is located in that habitat, and this has been the case with the red-cockaded woodpecker. Marines are not authorized to train in areas occupied by threatened and endangered woodpeckers. Because woodpeckers can sporadically nest anywhere in the training areas, this clearly limits the training area options and opportunities to conduct required training.

The Clean Air Act of 1990 established standards and programs managed by the Environmental Protection Agency in order to protect air quality in the United States. Each state must meet federally mandated minimum air standard requirements, or they may elect to make the state regulations more stringent than the federal requirements. What does this mean to the military? Marine Corps aircraft emit pollutants during operation that contributes to the already existing southern California pollution, and can make the air quality standards unacceptable for public health. As good stewards, the Marine Corps must make every effort to help improve air quality standards.

Clean Air Act (1990) legislation is enforced with Environmental Protection Agency policy, and exemplifies the

increased bureaucracy placed on the Marine Corps. At Marine Corps Base, Camp Lejeune, certain existing equipment could not be operated without a permit. The procedure to acquire the permit involved an application process through the Environmental Protection Agency that consumed five years. The permit was required to allow the operation of generators, paint booths, and fuel storage tanks that require strict monitoring and record keeping.

Strict environmental policy and inexperienced soldiers was the topic for an article titled "Green Troops" in a 2002 *Government Executive* magazine. The author identified a legitimate concern that the increasing environmental, noise, and air restrictions limit the training of new military personnel. These restrictions prevent the practical application portion of learning required tactics, techniques, and procedures used to conduct military operations. A recent example from Operation Enduring Freedom in Afghanistan, where Marines "were digging their first foxholes since basic training."¹⁴ This did not prevent mission accomplishment, but Marines could have been seriously wounded or killed because proper training prior to deployment was not conducted.

Environmental regulations have caused other individual

¹⁴ Cahlink, George (2002). "Green Troops," *Government Executive*, Vol 34(14): p 39.

military skills to atrophy as well. Training Marines to drive off-road in a tactical vehicle, during a tactical situation, is limited by environmental considerations. The ability to drive vehicles at night with night vision goggles to conduct and support military operations is critical. United States' forces have an advantage over many countries because of our night vision technology, and the capability must be exploited whenever possible. Perhaps the Marine Corps should use the area located on Route 8 near the Arizona and California border because it is where southern California civilian dune buggies drive on sand dunes. Dune buggies, all terrain vehicles, and other off-road vehicles make their way to the desert to drive off-road. Could the Marine Corps take advantage of that same area for driver training? Why are these sand dunes not monitored and protected from civilian drivers as strictly as the military bases? Perhaps that is why all the desert tortoises have moved to military property.

Today's Marines must abide by environmental laws that prevent contamination of water and soils due to the Resource Conservation and Recovery Act (RCRA) of 1976. This law requires organizations to be responsible for the "control of hazardous waste from cradle-to-grave."¹⁵ Drivers of all military vehicles must place drip pans under their vehicles to catch any leaking

¹⁵ Resource Conservation and Recovery Act, 42 U.S.C> s/s 6901 et seq. (1976).

oil and fluids both in garrison and in the training ranges. When training in the desert, Marines must also check underneath their vehicles for desert tortoises. The desert tortoise is listed as an endangered species in California, and often finds refuge in the cool shade, to include military vehicles. "Every military truck, Humvee (sic) and light-armored vehicle has a small sticker affixed near the driver's seat as a reminder," of the responsibility to protect desert tortoises.¹⁶

Based on the increase of environmental legislation, Headquarters Marine Corps published a document called the *United States Marine Corps Environmental Campaign Plan* in 1991. This document contained guidance and policy for the evolving Marine Corps environmental program, and included objectives for environmental instruction. Based on this document, the Marine Corps established the Comprehensive Environmental Training and Education Program in 1992 to provide appropriate environmental training and information in the most efficient and effective manner at all levels of command.¹⁷

Training

Part of the challenge the military has experienced in conducting training is associated with the increased

¹⁶ Fuentes, Gidget, "Marines stage training exercise," *North County Times*, April 29, 2002.

¹⁷ Hagopian, David M., "The United States Marine Corps Comprehensive Environmental Training and Education Program (CETEP): Applying a Systems Approach to a World-Wide Environmental Training Challenge."

capabilities of vehicles and weapons systems in today's arsenal. "In 1815 a division (normally 15,000-20,000 men) occupied about three square miles. Today it may take up a space of 25 miles by 25 miles. By 2015 it may require an area of 100 miles by 100."¹⁸ This information begins to frame the picture of the challenge military leaders have today. Will 100 miles by 100 miles of training area really be required in the future? Most training could be done at the small unit level, with an emphasis on squad and company training. Battalions conduct unit training during an annual training plan, but it is rare for an entire Division, Marine Aircraft Wing, or Force Service Support Group to train in a field environment even once per year. Perhaps larger training areas would allow larger units to train. Environmental considerations make training in the field harder to accomplish, especially during this crucial period when Marines need field training. Units will increase training if the opportunity and environmental climate are eased to facilitate field operations.

There are certain characteristics fundamental to training that will ensure success: "to train as you will fight is the fundamental principle upon which all Marine Corps training is based."¹⁹ During training, there should be an accurate application of current Marine Corps tactics, techniques, and

¹⁸ The Economist, p 21-22, March 8, 1997, p Strategy & Policy reader II p 311.

¹⁹ Marine Corps Reference Publication (MCRP) 3-0B, *How to Conduct Training*, November 25, 1996; 1-3. Accessed January 19, 2004; <https://www.doctrine.usmc.mil/signpubs/r30b.pdf>, p 2.

procedures and doctrine. A building block structure should exist to ensure Marines learn and practice all required skills. All training must be efficient because time is one of the most precious resources, especially during the current high operational tempo in the Marine Corps. Training must increase both individual and unit proficiency for assigned tasks required for the mission. Training scenarios must provide realistic situations for Marines or they will not learn the best tactics, techniques, and procedures, and potentially make a fatal error during real world operations. "Training is effective only if it produces technically and tactically proficient Marines and leaders who form cohesive units capable of accomplishing their assigned missions."²⁰

There are four Light Armored Reconnaissance battalions in the Marine Corps. Each battalion has training requirements for their light armored vehicles that function as highly mobile firepower platforms designed to defeat soft and armored targets. The vehicle's employment requires much greater space to train than a traditional foot-mobile infantry unit does. Driver training is done concurrently with marksmanship skills while the vehicle is both stationary, and moving. The size and speed of the vehicle require large training areas to prepare for

²⁰ Marine Corps Reference Publication (MCRP) 3-0B, *How to Conduct Training*, November 25, 1996; 1-3. Accessed January 19, 2004; <https://www.doctrine.usmc.mil/signpubs/r30b.pdf>, p 1-3.

reconnaissance operations, security operations, offensive and defensive operations, and stability and support operations. Training a battalion for a screening mission in front of a division could require miles of training area and road networks that are not available at all bases. The Marine Air Ground Combat Center and Camp Pendleton, both in Southern California, offer good training areas with space to maneuver; yet they are both hampered by endangered species or habitat restrictions.

Additionally, marksmanship training for the light armored vehicle requires large ranges that provide Marines the opportunity to shoot, move, and communicate simultaneously. 2d Light Armored Reconnaissance Battalion could not conduct annual marksmanship training at Camp Lejeune, North Carolina due to the lack of an appropriate training range. Therefore, the unit used training ranges at Fort Pickett Army base in Virginia to conduct annual re-qualification. To fix this problem the Marine Corps purchased and developed the Greater Sandy Run Area in 1991. Construction of ten total training ranges is scheduled to be complete by 2010. Unfortunately, after the initial operation of the first range in 1998, there were noise complaints from civilian neighbors, and this caused the range designated for tank qualification to be changed to help reduce the noise. Currently, there are four operating ranges, but all firing must cease at 2400 to minimize the noise impact on the civilian

neighbors.²¹

Training for tanks is much the same as the light armored vehicle. Four tank battalions exist in the Marine Corps: two in the active component and two in the reserve component. They require a large training area for movement and marksmanship requirements similar to the light armored vehicle.

Training for the Amphibious Assault Vehicle, used to move Marines from ship to shore, is also extensive. The vehicle has training requirements on both land and sea to successfully keep each crew proficient in order to support further training requirements of the seven Marine Expeditionary Units.

Training Marines in the reserve component has different challenges. Reserve Marines do not have as much time for the hazardous material/hazardous waste training as their active duty counterpart. Therefore, the active component Inspector & Instructor staff provides the unit expertise to remain in environmental compliance in garrison. When a reserve unit deploys, a reserve Marine is designated to assume the full time responsibilities, and must handle all the hazardous material/hazardous waste responsibilities at the deployed site.

The environmental considerations of noise and clean air really affect the training of aviation units. An alternative to flying

²¹ Ramirez, Joe, Director of Training Resources Management, Camp Lejeune, North Carolina, phone interview by author, notes, Virginia and North Carolina, April 16, 2004.

helicopters and jets above the neighborhoods near military installations is simulator training. Safety and cost are the primary reasons for pilots to train via simulation, but a secondary benefit is the reduction in noise and air pollutants. Simulation training is improving as reported in a September 2003 Marine Corps Gazette article titled *Next-Generation Military Aviation Simulation Solutions*. According to the article's author, aviation simulation will soon include networked training, distance learning, and improved visual systems that will "provide a much more realistic environment for training."²² The author's article emphasizes that it will be "much easier and more cost effective for military forces to "train the way they will fight.""²³

Environmental considerations must be key performance parameters in the definition of requirements for major systems and in acquisition processes. Notably, major new weapon systems such as the F/A-22 and Joint Strike Fighter may have noise and air quality consequences that will affect stationing decisions. Noise is a frequent encroachment challenge that will worsen as urban population centers continue to grow, and as future generations of combat aircraft become louder. A Unified Department of Defense Noise Program was formulated to coordinate

²² Lenyo, John, "Next-Generation Military Aviation Simulation Solutions," *USMC Gazette*, Vol 87, Number 9, September, 2003; 24.

²³ Ibid, p 24.

all efforts to deal with noise issues that affect testing and training. The program will focus on developing new joint-use noise models and tools, improving existing ones, and on identifying and collecting data to support better noise analyses.²⁴ The Department of Defense is emphasizing consideration of environmental concerns during the development of a weapons system. The Marine Corps Expeditionary Fighting Vehicle development program is a positive example.

The future amphibious assault vehicle, currently being developed, is the Expeditionary Fighting Vehicle. The initial performance specifications, in addition to war fighting criteria, included specific criteria for environmental, safety and occupational health for Marines and civilians that conduct maintenance on the vehicle. The vehicle's system was developed to incorporate an "Ozone Depleting Substance (ODS)-Free design in its system, subassemblies, components, manufacturer, operation, service, transportation, storage and material selection," which keeps it in environmental compliance with the Clean Air Act (1990).²⁵ This is significant because it is the first time that environmental considerations played such an important part in the design process for a fighting vehicle.

The cost associated with enforcing and implementing

²⁴ Pike, John, Environmental Issues. Accessed January 19, 2004; <http://www.globalsecurity.org/military/facility/andersen-south.htm>.

²⁵ <http://www.efv.usmc.mil/logistics/environmental2.html>

environmental legislation is a political issue. Active environmentalists have lobbied for increase spending to increase protection of the environment. It is human tendency to desire clean air, clean water, and the protection of animals for future generations to enjoy; but at what cost? Is it appropriate to spend millions of dollars to protect an endangered species while families do not have safe drinking water? How much money should be spent on environmental issues? Elected representatives must balance the requirements for environmental protection, and national defense matters with input from constituents and lobbyists. The Department of Defense has a requirement to provide a military force, and has worked with the Department of the Interior to identify, procure, and manage land for military installations to support military training during the last two centuries. Many military facilities contain environmentally protected areas identified primarily during the last four decades due to environmental legislation. The "Department of Defense manages 25 million acres on more than 425 military installations in the United States, providing sanctuary to 300 species listed as threatened or endangered...for 2003, DoD requested \$4 billion for environmental protection programs... from 1991-2001, DoD invested \$48 billion on environmental programs."²⁶ It is obvious that the Department of Defense

²⁶ Siegel, *Readiness and Range Preservation Initiative Talking Points*,

accepts their environmental responsibilities, and commits billions of dollars annually to adhere to prescribed regulations and legislation, protect endangered animals and wildlife, and protect Marines, families, and neighbors of military bases. There must be solutions that provide a proper balance between military training and environmental compliance.

Solutions

There are many different potential solutions to solve the current environmental challenges that the military is facing. There are quick, short-term solutions, while others are long-term and many decades away. Whether short, mid, or long term, solutions must be provided to maintain an environmentally safe and well-trained military that can respond to all crises.

All branches of the United States military recently joined together to seek exemptions from eight landmark environmental laws, including the Endangered Species Act, the Clean Air Act, the Clean Water Act and the Marine Mammal Protection Act. "On May 1, 2002 the House Armed Services Committee voted to allow the Department of Defense to ignore key environmental laws in its training activities."²⁷ Additionally, "in November 2002 the Senate passed compromise legislation, which gave the Defense Department an interim exemption from the Migratory Bird Treaty

www.cpeo.org.

²⁷ Pike, John, Environmental Issues. Accessed January 19, 2004;
<http://www.globalsecurity.org/military/facility/andersen-south.htm>

Act."²⁸ The legislation also directed the Secretary of the Interior to develop regulations that would permanently exempt military readiness activities from the law during the next year.

The fiscal year 2003 Defense Authorization Bill included provisions to exempt the Department of Defense from the Endangered Species Act, the Migratory Bird Treaty Act, and the Wilderness Act. This is the legislative reform needed by the Marine Corps to relieve the burden of increased environmental legislation. Environmentalists are very concerned about the impact that training will have on the environment, their concern should also focus on the safety and survivability of America's sons and daughters, and the ability to send well trained Marines, soldiers, sailors and airman to fight and win our nation's wars.

President Bush signed the 2004 National Defense Authorization Act in a Pentagon ceremony on 24 November 2003. This bill fully funded operations and maintenance accounts, and amended certain environmental laws that adversely restrained training for America's military. The "Freedom to Train" portion of the Act contains commonsense reforms of environmental laws that began to encroach on the ability of soldiers to train for combat.²⁹

²⁸ Ibid.

²⁹ Garamone, Jim, "Bush Signs Authorization Act During Pentagon Ceremony," American Forces Information Service, News Article, November 24, 2003. Accessed January 19, 2004; http://www.defenselink.mil/news/Nov2003/n11242003_200311242.html.

The Freedom to Train portion of the Act is hotly disputed. It amends the Endangered Species Act to protect military bases from lawsuits if critical habitat occupied by threatened or endangered species were disturbed or even destroyed by military training. It also prevents lawsuits that attempt to stop or delay exercises that could potentially disturb critical habitat, which has affected Camp Pendleton, California during the past decade. California state legislator Duncan Hunter thinks it provides a "reasonable balance between nature and national security...we went at this with the viewpoint that the most important endangered creature is the 19-year old Marine rifleman."³⁰

The following proposals should be considered to help continue training in today's environmental reality: continue to seek temporary relief from legislation, continue to share training areas with other services, and continue to use simulator training and develop additional simulator opportunities.

The first short-term solution, that has been exploited already, is to seek temporary relief from legislation. This action provides relaxation of compliance with environmental standards for Marine Corps bases and stations. There is an initial proposal supported by the Department of Defense called

³⁰ Mortenson, *North County Times*, "Pentagon gets House OK to ease environmental laws", www.nctimes.com, accessed March 14, 2004.

the Readiness and Range Preservation Initiative. The initial submission "sought relief from provisions in six environmental laws, including the 1990 Clean Air Act Amendments, the 1973 Endangered Species Act, the 1972 Clean Water Act, the 1918 Migratory Bird Treaty Act and statutes governing the cleanup of hazardous waste."³¹

A second short-term solution to share training areas with other services is also a possible and time-honored approach. New training areas provide new challenges and unfamiliar territory for personnel, which also require problem solving skills and application of solutions by the Marines. It may require land navigation skills that have atrophied from using the same training area repeatedly, resulting in fewer challenges because of terrain familiarity that is committed to memory.

There is a cost associated with using other services training areas: travel time, cost of moving military equipment, quality of life considerations for service members away from home, and depending on the base used, there may be a cost for using the training area.

A third short-term solution is to continue to conduct training with simulators and classroom time. In the article *Green Troops*, Colonel Waldhauser, former Commander of the 15th Marine

³¹ Weinstock, Matthew (2002). "Bird Watchers," *Government Executive*, Vol 34(14): p 46.

Expeditionary Unit, stated "over time, as we build bad habits into our training, or substitute the classroom and simulators for field training, our combat edge will become dulled."³²

Simulation should not be regarded as a substitute for training, but rather as a way of augmenting realistic training.

Simulation for firing weapons can reinforce good habits, while eliminating bad ones. The use of simulation to train a Marine infantry squad can sharpen judgment skills required during an urban environment scenario, permits multiple rehearsals, and can be critiqued quickly in a simulation center. Leaders at the simulation centers must reinforce good habits and eliminate bad ones with thoughtful critiques.

Simulated training using computer-aided technology can help maintain the proficiency for weapons training while minimizing the impact on the environment. Simulated training provides an alternate approach to training that can minimize or almost eliminate the use of hazardous material, thus reducing the generation of hazardous wastes. Simulation centers have been built on Marine Corps bases to facilitate training. A collateral benefit of simulator training is the reduced amount of ammunition and fuel consumed. The ammunition required for weapons systems is not used, which also reduces the amount of

³² Cahlink, George (2002). "Green Troops," *Government Executive*, Vol 34(14): p 40.

material (expended brass) that must be cleaned up, and the amount of ammunition that enters the ground at the range. This also saves ammunition for real world operations. The simulation centers can be used for individual training with multiple weapons systems: 9mm pistol, M16A2, and crew served weapons. Additionally, there is the capability provided with video support to conduct fire team and squad unit training that simulates specific training requirements. According to the National Training Systems Association, the Indoor Simulated Marksmanship Trainer "reduced the cost of operation requirement for the School of Infantry by more than \$16M (sic), without reducing the quality of training."³³ The biggest fiscal dollars are saved with the reduction of fuel costs for aircraft. Every hour that a pilot trains on a simulator vice a real aircraft saves thousands of dollars.

Airframe	Cost/Actual Flight Hour	Cost/Simulated Flight Hour	Ratio
F-16	\$5000	\$500	10/1
FA-18A	\$3955	\$217	18/1
P-3C	\$2903	\$119	24/1
S-3A	\$4360	\$143	30/1
SH-60B	\$1724	\$118	15/1
CH-47	\$3000	\$435	7/1
		Average Ratio:	17/1

Figure 2: Relative Cost of Simulated Versus Actual Flight Hour³⁴

³³ http://www.trainingsystems.org/publications/simulation/roi_effici.cfm

³⁴ National Training Systems Association, "Why Use Simulation? - Return on Investment," http://www.trainingsystems.org/publications/simulation/roi_effici.cfm#top; accessed March 10, 2004.

Figure 2 provides the fiscal comparison of operating an actual aircraft versus a flight simulator and the associated costs. The cost savings are a significant consideration, and as the simulator training improves, the consideration of simulation usage will increase as a viable training alternative.

Simulated training is used extensively for pilot training, and for training infantry Marines. Currently, there is at least one simulation alternative for combat service support roles. The new Medium Tactical Vehicle Replacement has offered new opportunities for both drivers and mechanics to use simulation training. However, how can the Marine Corps successfully train and simulate other logistics training? Many simulated military exercises do not accurately portray logistics planning and execution considerations because the exercise time allotted is too short. This results in little realistic training for the tactical and operational level logisticians.

Mid-term solutions should include the following: seeking continued relief from legislation, purchasing surrounding lands of current bases, and continuing use of simulation with investment in improved simulation to enable better training.

Headquarters Marine Corps must continue the effort to seek continued relief from environmental legislation. There are already environmental groups that want to reverse the environmental relief provided to the military during the past

year. They will not stop in their efforts to change legislation to favor tougher regulations, which will inhibit training.

Additionally, Headquarters Marine Corps must purchase land surrounding current bases. The purchase of the Greater Sandy Run Area, North Carolina, and land near the Mountain Warfare Training Center, California is an example. It has definitely been a challenge for the Marine Corps to develop the Greater Sandy Run Area, maintain environmental compliance, and remain considerate of neighbors during training.

Purchasing land for training requirements is extremely challenging in today's political reality of base realignment and closure issues. The Marine Corps must emphasize realignment of installations to augment current training areas, vice closure. The process should be viewed as an opportunity for services to co-locate and train jointly, while strengthening the requirement for current bases. The Marine Corps should take advantage of the opportunity to present Marine Corps' training requirements not being met with current installations, and recommend realignment of bases being considered for closure.

The urban facilities at Camp Pendleton and Camp Lejeune are small concrete block buildings that are limited in number. Although it provides an urban environment, one training patrol through the limited areas enable Marines to memorize the layout, and allows them to reduce the value of their training by

improperly anticipating where the attack will occur.

The ability to train in an urban environment is important for the Marine Corps. "Between 1975 and 1995, 21 of the 27 U.S. ground force commitments were in urban areas or a mix of urban and rural areas."³⁵ Recent experiences during Operation Enduring Freedom and Operation Iraqi Freedom reinforce the requirement for continued training in urban environments on a regular basis.

The proposed realignment of land on Guam by the Marine Corps presented a very compelling case for future training requirements. A Marine Corps site survey team visited Guam in early 2001 to conduct a training assessment of Andersen South, an abandoned Air Force housing complex. The initial assessment indicated the property did indeed provide a unique opportunity for an urban operations training facility for units up to the regimental level. The Marine Corps then requested transfer of 1,750 acres of that land. In 2002, Congress approved the transfer of 1,541 acres to the Marine Corps, in order to improve training opportunities in an urban environment. According to retired Lieutenant General Gary S. McKissock, former Deputy Commandant for Installation and Logistics, "the environmental cleanup along with infrastructure development would have made the cost prohibitive" for the Marine Corps, and the transfer of

³⁵ Pike, John, *Anderson South Air Force Base (AFB), Guam*. Accessed January 19, 2004; <http://www.globalsecurity.org/military/facility/andersen-south.htm>

land did not happen.

The Marine Corps must take advantage of every opportunity when federal agencies identify excess land, and assess the potential value of property to meet current or future requirements. The Marine Corps leadership must continue to evaluate potential training areas around the world, because the rapid change in technology will one day provide a new training requirement that current installations cannot support. The Guam experience did not deter the Marine Corps, and they continue to purchase land in areas that will improve training opportunities, like the Mountain Warfare Training Center.

Mr. Jim Omans, from Headquarters Marine Corps, Installation and Logistics, is the head of the Natural Resources Section. He points out that "the Marine Corps has no need for additional buffer lands...as it would remove lands from the tax base and cause concern among local residents that the military was acquiring additional land for no direct military reason."³⁶

Mr. Omans also suggests a solution that includes purchasing land surrounding Marine Corps bases to prevent encroachment with a cost-sharing program, vice the purchase by the Department of Defense. The program would team up private organizations to

³⁶ Omans, Jim, "Preventing Urban Sprawl while Preserving Military Readiness," Journal of Forestry, April/May 2002; p 60.

purchase land to support military bases. This is an interesting approach that incorporates a newly favorable public-private arrangement to solve a problem that is very vast and cumbersome. There are pros and cons to this approach, as experienced by Marine Corps Base, Camp Lejeune, North Carolina.

The initial acquisition of the 41,000-acre Greater Sandy Run Area in 1992 at Camp Lejeune, North Carolina, was to improve local training capabilities. The opening of this new training area was supposed to reduce training challenges that included moving units and personnel to other bases to train. The new training area was purchased to permit units to remain at Camp Lejeune and conduct their required live fire training for tanks and Light Armored Vehicles, while providing additional infantry ranges.

In addition to short and mid-term solutions, the Marine Corps must consider and plan for long-term solutions that will facilitate training in the future environmentally challenged climate of military training. This would include seeking permanent vice temporary relief from legislation, replacing Marines filling hazardous material/hazardous waste billets with civilians, developing environmentally friendlier equipment, and moving or realigning units to existing encroachment-free installations.

Permanent relief from legislation may prove elusive, and

incredibly challenging to attain due to the strength of the environmental movement and the political considerations associated with environmental issues. However, with the current threat of terrorism and increased security requirements, this would appear to be the opportune time to coordinate efforts with other government agencies, including the Department of Homeland Security, in order to increase Marine Corps training opportunities and resources.

A second long-term goal for the Marine Corps should be to eliminate the requirement for the hazardous material/hazardous waste occupational specialty. Every base environmental section is currently operated with civilians, but Marines are required at the unit level. Instead, have trained civilian experts operate and manage the entire program. Each Marine base could run a consolidated hazardous material /hazardous waste storage area operated and managed by civilians. Most people do not join the Marine Corps for environmental training and service, and they should free Marines to focus on their primary military occupational specialty.

A third long-term solution is to develop future environmentally friendlier technology like the Expeditionary Fighting Vehicle and new hybrid tactical vehicles.

Sometimes environmental restrictions can have a positive influence. One example is the attempt to make the Expeditionary

Fighting Vehicle quieter. This helps the vehicle meet the current noise restrictions imposed by legislation, and improves the vehicle's chances of survivability during tactical situations with a quieter approach.

The use of electric or solar power for vehicles would allow reconnaissance teams to have quieter vehicles, while also eliminating the logistics requirement for fuel. The elimination or reduction of fuel represents a move towards environmentally friendlier tactical systems. The Quantico Sentry newspaper contained an article about the new hybrid-electric tactical vehicle being developed by the Office of Naval Research, in partnership with The Defense Advanced Research Projects Agency and General Dynamics. The article reports that the "lithium-ion battery pack enables silent movement for upwards of 20 miles with extremely low thermal and acoustic signatures."³⁷

The final long-term proposal is to re-locate where the land is wide open and encroachment issues will be less restrictive than on current east and west coast bases. This land may be an individual island, or a large training area like Alaska, that could be used for combined arms or amphibious operation training. The Marine Corps could acquire land and establish a new Marine base in Alaska, or co-locate at current military

³⁷ Agg, Lance Cpl, "Corps unveils hybrid tactical vehicle," *Quantico Sentry*, December 18, 2003: p A1.

installations in Alaska. This step would reinforce current installation requirements and fend off closure of valuable military training areas. A Marine base in Alaska could be used to base Marine forces from Okinawa, Japan, and South Korea if the political climate requires force redeployment during this century. The cold weather training in Alaska would be better than the cold weather training conducted on Okinawa, which is non-existent. Alaska has been used by the military for training for many years, but some of the World War II developed bases are closing. The Navy closed the Adak Naval Air Station in 1998, and the Army lost part of Fort Greely due to a federally mandated realignment during 1995, but maintained a large portion of land called the Donnelly Training Area.³⁸ Former United States Senator and current Governor Frank Murkowski advertised that he "will continue to be a vigorous champion for expanding the military's presence in Alaska."³⁹ The Cold War, and Alaska's proximity to the Soviet Union, made Alaska a key outpost in the defense of North America. The Department of Defense and United States Coast Guard continue to maintain about 30 manned installations across the state as well as a large number of unmanned stations such as radio relay sites.

The principal Army unit in Alaska is the 172nd Infantry

³⁸ Reidsma, Steve, Fort Wainwright Natural Resources, phone interview by author, notes, Virginia and Alaska, April 16, 2004.

³⁹ Governor Frank Murkowski website, <http://www.frankmurkowski.com/veterans.pdf>, accessed October 2003.

Brigade, headquartered at Fort Wainwright. Headquarters for the Army National Guard and the Air National Guard are located in Anchorage with principal units in Anchorage, Fairbanks, Kotzebue, Bethel, and Juneau. The 17th Coast Guard District, with headquarters in Juneau, encompasses Alaska's 33,000 miles of coastline. The Coast Guard's major responsibilities include enforcing the 200-mile fisheries conservation zone, search and rescue, and maintenance of navigation aids.⁴⁰



Figure 3: Map of Alaska⁴¹

Figure 3 provides a general orientation for the major military bases that are in Alaska: Eielson and Elmendorf Air Force Base,

⁴⁰ FAQALASKA - Frequently Asked Questions About Alaska website, <http://sled.alaska.edu/akfaq/akmilit.html>, accessed April, 2004.

⁴¹ Federal Facility Site Information, "BRAC Sites in Alaska," http://www.epa.gov/swerffrr/ff/brac_ak.htm; accessed April 11, 2004.

Fort Greely, Fort Richardson, Fort Wainwright, and the Standard Steel & Metals Salvage Yard that belongs to the Department of Transportation.

The Air Force's major bases are Eielson Air Force Base near Fairbanks, Elmendorf Air Force Base outside of Anchorage, and thirteen long-range radar stations across the state. Alaska is host to the Alaskan Air Command with headquarters at Elmendorf Air Force Base. These strategic bases serve to expedite and facilitate movement of forces from continental United States training areas to locations in the Pacific region. Co-locating Marines would facilitate the link-up with strategic lift, and allow reasonable response times during crises.

Many of these bases were initially constructed to support efforts during World War II. Some of the bases missions and units have changed over the years, and with another base realignment and closure review pending, they will continue to change during this century. The Marine Corps already has two reserve companies from 4th Reconnaissance Battalion stationed at Elmendorf Air Force Base.

Both Elmendorf and Eielson Air Force bases provide strategic geographic locations to allow units based there to respond to both Europe and Korea faster than east and west coast

units could respond.⁴² This would be a great advantage for the Marine Corps because they advertise the ability to respond quickly to any contingency as America's 911 force in readiness.

Fort Wainwright is one of the Army's largest training areas. With over 950,000 acres, plus an additional 600,000 acres at the Donnelly Training Area (formerly part of Fort Greely). This provides a total of 1.55 million acres of available training area, according to the Fort Wainwright range manager, Greg Swallows.⁴³ According to Mr. Steve Reidsma of the Natural Resources section at Fort Wainwright, there are no threatened or endangered species on the post. The wetlands are a consideration during the six months of summer, when they want to minimize the damage caused by moving vehicles and bivouac sites. During the winter months, damage is not a consideration with the frozen landscape.⁴⁴

Mechanized army infantry brigades currently train at Fort Wainwright, and the future Army Stryker Brigade Combat Team will train will train there. The Stryker vehicle is a similar platform to the Marine light armored vehicle. Training ranges are available to support combined arms operations, which would also support the Marine Air Ground Task Force concept, minus the

⁴² www.eielson.af.mil

⁴³ Swallows, Greg, Fort Wainwright Range Manager, phone interview by author, notes, Virginia and Alaska, April 13, 2004.

⁴⁴ Reidsma, Steve, Fort Wainwright Natural Resources, phone interview by author, notes, Virginia and Alaska, April 16, 2004.

ability to conduct amphibious operations because Fort Wainwright is inland. The climate would present true training challenges in a cold weather environment during the winter, with temperatures ranging from 65 degrees below zero, to 90 degrees in the summer.

Winter training in Alaska would present realistic training challenges and opportunities that would prepare Marines for operations in potential cold weather environments around the world. The Marine Corps conducts bi-annual cold weather training in Norway. This training is neither frequent enough to maintain adequate cold weather survival skills, nor large enough in scale to allow a large portion of Marines to receive cold weather training. Should the Marine Corps only focus on desert training? Does the Mountain Warfare Training Center in California offer the capability to train enough Marines in cold weather? According to the operations officer, Major Scott Pierce, they can train 6,000-10,000 annually, with a capability to surge to 25,000 annually if required.⁴⁵ Will the Marine Corps culture prevent it from taking on real cold weather training? These are training questions that Marines must address.

Conclusion

Training is an important part of a Marine's life. Training

⁴⁵ Pierce, Scott, Operations Officer, Mountain Warfare Training Center, Bridgeport, California, phone interview by author, notes, April 16, 2004.

is critical for unit cohesion and mission accomplishment.

Protecting the environment is important. Marines need to train, as they will fight, in order to be ready to fight the nation's wars.

Enforcement of environmental regulations on the battlefield could cost human lives, which is why there are no environmental protection agency representatives in Iraq. During combat operations, environmental regulations are not practical, but that does not mean that this generation of Marines is not attuned with environmental responsibilities.

The Marine Corps is actively pursuing solutions to the current challenges of environmental legislation. Will the current plan prepare the way for Marines to continue training for the next 30, 40, or 50 years? Perhaps there should be a plan to move III Marine Expeditionary Force to Alaska in case Okinawa and South Korea do not require their presence in the future. Perhaps using Alaska as an area for units from every Marine Expeditionary Force to conduct cold weather training should be considered. Perhaps there are other bases being considered for closure or realignment that the Marine Corps should consider for future training opportunities. The future Marines of the 21st century will have annual training requirements that will depend on viable training areas that allow complete training, without sacrifices being made for

environmental considerations, to properly prepare for military operations around the world.

Could the current and increasing environmental legislative restrictions prevent the Marine Corps from conducting required training for future crisis? The Marine Corps must continue managing training areas, devising new and alternative methods for effective training, all while maintaining high training standards and continuing to protect the environment. Despite the challenges, no other country in the world can successfully manage to train a national military force in readiness, while maintaining such high environmental standards.

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