



**STRATEGY
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**THE LESSONS OF THE MASSACHUSETTS MILITARY
RESERVATION**

BY

LIEUTENANT COLONEL WILLIAM R. FITZPATRICK
United States Army National Guard

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USAWC STRATEGY RESEARCH PROJECT

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by

LIEUTENANT COLONEL WILLIAM F. FITZPATRICK
MASSACHUSETTS ARMY NATIONAL GUARD

Colonel David M. Cole, AWC
and
Dr. Rosemarie Szostak, AEPI
Project Advisors

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U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

ABSTRACT

AUTHOR: Lieutenant Colonel William F. FitzPatrick

TITLE: The Lessons of the Massachusetts Military Reservation

FORMAT: Strategy Research Project

DATE: 12 April 2001

PAGES: 41

CLASSIFICATION: Unclassified

Environmental awareness and stewardship was not a priority in Army installations and operations until the 1990s. Today's public environmental awareness and growing concern for public health and natural resources has called some past military training practices into question as potential sources of environmental contamination. One such military installation with a legacy of environmental contamination is the Massachusetts Military Reservation (MMR) located on Cape Cod Massachusetts, a military training facility for over ninety years. The analysis of the MMR legacy is critical for two reasons: (1) past training and safety procedures caused contamination that spread beyond installation boundaries via an underlying sole source aquifer; and (2) the Army handling of this legacy ultimately resulted in an EPA Administrative Order that indefinitely suspended artillery, mortar, and demolition training at MMR. The ultimate lesson of MMR is the sustainment of a well-prepared Army cannot exist without environmental stewardship.

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PREFACE

This paper is a result of the author's experience at the Massachusetts Military Reservation (MMR) and Army War College Fellowship at the Army Environmental Policy Institute (AEPI). My observations are based on thirteen years as a Field Artillery Officer in the Massachusetts Army National Guard, thirteen years living on Cape Cod in the Mashpee community bordering MMR, working at the Impact Area Groundwater Office at MMR, and research at AEPI.

The intent is to identify applicable lessons for other installations. It is not intended to place blame or to support any individual or group associated with MMR. The Army has had a formal Environmental Strategy since 1992 that lists specified and implied goals to implement a successful environmental program. The strategy stressed the importance of community involvement and partnership with all stakeholders. Unfortunately, much of the last twenty years communication and intent at MMR has been viewed with mistrust among the stakeholders, including the military. This mistrust continues today as some MMR public stakeholders interact with the military. There is controversy over the Department of the Air Force's upgrade of an early warning radar system located at MMR that is part of this nation's national missile defense program; and, the decision on types of compatible training at MMR with the Department of the Army and the Army National Guard.

I would like to thank the staff of AEPI for their assistance and insight. Especially, Dr. Rosemarie Szostak my project advisor and Dr. Donata Renfrow. Their expertise, advice, and humor were invaluable throughout the research process.

The views in this paper are those of the author and do not necessarily reflect the views of the Massachusetts National Guard, National Guard Bureau, the U.S. Army, the Department of Defense, and the U.S. government.

THE LESSONS OF THE MASSACHUSETTS MILITARY RESERVATION

"We have met the enemy and it is us."
—Walt Kelly

MILITARY OBJECTIVES and the ENVIRONMENT

The Massachusetts Military Reservation (MMR) is a training facility where the Army's environmental stewardship was not fully implemented. This failure resulted in the precedent setting training restriction imposed by the Environmental Protection Agency (EPA) Region 1 at MMR. This paper explores past actions at MMR to determine where the implementation of the environmental stewardship was unsuccessful and to identify lessons that can be applied to other installations to prevent future cases similar to MMR.

MMR is a facility that has supported the military, primarily Army and Air Force units for over ninety years. Since the 1950s, the Army and Air Force designated their respective areas of MMR as Camp Edwards and Otis Airfield. As the two names would imply each service has treated MMR as two separate sites within the installation boundaries. The significance of this separation, especially for environmental stewardship, would not manifest itself until the 1990s.

Over the past twenty to thirty years, increased public awareness on the environment has influenced the introduction and implementation of numerous environmental protection laws to safeguard natural resources and public health. With the end of the Cold War and perceived reduced threat to national security, the public began to look to the military to improve its environmental stewardship. Sacrificing the environment to train as a matter of National Security was no longer an acceptable argument to the public. In 1992, the Army responded to this growing awareness by developing a strategy titled, U.S. Army Environmental Strategy Into the 21st Century.¹ This strategy stated the Army's environmental awareness and it established environmental stewardship guidelines with the commitment to develop an eight-year plan for implementation.

Throughout the Department of Defense (DoD) there is widespread acceptance that environmental protection is essential to sustaining a well prepared, state-of-the-art military force.² This acceptance is implied in the three objectives of America's National Military Strategy (NMS): (1) shape the international environment; (2) respond to the full spectrum of crises; and (3) prepare now for uncertain future.³ "Like our national military strategy, our environmental strategy will promote national stability and protect our citizens."⁴ But as these two strategies integrate and prepare the military for the *uncertain future*, they must also address past environmental issues to fully protect our citizens. MMR is a prime example of an installation

where the military *prepared* for the past ninety years, yet did not envision an environmental threat resulting from that *preparedness*.

In the past, the military viewed the environment in the same manner as most industrial complexes and homeowners did and disposed potentially hazardous waste directly into the environment. These practices occurred prior to fully understanding the environmental consequences and not out of any deliberate or flagrant disregard for the environment. Thirty plus years ago there were very few environmental laws and the military was not subjected to state and federal laws because of national security. MMR was no exception. Waste was disposed of in unlined landfills and drywells, burned at firefighting training areas, or eliminated by any convenient method.⁵ These past actions unintentionally increased the contamination risk to human health and the environment.

The Army's 1992 Environmental Strategy identified why the Army needed to be effective stewards to ensure successful integration with the NMS. The strategy focused on the areas of Compliance, Restoration, Prevention, and Conservation.⁶ This program supported by leadership and community partnership would effectively manage the 20 million acres where the Army lives and trains. This partnership of shared common values will influence the natural, cultural, and public resources that affect the ecosystems on both sides of the fence line.⁷ Unfortunately, because the Army and Air Force have always treated MMR as two separate sites the total integration of environmental stewardship for the installation did not occur. Furthermore, it is this separation of physical areas and responsibilities that hindered the National Guard's ability to effectively address environmental issues and stakeholders at MMR. Stakeholders that include civilian and military personnel, their families, the public, elected officials, public interest groups, and all levels of environmental regulatory agencies.⁸ Without committed leadership and true community partnership, the Army's ability to sustain, restore, and maintain access to the land we need to train on will be impaired.

MMR - OVERVIEW

The mission of the Massachusetts Army National Guard (MAARNG) is to train units to meet Army readiness goals and to fulfill its federal mission when called upon. The Guard's ability to attain this state of combat readiness is directly connected to the access of key local training areas and facilities. The Massachusetts Military Reservation is one such facility. Located on Cape Cod, Massachusetts, MMR is surrounded by the towns of Mashpee, Sandwich, Bourne, and Falmouth. It has served as a training site for Active and Reserve Components of the Army and Air Force for over ninety years. MMR is also home to elements of

the United States Coast Guard and (formerly) to a local Marine Reserve battalion, it was also a major mobilization area for World War II.

DEMOGRAPHICS

When MMR started as a small training camp on Cape Cod, the military was an accepted member of the community. In the early 1900s, the permanent population was small. As the population of the country grew during the twentieth century so did the population of Cape Cod. Growth from 1920 to 1990 was 700 percent.⁹ During the 1980s and 1990s, Mashpee's population has more than doubled to approximately 7900 residents.¹⁰ This exponential growth had resulted in an increase of year round residents, businesses, and the infrastructure to support the livelihood of a population over 200,000 people. This infrastructure must also support an additional 300,000 people who visit during the summer tourist season.¹¹ With the population explosion in the eighties and nineties, homes and schools were built adjacent to the installation fence line and within sight of training ranges. This potential impact of MMR on the health of many thousands of people developed without any understanding of the effects of encroachment.

FACILITY – HISTORY

The following information is a brief synopsis on the history of the installation provided by MMR's public affairs section. MMR was established in 1911 as a Massachusetts (MA) Guard site to conduct field artillery firing and field training. In 1935, MMR, then named Camp Edwards was originally acquired by the state legislature. In 1940, MMR was leased to the Department of the Army (DA) and became a critical World War II training facility. This leasing action would significantly influence later decisions on how MMR would be controlled. In 1946, it was deactivated and placed back into the hands of the MA Guard only to be reactivated during the Korean War. Then, in 1954, Congress authorized the transfer from DA to the Department of the Air Force (DAF). However DA continued to control the ranges and maneuver areas. At this point MMR was synonymous with two names: Camp Edwards for the Army and Otis Airfield for the Air Force; each managed their own areas independently. As part of the Air Force's strategic national defense during the Cold War, the Boeing Michigan Aeronautical Research Center (BOMARC) missile complex was built at MMR in the early 1960s. This site conducted various classified testing in support of nuclear missiles. In the late 1970s, the Air Force built an early warning radar system, PAVE PAWS, as part of its missile defense upgrade. In 1972, DA planned to remove its active duty garrison, and DAF planned to turn the airfield over to the

Massachusetts Air National Guard but retain control over the PAVE PAWS site. However both DA and the National Guard Bureau (NGB)-Army recognized the importance of Camp Edwards as a reserve/guard training facility and agreed to provide financial support. In 1975 the Massachusetts National Guard (MANG) assumed operational responsibility for the majority of MMR.¹² DA also signed for an area known as the J-ranges where classified government contracted munitions testing occurred until the late 1980s or early 1990s. Ultimately, from 1975 until the spring of 1997, MMR has served New England as an active training facility for regional guard and reserve forces of the Army, Air Force, Marines, and the Coast Guard. Today MMR still supports reduced training activities of the National Guard, the PAVE PAWS site, and the Coast Guard.

Over the past ninety years, MMR has grown from a small camp to a garrison where thousands of personnel train. The Air Guard fighter wings stationed at Otis Airfield were part of the strategic defense of North America during the Cold War. Army training included infantry tactics of fire and maneuver; artillery tactics of shoot, move and communicate; and, engineer training in demolition and screening smoke. Army and Air Guard units have cycled through the ranges utilizing the MMR Impact Area every two weeks during the annual peak training periods occurring late April through September. Concurrently, weekend training is scheduled throughout the year. Thus, three out of four weekends of each month, training, live fire, and military aircraft could be seen and heard by the growing population surrounding MMR.

The local Cape Cod region is rich in military history, but it has a legacy of incomplete environmental stewardship. The legacy was first documented in 1950 when a recently completed Master Plan highlighted MMR's first potential environmental problem by stating, "The drainage facilities for Camp Edwards are inadequate."¹³

ENVIRONMENT

In a response to a petition from the citizens of Cape Cod the EPA designated the Cape Cod Aquifer as a sole source aquifer for Cape Cod in 1982. The aquifer provides over fifty-percent of the drinking water for the entire Cape. If contaminated, it would create a significant hazard to public health.¹⁴ One Cape Cod Commission hydrologist, Mr. Tom Cambareri, is quoted in the Cape Cod Times newspaper article, "Broken Trust, Day One," as estimating the Upper Cape aquifer, the Sagamore Lens, containing as much as 2.3 trillion-gallons of water.¹⁵ The Sagamore Lens supports the estimated 200,000-year round and 500,000 seasonal residents of the four Upper Cape towns and MMR.¹⁶ The aquifer matrix and the ground surface of the Upper Cape consist of very permeable sandy soils. The aquifer is recharged only from

rainwater that percolates through the lens. The soil characteristics that allow for the rapid infiltration of rainwater and high-yield water supply well also permit the migration of pollutants from the surface into the groundwater.¹⁷ Furthermore, the permeable sandy soil also permits rapid groundwater flow horizontally through the aquifer, spreading any possible contamination.¹⁸ What was not foreseen in 1911 or even during the early years of the Cold War was that MMR's position atop the Sagamore Lens would have environmental consequences.

THREATENED WATER SOURCE

The aquifer can yield millions of gallons of clean drinking water a day but it is a vulnerable resource. Continued use of this aquifer for drinking water depends on judicious land and water management of both quantity and quality.¹⁹ According to a 18 December 1998 article in the Mashpee Enterprise by Laura M. Reckford, quantity projections reflect a deficit of pristine water by 2020.²⁰ Some hydrologists project those deficits to be around one million gallons for Mashpee and as much as eight million gallons a day for the total Upper Cape.²¹ Thus, some area stakeholders were concerned that with the increasing population and emerging evidence of contamination coming from MMR there existed a threat to the aquifer.

The June 1994 Plume Response Report estimated 53 billion gallons of the aquifer had been lost to contamination.²² Since the 1994, report some previously uncontaminated monitoring wells have tested positive for contaminants. Moreover, results from some of the monitoring wells installed since 1994 have shown levels of contamination in the groundwater. Both new and old monitoring-wells testing positive for contamination could be the results of two possibilities: the contamination source was diffusing outwards or there were other unknown sources of contamination. Whether the contamination was a direct result of Army training (including artillery, mortar firing, and demolition training) remains unknown.

COMMAND AND CONTROL, AND THE LAND

Before the environmental issues are discussed the command and control relationships and the land leases and licenses agreements of MMR need to be outlined. These two factors have exacerbated the confusion over responsibility for and response to contamination as much as the environmental contamination that exists at the MMR installation. The majority of the land of MMR is state owned with a small part owned by the Federal Government. The portion owned by the state has been leased to DA, DAF, and the Department of Transportation (DOT) for the Coast Guard until 2026. DA and DAF, in-turn, licensed the property back to the MA Army Guard and the MA Air Guard respectively for use and operational control. Regardless,

ownership of the land determines which environmental regulatory process needs to be followed, state or federal. As state owned land, any upgrades considered by the MA Guard must first follow the Massachusetts Environmental Policy Act (MEPA) and not the National Environmental Policy Act (NEPA). Nevertheless, MEPA does mirror the requirements of NEPA; however, jurisdiction issues still develop between the two agencies.

In addition to the leases and licenses issues, the command and control relationships are convoluted at MMR. MA Guard controls both its Army and Air guard units, but it does not have any command relationship over the DOT and the Coast Guard. Nor does DoD have a command relationship with the Coast Guard. To further complicate the issue, MA Guard treats MMR as two sites versus one installation with minimal coordination between the MA Army and Air Guard units. Similarly, at NGB Headquarters in Virginia the National Army and Air Guard also treated MMR as two sites with separate environmental programs. This separation of responsibility and scope has created confusion for the public who has been told that NGB is the senior headquarters for the MA Army and Air Guard; yet they see two different leaders, cleanup programs, and oversight at MMR. Furthermore, when DA and DAF also view MMR as two separate installations and often provide uncoordinated conflicting guidance, this suggests to the stakeholders that they are being misled or misinformed.

These two issues have created an atmosphere in which no one knows who is in charge. The state owns the property, yet has no control over the lease, and it is bound to state environmental procedures. And when someone refers to MMR, it is uncertain if they mean Camp Edwards or Otis Air base and which leadership chain. Yet for local stakeholders, it is one installation with one ecosystem that adversely affects their communities.

In addition to these two issues, the early contamination history of MMR (primarily Air Force activities) needs to be considered. Ultimately, it was the controversy caused by these three issues: the unclear leadership chain, the ownership of the land, and the contamination history that set the stage for EPA Region 1 to issue to NGB-Army an Administrative Order in 1997 to restrict certain types of Army training.

ENVIRONMENTAL ISSUES TIED TO THE MILITARY

MASSACHUSETTS AIR NATIONAL GUARD

When the DAF took charge of MMR in the 1950s, an installation site plan was completed. It showed the total extent of the military complex and revealed insight into the threat of MMR's past activities that would turn into environmental problems. In 1962, MMR shut down a well after detecting phenol (carbolic acid) contamination from a coal storage site. MMR shut

down another well in 1985 that was contaminated with tetrachloroethylene and trichloroethylene compounds. These chemicals were associated with degreasing machine parts.²³ During the middle 1970s, some base personnel speculated about the potential of contaminated groundwater. In fact, the well shut down in 1985 had shown chemical contamination in 1973 and 1974.²⁴ In 1978, the town of Falmouth detected detergents in municipal drinking water wells that were 7500 feet south of MMR's wastewater treatment plant. The Massachusetts Department of Environmental Protection (MADEP) eventually ordered MMR to shut down the treatment plant in 1979. By 1983 and 1984, the Air Force detected volatile organic compounds (VOCs) in on-site monitoring wells near the base landfill and the fire fighting training area. Shortly thereafter, monitoring by the Air Force and MADEP detected VOCs in more than 200 private drinking wells and in one town well.²⁵ Besides the contamination showing up in the ground and drinking water, there was another public health issue that concerned the citizens of Cape Cod. Cancer rates in the Upper Cape were some of the highest in Massachusetts. Given the location of the BOMARC and PAVE PAWS sites, some in the community considered MMR the contributing source.

Superfund Designation

Because of all the discovered contamination from past activities on MMR, it was designated a Superfund site in 1989. Eleven areas of the aquifer have been contaminated from chlorinated solvents and fuel by-products primarily caused by Air Force activities at Otis airbase.²⁶ Plumes of contamination were created in the aquifer and were moving laterally across MMR's boundaries. Sixty plus sites have been recorded as some sort of spill. The major source areas for the contamination were from a small number of larger chemical and fuel spills, storm-drains, landfills, former fire fighting training areas, and coal yards.²⁷ Several fuel spills were associated with ruptured pipelines that supplied jet fuel. The ruptures were initially reported to have spilled 2000 gallons or less, quantity amounts that did not require an immediate or major investigation but would later prove to be grossly underestimated.

MMR was a facility that trained personnel during the period from WWII to beyond the Cold War. The land and everything associated with it was viewed as a training tool, and environmental monitoring was not federally regulated. In the past, fuel spills, oil products, and radar sites were not considered either hazardous to the environment or potential sources of cancer. Anything that happened inside the fence line, such as training, site upgrades like PAVE PAWS, and munitions testing was a military issue and would be prioritized based on war-fighting and national defense. On the other hand, the public considered both the land and

especially the groundwater as belonging as to community as much as to the military. Moreover, if training threatened their livelihood, then they wanted the activities to stop and the discovered contamination immediately cleaned up. Essentially, the environment and its stewardship were the primary responsibility of the government and national defense was not an excuse to ignore contamination.

Managing the Superfund

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or commonly known as Superfund, is a law that was promulgated in 1980. This legal Act addresses hazardous waste resulting from practices that were discontinued prior to 1976.²⁸ Superfund is a risk-based process that requires an initial assessment and site inspection to define and locate contamination, a remedial investigation/feasibility study to determine the cause, and a remedial design and action for clean up. NGB-Air and MA Air Guard managed this process under a DoD program called the Installation Restoration Process (IRP). The IRP essentially followed the Superfund process from investigation to cleanup. Both programs require that the community be involved or informed. Under the IRP, NGB-Air, and MA Air Guard provided information to the various groups through public affairs offices versus direct public involvement.

During this time frame, the military considered public affairs successful when they (the military) provided information to the community on how (the military) would conduct any cleanup. This public information process was considered community involvement by the military. True community involvement should include the community early and throughout discussions of the parameters of the problem. Discuss the best ways to solve it and thereby increase stakeholder support, acceptance, and trust.

From 1982 through 1989, the dialogue between the Guard and the thirty plus local environmental groups was strictly public affairs. Moreover, the Guard did not initially accept the contamination as their responsibility; and consequently, the groups had to fight hard to get the Guard to address their concerns. Once the site was designated a Superfund site, the environmental groups that supported the designation continued to interact with the Guard. From 1989 to 1996, stakeholders were provided information and updates and provided feedback information in return. Community involvement in the IRP appeared to be occurring but would later be revealed as only a public affairs process and not true community involvement.

Remediation Plan

The first formal public presentation of a removal action by the MA Air Guard and NGB-Air was not until February 1996. At this time, the stakeholders realized that there had not been true community involvement. The remediation plan was environmentally flawed and caused a great deal of public outrage.²⁹ NGB-Air and MA Air Guard presented a plan that simultaneously treated all seven-contamination plumes emanating under MMR, a requirement directed by the regulators and the environmental activists.³⁰ However, if implemented, the plan would draw down the water tables and change the ecosystem of the adjacent towns, creating a problem far worse for the environment than the current contamination. Understandably, the environmental groups asked what had happened to their input and concerns for not changing the ecosystem. Where were the regulators, the politicians, the military leadership, and even science during the plan development of the cleanup solution? For seven years, they provided input on the assessment and investigation, at least from a public health view; and had been provided information on the progress, (though slow in coming). Ultimately, their input had not really been part of the actual assessment or in the proposed solution to clean up the contamination. Seven years had gone by, hundreds of millions of dollars spent, and the only solution presented only made things worse.³¹ Any and all credibility NGB-Air had was gone, as reflected in a local Cape paper that ran a six-part, six-day exposé called "Broken Trust."³² The environmental groups and local politicians who had been involved since 1982 felt the progress of the last fourteen years had been lost, and as a result pushed their outrage all the way to the Pentagon and Congress.

Turnover to AFCEE

The Deputy Assistant Undersecretary of the Air Force for the Environment eventually stepped in and placed his premier environmental office in charge of the MMR clean up.³³ The Air Force Center for Environmental Excellence (AFCEE) assumed responsibility for NGB-Air, re-evaluated past information, and tried to convince the public and the politicians that it was not business as usual. They would include the stakeholders as part of the solution. The environment and public health of the community were important to the Department of the Air Force and environmental stewardship was inclusive in its national defense strategy.

Under a new management team, deadlines and milestones were established. Public affairs became more of a real community involvement process. Meetings were controlled by a facilitator, which improved dialogue among attendees. Total treatment was still the goal, but the process to get there may be in steps or with combined systems. The community was engaged in the decisions on the methods to remediate; however AFCEE had the final say.³⁴ By January

1998, AFCEE had rebuilt some of the trust; and the construction of treatment systems to either reverse contamination or prevent any further spread into the groundwater had begun.

MASSACHUSETTS ARMY NATIONAL GUARD

As stated earlier, the stage had been set for the MA Army Guard in 1996; and, it is here where the lack of a comprehensive environmental stewardship program begins to be demonstrated. Although in 1996 the MA Army Guard had been following an environmental process, it was not adequate to meet the heightened scrutiny by the regulators and the stakeholders created by their extended history of environmental concerns with the Air Guard and Otis Air base.

Environmental Assessment Requirement

As state owned property, any MMR environmental assessment is a MEPA requirement, which mirrors the NEPA process. The National Environmental Policy Act (NEPA) of 1969 is the basic national charter for protection of the environment.³⁵ NEPA mandates that federal agencies perform an environmental impact analysis prior to undertaking any action that may cause adverse impacts to the environment and consider alternatives for impact mitigation in making decisions.³⁶ Involving the stakeholders is a necessary part of the process. NEPA requires all stakeholders to review the draft document and any comments must be addressed as part of the final draft. The final draft must still be reviewed and the comments addressed before implementation can begin.³⁷ Regardless, the MA Army Guard still handled this as a public affairs format, "here is the information and our solution." For MEPA, the document is termed an Environmental Impact Report (EIR).

Master Plan History

While NGB-Air and the MA Air Guard were dealing with MMR as a Superfund site, the MA Army Guard had simultaneously considered upgrading the Camp Edwards' training facilities. As early as 1984 the MA Army Guard had drafted a Master Plan document. The draft plan identified fifty-eight projects and MA Army Guard filed an Environmental Notification Form (ENF) with MADEP. After reviewing the ENF, the MA State Secretary of Environmental Affairs issued a certificate requiring MA Army Guard to prepare an EIR, which was never completed due to on going changes.³⁸ By 1994, the MA Army Guard had revised the plan twice while reducing the number of projects to ten. Based on a reissued certificate, a draft EIR was completed in December 1996.³⁹

The EIR addressed environmental impacts based on the new construction projects and upgrades to existing training facilities. Because the focus was on improvements, the MA Army Guard analyzed the new projects and determined there were no significant impacts to the environment. Furthermore, training was not viewed as an environmental hazard and was not evaluated as part of the EIR. The MA Army Guard was already practicing stewardship. They were handling hazardous materials according to required regulations, recycling was in effect, and ranges were beginning to be managed under programs like Integrated Training Area Management (ITAM).

TURNING POINT: ENVIRONMENT TAKES THE FRONT SEAT

ENVIRONMENTAL EXPLOSION

When the MA Army Guard submitted the revised EIR to the regulators in 1996, they had unwittingly walked onto center stage of the MMR environmental crisis. The MA Army Guard was caught in-between an outraged public and an aggressive regulatory community. The Air Guard had presented its' unpopular remediation plan and the local paper had printed an exposé accusing all sides of mismanagement. And into the middle walks the MA Army Guard with its EIR and the finding of *no significant impact*.

As EPA Region 1 and MADEP reviewed the draft EIR, they had recently read and digested a series of articles on MMR by the Cape Cod Times newspaper. The newspaper printed a six-part series called "Broken Trust" that ran for six days, 5-10 January 1997; and it was a critique of the unpopular IRP solution.⁴⁰ The articles were based on EPA Region 1's, MADEP's, and various citizen groups' seven-year effort attempting to get NGB-Air and MA Air Guard to take responsibility for the contamination prior to MMR's declaration as a Superfund site. Moreover, the stakeholders spent another seven years of listening to NGB-Air present information, saw money spent, and waited for a mitigation and treatment program to be started. Then the only design presented was impractical. The magnitude of the environmental problems and mismanagement presented by the media focused everyone's attention on MMR. The key points included: (1) past military practices that had caused the contamination of the groundwater and to some public drinking water; (2) hundreds of millions of dollars spent and treatment systems not in place; and (3) confusion on who was really in charge or responsible for the investigation including regulator oversight during this process.

The EPA and the MADEP found the Draft EIR inadequate with respect to groundwater impacts from past and present live-fire training. The IRP had already reported groundwater contamination with some residue chemicals from high explosives. Nevertheless, the MA Army

Guard's EIR did not identify any such threat to the groundwater from the impact area and Army training. EPA Region 1 and MADEP requested that MA Army Guard withdraw the EIR and conduct a more thorough investigation of how training and high explosives might affect the groundwater supply.⁴¹ The MMR stakeholders knew the ranges and impact area were located over the lens leading to the aquifer below and the Air Force contamination had already threatened public health. Frustrated with the IRP process, the stakeholders began to demand that NGB-Army and MA Army Guard prove that past and present Army training (specifically high explosive training) was not contaminating the groundwater.⁴² Given the unsatisfactory results of the CERCLA/ IRP process with the MA Air Guard and NGB-Air and with very little patience left, the EPA decided to look for a legal means to force NGB-Army to fully evaluate training effects, specifically munitions on ranges.

LEGISLATION CHANGES

Two other significant changes occurred at about this same time that would ultimately have a profound impact on the course of training at MMR. These changes were not as dramatic or as publicized as the IRP solution or the master plan, but both would prove instrumental in the legal options EPA Region 1 sought. Both the Resource Conservation Recovery Act (RCRA) and the Safe Drinking Water Act (SDWA) were amended in late 1996 and early 1997. These two amendments (discussed below) provided a mechanism for EPA Region 1's to regulate and protect the environment of MMR and affect Army training.

Resource Conservation Recovery Act

The Resource Conservation Recovery Act was adopted in 1976. It provided a basic framework for federal regulation of hazardous material. It is a comprehensive Act that covers the generation of hazardous waste to its proper disposal. It is designed to anticipate and prevent harm to human health. It is not a response program as is CERCLA/Superfund.⁴³ In concert with the Federal Facilities Compliance Act of 1992, EPA is required to consult with the DoD and States to issue rules identifying when conventional and chemical military munitions become hazardous waste under RCRA.⁴⁴ When RCRA was amended in early 1997 it identified when munitions are considered solid waste. Munitions including unexploded ordnance (UXO) fall under RCRA when:

- abandoned by being disposed of, burned, or incinerated, or treated prior to disposal
- removed from storage for purposes of disposal or treatment prior to disposal

- deteriorated, leaking or damaged to the point that it cannot reasonably be recycled or used for other purposes
- determined by an authorized military official to be solid waste⁴⁵

This allows EPA to regulate military-generated munitions as waste. But the real source of legal redress for EPA Region 1 at MMR was with the SDWA.

Safe Drinking Water Act

Congress established the Safe Drinking Water Act in 1974, which allowed EPA to establish minimum drinking water standards.⁴⁶ Besides creating regulatory guidelines for drinking water systems, it included measures to protect sole source aquifers. The 1996 amendments to the SDWA law included drinking water standards and monitoring requirements that were better focused on health protection, risk reduction, and the extension of source water protection programs to include surface water.⁴⁷ This provided EPA Region 1 the ability to legally address the potential risk to drinking water from any source because of health protection.

RCRA AND SDWA AS TOOLS

Based on SDWA, the EPA did not have to prove there was a hazard; EPA could order the recipient, NGB-Army and the MA Army Guard, to prove that the aquifer had NOT been contaminated. Groundwater and public health were the issues and Army training and high explosives were the suspected sources. Past Air Force and Air Guard practices had already contaminated large amounts of groundwater therefore EPA Region 1 logically saw SDWA along with RCRA as their most powerful legal tools to protect the future groundwater and drinking water supply of Cape Cod. As EPA Region 1 reviewed SDWA, they recommended that their Regional Administrator, Mr. John P. DeVillars, "Invoke the broad emergency powers the EPA has with the Safe Drinking Water Act. Use those powers to shut down most military activities in the Impact Area."⁴⁸

In February 1997, EPA Region 1 issued Administrative Order #1 (AO1) under SDWA to the NGB-Army and MA Army Guard. This Order required the guard to: (1) conduct a study on the effects of army training, (2) modify the master plan and EIR, and (3) turn-in all information to the EPA for evaluation. "In short, the Guard had to prove that anything they wanted to do in the Impact Area would not harm the groundwater."⁴⁹ This Order was the first of three Administration Orders and set the precedent that EPA could affect military training. By April 1997, EPA Region 1 issued a second order, AO2, citing SDWA and RCRA, prohibiting any high explosive training on MMR. This included small arms to artillery firing. AO3 based on SDWA was issued in

January 2000 and directed NGB-Army to cleanup known explosive contaminated soil and groundwater. It also declared UXO as contaminates requiring cleaned up and removal.

The MA State Secretary of Environmental Affairs responded in July 1997 by issuing a new certificate to MA Army Guard establishing a Citizen's Working Group (CWG) that would assist in revising the Master Plan and the EIR, thus ensuring community involvement.⁵⁰ The CWG consisted of the local stakeholders, the four adjacent towns and the three services stationed at MMR. The revised plan was to be completed by December 2000, but it has been given an extension to March 2001.

AO1—FEBRUARY 1997

AO1 required NGB-Army and MA Army Guard to provide the regulators and the public any and all information of known or potential contaminates in the soil and groundwater on, near, and emanating from the ranges or impact areas; provide a study of the effects on public health from past, present, and future activities associated with the ranges and impact areas; and ensure adequate public involvement in the total process.⁵¹ AO1 identified Lead from small arms and two high explosive compounds, trinitrotoluene (TNT) and Royal Dutch Explosive (RDX) to be analyzed in the soil and groundwater on the ranges and the impact areas of Camp Edwards. These explosive compounds have been classified by EPA as possible human carcinogens, (Group C carcinogen); and, the possible effects of Lead can include damage to the brain and central nervous system, kidney damage, delay physical development, and elevated blood levels.⁵² RDX and TNT had already been identified in several areas by the IRP, and Lead was in the berms surrounding the rifle ranges.⁵³

AO1 established a citizens' advisory committee to monitor progress and EPA Region 1 as the sole authority to approve when work was completed or determine new project parameters. The committee would meet once a month and NGB-Army would provide updates. Moreover, EPA Region 1 controlled the meeting and used the SDWA to help enforce recommendations made by the environmental activists of the committee. Many of these were the same activists that had previously dealt with the Air Guard and the IRP process. Furthermore, lack of monies in the government budget cycle was not a legal excuse for project delays or incompletions. The health effect study was labeled the Impact Area Groundwater Study (IAGWS); and, NGB-Army and the MA Army Guard established a project office at MMR. AO1 was later amended to include a Munitions Survey Plan to look for known or possible buried munition sites.

MA ARMY GUARD RESPONSE

MA Army Guard and NGB-Army initially stated Army training had not affected the groundwater. As of 1996 and 1997, the preliminary technical evidence available indicated explosives were not a public health risk. A confined detonation study called the Bang Box study examined the products of various explosives and concluded that negligible amounts of explosive material remained after detonation.⁵⁴ This led to the assumption that training with high explosives at MMR was a possible environmental risk but not a public health risk that could prevent high explosive training. However, when AO1 was issued, the MA Army Guard agreed to comply with the order and initiated the mandated study. Moreover, the MA Army Guard outlined the type of activities it would conduct during the study:

- voluntarily suspended live high explosive artillery and mortar firing
- voluntarily suspended firing Lead munitions at small arm ranges
- voluntarily covered berms to prevent leaching when not in use
- voluntarily researched and implemented methods to remove Lead, use non-toxic bullets, use bullet traps and other capture devices
- would continue to fire artillery low-cost indirect training round
- would continue to use blanks and pyrotechnics during training
- would conduct an Archive Search Report on training at MMR
- participate in routine scheduled EPA directed public meetings
- provide any material requested or material created from the study⁵⁵

AO2—APRIL 1997

In his book, About Face, the author Seth Roblein states that EPA Region 1 issued AO2 for several reasons. One, both MADEP and Region 1 perceived the Army Guard as slow in responding to redressing their Environmental Impact Report in accordance with AO1. Two, EPA Region 1 wanted to maintain legal pressure and ensure that the Guard would comply with the requirement to demonstrate that army training had not caused contamination to the groundwater⁵⁶. EPA Region 1's intent was to shut down the training ranges, oversee a complete and thorough investigation of the groundwater under MMR. Once it was completed (one to two years) EPA Region 1 would then reconsider if high explosive training were compatible with groundwater and public health.⁵⁷ (A study that is currently in its fourth year of investigation.) Based on this intent, EPA Region 1 issued AO2 citing both SDWA and RCRA prohibiting any high explosive training at MMR. The restricted training was identified as:

- firing all Lead ammunition or other "live" ammunition at small arms ranges

- all artillery firing
- all mortar firing
- live demolition, unless for UXO clearance
- use of artillery and mortar propellants
- all pyrotechnics
- burning of propellant or propellant bags

With RCRA and its definition of handling hazardous waste, EPA Region 1 added additional contaminants as well as propellants to the list for the IAGWS to search and analyze for in the ranges and impact areas. All berms on small arm ranges were to be covered to prevent any potential leaching of Lead and a plan developed within thirty days for the removal of Lead from rifle ranges. Periodic UXO sweeps, in the ranges and impact area where soil and groundwater sampling were designated, were to be conducted to ensure safe access.⁵⁸ Furthermore, the language of AO2 included all aspects of AO1.

Senator Kennedy Steps In

As the controversy surrounding AO2 escalated beyond MA and NGB-Army to the Pentagon and Washington D.C., Senator Kennedy convened a meeting in April 1997. The military and its supporting politicians challenged that available technical evidence did not exist to support EPA Region 1's stance that army training was a threat to the environment. The AO2 restriction would prevent training required to maintain military preparedness and set a potentially dangerous precedence.⁵⁹ In About Face, Roblein describes Region 1's main emphasis as public health, not just the environment.⁶⁰ The groundwater is the Cape's public water supply for today and tomorrow. Senator Kennedy accepted the argument for public health and agreed with the implementation of AO2. The environmental groups and EPA Region 1 had successfully confronted NGB's chain of command and gained support of a key senator with the power to influence and direct the Guard.

MAARNG, NGB, and DA Response

When AO2 was issued within two months of AO1, the MA Army Guard complied with the direction of its Governor and ceased firing high explosive equipment, but it continued with other field training. Furthermore, MA Army Guard responded to MA State Secretary of Environmental Affairs' July 1997 formation of the Community Working Group by signing the issued certificate. Again, in About Face, Roblein recounts the events that NGB-Army and the Pentagon undertook to try and prevent the AOs. As a result of the precedent it would set if military training could be

shut down for public health reasons, NGB-Army appealed to Ms. Carol Browner, the head of the EPA, but to no avail. A year later (1998) the Pentagon with pro-military congressional support tried to add a provision to the DoD Authorization Act that would prevent such training restrictions. The proposed provision required a federal agency that proposes to take any action that might restrict military training to notify the Secretary of Defense immediately. The action would then be delayed for thirty days.⁶¹ Politicians on both sides argued and the thirty-day delay was changed to five days. But more significant was the language added to the act, "...it gave which ever agency involved (in this case the EPA) final say on what would happen at military bases if there was any question of public health being at risk."⁶²

February 1997—August 2000

Regardless of the tact taken by NGB-Army, the AOs were legally binding. Over the next three years NGB-Army and MA Army Guard complied with the requirements of AO1 and 2. An Archive Search Report on high explosive and chemical training sites was submitted to Region 1 as completed. Numerous monitoring wells were installed and soil samples taken. Additionally the Munitions Survey Plan directed by EPA Region 1 to specifically look for buried munitions in the ranges and impact area was implemented.

The IAGWS discovered various levels of contamination from explosives, propellants, metals, herbicides, volatile organic compounds, semi-volatile organic compounds, and UXO in soil and/or groundwater.⁶³ Results of some of the soil sampling showed some areas were contaminated with explosive residues. Over three hundred monitoring wells have been installed. According to Mr. Ben Gregson of the Impact Area Groundwater Study Program, one of the training areas, Demolition Area One, was classified as a source area for groundwater contamination from explosives with an associated contamination plume in the spring of 2000.⁶⁴ Throughout the investigation, numerous UXO were discovered and required safe disposal.

AO3—August 2000

Based on the success of AO1 and 2, EPA Region 1 issued AO3 in August 2000 classifying UXO as environmental contaminants and directed a clean up action. EPA Region 1 issued AO3 in spite of a previous agreement from under the Federal Facilities Agreement that any identified contamination sites would be turned over to the IRP for remediation under a CERCLA process.

AO3 directed NGB-Army to conduct Rapid Response Actions (RRA) for clean up. The RRA process included a feasibility studies, design and remedial actions to abate the threat to

public health presented by the contamination from past *and* present activities, and sources emanating from the MMR training range and impact area.⁶⁵ Ten different sites were listed that needed action. Three of the sites would require a feasibility study, design, and remedial actions, extensive in time and money. Eight out of the ten sites required a RRA on known contaminated soil locations. The RRA could be conducted immediately and at a relatively modest cost. A separate requirement of this order dealt with UXO. NGB-Army is to conduct a feasibility study/remedial design/remedial action for surface and subsurface UXO.⁶⁶ This is a problem that DoD has yet to determine how best to handle, and it is still under negotiations with the regulatory agencies. As with the first two orders, NGB-Army will be prepared to conduct additional response actions as dictated by EPA Region 1, and the requirements of AO's 1 and 2 still apply.

NGB-ARMY AND DA RESPONSE

NGB-Army challenged EPA Region 1 about the previous agreement to move identified contaminated areas to the IRP program. However, EPA Region 1 was able to enforce the cleanup under AO3 and NGB-Army is currently conducting a RRA on those identified sites. Also under contention was EPA Region 1's characterization of UXO as environmental contaminants. That debate is still ongoing at DA level; however, NGB-Army is creating a feasibility study document on how to remediate UXO on MMR ranges.

AO IMPLICATIONS

The legal language of EPA Region 1's administrative orders ensured that the lack of government dollars would not become a roadblock for action. Based on past experiences with IRP and Superfund process, EPA Region 1 wanted to make sure they were in control. With SDWA and with RCRA, EPA had the legal power to direct the Guard to do the groundwater study, stop and prohibit certain types of training, conduct Rapid Response Actions, and remediate UXO from the ranges whether programmed funds existed or not. As written in AOs, EPA Region 1 is the approval authority for any completed work. Case in point, NGB-Army turned in the final draft of the Archive Search Report for review by EPA Region 1. As part of AO3, EPA Region 1 has directed NGB-Army to go back and rework the Archive Search Report to include all impacts of Army training activities not just those associated with explosives.

IMPACTS

ENVIRONMENT

As stated earlier the paper, past military activities at MMR has caused environmental contamination. The DAF and the MA Air Guard standard operating procedures to test the fuel valves prior to take-off and during routine maintenance dumped an unknown number of gallons of jet fuel into the soil and subsequently the groundwater. One of the piped-in jet fuel line ruptures reported in 1972 as a 2000-gallon spill was later revised in 1990 as a spill of 70,000 gallons.⁶⁷ Other prescribed practices and techniques as well as improper handling of chemicals and waste material have caused contamination to public drinking water. Explosives have been detected and confirmed at numerous locations in the soil around old targets and in groundwater radiating from underneath a target area. In some areas, explosive residues in groundwater were above the established EPA health advisory. Lead, a known contaminant, was in the berms surrounding the small arms ranges.

Furthermore, as the study progressed, the handling of discovered UXO has become a serious concern to the environmental activist, EPA Region 1, and the surrounding neighborhoods. The normal or proscribed method of handling UXO has been to explosively detonate or blow in place (BIP) the ordnance, which is the safest disposal method. However, the public perceived that any further detonations were a violation of AO2 and would contribute additional contaminants to the environment. Explosive residue deposited in the soil; and, chemical constituents blown into the air could migrate into neighboring homes and schools on the other side of the MMR fence potentially causing harm to residents and children. The military only had indirect evidence to the contrary.

An additional impact to the environment has occurred from both the IRP and IAGW programs. While it is true that some past activities have contaminated the environment and affected public health, the investigations and remedial systems may also change MMR's ecosystem. Building remediation systems, building well pads for monitoring groundwater, and removing acres of vegetation at a time to search for UXO or buried munitions has removed portions of the pine forest on MMR. MMR does have several endangered species that could be jeopardized as the Guard and EPA Region 1 try to resolve the potential threat to groundwater by or from Army training.

TRAINING AND READINESS

Because of AO2 restrictions to training at MMR, readiness of the Army National Guard throughout New England has been affected. Utilization of Camp Edwards by units dropped

within the first six months of AO2. Units that had scheduled Annual Training (AT) during 1997 suddenly had to find alternate locations to train. Relocating an AT site within ninety days was difficult at best. The restrictions imposed by EPA Region 1 also occurred at the same time when an artillery battalion was reactivated with personnel who were originally trained as armor and signal soldiers. Without the full use of the MMR training ranges, artillery sustainment training effectiveness has been reduced. As a Division Artillery staff officer and Field Artillery Battalion Commander, I have witnessed the impact to training because of the training restrictions at MMR. Previously, MA units had a full day of artillery firing on a two-day weekend drill at MMR. Now units must travel seven plus hours one-way to reach an unrestricted artillery range. Realistically, a full day of firing has been reduced to four-to-six hours.

MMR does have Howitzer Crew Trainers that simulate a live mission. The stationary trainer does everything except send a round down range. However, part of the training experience and the ability to retain artillery soldiers is the actual firing of the howitzer. Personnel in my units have retired earlier than necessary or have not re-enlisted and the reason given has been "a lack of real training and can't smell the gunpowder." No matter how dynamic the leadership is, when soldiers perceive they cannot train in their designated/chosen specialty, their desire to stay is greatly reduced.

From the beginning, the IAGW study was an un-financed requirement. NGB-Army had to divert funds from the operating and maintenance budget, thus impacting other planned and approved programs. Moreover, EPA Region 1 kept adding investigation and remediation requirements, which increased the cost of the groundwater study, which has grown to the tens of millions of dollars. The dollars that NGB-Army has taken from other programs has included monies from its own environmental budget, thus affecting other State Guard environmental stewardship programs.

An even greater impact on readiness and training to Army ranges will be the disposal of UXO and what the standard will be for removal. There is not a policy for active ranges, and the amount in time and dollars for UXO remediation is unknown. Also unknown is how range utilization will be affected during an active removal of UXO. Furthermore, *who* will be in charge of the complete process? Will it be the military who trained there or the regulator who establishes hazardous cleanup standards?

LESSONS OBSERVED

Army Environmental Stewardship seems to have been unsuccessful at MMR in the areas of command and control, community involvement, and a comprehensive environmental

assessment. However, besides these three areas there are two other reasons that influenced the actions at MMR. First, the environmental activists and regulators treated MMR as *one* installation regardless of the color of the uniform. However, the Guard and DoD treated MMR as two sites. Consequently environmental issues were viewed as separate service issues and not as a whole site with potentially compounding environmental or public health hazards. Even as AFCEE took over the IRP program it did not consider Army training impacts. Similarly, the MA Guard dismissed the IRP data from the training ranges and only focused on their own activities. Yet, the public was looking at MMR as one site contaminating the groundwater.

Secondly, while the 1992 Army Environmental Strategy improved the environment stewardship in support of future training, it did not focus on public health as part of the environment. But to the stakeholders, the environment was directly related to public health. As mentioned throughout the paper the regulators and the stakeholders used the threat to public health as the key to protect the groundwater from training. Whereas the Guard did not view military training as an environmental threat and only recognized safety issues like UXO as a public health risk. The words are similar but intents differ. This difference combined with a confusing MMR command and control relationship prevented effective leadership, communication, and compliance in accordance with environmental stewardship as outlined in the 1992 Environmental Strategy.

LACK OF CENTRALIZED COMMAND

A central site command could have better demonstrated the Guard, the Army, and DoD's commitment to safeguarding MMR's natural resources for all the stakeholders, while ensuring public health with the potential of sustaining training. Strong or weak leadership could not change the contamination at MMR, but leadership is charged with integrating environmental responsibilities into military decision-making and operations. Both MANG and NGB treated MMR as two sites, yet MMR as a whole affected the surrounding communities. When the complexity of command is combined with who actually owns or controls MMR, the regulators and the environmental activists did not know who was responsible and really in charge.

Furthermore, NGB and MANG do not have the technical or financial resources that AFCEE or DA could apply to handle a massive clean up such as MMR. As history shows that in 1996 AFCEE had to step in to oversee and manage the IRP before improved community involvement occurred or a remediation process was implemented. Today the Impact Area Groundwater study is still managed by NGB-Army and has had little direct support from HQDA. It was not until December 2000 that DA met with MA Army Guard and actively participated in

new meetings with the surrounding communities. Follow-up meetings have occurred in the first quarter of the calendar year 2001 to discuss and decide on Army training compatible to MMR's environment. March 31st 2001 is the deadline for the MA Army Guard to submit its revised 1996 Master Plan/EIR with the Community Working Group comments.

LACK OF TRUE COMMUNITY INVOLVEMENT

If the Army is to be the national leader in environmental stewardship, then the Army needs to more effectively embrace public involvement. Open discussions on past, present, and future environmental issues as well as encroachment issues need to take place to reduce conflicts. Communities on both sides of the installation fence feel encroachment and are impacted by changes on either side. The Army's environmental stewardship is based on common values that all stakeholders share, a safe environment for today that sustains tomorrow's livelihood. The path to get there is different, but with honest and open communication each stakeholder will improve the stewardship of our natural resources.

Communication has three key components: talking, listening, and understanding. Stressed throughout the Army's environmental strategy is communication with the stakeholders and the community. Ensuring public involvement early and in every aspect, reduces conflict, obtains cooperation, and expedites actions with the stakeholders.⁶⁸ From 1982 to 1996 and today, the communication process at MMR is full of conflict and concern. Communication requires trust, which is a two-way street. Everyone associated with the problems at MMR talked and some listened, but due to their respective perceptions very few understood or trusted one another. Perception appears to have influenced more decisions than fact or science. Because responsibility and communication were clouded with perceptions or misconceptions, smart or risk-based decisions have not always occurred.

For over twenty years, MMR stakeholders have tried to convince NGB that Army and Air training or activities have caused contamination to the environment and to public health. During that same time, the Guard has been trying initially to impart to the stakeholders that the environment was not the priority for National Defense and inside the fence line was not the public's concern. As the stakeholders linked the environment to public health and began to demand not only information but to be part of the decision process for solutions, the Guard was hesitant and used national defense as an excuse to provide limited information. Both sides have used the word *potential* to enhance their arguments. But when *potential* is linked to public health and true communication does not exist with the stakeholders, risk-based solutions are difficult to implement.

ENVIRONMENTAL ASSESSMENT OMITTED REVELANT ISSUES

The environmental assessment was unsuccessful at MMR because it did not consider past contamination. The 1996 Master Plan essentially reported there were no significant impacts to the environment. With the ten remaining projects of the original fifty-eight identified in the 1985 plan, the compliance assessment did not identify any problems. The MA Guard only focused on new projects and did not consider the current findings of the Air Guard and the IRP program that identified several sites of possible explosive contamination from past activities. With the failed IRP solution and the "Broken Trust" articles the regulators could not accept MA Army Guards' assessment of "no significant impacts."

Based on the difficulties with the stakeholders and with the unknown extent of the contamination from past activities in hindsight, the Master Plan should have completed a comprehensive environmental assessment as outlined in the 1992 Army Environmental Strategy.⁶⁹ The 1999 Master Plan with the Community Working Group does include an assessment; additionally, as of February 2001 the Army Guard and DA are sitting down with the stakeholders and discussing compatible training.

CONCLUSION

The Massachusetts Military Reservation is an established military training facility where past military practices contaminated a sole source aquifer. MMR, like the majority of Army installations, has supported military operations for over fifty years. Inherent with this longevity is the potential that past operations caused or left some type of contamination on the installation. MMR is an example of just one installation with an extensive military heritage but whose legacy includes environmental and public health issues.

The Army Environmental Strategy developed in 1992 provided the framework for the Army to become effective environmental stewards. A comprehensive program was created focusing on four pillars of Compliance, Restoration, Prevention, and Conservation. Common themes throughout the pillars are coordination and resolution on environmental site assessment issues, a holistic approach to the site, and minimize the risk to human health and the environment. The environmental site assessments are important tools enabling Army leaders to become effective environmental stewards managing installation resources. The primary goals of environmental stewardship are sustaining training areas and combat readiness.

Environmental stewardship must be developed and sustained, as one would approach combat operations: analyze the present situation, consider the historical activities, and remain flexible for the unexpected. Based on what happened at MMR, the Army Guard environmental

stewardship program was incomplete and uncoordinated. Resulting in a series of Administrative Orders issued by EPA Region 1 to the Army National Guard that indefinitely suspending high explosive training. These Orders were based on a legal premise to protect public health. During the twelve years the MA Army Guard was revising their Master Plan, the MA Air Guard and NGB-Air were dealing with both the groundwater contamination and the stakeholders. The Army Guard did not consider either prior evidence or current training as presenting environmental impacts nor were they flexible enough to interact with the Air Guard, the regulators, and the environmental activists. The Army Guard failed to correctly analyze the situation. The 1996 Master Plan with a finding of no significant environmental impacts never had a chance at approval.

Based upon MMR's environmental and public health issues, the following recommendations should be assessed by Army installations against their own environmental stewardship programs. The recommendations are:

- read and apply the 1992 U.S. Army Environmental Strategy into the 21st Century
- ensure one leadership team for the installation
- understand that the environment includes public health
- review past practices, especially with respect to changing environmental laws
- engage the public openly, honestly, and aggressively
- identify each stakeholders' agenda, for every situation

These recommendations will not reverse the contamination, the lasting environmental effects or satisfy a concerned public. Rather, by applying these recommendations, Army installations will improve the trust and understanding with the local communities. The critical decisions that are required and implemented for contamination remediation have a more likely chance of acceptance. Nevertheless, implementing these recommendations during the 1996 Master Plan process may not have changed EPA Region 1 issuance of the Administrative Orders, but all sides would have had a clearer understanding of each other's agendas.

The Army has an excellent environmental awareness and stewardship strategy with mature programs to integrate that strategy into military operations. As the Army redefines installation management into terms synonymous with ecosystem management both environmental and public health systems will be protected. Together the Army and the community form one ecosystem. As a partner in this ecosystem the challenge for the Army is acknowledging community needs while attaining the objectives of the NMS. This is critical because the ecosystems-partners need to assess the risks associated with protection. Stewardship of the environment ensures we always have a safe place to live, stewardship of our

country ensures our way of life. The Army is responsible in both. An objective of the NMS is "prepare now for uncertain future," to be able to *prepare* we must have the lands to train on. As the Army works with the stakeholders, public health and the environment should not be neglected or compromised, nor can the preparedness of the Army be compromised. It is a risk based dilemma that can only be resolved when all stakeholders have an open and honest exchange of information and goals.

Another objective of the NMS is "respond to the full spectrum of crises." As soldiers we swore or affirmed, "to protect against all enemies foreign and domestic." These values that inspire us to be successful and win are the same values that inspire environmental activists. In fact, these common values are rooted in the foundation of our country and the Constitution. The Army cannot exist in a vacuum; furthermore, the soldiers come from the neighboring communities. Everyone is perpetuating this country's common values. Wherever and whatever the crises are, our values influence the decisions and solutions to remediate those crises. The methods and goals between the stakeholders may be different or be totally disagreeable, but the core motivation to resolve the threat are the same.

History has taught us how to be leaders. History also shows us the errors of our ignorance; MMR is an example of our past ignorance. The present reflects our enlightenment to change our ignorance. The development of the 1992 Environmental Strategy demonstrates the Army's awareness in regards to environmental stewardship. Only the future's recount of the present will prove whether the environmental lessons of MMR and other installations were adopted and implemented. Hopefully in the future's retelling of history demonstrates the Army's environmental ethic and responsibility safeguarded neighboring communities without compromising the execution of the National Military Strategy.

WORD COUNT = 10,267

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⁶¹ Ibid., 133.

⁶² Ibid.

⁶³ United States Environmental Protection Agency Region 1, U.S. EPA Region 1, EPA Docket No.: SDWA-1-2000-0014, (EPA Region 1, 2000), 4.

⁶⁴ Ben Gregson, program manager, Impact Area Groundwater Study Program, telephone interview by the author, 29 March 2001.

⁶⁵ United States Environmental Protection Agency Region 1, U.S. EPA Region 1, EPA Docket No.: SDWA-1-2000-0014, (EPA Region 1, 2000), 9.

⁶⁶ Ibid., 22-23.

⁶⁷ Roblein, The Enemy Within, 46-48.

⁶⁸ United States Army, U.S. Army Environmental Strategy into the 21st Century, 22.

⁶⁹ Ibid.

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