

Supplemental Environmental Impact Report

Massachusetts Military Reservation
Camp Edwards, Massachusetts
(EEA #5834)



Prepared for:

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August 15, 2012

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A	MEPA Certificates	<ul style="list-style-type: none"> ▪ June 8, 2012 (I Range) ▪ June 29, 2012 (S Range)
○	November 9, 2006	
○	August 10, 2007	
○	January 22, 2010	
○	May 6, 2011	
○	December 16, 2011	
B	Regulatory Approval Requests	
○	EPA	<ul style="list-style-type: none"> ▪ June 13, 2007 (T Range) ▪ September 25, 2008 (J & K Range) ▪ October 11, 2011 (S Range) ▪ May 9, 2012 (I Range)
○	EMC	<ul style="list-style-type: none"> ▪ June 27, 2007 (T Range) ▪ July 10, 2008 (J & K Range) ▪ March 23, 2012 (S Range) ▪ May 9, 2012 (I Range) ▪ June 19, 2012 (S Range)
C	Regulatory Approvals	
○	EPA	<ul style="list-style-type: none"> ▪ July 23, 2007 (T Range) ▪ January 28, 2009 (J & K Range) ▪ January 8, 2012 (S Range) ▪ May 15, 2012 (I Range)
○	EMC	<ul style="list-style-type: none"> ▪ July 23, 2007 (T Range) ▪ August 6, 2008 (J & K Range) ▪ March 28, 2012 (S Range)
D	Camp Edwards Small Arms Range Pollution Prevention (P2) Overview Plan	
E	Operations, Maintenance and Monitoring (OM&M) Plans	<ul style="list-style-type: none"> ○ Tango (T) Range ○ Juliet (J) Range ○ Kilo (K) Range ○ Sierra (S) Range
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G	Soil and Groundwater Investigation Reports	<ul style="list-style-type: none"> ○ Tango (T) Range ○ Juliet (J) Range ○ Kilo (K) Range ○ Sierra (S) Range
H	Life-Cycle Environmental Assessment (LCEA) Cartridge, 5.56mm, Ball, M855A1 (April 28, 2010)	
I	Public Involvement Documents	<ul style="list-style-type: none"> ○ Community Involvement Overview ○ Status Updates ○ Fact Sheets
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Acronyms

AO	Administrative Order
BMP	Best Management Practice
CAC	Community Advisory Council
CACTF	Combined Arms Collective Training Facility
COPC	Contaminant of Possible Concern
CRREL	Cold Regions Research and Engineering Lab
CWG	Community Working Group
DA	Department of Army
DCR	Department of Conservation and Recreation
DFG	Department of Fish and Game
DoD	Department of Defense
EA	Environmental Assessment
E&RC	Environment and Readiness Center
EEA	Executive Office of Energy and Environmental Affairs
EIR	Environmental Impact Report
EMC	Environmental Management Commission
ENF	Environmental Notification Form
EO	Environmental Officer
EPA	U.S. Environmental Protection Agency
EPS	Environmental Performance Standard
EST	Engagement Skills Trainer
FATS	Firearm Training System
FEIR	Final Environmental Impact Report
FNSI	Finding of No Significant Impact
IAGWSP	Impact Area Groundwater Study Program
MAANG	Massachusetts Air National Guard
MAARNG	Massachusetts Army National Guard
MANG	Massachusetts National Guard
MassDEP	Massachusetts Department of Environmental Protection
MMR	Massachusetts Military Reservation
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act of 1969
NGB	National Guard Bureau
NPC	Notice of Project Change
OM&M	Operation, Maintenance, and Monitoring
P2	Pollution Prevention
SAC	Science Advisory Council
SAR	Small Arms Range
SAR IP	Small Arms Range Improvement Project
SEIR	Supplemental Environmental Impact Report
USACE	US Army Corps of Engineers
USAEC	US Army Environmental Command
USGS	United States Geological Survey
UTES	Unit Training Equipment Site

Section 1. Introduction

This Supplemental Environmental Impact Report (SEIR) has been prepared in accordance with the requirements articulated in the November 9, 2006 Certificate on the Notice of Project Change (NPC) submitted to the MEPA office of the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) on September 15, 2006 by the Massachusetts National Guard (MANG) pursuant to the Small Arms Range Improvements Project (SAR-IP) at Camp Edwards. In addition, this SEIR also incorporates the modifications contained within the subsequent August 10, 2007 Certificate regarding the July 9, 2007 Juliet (J) and Kilo (K) Range NPC, also submitted by the MANG.

As noted in previous filings, the purpose of the SAR-IP is to resume small arms weapons training at Camp Edwards, to military standards, in a manner that protects both human health and the environment (particularly groundwater). The SAR-IP will be implemented in a phased approach, enabling the MANG to upgrade and resume training on existing small arms ranges where military personnel employ live fire training with small arms weapons. The action is regulated by MEPA, the Massachusetts Environmental Management Commission (EMC), the U.S. Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MassDEP), the Department of Army (DA), the National Guard Bureau (NGB), and the MANG.

The SEIR was slated for submission to MEPA in 2009, but was held back to allow for the development and incorporation of analysis associated with Sierra (S) Range. S Range entered into the approval process with EPA and EMC in the same manner at Tango (T), J & K Ranges, and it was decided through coordination with these two regulatory bodies that this analysis should also be included with T, J & K into this SEIR. The soil and groundwater investigations, operations maintenance and monitoring plan, and regulatory approval for S Range were secured earlier this year. As discussed later, the SEIR also includes information related to India (I) Range, which entered into the approval process with EMC in April 2012.

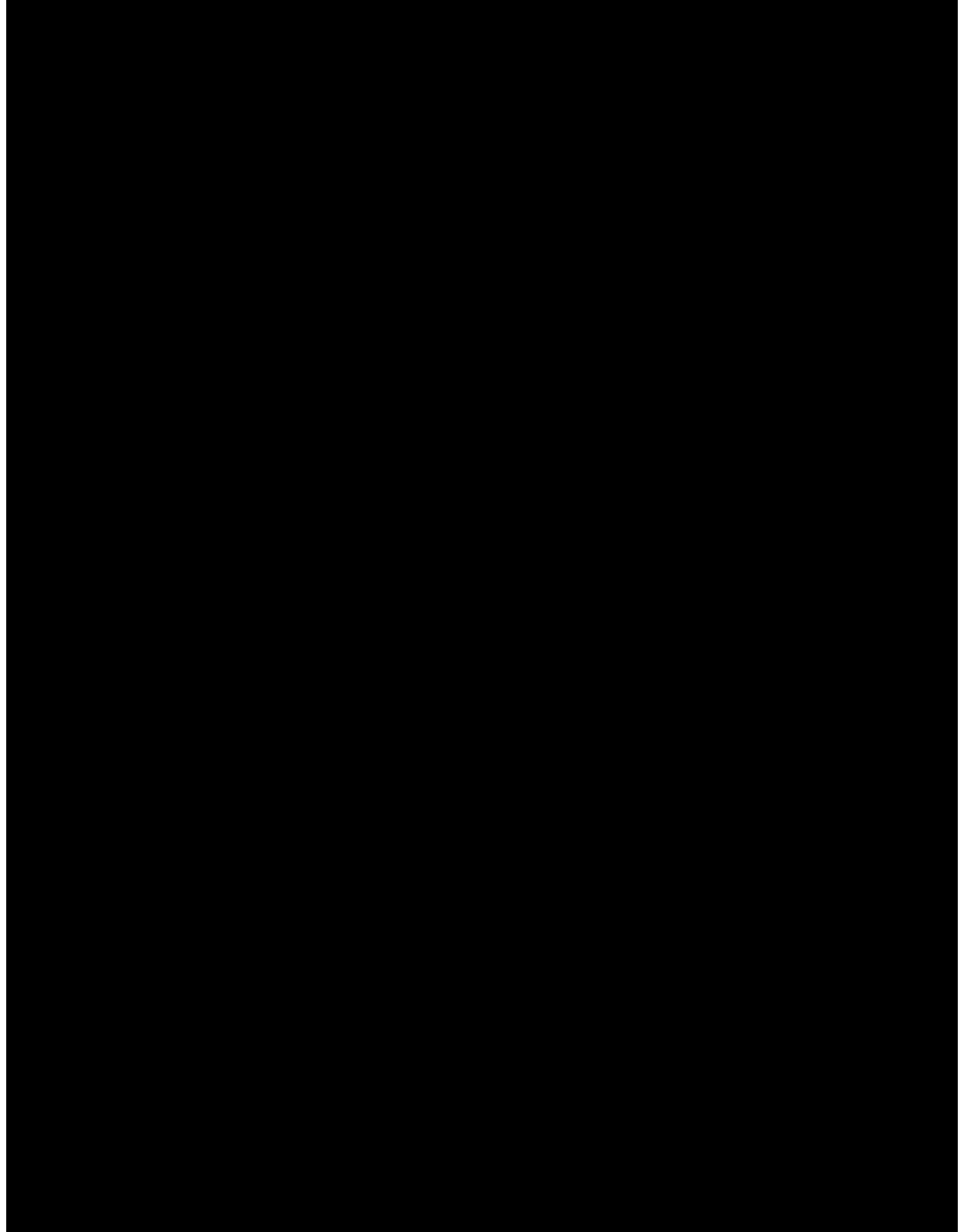
Background

Camp Edwards is an important training center for National Guard, Reserve Components, US Coast Guard, and law enforcement agencies throughout the northeastern United States. As shown in Figure 1, Camp Edwards is located on Cape Cod, which is an environmentally sensitive region that contains state threatened and endangered wildlife species, prime wildlife habitat, archeological sites, and culturally sensitive areas. Moreover, Camp Edwards sits on top of the Sagamore lens, a sole-source drinking water aquifer for Cape Cod. The northern 15,000 acres of Camp Edwards, the Reserve/Training Area, are located within the recharge area of the aquifer. Camp Edwards is committed to excellence in environmental protection, training, readiness, and management of training sites. Training facilities available at Camp Edwards include small arms ranges (SAR's), training areas, battle positions, observation posts, and maneuver roads and trails. These facilities support a variety of training activities to include small arms marksmanship. In particular, the SAR's support training and qualification in basic infantry skills with small arms weapons systems, including pistols, rifles, machine guns, and shotguns, with range location/status shown in Figure 2. The MANG seeks to constantly improve upon training practices that protect the future of the surrounding ecosystem and the aquifer, and maintain a viable ready force.

Intent of this SEIR

The intent of this SEIR filing is to satisfy the Secretary's November 9, 2006 and August 10, 2007 Certificate requirements for supplemental information, and authorize the MANG to present the remainder of the Small Arms Range Improvement Project for state permitting, as appropriate, through the EMC (on an iterative basis and in accordance with the Environmental Performance Standards (EPS's), as specific range designs, Best Management Practices (BMP's), and Operations, Maintenance and Monitoring (OM&M) plans are emplaced and where they do not exceed MEPA threshold criteria), without the requirement for further MEPA review.

Please contact the Environmental & Readiness Center at 508-968-5143 or ma-mmrapo@ng.army.mil for a copy of this document that includes maps.



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History of Environmental Impact Review

In 1986, in compliance with MEPA, the MANG filed an Environmental Notification Form (ENF) describing 58 separate projects proposed by the Massachusetts National Guard for Camp Edwards. The MEPA reference number issued at that time was 5834. In response to the ENF, a Certificate was issued, requiring the preparation of an Environmental Impact Report (EIR) and identifying the scope for that report. The EIR responding to that Certificate was never filed because of a subsequent change in the number of proposed projects.

In December 1992, an NPC was filed that reduced the number of proposed projects from 58 to 17. In October 1994, the MANG filed another NPC that further reduced the number of projects to 10: six MAARNG projects for Camp Edwards and four MAANG projects for Otis ANGB. Following these latter filings, a new Certificate was issued in December 1994 that redefined and refocused the scope of the EIR to include the MAANG projects and the cumulative effects of all activities on the Massachusetts Military Reservation (MMR). In December 1996, a Draft EIR was filed in response to the 1994 Certificate. In April 1997, reviewers found that the Draft EIR did not adequately address the issues required by the scope.

In May 1997, a new special review procedure for the proposed projects was defined in a Certificate jointly executed by the Executive Office of Environmental Affairs (EOEA) (reorganized and renamed the Executive Office of Energy and Environmental Affairs (EEA) in 2007) and the Massachusetts National Guard Headquarters. The Special Review Procedure required the establishment of a 22-member Community Working Group (CWG), which included representatives of the four local communities (Bourne, Sandwich, Mashpee, and Falmouth), the Cape Cod Commission, branches of the military stationed at the MMR, environmental and business organizations, and at-large members representing the Cape Cod public.

In August 1998, the CWG adopted its Master Plan Final Report, with technical and drafting assistance provided by the Cape Cod Commission; this document was presented to the Commonwealth that September. The CWG Master Plan divided the MMR into two primary land use zones: the Reserve and the Cantonment Area. Within the Reserve, this master plan proposed permanent protection for water supply, wildlife, and open space, with the continuation of compatible military field training activities. The Cantonment Area was identified as the appropriate location for construction of new military and civilian development projects.

Following the issuance of the CWG Master Plan, the scope for the Massachusetts National Guard's EIR was issued in January 1999. The Draft EIR was completed in August 1999, and found adequate in October 1999. This draft report included EPS's, which were created to focus the efforts of the MAARNG's environmental plans and programs. The Final EIR (FEIR) was submitted for review (with suggested refinements to the EPS's from the CWG and state agencies) on May 23, 2001 and was found adequate in a Certificate dated July 16, 2001.

The FEIR contained four proposed projects, one for the MAARNG on Camp Edwards and three for the MAANG on Otis ANGB. The proposed project for the MAARNG was construction of a Unit Training Equipment Site (UTES). The Air National Guard proposed projects were an Aircraft Control Tower, a Fire Station, and a Consolidated Services Facility.

The EPSs for the Reserve were created in committee by the CWG, state agencies, the NGB, and the Massachusetts National Guard. As outlined in the FEIR, the standards put forth in the EPS's were intended to provide a common foundation for environmental stewardship of resources within the Reserve, with a specific emphasis on protection of groundwater. Compliance with the EPS's, like compliance with other federal, state, and Department of Defense (DoD) regulations, was to be programmed as a function of the MAARNG environmental management programs.

The FEIR Certificate required the filing of an Informational Supplement with further revisions to the EPS's, an outline for the proposed Annual State of the Reservation Report, and a proposed Section 61 Finding containing all applicable mitigation commitments. On August 15, 2001, this Informational Supplement was submitted to the MEPA Office and to all individuals and agencies that had commented on the FEIR. A Notice of Availability was published in *The Environmental Monitor*.

The Special Review procedure created in May 1997 allowed for the accelerated review of certain projects and activities at the MMR, prior to the completion of the FEIR. In particular, separate MEPA review was authorized for the new 39 acre Barnstable County Correctional Facility (EEA # 11361) and for the development by the U.S. Army Corps of Engineers (USACE) of a new 3-million gallon per day regional water supply (EEA # 12277). Additionally, the July 16, 2001 Certificate was premised on the establishment of environmental oversight management and advisory bodies. With the completion of this process, the July 16, 2001, Certificate pronounced acceptance of the four National Guard projects, and deemed the master plan process complete.

On October 4, 2001, a Memorandum of Agreement (MOA) was signed establishing a management structure for the Reserve and creating the oversight structure for the Reserve as outlined in the CWG Master Plan Final Report. The MOA was signed by the Governor of Massachusetts for the Commonwealth of Massachusetts and by the Deputy Assistant Secretary of the Army (Environment, Safety & Occupational Health) for the Department of the Army (DA). Other signatories were the Secretary of EOE, NGB, the Adjutant General of the Massachusetts National Guard, the Commissioner of the Massachusetts Department of Fish and Game (DFG), the Commissioner of the Massachusetts Department of Conservation and Recreation (DCR), and the Commissioner of MassDEP.

Role of Chapter 47 and the EMC

On March 5, 2002, acting Governor Jane Swift signed legislation (Chapter 47 of the Acts of 2002) codifying into law the MOA ensuring the permanent protection of the drinking water supply and wildlife habitats in the Reserve, while allowing compatible military training. Under the law, the compatibility of training with environmental protection would be verified through independent oversight, monitoring, and evaluation. For this purpose, the legislation created the Environmental Management Commission (EMC), consisting of the Commissioner of DFG, the Commissioner of MassDEP, and the Commissioner of DCR. The EMC oversees compliance with and enforcement of the EPS's and coordinates the actions of environmental agencies of the Commonwealth in the enforcement of environmental laws and regulations within the Reserve.

Chapter 47 of the Acts of 2002 also directed that the EMC be assisted by two advisory councils. The Community Advisory Council (CAC), consisting of 15 members, assists the EMC by providing advice on issues related to the protection of the water supply and wildlife habitat within the Reserve. The Science Advisory Council (SAC), consisting of up to 9 members, assists the EMC by providing scientific and technical advice relating to the protection of the drinking water supply and wildlife habitat within the Reserve.

The legislation also established a full-time Environmental Officer (EO) for the MMR. Mr. Mark Begley, the current EO, was appointed by the EMC in December 2002. In this capacity, he provides full-time monitoring of military and civilian activities on and uses of the Reserve and the impact of those activities and uses on the water supply and wildlife habitats. Working directly for the EMC, Mr. Begley has unrestricted access to all data and information from the various environmental and management programs. He has full access to all points in the Reserve and conducts inspections at any time in order to monitor, oversee, evaluate, and report to the EMC on the environmental impact of military training and other activities. His on-site monitoring occurs prior to, during and immediately following training and other activities. Mr. Begley's monitoring activities include but are not limited to: training sites, pollution prevention, and habitat protection activities for both military and contractors in the Reserve, as well as coordinating with and consulting with the E&RC on various projects, initiatives, and issues.

Mr. Begley is located full time at the MMR and acts as a liaison between the EMC, SAC, CAC, military, general public, and various state agencies. Mr. Begley identifies and monitors ongoing issues regarding training procedures and the environment and keeps the EMC, SAC, and CAC apprised of the progress of these issues in addition to bringing issues to the E&RC for resolution. He also participates in community outreach activities with the E&RC and facilitates the EMC, SAC, and CAC public meetings under the legislation. Recently, the EMC granted Mr. Begley the authority to make approvals for a zeroing range at India range; information on this range is included as part of this SEIR.

Current Status of Projects Subject to MEPA under EEA # 5834

The Final Area-Wide FEIR filed in 2001 referenced a series of projects at MMR that were expected to advance during subsequent years. Projects envisioned at the time included: a Unit Training Equipment Site (UTES), an Air Traffic Control Tower, a Fire Station, and a Consolidated Administration Building.

Of the projects listed above, only the Fire Station project was constructed, in accordance with the requirements in the Secretary's 2001 Certificate and was transferred soon after its 2007 completion to the operational control of the Massachusetts State Fire Marshall's Office.

On February 15, 2006, the MAARNG submitted a Notice of Project Change to EEA with plans to upgrade three existing small arms firing ranges located in the Camp Edwards Training Area. The proposal was published in *The Environmental Monitor* on February 22, 2006. EEA issued a Certificate on March 24, 2006 approving the project, with conditions.

On September 15, 2006, the MAARNG initiated the multi-step process to return to firing lead ammunition at the ranges on Camp Edwards with the submission of an NPC to EEA. The proposal was published in *The Environmental Monitor* on September 26, 2006 with a 35-day public comment period that ended on October 30, 2006. A public scoping meeting was held on October 23, 2006. EEA issued a Certificate on November 9, 2006 allowing the MAARNG to proceed with the EMC approval process for using leading ammunition at two ranges (Tango and Echo) prior to completion of an SEIR in accordance with the specific conditions outlined in the Certificate. This, in turn, led to the EMC approving a change to the EPS's to incorporate specific provisions for firing lead ammunition.

Another NPC was submitted to the newly renamed Executive Office of Energy and Environmental Affairs (EEA) by the MAARNG in July 2007 requesting approval to resume firing lead ammunition on J and K ranges. This proposal was published in *The Environmental Monitor* on July 11, 2007 with a public comment period ending on July 31, 2007. EEA issued a Certificate on August 10, 2007 indicating the MAARNG could proceed to the EMC permitting process for J and K ranges prior to development of the SEIR in accordance with the specific conditions listed in this latest Certificate.

In the September 15, 2006 NPC filing, the MANG requested that the comprehensive Range Upgrade program be approved to advance to state permitting without further MEPA review. In the November 9, 2006 certificate on that NPC, which is attached to this filing as Appendix A, the Secretary stated that:

“given the location of the base over the Cape Cod sole source aquifer, and the incomplete status of baseline information, I will require supplemental information on baseline conditions, alternatives and pollution prevention plans...”

The certificate, however, also:

“allow(ed) the Tango Range (for which a STAPP bullet catcher system is proposed) and the Echo Range (for which a range of other best management practices (BMPs) are proposed) to proceed to state permitting while the supplemental information is being prepared providing that: the Lead Fate and Transport Study and remedial investigations for Tango and Echo have been completed; action levels, acceptable to the Environmental Management Commission (EMC) for lysimeter/soil pore water monitoring have been established; a final Pollution Prevention (P2) Plan for both ranges has been approved by the EMC; and range-specific operations, maintenance and

monitoring plans are completed for the ranges and approved by the SAR working group and EMC.”

The above requirements were met for the T Range in 2007, and J and K Ranges in 2008, as demonstrated by EPA’s *Limited Authorization for Lead Ammunition Training* (July 23, 2007), and *Proposed Revised Limited Authorization for Lead Ammunition Training* (October 23, 2008); and EMC’s *Environmental Management Commission’s Small Arms Range Plan Approval, Camp Edward’s Tango Range within the Upper Cape Water Supply Reserve* (July 23, 2007), and *Upper Cape Water Supply Reserve, Small Arms Range Construction Plan Approval, Camp Edward’s J and K Ranges*, (August 6, 2008). In addition, approval for S Range and I Range has also been received (Appendix B & C). The MANG has also received an advisory opinion from MEPA, December 16, 2011, that the proposed use of copper bullet ammunition at ranges did not require a Notice of Project Change (NPC). All approvals and required backup material are presented as appendices to this SEIR filing.

Camp Edwards and the Significance of the Small Arms Range Improvement Project to Massachusetts Soldiers and Airmen

The MANG has approximately 6,000 soldiers and 2,500 airmen who train at Camp Edwards annually. In addition, other military units and civilian agencies (e.g., law enforcement) train at Camp Edwards, as it remains an important training area for military personnel completing missions here at home and across the world. More specifically, it supports the many Massachusetts Army and Air National Guard personnel being deployed to combat zones in Iraq, Afghanistan, the Balkans, as well as other locations in support of the Global War on Terrorism on a frequent and regular basis.

Small arms training and qualification is a mandatory core capability for both the Army and Air National Guard soldiers and a necessary requirement for survivability and combat readiness. Live fire training is essential for force protection and military readiness as it enhances and improves the combat-related skills of personnel deploying to combat zones. The MANG needs to conduct realistic exercises that build muscle memory, familiarity, and an adequate foundation of firearms knowledge. Feedback from the Army National Guard troops deployed to combat zones reinforced the need for training realism, and in particular, the employment of all small arms weapon systems to be used in military operations. Soldier success and survival depends on a firm understanding and physical familiarization of handling and employing small arms. It is required that all Guard personnel be qualified on all of their assigned weapon systems prior to deployment.

The 17-month interim approval, provided by EPA and EMC in July 2007, for firing lead bullet ammunition on T Range, was a critical first step in protecting the lives and increasing the survivability of Massachusetts’ military personnel. In addition, the DoD and DA issued guidance reducing deployment time from 18 months down to 12 months, necessitating that each state must maximize the allotted training time it has prior to unit deployment to train core competencies, including weapons familiarization and qualification. The availability of additional small arms ranges at Camp Edwards is critical to ensuring that Massachusetts soldiers meet the small arms standards to which they must train and qualify each year.

Future Projects

The MANG recognizes and acknowledges, that projects other than the SAR-IP and the four projects previously noted in the FEIR, may be proposed at MMR in the future as they are developed and funded, and if they meet MEPA review thresholds. Military Tactics, Techniques, and Procedures (TTP) continue to evolve in response to the dynamic threat environment by providing robust training venues for troops deploying to the current theatre of operations. At this time to better meet Army doctrinal training requirements, there are several potential projects that may be proposed in the future pending the availability of funding. These projects will be presented to the EMC and MEPA for review provided they are funded and meet MEPA review thresholds. The MANG is tentatively pursuing the following in accordance with all environmental requirements:

- FY 2018: Uniform Range as an Automated Multipurpose Machine Gun Range (MPMG) that familiarizes and qualifies Soldiers with machine guns.
- FY 2018: Known Distance (KD) Range that will provide three primary objectives: fire tight shot groups at a known distance, make sight adjustments at range while experiencing the effects of wind and gravity, and marksmanship testing. Soldiers will fire at the 100, 200, and 300 meter targets.
- FY 2019: Lima Range is planned as a Modified Record Fire (MRF) Range such as the current Sierra Range. These ranges will be constructed and operated in accordance with all environmental requirements and would likely use copper ammo.

Conclusion

The MANG recognizes that it has obligations to conduct the SAR-IP and related training activities in a manner that protects the resources at Camp Edwards while complying with applicable federal, state and local environmental requirements, agreements, and orders. For the SAR-IP, the MANG has demonstrated compliance with these obligations through ongoing review and coordination with the SAR Working Group, modification to the EPSs and Administrative Order (AO) #2, reviews and approvals from EPA and from EMC for T, J, K, S and I Ranges, and the demonstrated success of the return-to-firing process at T Range. The record reflects that the MANG has successfully developed and implemented BMPs and pollution prevention techniques to effectively manage live fire training at the small arms ranges that is protective of human health and the environment (particularly groundwater) at Camp Edwards.

The MANG anticipates that this SEIR will be sufficient and respectfully requests that the Secretary certify that a return to live fire training with small arms weapons at the remaining small arms ranges at Camp Edwards, that are part of the Small Arms Range Improvement Project (or as amended), as described in the September 15, 2006 NPC, can be presented to the EMC for authorization without the need for additional MEPA review.

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Section 2. SAR Pollution Prevention (P2) Plan

As required in the Secretary's November 9, 2006 certificate, a Small Arms Range *Pollution Prevention Overview Plan* (Small Arms Range Supplement) has been developed by MANG in coordination with the members of the SAR Working Group, which includes EMC, EPA, MassDEP, the Impact Area Ground Water Study Program (IAGWSP) and the MANG, along with the public and other entities reviewing the MANG's activities at Camp Edwards. The Small Arms Range Supplement, provided with this SEIR as Appendix D, describes the historic use, configuration and management of the SAR's at MMR. The Supplement then provides an overview of an array of administrative, operational, management and design BMP's that could potentially be used on the ranges, and finally, the document contains a preliminary review of BMP's that could be employed on eight different small arms ranges at Camp Edwards.

In addition to the Pollution Prevention Overview Plan mentioned above, range specific Operations, Maintenance, and Monitoring (OM&M) plans have been developed for T, J and K as required. The plans for T, J, and K have been reviewed and approved by the EPA and the EMC. These range specific plans describe how the ranges will be managed utilizing the STAPP bullet containment systems, groundwater monitoring wells, lysimeters and other specific administrative, operational, management and structural BMP's that have now been placed at these ranges. The OM&M plans, where practicable, focus on maximization of bullet recovery and recycling; prevention or minimization of bullet fragmentation, ricochets, and leaching of contaminants to groundwater; monitoring requirements; and action thresholds. They identify BMP's that enable small arms training at Camp Edwards in a manner that meets current and future training needs and employs maximum feasible use of pollution prevention to protect the Upper Cape Water Supply Reserve. Copies of the T, J and K Range OM&M plans are presented in Appendix E.

To maximize bullet recovery, the STAPP™ bullet containment system is a granular rubber bullet containment system that can stop the projectiles and was proposed for use on T, J & K Ranges, as discussed in the OM&M plans. It has a total capacity of 600,000 and 900,000 rounds for a 15 lane system and projectile removal would be required after approximately three training years (or 500,000 rounds, whichever is first). Bullets entering the system through the "self-closing" membrane and into the granular rubber are captured safely as discussed in the OM&M plans. Rounds can be fired from nearly any distance with limited ricochet or back splatter.

The STAPP™ system employs several features that collectively sever pathways of metals migration, as discussed in the OM&M plans. The non-permeable liner prevents bullets in the granular rubber from interacting with berm soil. Additionally, the liner collects water that has passed through perforations in the membrane cover and directs it toward the water collection piping instead of allowing it to percolate through soil and possibly into groundwater. Groundwater wells enable the monitoring of potential impacts by capturing groundwater flow, and lysimeters enable the monitoring of potential munitions constituents in soil-pore water, as discussed in the OM&M plans. Action levels for lead, copper, antimony, and nitroglycerine are identified for the groundwater, soil-pore, and surface soil levels to trigger action if one of the thresholds is exceeded during monitoring. Lastly, thresholds for maintaining the bullet containment system are described in the plans, specifically for holes in the cover, failed seams, pooling on the surface, and other inspection criteria.

Since the approval of T, J & K Ranges, and the development of OM&M plans for each, two additional ranges (S & I) have been approved for live fire using the M855A1, 5.56mm, Copper Ball Ammunition (non-lead ammunition). The M855A1 Enhanced Performance Round has recently become available for use by soldiers for small arms training at Camp Edwards for one caliber of small arms weapons. The bullet (projectile) utilizes a copper core, steel penetrator and is seated in a brass jacket. The projectile is similar to the current lead based projectile, with the exception of the copper slug, steel penetrator, and slightly modified propellant. The new projectile has both performance benefits (greater consistency, longer distances) and environmental benefits, as compared to the existing M855 Round (lead bullet), currently approved for use on the SAR. According to the Life Cycle Environmental Assessment (LCEA)

(28 April, 2010) performed on the projectile for the Department of the Army Office of the Project Manager-Maneuver Ammunition Systems (OPM-MAS), there are two main sources of potential impact from the round at an outdoor range: combustion products and the slug. The combustion products will quickly disperse at outdoor ranges and consist mainly of naturally abundant atmospheric compounds. Only trace amounts of antimony, bismuth, particulate matter and barium compounds are emitted. The copper slug will have little to no impact to surface and groundwater at outdoor ranges.

S Range is a Modified Record Fire (MRF) range used to train and test individual soldiers on the skills necessary to identify, engage, and defeat stationary infantry targets for day/night qualification requirements with the M16 and M4 rifles. S Range has been approved to return to live fire with the use of the M855A1 ammunition by the EMC and MEPA. The design of the range is fundamentally different from T, J & K Ranges, which are all Rifle/Machine Gun Zero Ranges. There are 9 stationary, pop-up targets in each firing line. The targets are located at 50, 75, 100, 150, 175, 200, 250, and 300 meters. There are two targets at the 50 meter distance and one each at the other distances. Instead of a STAPP bullet containment system, S Range utilizes complimentary BMP's, including individual backstop berms, and a continuous earthen backstop berm that spans the entire width of the range at 320 meters. Range monitoring and maintenance activities are similar in scope to the other 3 operational ranges, and are described in the OM&M plan.

I Range, which is currently under construction, will be a Zeroing Range to be used in conjunction with Sierra Range. The original plan called for modifying the existing Tango Range to support the use of the M855A1 Copper Round. The plan called for the removal of the existing STAPP system which was designed to capture the M855 lead based round. The STAPP System would not be able to contain the M855A1 round within the system because of the enhanced ballistics capabilities of the copper based round. In analyzing the problem, the MAARNG discovered the new M855A1 round had a wider Safety Distance Zone (SDZ) than the lead based round. This meant that when soldiers were firing on Sierra they could not fire on Tango because there could be a potential of ricochets going onto Tango range. Soldiers would have to wait to fire on Tango until the firing on Sierra was completed.

The current I Range is an existing 25m range with 27 firing points. This range was last used for rifle training using tungsten rounds from 1999 to 2006. The use of tungsten rounds was stopped in 2006. Tungsten soils were removed from this range in 2006 and later transported to an approved landfill. The MAARNG is reconstructing this range to be able to use the M855A1, 5.56mm, Copper Ball Ammunition. This would include vegetation removal, backstop berm reconstruction, tank target track and timber removal, and all associated structural requirements for using copper ammunition. Range monitoring and maintenance activities would be similar in scope to the other 4 operational ranges, as described in the OM&M plans.

Section 3. Lead Fate and Transport Study

As required by the Secretary in the November 9, 2006 certificate, the report entitled "*Environmental Assessment of Lead at Camp Edwards, Massachusetts Small Arms Ranges, 2007*" (commonly called "Lead Fate and Transport Study") is provided in Appendix F to this SEIR. The report, dated May 9, 2007 was reviewed by the MANG, EPA, MassDEP, EMC and IAGWSP prior to its release.

The *Environmental Assessment of Lead at Camp Edwards, Massachusetts Small Arms Range, 2007* notes that, "The principal conclusions are corrosion, dissolution processes are sufficiently slow, and mechanisms for attenuation, such as precipitation and adsorption, sufficiently robust, that lead has not migrated to groundwater. This review also indicates quantification of soil sorptive capacity cannot be accomplished in any meaningful way.... The technical literature, however, clearly describes dangers to humans and wildlife exposed to lead. Although lead mobility is limited in the Camp Edwards environment, there is not adequate data to date to quantify the amount of lead that can be safely deposited

in the environment. It is important, therefore, to minimize environmental exposure through the application of best management practices.”¹ By implementing feasible pollution prevention technologies as recommended in the study (as discussed in the Overview and Range Specific OM&M plans), the MANG is being proactive about protecting human health and the environment, while supporting required small arms training. Where lead is approved for use, appropriate BMP’s and bullet capture systems prevent lead from entering the environment. In addition, the MANG is utilizing non-lead ammunition, such as the copper based Enhanced Performance Round (EPR), which has been approved for use on S & I Ranges.

Section 4. Soil and Groundwater Investigation Reports

Extensive soil and groundwater investigations have been conducted at MMR over the past decade, including specific investigations focused on T, J, K, and S Ranges, which are included in Appendix G, and summarized below.

For T Range, the investigations noted, “Small arms firing at T Range has lead to the deposition of detectable levels of several analytes on the soil. These include propellants near the firing line that are likely attributable to deposition of propellants from the bullet cartridges and lead deposited on the range floor near the firing line and lesser concentrations down range. ... The human health risk assessment indicates that potential non-carcinogenic effects are not expected for any of the likely current site receptors included in the evaluation. Similarly, the human health risk assessment also indicates that potential excess lifetime cancer risks are less than or within USEPA’s allowable risk range of 1×10^{-6} to 1×10^{-4} for all current or future receptors included in the risk assessment and fall within the allowable risk range for future hypothetical residents (between 1.9×10^{-6} and 2.3×10^{-6}). Future residential development is unlikely to occur. Thus, the risk assessment demonstrates that for the most likely and expected current and future uses, the T Range does not pose an unacceptable cancer or non-cancer risk.”²

For J Range, the investigations noted “The historical firing of small arms at the J Range has lead to the deposition of detectable levels of several analytes on the soil. These include propellants near the Firing Line that are likely attributable to the deposition of propellants from bullet cartridges and lead deposited on the Range Floor near the Firing Line with lesser concentrations downrange. ...based on an evaluation of the sampling data and the need to meet construction schedules, a decision was made by the MAARNG to remove the near-surface soil from J Range. This removal was performed to reduce the concentration of nitroglycerin in soil to below 5 mg/Kg, the cleanup level previously established for the Tango Range. ...no soil contaminants remaining at the J Range are indicated to pose a potential near or long-term threat to groundwater relative to a conservative residential scenario. Consequently, no further assessment of risks with respect to these constituents in soil was required relative to the objectives of this risk assessment. In summary, this risk assessment identified no COPCs (chemical or contaminant of possible concern) and no indicated direct or indirect risks associated with exposure to the local groundwater.”³

For K Range, the investigations noted “The historical firing of small arms at the K Range has lead to the deposition of detectable levels of several analytes on the soil. These include propellants near the Firing Lines that are likely attributable to the deposition of propellants from bullet cartridges. Metals associated with projectile fragments are also detected with the highest concentrations of lead reported in certain downrange areas, including the Behind Target, Berm Face, and Behind Berm areas. ...based on an evaluation of the sampling data and the need to meet construction schedules, a decision was made by MAARNG to remove the near-surface soil that contained the nitroglycerin (and 2,4-DNT). This removal

¹ Clausen, Jay L, et al. 2007. *Environmental Assessment of Lead at Camp Edwards, Massachusetts, Small Arms Ranges*. Section 5, Conclusions.

² U.S. Army Corp of Engineers, June 2007, *DRAFT FINAL T Range Soil & Groundwater Investigation Report*, Section 6 – Conclusions

³ Tetra Tech, Inc., October 2008, *DRAFT FINAL Juliet (J) Range Soil and Groundwater Investigation Report*, Section 6 – Conclusions

was performed to reduce the concentration of nitroglycerin in soil to below 5 mg/Kg, the cleanup level previously established for Tango Range. ...no soil contaminants remaining at K Range are indicated to pose a potential near or long-term threat to groundwater relative to a conservative residential scenario. Consequently, no further assessment of risks with respect to these constituents in soil was required relative to the objectives of this risk assessment. In summary, this risk assessment identified no COPCs and no indicated direct or indirect risks associated with exposure to the local groundwater.”⁴

For S range, the risk assessment found that there are no contaminants of concern, no risk to health, and no anticipated impact to groundwater. The investigation and its findings are summarized in the IAGWSP’s recent report – Final Sierra Range Soil and Groundwater Investigation Report (March 2012). The report concluded that “Based upon the findings of the investigation, no further investigation or any remedial actions are necessary or warranted at the Sierra Range.” This finding is consistent with the conclusions of the investigations conducted at three other small arms ranges at MMR (T, J, & K Ranges). No remediation or response action was required at any of the ranges before construction or use. The OM&M Plan each contain a chapter focusing on range operations and maintenance, which includes protocol for environmental sampling and analysis including groundwater, soil-pore water, and surface water at each range.

For I range, a soil sampling plan has been developed and initial soil sampling results have been recorded. Based on the initial results, the IAGWSP proposed to remove the soil from one area at I Range that exceeded 35 mg/Kg for tungsten. After the soil is removed, a 10-point composite sample will be collected from the surface to 3-inches deep and screened for tungsten. Excavation will continue, if necessary, in 6-inch lifts until the action level of 35 mg/Kg is reached. Documentation of the work conducted at India Range will be provided in the upcoming Draft Small Arms Ranges Investigation Report to be submitted later this year.

Section 5. Ammunition Alternatives

Context: As noted in the introduction to this SEIR, the MANG is returning to firing lead bullet ammunition to train soldiers and airmen to current military standards in a manner that is protective of human health and the environment. To fully meet training requirements for small arms weapons, a full suite of ranges is required upon which soldiers and airmen can practice small arms familiarization, zeroing sights, weapons qualification, and small unit tactics. Military personnel must practice these skills in realistic training scenarios because through these practice scenarios, personnel become familiar with all the sensations, the sound, smell, and feel, of the weaponry and ammunition encountered in combat situations. The Army specifies certain range types to conduct these tasks for different weapon systems and also specifies the number of repetitions needed to become proficient in each task. The number and variety of these ranges should enable a standard level of soldier throughput and the training exercises performed on the ranges should be completed within the bounds of a prescribed number of training days. Finally, these training ranges should support small arms training while protecting the environment for range users and the surrounding community.

Camp Edwards remains an integral part of Massachusetts National Guard soldier training and small arms weapons training conducted at Camp Edwards currently includes: weapons simulator training, non-lead bullet ammunition use (copper, paint ball, blanks, laser and plastic), and limited lead bullet ammunition use. While the intent of the Small Arms Range Improvement Projects are to upgrade existing small arms ranges so they can be used for small arms weapons training with lead bullet ammunition, it should be recognized that training of soldiers at Camp Edwards will continue to utilize simulator training and non-lead bullet ammunition (copper, paint ball, blank, laser and plastic) for small arms familiarization exercises to the extent practicable.

⁴ Tetra Tech, Inc., October 2008, *DRAFT FINAL Kilo (K) Range Soil and Groundwater Investigation Report*, Section 6 – Conclusions

Simulators: Small arms weapons training simulators provide realistic, hands-on, performance-oriented training environments. Existing simulators include the Fire Support Combined Arms Tactical Trainer, the Engagement Skills Trainer (EST2000), the Fire Arms Training System (FATS), the Vehicle Convoy Operations Trainer, etc. These are computer-based virtual reality training devices that enhance training. They include small arms and field artillery simulators and simulations. Simulation in itself is an excellent, cost-effective training “tool”; however, simulation cannot replace the requirement for soldiers to train collectively on the ground to meet the required standard. Realism in training cannot be simulated.

Plastic: Plastic ammunition does not have the ballistic properties (e.g., muzzle velocity, projectile trajectory, and point of impact at distance) or realism associated with the lead bullet ammunition used in combat situations. Marksmanship proficiency cannot be attained, maintained, and demonstrated (during weapons qualification) using plastic ammunition. Weapons must be modified (i.e., the use of a different bolt in the firing mechanism) to train with plastic ammunition. Military personnel engaging targets with plastic ammunition for qualification do not experience conditions that are sufficiently representative of lead bullet ammunition used in combat situations.

Simunitions: Although they allow military personnel to practice maneuver exercises and force-on-force exercises, blank ammunition and paint ball (a type of simunitions) do not enable military personnel to qualify to military standard with the assigned weapon. Blanks do not fire a projectile to practice and demonstrate marksmanship. Paint ball projectiles do not have the ballistic properties associated with lead bullet ammunition.

Copper: At the time of the Small Arms Range (SAR) Improvement Project NPC (September 15, 2006), the US Army (Army) ammunition inventory did not stock copper bullet ammunition (or other alternative alloy bullets), or most calibers of steel bullet ammunition because they had not met requirements for ballistics, safety, and capability to train a soldier to mission standard. The Army conducts exhaustive testing to accept bullets of alternative compositions before being procured and stocked in the Army ammunition inventory. This process begins with the establishment of an Army-wide requirement for the alternative ammunition. If this requirement is approved, the Army tests the alternative ammunition for ballistic performance, safety of use, insensitivity to shock, and dramatic changes in temperature.

The M855A1 Enhanced Performance Round has recently become available for use by soldiers for small arms training at Camp Edwards for one caliber of small arms weapons. The bullet (projectile) utilizes a copper core, steel penetrator and is seated in a brass jacket. The projectile is similar to the current lead-based projectile, with the exception of the copper slug, steel penetrator, and slightly modified propellant. The new projectile has both performance benefits (greater consistency, longer distances) and environmental benefits, as compared to the existing M855 Round (lead bullet), currently approved for use on the SAR. According to the Life Cycle Environmental Assessment (LCEA) (28 April, 2010) performed on the projectile for the Department of the Army Office of the Project Manager-Maneuver Ammunition Systems (OPM-MAS), there are two main sources of potential impact from the round at an outdoor range: combustion products and the slug. The combustion products will quickly disperse at outdoor ranges and consist mainly of naturally abundant atmospheric compounds. Only trace amounts of antimony, bismuth, particulate matter and barium compounds are emitted. The copper slug will have little to no impact to surface and groundwater at outdoor ranges. According to the report (located in Appendix H):

“When testing/training is conducted on outdoor test/training ranges, M855A1 projectiles and projectile fragments enter the test/training range impact area and berm soils. Copper, in the form of projectile jackets of various other ammunition types, has had a long history of use at ammunition testing/training ranges. Thus, the use of copper for the slug of the M855A1 will have little to no additional impact to surface and ground water at these facilities. Furthermore, the use of lead/antimony projectiles at test ranges will be reduced as the M855A1 gradually replaces the M855.”

Copper has a long history of use in many applications, including copper piping for domestic water service, and copper jackets have encase the lead bullet ammunition used at the Camp Edwards SAR for

over the past 72 years with no known impact to ground water observed. Where appropriate, the use of copper bullet ammunition instead of lead bullet ammunition would facilitate meeting the EPSs and further minimize potential impacts to the environment within the Reserve/Training Area. The MANG will begin shifting away from lead bullet ammunition and toward copper bullet ammunition as the preferred option for future training. The MANG has received approval from EPA and EMC to begin using the copper round on S Range and I Range. The MANG has also received an advisory opinion from MEPA, December 16, 2011, that the proposed use of copper bullet ammunition at ranges did not require a Notice of Project Change (NPC).

Other Alternatives: The only steel bullet stocked in the Army ammunition inventory is a .50 caliber armor piercing round that has different ballistic characteristics and a much greater effective range than lead-bullet ammunition. These .50 caliber steel bullets perform differently and require a much greater surface danger zone⁵ than lead-bullet ammunition.

The MANG can only authorize the purchase of ammunition that is available in the DoD inventory. In February 2006, the DoD issued a directive for “Nonstandard Ammunition and Explosives”:

“To ensure the safety of the US military and civilian personnel, contractor, and the general public, the Army centrally procures ammunition and explosives by implementing safety and procedural safeguards to assure that ammunition and explosives meet strict operational, safety, and quality criteria. Local procurement of nonstandard ammunition and explosives circumvents controls potentially exposing US military and civilian personnel, contractors, or members of the public to injury or death.”

The Army, as delegated by the DoD, is the single manager for conventional ammunition, and procures ammunition for the Armed Services. All ammunition for use by the Army (and its components) in government-procured weapons must be bought with congressionally appropriated funds from the Procurement of Ammunition, Army account. Local purchase authorization of non-standard ammunition exists and has a formal process that must be followed. This process includes the requirement for local commanders to **assume all liability** for any safety issues associated with ammunition that has not been safety tested, certified, material released, and approved for use. The Army cannot, and will not, assume any liability for any accidents incurred due to any Department official unlawfully authorizing the use of non-military commercial ammunition.

Section 6. Public Involvement

The MANG has performed extensive public outreach regarding the SAR-IP and the proposed return to live fire training utilizing lead bullet ammunition at Camp Edwards. Outreach activities to date include close to 80 public meetings with briefings, newsletters, status updates, and opportunities for the public to visit and ask questions about the project during multiple different SAR tours. In addition, the Massachusetts National Guard Environmental and Readiness Center (E&RC) located at Camp Edwards, maintains up-to-date information about the program on its website and also responds to inquiries about the project from the public.

The EPA held a public meeting during their public comment period for each Scope of Work Modification Request received for each range, prior to finalizing their ruling on each request. For T Range, EPA’s public meeting was held on June 20, 2007 and for J and K Ranges, the public meeting was held on November 6, 2008, partway through EPA’s 30-day public comment period that commenced on October 24 and continued thru November 24, 2008.

⁵ A surface danger zone is defined as the ground and airspace designated within the training complex (to include associated safety areas) for vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapon systems to include ammunition, explosives and demolition explosives.

Likewise, the EMC and its advisory groups, the Science Advisory Council (SAC) and the Community Advisory Council (CAC), each have held a series of public meeting where the merits of the modifications to EPSs were discussed, and then approved along with the T Range request on July 11, 2007. In the spring of 2008, as part of the EMC's J and K Range approval process, the CAC, SAC and EMC at their respective public meetings on April 16, May 15 and May 28, 2008, supported the use of the STAPP bullet containment systems proposed for J and K Ranges. After a series of status briefings to the CAC, SAC and EMC in the spring 2007, the MANG distributed the following series of documents for public review and comment:

- J Range Best Management Practice: OM&M plan, (also includes the K Range OM&M plan), public comment period May 12 thru 26, 2008
- J and K Range Soil and Groundwater Draft Investigation Report, public comment period May 28 thru June 12, 2008
- T Range Interim Pilot Program / Lessons Learned Report, public comment period May 28 thru June 12, 2008

The E&RC also publishes an Annual State of the Reservation Report, which documents activities at Camp Edwards for the most recent training year and is available to the public electronically or by mail. Attached to this SEIR in Appendix I, are a series of recent fact sheets and status updates prepared by the E&RC regarding the Small Arms Range Improvements Project which provides a sample of public involvement activities to date. The MANG Community Involvement Program is also provided in Appendix I.

Section 7. Regulatory Review

The SAR-IP has been the subject of significant regulatory oversight and there has been over 20 SAR Working Group coordination meetings with representatives of the EMC, EPA, MassDEP, AEC, NGB, and MANG since the return to live fire training with lead bullet ammunition was first proposed by the MANG in early 2006.

As noted in MANG's NPC filing in July 2007, the E Range upgrade has been on hold, and remains so at the time of this filing in part because the design challenges associated with a "pop-up" target range are qualitatively different from those associated with fixed, 25 meter backstop berm ranges such as the T, J and K Ranges. Among the "lessons learned" by the MANG through its initial efforts to design an effective system for managing lead bullets at E Range is the insight that designing effective structural pollution prevention at some ranges at Camp Edwards will require creative thinking and could take time. As a result, the MANG has initially prioritized utilizing its available resources to place the STAPP system on multiple backstop berm ranges so that its ability to train Massachusetts soldiers at Camp Edwards is enhanced as efficiently as possible. The MANG does intend to proceed with E Range as a component of the Small Arms Range Improvement Project, but currently anticipates that it will first focus on several other ranges such as the S Range and I Range.

A draft and final version of Environmental Assessment for the Small Arms Range Improvement Project was submitted to the members of the SAR Working Group and public for review and comment. After the last review iteration and incorporation of comments, the document was finalized and issued on June 19, 2007.

Section 8. Mitigation and Section 61 Findings

Status of Prior Section 61 Findings

The Final Area-Wide FEIR, filed in 2001, referenced a series of projects at MMR that were expected to advance during subsequent years. Projects envisioned at the time included: a Unit Training Equipment Site (UTES), an Air Traffic Control Tower, a Fire Station, and a Consolidated Administration Building.

Of the projects listed above, only the Fire Station project was constructed, in accordance with the requirements in the Secretary's 2001 Certificate and was transferred soon after its 2007 completion to the operational control of the Massachusetts State Fire Marshall's Office.

The UTES project is still planned at this time, with funding anticipated in approximately 2013. When this project does advance, it is expected that the facility will be located in approximately the same geographical area.

The Air Traffic Control Tower project is no longer planned, as the 102nd Intelligence Wing (formerly the 102nd Fighter Wing) has been moved from MMR and has been determined that this project is no longer realistic.

Finally, the Consolidated Administration Building project is still planned, but has not been funded at this time. When it is funded in the future, it is envisioned that the building will be located within the MMR Cantonment Area, at a location where existing buildings and parking lots are now located and are scheduled to be demolished.

Proposed Section 61 Findings

The Massachusetts National Guard has submitted revised Section 61 findings for the Massachusetts Military Reservation Final Area-Wide Environmental Impact Report (EEA # 5834). The revised Section 61 Findings document was prepared in accordance with the Secretary's Certificate on the Notice of Project Change (NPC) for return to live fire small arms training at Camp Edwards utilizing lead bullet ammunition. This document supercedes the previous Section 61 Finding submitted to MEPA on February 4, 2003.

The document was modified relative to the original Section 61 Findings document in two primary ways:

- Section A (Findings) has been modified to reflect submission and certification of the recent NPC.
- Section B (Proposed Projects and Activities) has been modified in the "Limitations on Army Field Training Activities" section. Paragraph 2 of this section, which in the 2003 version read:

"In addition, live weapon (small arms) fire is not allowed outside of established ranges and cannot be performed anywhere with lead based ammunition. This excludes blank ammunition used in designated areas outside of the ranges."

has been modified to read:

"In addition, live weapon (small arms) fire is not allowed outside of the established ranges. This excludes blank ammunition used in designated areas outside of the ranges. Use of lead-based small arms ammunition is not prohibited, but is subject to approval by the Massachusetts Environmental Management Commission (EMC), on a range-by-range basis and with implementation of EMC-coordinated design and operational best management practices."

The text of the document is otherwise fundamentally unchanged, with several sections revised to provide up-to-date information. A copy of the revised Section 61 Findings document is provided in Appendix J.

Mitigation and Funding

As documented in EPA's: *Limited Authorization for Lead Ammunition Training* (July 23, 2007), and *Proposed Revised Limited Authorization for Lead Ammunition Training* (October 23, 2008); and EMC's *Environmental Management Commission's Small Arms Range Plan Approval, Camp Edward's Tango Range within the Upper Cape Water Supply Reserve* (July 23, 2007), and *Upper Cape Water Supply*

Reserve, Small Arms Range Construction Plan Approval, Camp Edward's J and K Ranges, (August 6, 2008), the MANG has funded and received regulatory concurrence with the extensive BMP's that were implemented for T, J and K Ranges. In addition, The MANG has requested sufficient funds in its annual operations and maintenance budget to sustain proper operation and maintenance of the STAPP systems at T, J and K Ranges, as identified in each range's respective OM&M Plan.

Section 9. Lessons Learned

In the August 10, 2007 Certificate on the J and K Range Notice of Project Change, EEA required the MANG to provide a summary of lessons learned on T Range based on its observations and use of the STAPP system. In a similar manner, EPA in its *Limited Authorization for Lead Ammunition Training* (July 23, 2007), required the MANG to report on the results of the 17 month pilot program established for T Range. To meet these requirements and additional reporting requirements requested by EPA for the J and K Range approval process, the MANG produced the report, *Tango Range: Interim Pilot Program/Lessons Learned*, May 12, 2008.

The report documents many of the "lessons learned" that were incorporated in the revised T Range OM&M plan to clarify training activities while improving the level of monitoring on the range. The revised EPSs (11 July 2007) also require the MANG to develop plans that identify how a small arms range will be managed, as well as re-built with a containment system to ensure protection of the environment. The report discusses potential considerations regarding the berm construction and STAPP installation plans for J and K Ranges, based upon actual experience at T Range, including the observations noted during the building of the berm and STAPP on T Range, and the glue and seam issues when the system was rebuilt in July 2007. A copy of the report is included in Appendix K.

Section 10. Comments

The following comments were submitted in response to the September 15, 2006 NPC (Appendix L). Each comment has been addressed and the responses are indicated in the following section.

9.1 Response to Comments

EPA MMR Team Leader Lynne A. Jennings, October 30, 2006:

1. *Comment*: "...the timeline presented in the NPC does not include all of the critical tasks as required by EPA's orders..."

Response: The timeline presented in the NPC from July 9, 2007 was a preliminary, conceptual schedule that has been superseded by the fully detailed schedule presented in Appendix J. The detailed schedule presented in Appendix J was developed in consultation with EPA, MassDEP, the EMC, and other participating agencies and contains the critical tasks as required by EPA's orders.

2. *Comment*: "The investigation of the ranges that are proposed for use with lead must be completed. The investigation must include the collection of both soil and groundwater data to fully characterize the extent of contamination at these ranges. The results of the investigation must be submitted in a Remedial Investigation (RI) Report which includes a risk assessment. This report must be reviewed and approved by EPA. Currently, EPA awaits the submission of these reports and it is our understanding that draft reports will be submitted to EPA for review in December 2006."

Response: The required investigations have been completed and are presented as attachments to this SEIR, Appendix G.

3. *Comment*: "If the RI Report concludes that contaminants are present at levels that pose an unacceptable risk to human health or the environment, including the sole source aquifer, a Feasibility Study must be developed and response actions must be completed. The resumption of

training can not interfere with the implementation of response actions. This report and any activities must be reviewed and approved by EPA.”

Response: The reports were submitted to EPA and are attached in Appendix G.

4. *Comment:* “The MANG has hired the US Geological Survey (USGS) and the Cold Regions Research and Engineering Lab (CRREL) to conduct a Lead Fate and Transport Study. The results of this study must be reviewed and approved by EPA. It is our understanding that a draft report will be submitted to EPA for review in December 2006.”

Response: The Lead Fate and Transport Study (*Environmental Assessment of Lead at Camp Edwards, Massachusetts Small Arms Range, 2007*) was completed and submitted to EPA and recognized in EPA’s Limited Authorization for Lead Ammunition Training, July 23, 2007.

5. *Comment:* “After the completion of the investigation and cleanup, a pollution prevention plan must be developed and submitted to EPA for review and approval. The pollution prevention plan must include an evaluation of the pollution prevention technologies available for a particular range and demonstrate maximum feasible use of these technologies. Currently, a draft Pollution Prevention Plan has been submitted to EPA for review. We have initiated our review of this plan; however, this plan can not be fully evaluated by EPA until after the studies and cleanup actions have been completed.”

Response: The *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan*, and related studies and clean up actions were completed, submitted and recognized in EPA’s Limited Authorization for Lead Ammunition Training, July 23, 2007.

6. *Comment:* “After the completion of the studies and approval of the pollution prevention measures by EPA, the Administrative Orders must be modified to eliminate the prohibition on the use of lead-ammunition.”

Response: Administrative Order #2 was modified in EPA’s Limited Authorization for Lead Ammunition Training, July 23, 2007.

7. *Comment:* “Throughout the steps above, the public needs to be informed of the results of each of these steps and provided an opportunity to comment.”

Response: Public information and opportunities to comment have continuously been provided throughout the Small Arms Range Improvement Project and will continue to be provided. The Public Involvement Documents are attached in Appendix I.

State Senator Robert A. O’Leary, November 1, 2006:

8. *Comment:* “A thorough review is in order before a change is made...”

Response: Comment acknowledged. Note that a thorough review including oversight by the NGB, EPA, the MassDEP, EMC, and the EMC’s advisory councils CAC and SAC has continued throughout the Small Arms Range Improvement Project.

9. *Comment:* “...it would be appropriate to certify the Notice of Project Change as adequate review under MEPA as long as that certification makes it clear that all of the proposed steps are to be covered in the overall review of the proposal, so that there is adequate information and public participation to ensure that the Environmental Management Commission can make an informed decision.”

Response: All aspects of the Small Arms Range Improvement Project have been subject to thorough review by both the public and regulatory agencies, and adequate information and public participation has been available to ensure that the Environmental Management Commission can

make informed decisions about the project. The Public Involvement Documents are attached in Appendix I.

10. *Comment:* “The Guard should present a plan for the operation, maintenance, and monitoring of the ranges where lead is to be fired, and an effective process should be set up to address how future changes to both the type of ammunition used and appropriate mitigation would be handled. The entire review should be completed before any firing of ammunition begins.”

Response: The *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan* has been prepared, reviewed and approved by EPA and EMC, and is attached in Appendix E.

Massachusetts Department of Environmental Protection, Leonard Pinaud, October 30, 2006:

11. *Comment:* “Performance of a soil and groundwater investigation and the submittal of an investigation report. In addition, a plan for remediation which may be necessary at each range proposed for returning to the use of lead ammunition should also be submitted.”

Response: The required investigations have been completed and are presented as attachments to this SEIR, Appendix G.

12. *Comment:* “Submission of the MANG’s lead fate and transport study to MassDEP, EMC and EPA for review (is required.)”

Response: The Lead Fate and Transport Study (*Environmental Assessment of Lead at Camp Edwards, Massachusetts Small Arms Range, 2007*) was completed and submitted to EPA and incorporated in the EPA’s Limited Authorization for Lead Ammunition Training, July 23, 2007.

13. *Comment:* “A Pollution Prevention Plan for each range proposed for returning to the use of lead ammunition that:

- a. Maximizes bullet recovery and recycling;
- b. Prevents/minimizes bullet fragmentation and ricochets;
- c. Prevents/minimizes the leaching of range associated metals and other contaminants to the groundwater;
- d. Includes appropriate monitoring requirements, such as soil, groundwater and lysimeter pore water monitoring, and action levels that will trigger operational or design changes.”

Response: Each of these requirements, a-d, are described in the *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan*, in Appendix E.

14. *Comment:* “Development of a public involvement plan to adequately inform the public concerning the return to the use of lead, the pollution prevention plan, and other issues related to these changes.”

Response: A public involvement plan was implemented as part of the Small Arms Range Improvement Project. Over 45 public meetings have been held to date and a series of fact sheets, status updates, and public briefings have been provided as shown in Appendix I.

15. *Comment:* “...the proponent is advised that, if oil and/or hazardous materials not previously reported to MassDEP are identified during the implementation of this project, notification pursuant to the MCP must be made to MassDEP, if necessary.”

Response: Comment acknowledged.

Massachusetts Environmental Management Commission, Executive Director Mark Begley, October 30, 2006:

16. *Comment:* "...the change proposed in the NPC appears to be a reasonable direction for both the Upper Cape Water Supply Reserve and the Mass Guard in terms of environmental protection and compatible military training."

Response: Comment acknowledged.

17. *Comment:* "As part of the overall Pollution Prevention strategy, a range-specific operation, maintenance, and monitoring plan must be developed for each small arms range. Such a plan will help assure that high quality pollution prevention systems are selected and built with measures of performance in mind, and that they are operated in a manner that does not allow the systems to deteriorate to a level that could potentially allow contamination of the resources in the Reserve."

Response: The *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan* has been prepared, reviewed and approved by EPA and EMC, and is attached in Appendix E.

18. *Comment:* "A requirement to establish action levels, acceptable to the EMC, for the lysimeter/soil pore water monitoring. The action levels will trigger alternative designs, operations or procedures on the applicable range."

Response: Action levels are described in the *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan*, in Appendix E.

19. *Comment:* "A requirement for detailed annual updates on range operations and pollution prevention methods, monitoring, and alternatives in the Annual State of the Reservation Report."

Response: An status update on T Range was included in the Annual State of the Reservation Report, Training Year 2007.

20. *Comment:* "A requirement to work with the EMC and its Advisory Councils and other stakeholders to develop an enforceable Environmental Performance Standard for management of the small arms ranges that will be as protective as the current Environmental Performance Standards that prohibit the use of lead ammunition."

Response: New Environmental Performance Standards were developed and approved by the EMC as part of the T Range EMC approval process.

21. *Comment:* "A recommendation for the Mass Guard to hold an informational meeting for the general public to provide an update on the pollution prevention plan and other relevant aspects of the project prior to implementation of the proposed change."

Response: A public involvement plan was implemented as part of the Small Arms Range Improvement Project via the distribution of a series of fact sheets, status updates, and public meetings as shown in Appendix I.

22. *Comment:* "Development of a range-specific operation, maintenance, and monitoring plan for each small arms range."

Response: The *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan* has been prepared, reviewed and approved by EPA and EMC, and is attached in Appendix E.

23. *Comment:* "A prohibition of the use of lead bullets in a manner that does not provide for:

- a. Bullet recovery and recycling
- b. Prevention of bullet fragmentation and ricochets
- c. Prevention of sub-surface metals percolation"

Response: Each of these requirements, a-c, are described in the *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan*; in Appendix E.

24. *Comment:* “A requirement for an update on the Section 61 findings to address the change or changes associated with this MEPA review process.”

Response: An update of Section 61 findings is presented in Appendix J.

Association to Preserve Cape Cod, Executive Director Margaret A. Geist, October 30, 2006:

25. *Comment:* “APCC recommends that a Supplemental FEIR be required in order to allow for further development of the Small Arms Range (SAR) Pollution Prevention (P2) Plan as it is relevant to the ongoing MEPA Notice of Project Change.”

Response: Comment acknowledged.

26. *Comment:* “...it is imperative to first know how projectiles, residue and solid waste associated with the weapons and ammunition will be contained, collected and recycled.”

Response: Information regarding how projectiles, residue and solid waste associated with the weapons and ammunition will be contained, collected and recycled are described in the *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan*, in Appendix E.

27. *Comment:* “APCC supports the MANG’s intent to review and incorporate the newest technological, design, and management advances for small arms range maintenance and pollution prevention. APCC also supports an adaptive approach to the P2 plan that will allow for annual updates and modifications based on ongoing review of monitoring data and recent advances in range monitoring and bullet containment systems.”

Response: The *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan* in Appendix E sets forth monitoring requirements for the bullet containment system.

28. *Comment:* “APCC strongly recommends immediate and long term monitoring of surface and pore water, with appropriately placed well(s). Monitoring for lead should also be conducted on surface and subsurface soil samples, as well as on leachate where applicable.”

Response: Long term monitoring of surface and pore water with appropriately placed wells and lysimeters is discussed in the *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan* in Appendix E.

29. *Comment:* “...APCC recommends that the MANG be required to equip each SAR, regardless of ammunition type, with containment devices, monitoring wells and other pollution prevention systems before changes in ammunition type are allowed...”

Response: A bullet containment system and monitoring plan are discussed in the *T Range Best Management Practices: Operations, Maintenance, and Monitoring Plan* in Appendix E.

Lawrence P. Cole, PhD, October 30, 2006:

30. *Comment:* “Writing now as an individual and not on behalf of the CAC, it is my view that contracting with an outside expert entity to review literature and MMR groundwater data pertaining to lead fate and transport; having the Ground Water Study Program conduct its planned tests in the range area to establish a baseline; having studies conducted by US Geological Service; coordinating with the Army Environmental Center; taking a phased approach to range upgrades; customizing the renovations to each individual range according to the type of weapons to be fired, the type of target course, and the terrain; testing what is installed to see if it works; installing lysimeters and test wells to monitor for metal; and planning to periodically remove the metal ought to provide a sufficient basis for EMC, with the advice of the SAC, to render a decision about the technical issues. In addition, the Environmental and Readiness Center (E&RC) has prepared extensive plans for public outreach that should enable the CAC to advise the EMC regarding public acceptance or concerns about the proposed change”

Response: Comment acknowledged.

31. *Comment:* "...it is essential that firing be allowed to resume at Camp Edwards as soon as the proper environmental safeguards can be put in place, and the process needs to be expedited."

Response: Comment acknowledged.

Minos Gordy, October 29, 2006:

33. *Comment:* "Although there are some details to be worked out in practice, I believe that those will be only adjustments and that the Army will use good engineering practices and provide careful monitoring of all emanations from the ranges.

Response: Comment acknowledged.

34. *Comment:* "The disposition of the ranges and the materials chosen to begin the pilot program appear to be most favorable for protecting the ground water."

Response: Comment acknowledged.

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Appendices A – M located on attached CD

Appendix A

MEPA Certificates

- November 9, 2006
- August 10, 2007
- January 22, 2010
- May 6, 2011
- December 16, 2011

Appendix B

Regulatory Approval Requests

- EPA
 - June 13, 2007 (T Range)
 - September 25, 2008 (J & K Range)
 - October 11, 2011 (S Range)
 - May 9, 2012 (I Range)
- EMC
 - June 27, 2007 (T Range)
 - July 10, 2008 (J & K Range)
 - March 23, 2012 (S Range)
 - May 9, 2012 (I Range)
 - June 19, 2012 (S Range)

Appendix C

Regulatory Approvals

- EPA
 - July 23, 2007 (T Range)
 - January 28, 2009 (J & K Range)
 - January 8, 2012 (S Range)
 - May 15, 2012 (I Range)
- EMC
 - July 23, 2007 (T Range)
 - August 6, 2008 (J & K Range)
 - March 28, 2012 (S Range)
 - June 8, 2012 (I Range)
 - June 29, 2012 (S Range)

Appendix D
**Camp Edwards Small Arms Range
Pollution Prevention (P2) Overview Plan**

Appendix E

Operations, Maintenance, and Monitoring (OM&M) Plans

- Tango (T) Range
- Juliet (J) Range
- Kilo (K) Range
- Sierra (S) Range

Appendix F
Lead Fate and Transport Study
(Environmental Assessment of Lead
at Camp Edwards, Massachusetts Small Arms Range, 2007)

Appendix G

Soil and Groundwater Investigation Reports

- Tango (T) Range
- Juliet (J) Range
- Kilo (K) Range
- Sierra (S) Range

Appendix H

**Life-Cycle Environmental Assessment (LCEA) Cartridge, 5.56mm,
Ball, M855A1 (April 28, 2010)**

Appendix I

Public Involvement Documents

- Community Involvement Overview
- Status Updates
- Fact Sheets

Appendix J
Draft Section 61 Findings

Appendix K

**Tango (T) Range: Interim Pilot Program Report/ Lessons Learned
(May 12, 2008)**

Appendix L
Comment Letters

Appendix M
SEIR Circulation List

**Massachusetts Military Reservation
EOEA # 5834
Supplemental Environmental Impact Report
Circulation List**

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Town of Sandwich
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Conservation Commission
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