DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI)

MASSACHUSETTS ARMY NATIONAL GUARD
PROPOSED CONSTRUCTION AND OPERATION OF A MULTI-PURPOSE MACHINE GUN RANGE
CAMP EDWARDS, JOINT BASE CAPE COD
BARNSTABLE COUNTY, MASSACHUSETTS

1. Introduction

The Massachusetts Army National Guard (MAARNG) prepared an Environmental Assessment (EA) to identify and evaluate potential environmental effects from the proposed construction of a new Multi-Purpose Machine Gun (MPMG) Range at Camp Edwards, which is situated within Joint Base Cape Cod in Barnstable County, Massachusetts. This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and 32 CFR 651 (Environmental Analysis of Army Actions, Final Rule, 29 March 2002). As set forth in Department of Defense (DoD) Directive 5105.77, *National Guard Bureau (NGB)*, the NGB is a joint activity of the DoD and as such must comply with the NEPA.

2. Description of the Proposed Action and Alternatives

Proposed Action. The Proposed Action includes the construction and operation of an eight lane MPMG Range with six lanes 800 meters long by 25 meters wide at the firing line and by 100 meters wide at a distance of 800 meters. The two middle lanes would extend an additional 700 meters to a distance of 1,500 meters long to accommodate the use of .50 caliber rifles. The range would include two primary components: (1) the physical range footprint, consisting of the firing positions, targetry, support structures, and associated facilities; and (2) the Surface Danger Zones (SDZs), the area where projectiles fired on the range would land based on the types of weapons and ammunition used.

The physical range footprint would consist of firing positions and lanes, targetry, and support structures. Construction activities would include up to 199.0 acres of disturbance and would require up to 170.5 acres of tree clearance to accommodate the range footprint, small arms range operations and control area facilities, utility extensions, access and maintenance road development, and firebreaks to reduce wildfire hazards from tracers and other ignition sources. Approximately 5,197 acres would be required for the MPMG Range to accommodate the SDZs associated with the proposed weapons and ammunition.

The MPMG Range would be available for all MAARNG units as well as other DoD organizations as scheduling permits. Under the Proposed Action, it is anticipated that Camp Edwards site usage could increase by up to 18.6 percent (or by up to 17,650 man-days) as a result of military personnel utilizing the MPMG Range.

The purpose of the Proposed Action is to provide the requisite range and training facilities at Camp Edwards to allow the MAARNG to efficiently attain small arms training and weapons qualifications requirements within Massachusetts. The MPMG Range would provide Soldiers and units the necessary modernized training capabilities to be effective in contemporary and future operating environments while meeting mission training objectives. The Proposed Action is needed to: 1) address shortfalls in required small arms training facilities and capabilities within Massachusetts, 2) allow multiple units to attain required weapons qualification levels simultaneously and efficiently, and 3) support the MAARNG's and other military users' Federal and State missions.

A MPMG Range does not currently exist within Massachusetts. To receive training on an MPMG Range and meet weapons qualifications standards and training requirements as set forth under Department of the Army (DA) Pamphlet (PAM) 350-38, *Standards in Weapons Training*, soldiers and units must travel to a nearby MPMG range, with the closest being Camp Ethan Allen in Jericho, Vermont, approximately 270

miles away. The need for travel causes the loss of critical training resources MAARNG units need and reduces the time available for conducting required training exercises at Camp Edwards. Implementation of the Proposed Action would support higher quality, mission-essential training activities at Camp Edwards, while limiting the need for out-of-state travel.

Alternatives Considered. NEPA, CEQ regulations, and 32 CFR 651 require all reasonable alternatives to be explored and objectively evaluated. Alternatives that are eliminated from detailed study must be identified along with a brief discussion of the reasons for eliminating them. For purposes of analysis, an alternative was considered "reasonable" only if it would enable the MAARNG to accomplish the primary mission of providing land, facilities, and resources at Camp Edwards and to meet the purpose of and need for the Proposed Action. "Unreasonable" alternatives would not enable the MAARNG to meet the purpose of and need for the Proposed Action.

The MAARNG considered but dismissed from further analysis the following unreasonable alternatives: 1) use a training site at another installation; 2) use an undisturbed area at Camp Edwards; 3) use a different existing range at Camp Edwards; 4) implement a standard-size MPMG range; and 5) use an alternate location 100 meters south of the Proposed Action.

The EA examines three alternatives in-depth, the Preferred Action Alternative, which would carry out the Proposed Action; the Reduced-Scale Alternative, which would carry out a modified, smaller version of the Proposed Action; and the No Action Alternative, which would not carry out the Proposed Action but is carried forward to provide a comparative baseline against which to analyze the effects of the Proposed Action, as required in CEQ Regulations (40 CFR Part 1502.14). Currently, Military Construction (MILCON) funding has not been appropriated for the implementation of the Preferred Action Alternative. At the time of programming the MPMG MILCON funding request, the MAARNG did not include a provision for the additional M2 lanes. As such, the additional features associated with this alternative (e.g., extension of the two middle lanes from 800 feet to 1,500 feet) are not currently funded. These additional features would need to be constructed at a later date.

3. Environmental Analysis

The potential environmental impacts associated with the Proposed Action are fully described in the EA. The EA identifies the environmental resources that could be affected by the Proposed Action, and determines the significance of the impacts, if any, to each of these resources. Based on the EA's analysis, the MAARNG determined that the known and potential adverse impacts from the Proposed Action would be less than significant on land use and cover, air quality and climate, noise, soils, groundwater, biological resources, infrastructure, and hazardous and toxic materials and wastes. The implementation of Best Management Practices and Regulatory Compliance Measures specified in the EA, such as establishing a Noise Notification Protocol and implementing a 24-hour noise complaint point of contact, would further avoid or reduce less-than-significant impacts. Regional air quality may experience long-term beneficial impacts. The Proposed Action would have no effect on cultural resources.

4. Mitigation

Under the Preferred and Reduced-Scale Alternatives, no significant impacts would be anticipated; therefore, no mitigation measures are required.

5. Regulations

The Proposed Action would not violate NEPA, the CEQ Regulations, 32 CFR Part 651, or other Federal, state, or local environmental regulations.

6. Commitment to Implementation

The NGB and the MAARNG affirm their commitment to implement this EA in accordance with NEPA. Implementation is dependent on funding, and this project will be a Military Construction funded project. The

MAARNG and the NGB will ensure that adequate funds are provided to achieve the goals and objectives set forth in this EA.

7. Public Review and Comment

The final EA and draft FNSI will be made available for public review and comment for 30 days following publication of a public notice in the local newspaper *Cape Cod Times*. Copies of the final EA and draft FNSI will be available for public review online at https://www.massnationalguard.org/ERC/publications.htm.

The public may obtain information on the status and progress of the EA, as well as submit written comments on the EA during the 30-day public review period to: Keith J Driscoll, MAARNG, 2 Randolph Road, Hanscom Air Force Base, MA 01731 or via e-mail to Keith.J.Driscoll.nfg@mail.mil.

8. Draft Finding of No Significant Impact

After careful review of the EA, I have concluded that implementation of the Proposed Action would not generate significant controversy or have a significant impact on the quality of the human or natural environment. Per 32 CFR Part 651, the Final EA and draft FNSI will be made available for a 30-day public review and comment period. Once any public comments have been addressed and if a determination is made that the Proposed Action will have no significant impact, the FNSI will be signed and the action will be implemented. This analysis fulfills the requirements of NEPA and the CEQ Regulations. An Environmental Impact Statement will not be prepared, and the NGB is issuing this FNSI.

_____ _____

Date

Anthony Hammett
COL, EN
Chief, ARNG G9

Final

Environmental Assessment for a Multi-Purpose Machine Gun (MPMG) Range at the Known Distance (KD) Range

Camp Edwards
Joint Base Cape Cod
Sandwich, Barnstable County, Massachusetts

MILCON # 250194

Fiscal Year (FY) 2020 Project

Prepared For:

Massachusetts Army National Guard

Joint Force Headquarters

Hanscom Air Force Base, MA 01731

August 2020

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ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental, socioeconomic, and cultural effects associated with the Massachusetts Army National Guard's (MAARNG) proposal to construct and operate a Multi-Purpose Machine Gun (MPMG) Range at Camp Edwards, which is situated within Joint Base Cape Cod (JBCC) in Barnstable County, Massachusetts. As required by the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and 32 CFR Part 651 (Environmental Analysis of Army Actions, Final Rule, 29 March 2002), the potential effects of the Proposed Action and Alternatives are analyzed. This EA will facilitate the decision process by the MAARNG regarding the Proposed Action and its considered alternatives, and is organized as follows:

- **EXECUTIVE SUMMARY**: Describes the Proposed Action; summarizes environmental, cultural, and socioeconomic consequences; and compares potential effects associated with the three considered alternatives.
- **SECTION 1. PURPOSE AND NEED FOR THE PROPOSED ACTION**: Summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA.
- **SECTION 2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**: Describes the Proposed Action and presents alternatives for implementing the Proposed Action.
- **SECTION 3. AFFECTED ENVIRONMENT:** Describes the existing environmental, cultural, and socioeconomic setting of Camp Edwards.
- **SECTION 4. ENVIRONMENTAL CONSEQUENCES:** Identifies individual and cumulative potential environmental, cultural, and socioeconomic effects of implementing the Proposed Action and alternatives and identifies measures to reduce or avoid impacts.
- **SECTION 5. COMPARISON OF ALTERNATIVES AND CONCLUSIONS:** Compares the environmental effects of the considered alternatives and summarizes the significance of individual and expected cumulative effects of these alternatives.
- **SECTION 6. REFERENCES:** Provides bibliographical information for cited sources.
- **SECTION 7. GLOSSARY:** Defines terms used in the EA.
- **SECTION 8. LIST OF PREPARERS:** Identifies document preparers and their areas of expertise.
- **SECTION 9. AGENCIES AND INDIVIDUALS CONSULTED:** Lists agencies and individuals consulted during EA preparation.
- **APPENDICES:**

  Appendix A: Agency Coordination and Native American Consultation

  Appendix B: Section 7 Consultation and Biological Assessment

  Appendix C: Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds

  Appendix D: Final Noise Assessment for Proposed Multi-Purpose Machine Gun Range, Camp Edwards

  Appendix E: Conservation and Management Permit (CMP) Application

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ENVIRONMENTAL ASSESSMENT

LEAD AGENCY:	Army National Guard
COOPERATING AGENCIES:	None
TITLE OF PROPOSED ACTION:	Proposed Construction and Operation of a Multi-Purpose Machine Gun Range (MPMG), Camp Edwards
AFFECTED JURISDICTION:	Sandwich, Barnstable County, Massachusetts
POINT OF CONTACT:	Keith J. Driscoll, NEPA Manager, Massachusetts Army National Guard, Hanscom Air Force Base, MA 07131 (339) 202-3980
PROPONENTS:	Massachusetts Army National Guard (MAARNG)
IMPLEMENTATION YEARS:	FY 2020

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
COL Mathew Porter Commander Camp Edwards Massachusetts Army National Guard	Mr. David Shannon Construction and Facilities Management Officer Massachusetts Army National Guard	Mr. Paulo Baganha Environmental Program Manager Massachusetts Army National Guard

DOCUMENT DESIGNATION: Environmental Assessment (EA)

ABSTRACT: The MAARNG proposes to construct and operate a Multi-Purpose Machine Gun (MPMG) Range at Camp Edwards, situated within Joint Base Cape Cod (JBCC) in Barnstable County, Massachusetts (Proposed Action). This Environmental Assessment (EA) addresses the potential environmental, socioeconomic, and cultural impacts of this proposal and its alternatives. The purpose of the Proposed Action is to provide the requisite range and training facilities at Camp Edwards to allow the MAARNG to efficiently attain small arms training and weapons qualifications requirements. The Proposed Action is needed to address shortfalls in required small arms training facilities and capabilities within Massachusetts, and support the MAARNG's and other military users' assigned Federal and State mission training objectives and requirements.

This EA evaluates the individual and cumulative effects of the Proposed Action and its reasonable alternatives with respect to the following criteria: land use and cover; air quality; noise; soils; groundwater; biological resources, including vegetation, wildlife, and special status species; cultural resources; infrastructure; and hazardous and toxic materials and wastes. This EA concludes there would be no significant adverse impact to the local environment or quality of life associated with implementation of the Proposed Action. The MAARNG would implement routine Regulatory Compliance Measures and Best Management Practices to address less-than-significant adverse environmental impacts.

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) evaluates and analyzes the potential physical, environmental, cultural, and socioeconomic effects of the Massachusetts Army National Guard's (MAARNG) proposal to construct and operate a Multi-Purpose Machine Gun (MPMG) Range at Camp Edwards, which is situated within Joint Base Cape Cod (JBCC) in Barnstable County, Massachusetts. The Camp Edwards Training Site encompasses approximately 15,000 acres of the approximately 20,554-acre JBCC. Within the JBCC are five military commands including: the MAARNG at Camp Edwards; the Massachusetts Air National Guard (MA ANG) at Otis Air National Guard Base (ANGB); the 253rd Combat Communications Group also at Otis ANGB; the U.S. Air Force (USAF) at the 6th Space Warning Squadron phased array radar site at Cape Cod Air Force Station; and the U.S. Coast Guard (USCG) at Air Station Cape Cod. Camp Edwards is owned by the Commonwealth of Massachusetts and leased to the Federal government, which has licensed Camp Edwards to MAARNG. Camp Edwards contains the largest amount of land within JBCC. The MPMG Range would be constructed within the area previously used as a 600-yard Known Distance (KD) Range and is a programmed Fiscal Year (FY) 2020 Military Construction (MILCON) project.

This EA has been prepared under the provisions of, and in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and 32 CFR 651 (Environmental Analysis of Army Actions, Final Rule, 29 March 2002). This EA will facilitate the decision-making process regarding the Proposed Action and its alternatives considered by the MAARNG.

PROPOSED ACTION

The Proposed Action includes the construction and operation of an eight lane MPMG Range with six lanes 800 meters long by 25 meters wide at the firing line and by 100 meters wide at a distance of 800 meters. The two middle lanes would extend an additional 700 meters to a distance of 1,500 meters long to accommodate the use of .50 caliber rifles. The range would include two primary components: (1) the physical range footprint, consisting of the firing positions, targetry, support structures, and associated facilities; and (2) the Surface Danger Zones (SDZs), the area where projectiles fired on the range would land based on the types of weapons and ammunition used.

The physical range footprint would consist of firing positions and lanes, targetry, and support structures. Construction activities would include up to 199.0 acres of disturbance and would require up to 170.5 acres of tree clearance to accommodate the range footprint, small arms range operations and control area (SAROCA) facilities, utility extensions, access and maintenance road development, and firebreaks to maintain or improve pitch pine and scrub oak (PPSO) and scrub oak shrubland (SOS) conditions while reducing wildfire hazard from tracers and other ignition sources. Approximately 5,197 acres would be required for the MPMG Range to accommodate the SDZs associated with the proposed weapons and ammunition.

The MPMG Range would be available for all MAARNG units and it is anticipated that Camp Edwards site usage could increase by up to 18.6 percent (or by up to 17,650 man-days) as a result of military personnel utilizing the MPMG Range. Peak usage would occur from May through June, during the main annual training cycle from March through November. Night training would occur approximately 1 to 2 days per week, from sundown to 2:00 AM, for a total of 37 to 74 days during the annual training cycle.

PURPOSE AND NEED

The ***purpose*** of the Proposed Action is to provide the requisite range and training facilities at Camp Edwards to allow the MAARNG to efficiently attain small arms training and weapons qualifications requirements within Massachusetts. The MPMG Range would provide Soldiers and units the necessary modernized training capabilities to be effective in contemporary and future operating environments while meeting mission training objectives as defined in Training Circular (TC) 25-8, *Training Ranges*. The Proposed

Action is ***needed*** to: 1) address shortfalls in required small arms training facilities and capabilities within Massachusetts, 2) allow multiple units to attain required weapons qualification levels simultaneously and efficiently, and 3) support the MAARNG's and other military users' Federal and State missions.

An Army standard MPMG Range does not currently exist within Massachusetts. To receive training on an MPMG Range and meet weapons qualifications standards and training requirements as set forth under Department of the Army (DA) Pamphlet (PAM) 350-38, *Standards in Weapons Training* (STRAC), soldiers and units must travel to a nearby MPMG range, with the closest being approximately 270 miles away (Camp Ethan Allen in Jericho, Vermont). The need for travel causes the loss of critical training resources MAARNG units need and reduces the time available for conducting required training exercises at Camp Edwards. Implementation of the Proposed Action would support higher quality, mission-essential, and increased training activities at JBCC, while limiting the need for out-of-state travel.

PUBLIC AND AGENCY INVOLVEMENT

The MAARNG invites public participation in decision-making on new proposals through the NEPA process. Public participation with respect to decision-making on the Proposed Action is guided by 32 CFR Part 651, which is the Army's regulation for implementing NEPA. Consideration of the views of and information provided by all interested persons and stakeholders promotes open communication and enables better decision-making.

The MAARNG, as the proponent of the Proposed Action, will publish and distribute the final EA and, if found appropriate, the draft Finding of No Significant Impact (FNSI) for a 30-day public review and comment period, as announced by a Notice of Availability (NOA) published in the *Cape Cod Times*. The NOA will identify where copies will be made available (e.g., provided to local libraries, available online, etc.) for public review and comment in accordance with the NEPA guidelines. If it is determined that implementation of the Proposed Action would result in significant impacts, the MAARNG will either not implement this action as proposed, or will publish in the Federal Register a Notice of Intent (NOI) to prepare an EIS. Throughout this process, the public may obtain information on the status and progress of the EA through the MAARNG Environmental and Readiness Center Public Affairs Office at 339-202-9341.

Agencies and local entities consulted for this EA include the U.S. Army Corps of Engineers (USACE) New England District, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA), U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS), Massachusetts Department of Environmental Protection (MassDEP), Massachusetts Department of Conservation and Recreation (DCR), Massachusetts Historical Commission (MHC), Environmental Management Commission (EMC), Cape Cod Commission, and Sandwich and Bourne town boards.

The MAARNG is also consulting and coordinating with federally recognized Native American tribes as required under DoD Instruction (DoDI) 4710.02, *DoD Interactions with Federally Recognized Tribes*, which implements the Annotated DoD American Indian and Alaska Native Policy; AR 200-1, *Environmental Protection and Enhancement* (Department of the Army, 2007); NEPA; the National Historic Preservation Act (NHPA); and the Native American Graves and Protection and Repatriation Act (NAGPRA). Tribes were invited to participate in the EA and NHPA Section 106 processes as Sovereign Nations per EO 13175, *Consultation and Coordination with Indian Tribal Governments*.

ALTERNATIVES

NEPA, CEQ regulations, and 32 CFR 651 require all reasonable alternatives to be explored and objectively evaluated. Alternatives that are eliminated from detailed study must be identified along with a brief discussion of the reasons for eliminating them. For purposes of analysis, an alternative was considered "reasonable" only if it would enable the MAARNG to accomplish the primary mission of providing land, facilities, and resources at Camp Edwards and to meet the purpose of and need for the Proposed Action. "Unreasonable" alternatives would not enable the MAARNG to meet the purpose of and need for the Proposed Action.

The MAARNG considered but dismissed from further analysis the following alternatives: 1) use a training site at another installation; 2) use an undisturbed area at Camp Edwards; 3) use a different existing range at Camp Edwards; 4) implement a standard-size MPMG range; and 5) use an alternate location 100 meters south of the Proposed Action. These alternatives were eliminated from further consideration because they did not meet one of more of the screening criteria. For more detailed information on the MAARNG's screening criteria and the alternatives eliminated from further consideration, refer to **Section 2.3.1**.

Through application of the screening criteria, it became readily apparent to the MAARNG that locating the MPMG Range at Camp Edwards was the only reasonable alternative. Once Camp Edwards was identified as the only viable location, the MAARNG undertook a rigorous siting analysis to identify potential range locations that could achieve the purpose and need for the Proposed Action, as well as best meet the identified screening criteria.

This EA examines three alternatives in-depth, the Preferred Action Alternative, which would carry out the Proposed Action; the Reduced-Scale Alternative, which would carry out a modified, smaller version of the Proposed Action; and the No Action Alternative, which would not carry out the Proposed Action. The alternatives are defined as follows:

- Preferred Action Alternative: Implement the Proposed Action by constructing and operating an eight-lane MPMG Range. The MPMG range would train and test Soldiers on the skills necessary to zero, detect, identify, engage, and defeat targets, and meet weapons qualifications standards and training requirements as set forth under the DA PAM 350-38. Six lanes would be 800 meters long by 25 meters wide at the firing line and 100 meters wide at a distance of 800 meters. The two middle lanes would extend an additional 700 meters for a total distance of 1,500 meters to accommodate .50 caliber rifle training. Currently, MILCON funding has not been appropriated for the implementation of the Preferred Action Alternative. At the time of programming the MPMG MILCON funding request, the MAARNG did not include a provision for the additional M2 lanes. As such, the additional features associated with this alternative (e.g., extension of the two middle lanes from 800 feet to 1,500 feet) are not currently funded. These additional features would need to be constructed at a later date.

- Reduced-Scale Alternative: Implement the Proposed Action without the two extended middle lanes for .50 caliber rifle training. All eight lanes would be constructed to a distance of 800 meters. This is the approved MILCON project funded for FY 2020. This alternative would allow for the same training capabilities as the Preferred Alternative with the exception of the M2 machine gun and the M82 sniper rifle, which utilize .50 caliber ammunition.

- No Action Alternative: Continue with existing training and operations at Camp Edwards without an MPMG range and continue to travel out-of-state to conduct this training.

AFFECTED ENVIRONMENT

Camp Edwards lies within the towns of Sandwich and Bourne. The local climate is defined as humid continental. The predominant land cover is unimproved grounds, primarily used for training activities (e.g., assembly, tactical maneuvering, and small arms range firing), support and maintenance facilities, aviation facilities, and environmental management. No surface water features or floodplains are present within or near the Proposed Action area. The predominant source of groundwater is the Sagamore Lens of the Cape Cod Aquifer, designated as a sole-source aquifer under the Safe Water Drinking Act. In 2015, the four military agencies at JBCC signed a Memorandum of Agreement to implement the JBCC Groundwater Protection Policy to enforce protections for the existing and future water supplies at the JBCC. The groundwater beneath Camp Edwards provides up to three million gallons of clean drinking water daily to Camp Edwards and the towns of Sandwich, Bourne, Falmouth, and Mashpee.

Camp Edwards is the largest intact area of relatively unfragmented forest remaining on Cape Cod and serves as an important refuge for wildlife which require large ranges of interior forest habitat. The proposed MPMG Range footprint is primarily comprised of disturbed land, immature pitch pine, pitch pine oak forest, and pitch pine scrub oak. One Federally listed and 34 state-listed wildlife species have been documented at Camp Edwards.

No archaeological or architectural resources occur within the Proposed Action area and the Proposed Action area does not meet the criteria for an environmental justice community[1].

ENVIRONMENTAL CONSEQUENCES

The Proposed Action was evaluated to determine its potential direct or indirect impact(s) on the physical, environmental, cultural, and socioeconomic aspects of Camp Edwards and the surrounding area. Technical areas evaluated include: land use and cover; air quality; noise; soils; groundwater; biological resources, including vegetation, wildlife, and special status species; cultural resources; infrastructure; and hazardous and toxic materials and wastes (HTMW).

The Preferred Alternative, Reduced-Scale Alternative, and No Action Alternative would result in the impacts identified throughout **Section 4** and summarized in **Table ES-1**. The MAARNG would incorporate Regulatory Compliance Measures (RCMs) and Best Management Practices (BMPs) into the Proposed Action to proactively minimize potential adverse environmental impacts. RCMs are compliance measures that the MAARNG is required to conduct in accordance with applicable laws, regulations, and permit conditions (e.g., Massachusetts Endangered Species Act [MESA] requirements), and BMPs are environmentally sensitive construction practices the MAARNG would conduct in order to minimize or avoid potential adverse environmental impacts (e.g., implementing dust control measures). No project-specific mitigation measures would be required to reduce adverse impacts to less-than-significant levels.

CONCLUSIONS

The evaluation performed within this EA concludes there would be no significant adverse impact, either individually or cumulatively, to the local environment or quality of life as a result of implementing the Proposed Action. BMPs and RCMs specified in this EA, such as establishing a Noise Notification Protocol and implementing a 24-hour noise complaint point of contact, would enable the MAARNG to avoid or further minimize less-than-significant impacts on Camp Edwards and the surrounding area to the extent practicable. Therefore, this EA's analysis determines that an EIS is unnecessary to support the implementation of the Proposed Action, and that a FNSI is appropriate.

The Preferred Alternative was determined by the MAARNG to provide the best combination of land and resources to sustain quality military training and to maintain and improve the units' readiness postures. While the Reduced-Scale Alternative would carry out a modified version of the Proposed Action, it would still meet the purpose of and need for the Proposed Action. The No Action Alternative would not fulfill the purpose of and need for the Proposed Action. It would limit the capability of the MAARNG to carry out its assigned mission to provide adequate training facilities, and would jeopardize the proficiency and military readiness of the MAARNG and other military entities that require MPMG Range training. As such, this EA recommends implementation of the Preferred Alternative.

[1] An environmental justice community is defined as having 25 percent or more residents identifying as a race other than white, or who have an income equal to or less than 65 percent of the Statewide median (MassDEP, 2019).

Table ES-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Land Use and Cover	*Long term,* ***potentially significant*** *adverse* impact on future land use from a reduction in training use of Camp Edwards.	Long-term, *less-than-significant* adverse impacts on land cover from the clearing of 170.5 acres and permanent conversion of forested areas to maintained grasslands. Long-term, *beneficial* impact on land use by maximizing training value and use of Camp Edwards. **Impacts would be greater than the Reduced-Scale Alternative.**	Long-term, *less-than-significant* adverse impacts on land cover from the clearing of 99.5 acres and permanent conversion of forested areas to maintained grasslands. Long-term, *beneficial* impact on land use by maximizing training value and use of Camp Edwards. **Impacts would be less than the Preferred Alternative.**
Air Quality	*Long-term, less-than-significant adverse* impact on climate change from continued vehicle-generated GHG emissions.	Short-term, *less-than-significant* adverse impacts on air quality from the clearing of 170.5 acres generating fugitive dust and exhaust emissions. Long-term, *less-than-significant* adverse impact on air quality from increased emissions due to training and firing operations. Long-term, *beneficial* impacts on air quality from decreased emissions due to reduced out-of-State travel. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on air quality from the clearing of 99.5 acres generating fugitive dust and exhaust emissions. Long-term, *less-than-significant* adverse impact on air quality from increased emissions due to training and firing operations. Long-term, *beneficial* impacts on air quality from decreased emissions due to reduced out-of-State travel. **Impacts would be less than the Preferred Alternative.**
Noise	No impact.	Short-term, *less-than-significant* adverse impacts on noise levels due to construction activities required for clearing 170.5 acres of land. Long-term, *less-than-significant* adverse impacts on noise levels due to increased site usage and weapons firing. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on noise levels due to construction activities required for clearing 99.5 acres of land. Long-term, *less-than-significant* adverse impacts on noise levels due to increased site usage and weapons firing. **Impacts would be less than the Preferred Alternative.**

Table ES-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Soils	No impact.	Short-term, *less-than-significant* adverse impacts on soils due to erosion, sedimentation, and compaction resulting from the disturbance of 199.0 acres of land. Long-term, *less-than-significant* adverse impact on soils from training activities. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on soils due to erosion, sedimentation, and compaction resulting from the disturbance of 128.0 acres of land. Long-term, *less-than-significant* adverse impact on soils from training activities. **Impacts would be less than the Preferred Alternative.**
Groundwater	No impact.	Short-term, *less-than-significant* adverse impacts on groundwater from potential contaminant spills during construction. Long-term, *less-than-significant* adverse impacts on groundwater from inadvertent release of contaminants during site maintenance and training operations. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on groundwater from potential contaminant spills during construction. Long-term, *less-than-significant* adverse impacts on groundwater from inadvertent release of contaminants during site maintenance and training operations. **Impacts would be less than the Preferred Alternative.**

Table ES-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Biological Resources	No impact.	Short-term, *less-than-significant* adverse impacts on vegetation from temporary clearing for construction of the MPMG range. Long-term, *less-than-significant* adverse impacts on vegetation from the permanent loss of 170.5 acres of forested land. Short-term, *less-than-significant* adverse impacts on wildlife species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on wildlife species from potential habitat loss and training range operations. Short-term, *less-than-significant* adverse impacts on special status species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on special status species from potential habitat loss and training range operations. Long-term, *beneficial* impacts on migratory birds from enhanced habitat due to wildfire management practices. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on vegetation from temporary clearing for construction of the MPMG range. Long-term, *less-than-significant* adverse impacts on vegetation from the permanent loss of 99.5 acres of forested land. Short-term, *less-than-significant* adverse impacts on wildlife species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on wildlife species from potential habitat loss and training range operations. Short-term, *less-than-significant* adverse impacts on special status species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on special status species from potential habitat loss and training range operations. Long-term, *beneficial* impacts on migratory birds from enhanced habitat due to wildfire management practices. **Impacts would be less than the Preferred Alternative.**
Cultural Resources	No impact.	*No effect* on cultural resources.	*No effect* on cultural resources.

Table ES-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Infrastructure	No impact.	Short-term, *less-than-significant* adverse impacts on traffic conditions from temporary construction congestion. Long-term, *less-than-significant* adverse impacts on traffic conditions from personal and military vehicles moving to and from the new MPMG Range. Short-term, *less-than-significant* adverse impacts on utilities from temporary utility interruptions during utility extensions and construction. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on traffic conditions from temporary construction congestion. Long-term, *less-than-significant* adverse impacts on traffic conditions from personal and military vehicles moving to and from the new MPMG Range. Short-term, *less-than-significant* adverse impacts on utilities from temporary utility interruptions during utility extensions and construction. **Impacts would be less than the Preferred Alternative.**
HTMW	No impact.	Short-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during construction. Long-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during training operations and site maintenance. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts associated with handling, storage, use, transportation, and disposal of HTMW during construction. Long-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during training operations and site maintenance. **Impacts would be less than the Preferred Alternative.**

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ACRONYMS AND ABBREVIATIONS

ACS .....American Community Survey
ANG .....Air National Guard
ANGB.....Air National Guard Base
APE .....Area of Potential Effect
AQCR.....Air Quality Control Region
AR .....Army Regulation
ARNG I&E ARNG Installation and Environment Directorate
ARRM .....Army Range Requirement Module
ARPA .....Archaeological Resources Protection Act
AT/FP .....antiterrorism and force protection
BCC .....Birds of Conservation Concern
BGEPA.....Bald and Golden Eagle Protection Act
BMP.....Best Management Practice
CAA.....Clean Air Act
CAC.....Citizens Advisory Council
CEQ.....Council on Environmental Quality
CFR .....Code of Federal Regulations
CMP.....Conservation and Management Permit
CO.....carbon monoxide
CWA.....Clean Water Act
CZM .....Coastal Zone Management
CZMA .....Coastal Zone Management Act
DA .....Department of the Army
DA PAM....Department of the Army Pamphlet
dB .....Decibel
DCR.....Massachusetts Department of Conservation and Recreation
DFG.....Massachusetts Department of Fish and Game
DNL.....Day-night Level
DoD .....Department of Defense
DoDI.....Department of Defense Instruction
E&S .....Erosion and Sediment
EA.....Environmental Assessment
ECOP.....Environmental Condition of Property
EIS .....Environmental Impact Statement
EMC .....Environmental Management Commission
EO.....Executive Order
EPS .....Environmental Performance Standard
ESA .....Endangered Species Act
FEMA.....Federal Emergency Management Agency
FIRM .....Flood Insurance Rate Map
FNSI .....Finding of No Significant Impact
FPPA .....Farmland Protection Policy Act
FY.....Fiscal Year
GHG .....greenhouse gas
HTMW .....Hazardous and Toxic Materials and Wastes
ICRMP.....Integrated Cultural Resources Management Plan
IWFMP.....Integrated Wildlife Fire Management Plan
IICEP.....Interagency and Intergovernmental Coordination for Environmental Planning
INRMP .....Integrated Natural Resources Management Plan
JBCC .....Joint Base Cape Cod
JLUS.....Joint land Use Study
KD .....Known Distance
LF .....linear feet
LUPZ.....Land Use Planning Zone
MAARNG .Massachusetts Army National Guard
MassDEP ...Massachusetts Department of Environmental Protection
MBTA .....Migratory Bird Treaty Act
MEC .....munitions and explosives of concern
MEPA.....Massachusetts Environmental Policy Act
MESA.....Massachusetts Endangered Species Act
MFR.....Memorandum for Record
MHC.....Massachusetts Historical Commission
MILCON ...Military Construction
MOA.....Memorandum of Agreement
MOU.....Memorandum of Understanding
MPMG.....Multi-Purpose Machine Gun
MSL.....Mean sea level
NAAQS .....National Ambient Air Quality Standards
NAGPRA...Native American Graves Protection and Repatriation Act
NEPA.....National Environmental Policy Act of 1969
NGB.....National Guard Bureau
NGR.....National Guard Regulations
NHESP .....Massachusetts Natural Habitat and Endangered Species Program
NHPA .....National Historic Preservation Act
NLEB.....northern long-eared bat

NOA .....Notice of Availability
NOI.....Notice of Intent
NO_x .....nitrogen oxides
NPDES .....National Pollutant Discharge Elimination System
NRCS.....Natural Resources Conservation Service
NRHP .....National Register of Historic Places
O_3 .....ozone
OMMP.....Operations, Maintenance, and Management Plan
OSHA .....Occupational Safety and Health Administration
OTR.....Ozone Transport Region
Pb.....lead
PM .....particulate matter
PM_{10}.....particulate matter less than or equal to 10 micrometers
$PM_{2.5}$.....particulate matter less than or equal to 2.5 micrometers
ROI .....Region of Influence
RTLA.....Range and Training Land Assessments
SAAQS.....State Ambient Air Quality Standards
SAC .....Scientific Advisory Council
SAR .....Small Arms Range
SAROCA...Small Arms Range Operations Control Area
SDZ .....Surface Danger Zone
SHPO.....State Historic Preservation Office
SIP .....State Implementation Plan
SO_2.....sulfur dioxide
SONMP .....Statewide Operational Noise Management Plan
SOP.....Standard Operating Procedure
SPCCP.....Spill Prevention Control and Countermeasure Plan
SR/ES .....Registration/Emissions Statement
STRAC .....Standards in Weapons Training
SWDA .....Safe Water Drinking Act
TC.....Training Circular
TY.....Training Year
U.S.....United States
UAS.....Unmanned Aircraft Systems
UFC .....Unified Facilities Criteria
USACE .....U.S. Army Corps of Engineers
USAF.....U.S. Air Force
USAPHC ...U.S. Army Public Health Center
USC .....U.S. Code
USCG .....U.S. Coast Guard
USEPA .....U.S. Environmental Protection Agency
USFWS.....U.S. Fish and Wildlife Service
UXO……Unexploded Ordnance
WOUS .....Waters of the U.S.

1. PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

This Environmental Assessment (EA) evaluates the Massachusetts Army National Guard's (MAARNG) proposal to construct and operate a Multi-Purpose Machine Gun (MPMG) Range at Joint Base Cape Cod (JBCC) Camp Edwards on Cape Cod, Massachusetts (see **Figure 1-1**). The Proposed Action is intended to meet current range requirements set forth in Training Circular (TC) 25-8, *Training Ranges*; to meet qualification and pre-validation of deploying units; and to help support higher quality, mission-essential, increased training activities for the MAARNG's and other military users' assigned training missions.

Camp Edwards encompasses approximately 15,000 acres of the approximately 20,554-acre JBCC (see **Figure 1-2**). JBCC is situated within four towns, Bourne, Sandwich, Falmouth, and Mashpee, although Camp Edwards lies only within the boundaries of Bourne and Sandwich (see **Figure 1-2**). Within the JBCC there are five military commands including: the MAARNG at Camp Edwards; the Massachusetts Air National Guard (MA ANG) at Otis Air National Guard Base (ANGB); the 253rd Combat Communications Group also at Otis ANGB; the U.S. Air Force (USAF) at the 6th Space Warning Squadron phased array radar site at Cape Cod Air Force Station; and the U.S. Coast Guard (USCG) at Air Station Cape Cod. Camp Edwards is owned by the Commonwealth of Massachusetts and leased to the Federal government, which has licensed Camp Edwards to MAARNG. Camp Edwards contains the largest amount of land at JBCC.

The MPMG Range would be constructed within the area previously used as a 600-yard Known Distance (KD) Range. The 38.5-acre KD Range was used for range training activities from 1966 to 2004 and is currently used for other training operations such as unmanned aircraft systems (UAS). Since 2006, the MAARNG has been actively planning and redeveloping various ranges at Camp Edwards for live-fire training exercises through the Small Arms Range (SAR) Improvement Plan which incorporates Best Management Practices (BMPs) into any range development for pollution prevention and environmental protection (MAARNG, 2012). The MPMG Range is a programmed Fiscal Year (FY) 2020 Military Construction (MILCON) project and is part of the Camp Edwards SAR Improvement Plan.

This EA has been prepared under the provisions of, and in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and 32 CFR 651 (Environmental Analysis of Army Actions, Final Rule, 29 March 2002). This EA will facilitate the decision-making process regarding the Proposed Action and its alternatives considered by the MAARNG.

1.2 Purpose and Need

1.2.1 Purpose of the Proposed Action

The ***purpose*** of the Proposed Action is to provide the requisite range and training facilities at Camp Edwards to allow the MAARNG to efficiently attain small arms training and weapons qualifications requirements within Massachusetts. The MPMG Range would provide Soldiers and units the necessary modernized training capabilities to be effective in contemporary and future operating environments while meeting mission training objectives as defined in TC 25-8. The Proposed Action would ensure the MAARNG provides a complete, sustainable, and viable training facility for its Soldiers through the continued use and development of live-fire ranges to meet the requirement that all Soldiers qualify with their primary weapon systems annually.

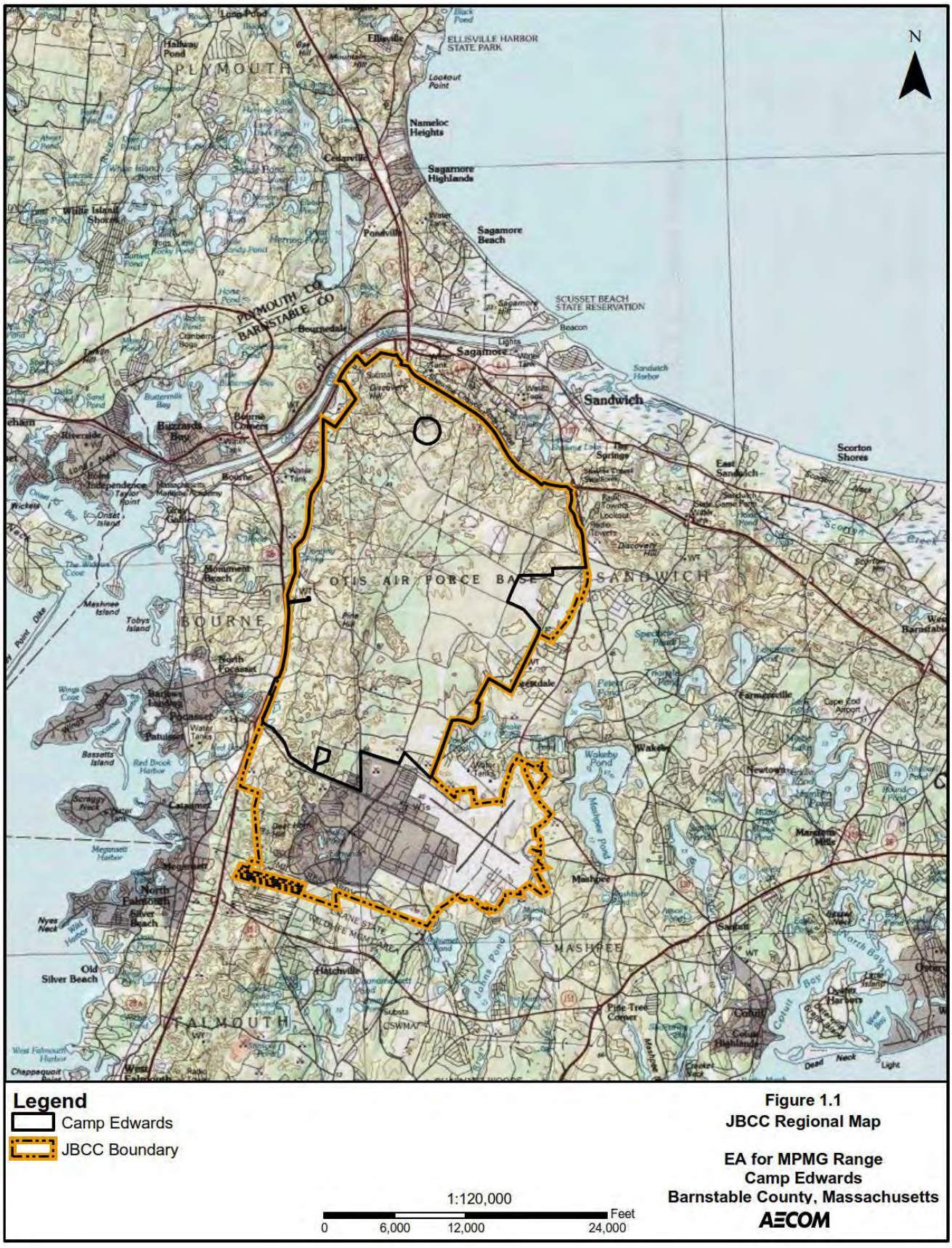
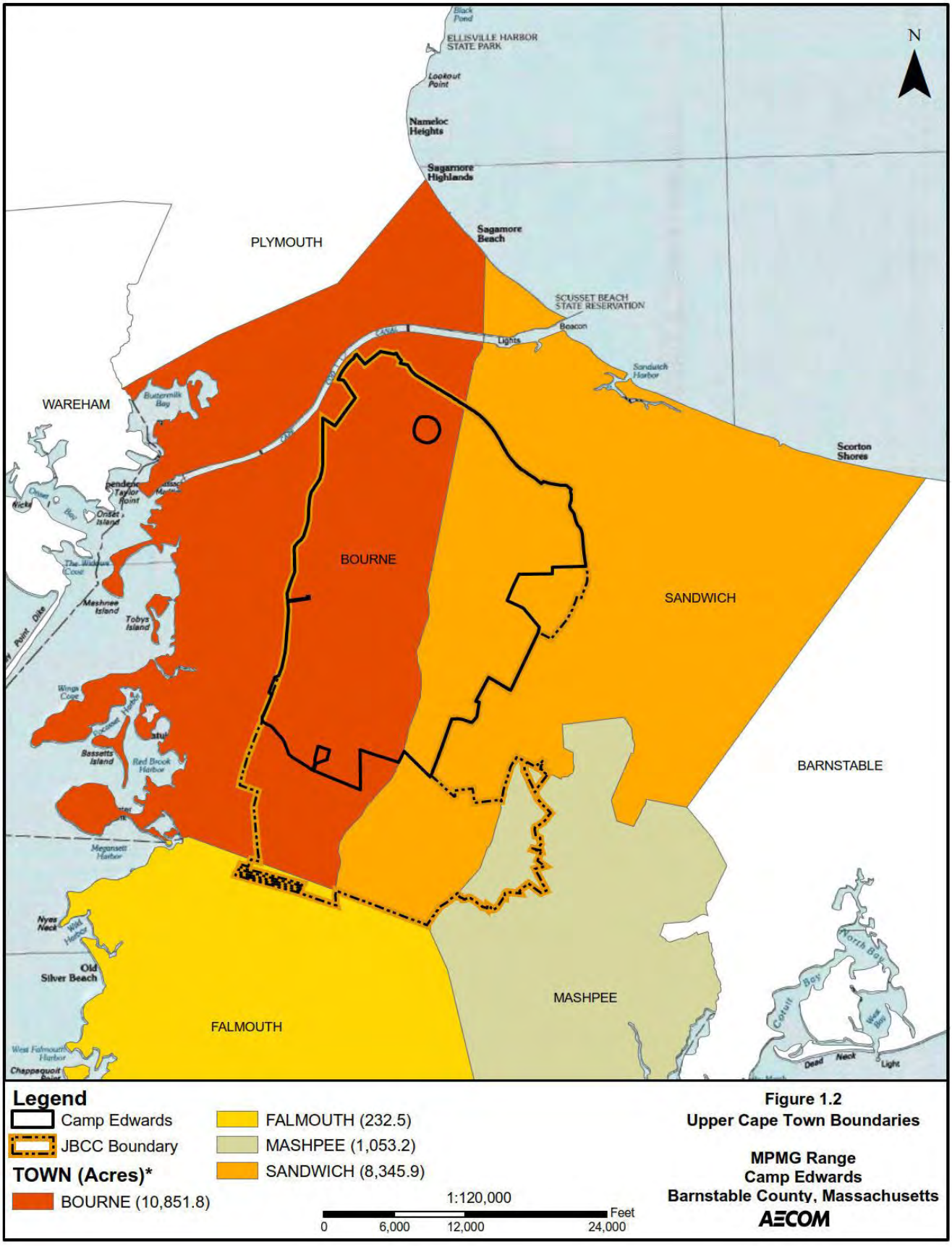


Figure 1.1
JBCC Regional Map

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM


N
ELLISVILLE HARBOR STATE PARK
Nameloc Heights
Sagamore Highlands
Sagamore Beach
PLYMOUTH
SCUSSET BEACH STATE RESERVATION
Beacon Lights
Sandwich Harbor
Scorton Shores
WAREHAM
Buttermilk Bay
Onset Island
BOURNE
SANDWICH
Meshnee Island
Toby's Island
Wings Cove
Bassetts Island
Red Brook Harbor
BARNSTABLE
Megansett Harbor
Nyes Neck
Old Silver Beach
MASHPEE
FALMOUTH
West Falmouth Harbor
Chappaquoit Point
North Bay
Cotuit Bay
Dead Neck
Light
Legend
Camp Edwards
JBCC Boundary
TOWN (Acres)*
BOURNE (10,851.8)
FALMOUTH (232.5)
MASHPEE (1,053.2)
SANDWICH (8,345.9)
1:120,000
0 6,000 12,000 24,000 Feet
Figure 1.2
Upper Cape Town Boundaries
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

1.2.2 Need for the Proposed Action

The Proposed Action is ***needed*** to: 1) address shortfalls in required small arms training facilities and capabilities within Massachusetts, 2) allow multiple units to attain required weapons qualification levels simultaneously and efficiently, and 3) support the MAARNG's and other military users' assigned mission training objectives and requirements as defined in TC 25-8 (Department of the Army, 2016).

Camp Edwards' primary mission is to prepare Soldiers for combat missions overseas, as well as missions to serve and protect the homeland stateside. Army Range Requirement Module (ARRM) data support the need for an MPMG Range, which allows the MAARNG to be able to train with the M249 and M240 (5.56 mm and 7.62 mm) weapons systems. An Army standard MPMG Range does not currently exist within Massachusetts. To receive training on an MPMG Range and meet weapons qualifications standards and training requirements as set forth under Department of the Army (DA) Pamphlet (PAM) 350-38, *Standards in Weapons Training* (STRAC), soldiers and units must travel to one of the following nearest MPMG ranges (**Figure 1-3**): Fort Drum in Jefferson County, New York (370 miles away); Fort Dix in Ocean County, New Jersey (over 300 miles away); or Camp Ethan Allen in Jericho, Vermont (270 miles away). The need for travel causes the loss of critical training resources MAARNG units need, and reduces the time available for conducting required training exercises at Camp Edwards. This travel time frequently violates TC 3-20.40, *Training and Qualifications – Individual Weapons*, which establishes a reasonable travel distance as 100 miles. The aforementioned sites are located at substantially greater distances than this allowance. Without the Proposed Action, the need to travel out-of-state for training requirements would continue, thereby impacting troop morale, training time, and use of fiscal resources.

As Camp Edwards serves as the primary ARNG training site for Massachusetts, the Proposed Action is also needed to ensure the continued and long-term viability of Camp Edwards as a training center capable of providing the land and resources necessary to support the MAARNG and other military users' assigned training missions. Implementation of the Proposed Action would support higher quality, mission-essential, training activities at JBCC, while limiting the need for out-of-state travel.

1.3 Scope of the EA

This EA evaluates the potential direct, indirect, and cumulative physical, environmental, cultural, and socioeconomic effects of implementing the Proposed Action (see **Section 2.2**) and reasonable alternatives to that scenario (see **Section 2.3.2**). The MAARNG developed 12 screening criteria (see **Section 2.3.1**) to identify range locations and designs that would meet the purpose of and need for the Proposed Action. Alternatives were eliminated from further consideration if they did not meet one or more of the screening criteria (see **Section 2.3.3**). In accordance with NEPA and CEQ Regulations, this EA considers the following alternatives for implementing the Proposed Action

- Preferred Action Alternative: Implement the Proposed Action, as described in **Section 2.2**, by constructing and operating an eight-lane MPMG Range. The MPMG range would train and test Soldiers on the skills necessary to zero, detect, identify, engage, and defeat targets, and meet weapons qualifications standards and training requirements as set forth under the DA PAM 350-38 Six lanes would be 800 meters long by 25 meters wide at the firing line and 100 meters wide at a distance of 800 meters. The two middle lanes would extend an additional 700 meters for a total distance of 1,500 meters to accommodate .50 caliber rifle training.

- Reduced-Scale Alternative: Implement the Proposed Action without the two extended middle lanes for .50 caliber rifle training. All eight lanes would be constructed to a distance of 800 meters. This is the approved MILCON project funded for FY 2020. This alternative would allow for the same training capabilities as the Preferred Alternative with the exception of the M2 machine gun and the M82 sniper rifle, which utilize .50 caliber ammunition.

- No Action Alternative: Continue with existing training and operations at Camp Edwards without an MPMG range and continue to travel out-of-state to conduct this training.

Figure 1.3
Regional MPMG Ranges Near Camp Edwards

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

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Resource categories described in **Section 3** and evaluated in **Section 4** include: land use and cover; air quality; noise; soils; groundwater; biological resources, including vegetation, wildlife, and special status species; cultural resources; infrastructure; and hazardous and toxic materials and wastes (HTMW). This EA also considers the cumulative effects of other past, present, and reasonably foreseeable actions within the Proposed Action's Region of Influence (ROI). The ROI boundaries vary depending on the resource category being analyzed as described in **Section 3**. Typically, the ROI will consist of the Proposed Action area, Camp Edwards, JBCC, and possibly include the Towns of Bourne and Sandwich and Barnstable County. That is, those areas within the immediate vicinity of the Proposed Action area that could be influenced by or cause influence on the Proposed Action. Meaningful effects beyond this ROI would not be anticipated, based on the nature and scope of the Proposed Action and the considered reasonable range of alternatives.

As specified under NEPA and CEQ regulations (40 CFR 1500-1508), a monetary cost-benefit analysis is not required as part of the EA. The Proposed Action and its alternatives have been developed based on military training needs and mission requirements. As such, no quantitative financial assessment has been performed as part of this EA. However, economic factors that result in socioeconomic impacts to the ROI are addressed in this document, as required under NEPA.

1.4 Decision Making

As described in 32 CFR Part 651.5, the NEPA process is intended to provide the Army's planners and decision-makers with a meaningful review of environmental considerations associated with a given action. The analysis set forth in this EA allows the decision-makers to carefully balance the protection of these environmental resources while fulfilling the Army's essential roles, including national defense, and MAARNG's mission to provide adequate training facilities in support of the military mission. Both environmental staff and military personnel within the MAARNG were consulted and provided guidance on the development of this EA.

Per amendments to 10 U.S. Code (USC) 10501, described in Department of Defense (DoD) Directive 5105.77, the National Guard Bureau (NGB) is a joint activity of the DoD. NGB serves as a channel of communication and funding between the Army and State ARNG organizations in the 54 U.S. states, territories, and the District of Columbia. The ARNG is a Directorate within NGB. The ARNG's Installation and Environment Directorate (ARNG I&E) is the division within ARNG that is responsible for environmental matters, including compliance with NEPA. As ARNG is the Federal decision-maker concerning this Proposed Action, this is a Federal Proposed Action. The Federal decision-making on the part of the ARNG includes selecting an alternative to implement, and identifying the actions that the Government will commit to undertake to minimize environmental effects, as required under NEPA, CEQ Regulations, and 32 CFR Part 651.

1.5 Public and Agency Involvement

The MAARNG invites public participation in decision-making on new proposals through the NEPA process. Public participation with respect to decision-making on the Proposed Action is guided by 32 CFR Part 651, which is the Army's regulation for implementing NEPA. Consideration of the views of and information provided by all interested persons and stakeholders promotes open communication and enables better decision-making. A record of public involvement, agency coordination and meetings, and Native American consultation associated with this EA is provided in **Appendix A**. Refer to **Section 2.3** for information regarding the additional public review required for the Proposed Action at Camp Edwards and to **Section 9** for a complete list of agencies and individuals consulted in support of analyses conducted during preparation of the EA.

1.5.1 Public Review

The MAARNG, as the proponent of the Proposed Action, will publish and distribute the final EA and, if found appropriate, the draft Finding of No Significant Impact (FNSI) for a 30-day public review and comment period, as announced by a Notice of Availability (NOA) published in the *Cape Cod Times*. The NOA will identify where copies will be made available (e.g., local libraries and/or online) for public review and comment in accordance with the NEPA guidelines. The MAARNG Public Affairs Office will be responsible for reviewing notices for distribution within the local newspaper, and will be the primary contact for local news media inquiries. The MAARNG's NEPA Manager will be responsible for receiving comments submitted during the 30-day public comment period.

If it is determined that implementation of the Proposed Action would result in significant impacts, the MAARNG will either not implement this action as proposed, or will publish in the Federal Register a Notice of Intent (NOI) to prepare an EIS. Throughout this process, the public may obtain information on the status and progress of the EA through the MAARNG Environmental and Readiness Center Public Affairs Office at 339-202-9341.

1.5.2 Agency Coordination

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is a federally mandated process for informing and coordinating with other governmental agencies regarding Federal Proposed Actions. CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the IICEP process, the MAARNG notifies relevant Federal, State, and local agencies and allows them sufficient time to make known their environmental concerns specific to a Proposed Action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA. This coordination fulfills requirements under Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, superseded by EO 12416, and subsequently supplemented by EO 13132, which requires Federal agencies to cooperate with and consider State and local views in implementing a Federal Proposed Action. It also constitutes the IICEP process for this EA.

Agencies and local entities consulted for this EA include the U.S. Army Corps of Engineers (USACE) New England District, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA), U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS), Massachusetts Department of Environmental Protection (MassDEP), Massachusetts Department of Conservation and Recreation (DCR), Massachusetts Historical Commission (MHC), Cape Cod Commission, and Sandwich and Bourne town boards.

The MAARNG is also consulting with the Environmental Management Commission (EMC) who oversees compliance with and enforcement of the Environmental Performance Standards (EPS), which are standards for protecting resources in the Upper Cape Water Supply Reserve, which is coterminous with a 15,000-acre area in northern JBCC. The EMC comprises commissioners from the Massachusetts Department of Fish and Game (DFG); the Massachusetts Department of Conservation and Recreation (DCR); and the MassDEP. A Community Advisory Council (CAC) and Science Advisory Council (SAC) hold public meetings and report to the EMC. The CAC consists of representatives from each of the surrounding towns, base housing, the military, the Cape Cod Commission, the Upper Cape Regional Water Supply Cooperative, and the Wampanoag Tribe, as well as other members appointed by the Governor. The SAC, appointed by the governor, consists of scientists and engineers recognized for their expertise in the areas of public health, water protection, wildlife habitat management, and land use management.

The MAARNG formally initiated MPMG project consultation with a presentation of the proposed action at the EMC, CAC, and SAC meetings in June 2016. The EMC Environmental Officer has been afforded the opportunity to provide comment on the proposed MPMG design at each of the 30%, 60%, and 90% design stages to ensure compliance with the EPS's. Once the design is finalized and after the MEPA and

NEPA processes are completed, the MAARNG will send a letter to the EMC Environmental Officer in accordance with Massachusetts General Law Chapter 47 the Acts of 2002 and its associated EPS, specifically EPS 19, requesting approval of the range design and operations plan for the range (i.e., Operations, Maintenance, and Monitoring Plan). The Environmental Officer and the MAARNG would then present this plan to the two advisory councils and would request the EMC to grant the Environmental Officer the authority to approve the design and operations of the range. Finally, the Environmental Officer would send a formal response to a MAARNG's request.

Agency consultation and correspondence have been incorporated into this EA, as appropriate. Copies of relevant correspondence can be found in **Appendix A.**

1.5.3 Native American Consultation/Coordination

The MAARNG is consulting and coordinating with federally recognized Native American tribes as required under DoD Instruction (DoDI) 4710.02, *DoD Interactions with Federally Recognized Tribes*, which implements the Annotated DoD American Indian and Alaska Native Policy; Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*; NEPA; the National Historic Preservation Act (NHPA); and the Native American Graves and Protection and Repatriation Act (NAGPRA). Tribes were invited to participate in the EA and NHPA Section 106 processes as Sovereign Nations per EO 13175, *Consultation and Coordination with Indian Tribal Governments*.

Based on the MAARNG's Integrated Cultural Resources Management Plan (ICRMP), Federally recognized tribes that are historically affiliated with the Camp Edwards geographic region will be invited to consult on all proposed undertakings with potential to affect properties of cultural, historical, or religious significance to the tribes. These include the Wampanoag Tribe of Gay Head – Aquinnah, the Mashpee Wampanoag Tribal Council, and the Stockbridge – Munsee Community Tribe of Mohican Indians of Wisconsin. Consultation letters dated 7 August 2019 were sent to these tribes via certified mail. Consultation with the Mashpee Wampanoag was also conducted through the EMC and the CAC, as these groups include representatives of the Tribe. Correspondence with the tribes and any responses received are included in **Appendix A**. A Memorandum for Record (MFR) summarizing the Native American consultation efforts by the MAARNG is also included in **Appendix A**.

1.6 Related NEPA, Environmental, and Other Documents and Processes

Other NEPA and early planning level documents and studies were reviewed and/or used to support the preparation of this EA. These documents include, but are not limited to:

- Statewide Operational Noise Management Plan (SONMP)
- Camp Edwards Standard Operating Procedures (SOPs)
- Final Environmental Impact Report for MAARNG Properties at MMR (MAARNG, 2001)
- Camp Edwards Site Consolidation Plan (MAARNG, 2005)
- Draft EA for the Small Arms Range Improvement Project (MAARNG, 2007)
- Final Integrated Cultural Resources Management Plan Revision for Site and Training Installations of the Massachusetts Army National Guard, Fiscal Years 2009-2013 (MAARNG, 2009)
- Camp Edwards INRMP and EA (MAARNG, 2009)
- Environmental Condition of Property (ECOP) Pre-Construction Assessment Camp Edwards MPMG Range Development (MAARNG, 2019)
- Installation Compatible Use Zone Study (MAARNG, 2015)

- Impact Area Groundwater Study Program: Final JBCC Training Areas Investigation Report (TetraTech, Inc., 2018)
- Noise Assessment for Proposed Multi-Purpose Machine Gun Range, Camp Edwards (USAPHC, 2019)

Relevant NEPA and environmental documents are incorporated into this EA and recorded in **Section 6**, **References**, as applicable.

1.7 Regulatory Framework

This EA has been prepared under the provisions of, and in accordance with NEPA, CEQ Regulations, and 32 CFR Part 651. The document has also been prepared as prescribed in the 2011 *ARNG NEPA Handbook, Guidance on Preparing Environmental Documentation for Army National Guard Actions in Compliance with the National Environmental Policy Act of 1969* (ARNG, 2011).

Regulations relevant to the resource areas analyzed in this EA include the Massachusetts Environmental Policy Act (MEPA), Massachusetts Endangered Species Act (MESA), and Chapter 47 of the Commonwealth of Massachusetts Acts of 2002, *An Act Relative to the Environmental Protection of the Massachusetts Military Reservation,* and others. These regulations are included in discussions of the resource areas (**Sections 3** and **4**), as appropriate.

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2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

The Proposed Action is the construction and operation of an eight lane MPMG Range (**Figure 2-1**). Implementation of the Proposed Action would allow the MAARNG to fulfill their mission by meeting weapons qualifications standards and training requirements as set forth under TC 25-8, TC 25-1 (*Training Land*), AR 350-19 (*The Army Sustainable Range Program*), and DA PAM 350-38. The following sections provide a detailed description of the Proposed Action and the alternatives considered to meet the purpose of and need for the Proposed Action. Development and evaluation of the alternatives and the screening criteria used for alternative selection are presented in **Section 2.3**. The proposed MPMG Range is a FY 2020 MILCON project (Project # 250194).

2.2 Proposed Action

The Proposed Action includes the construction and operation of a MPMG Range. The proposed range is identified in the Camp Edwards SAR Improvement Plan (MAARNG, 2012). The range would include two primary components: (1) the physical range footprint, consisting of the firing positions, targetry, support structures, and associated facilities; and (2) the Surface Danger Zones (SDZs), the area where projectiles fired on the range would land based on the types of weapons and ammunition used.

ECOP assessments are required for all MILCON funded projects in accordance with AR 200-1 and the 2011 ARNG ECOP Handbook. ECOP investigations ensure protection of construction workers and personnel, as well as avoidance of unforeseen cleanup costs and delays. An ECOP investigation was initially conducted for the Proposed Action in 2015. Since then two updates have been completed and approved by NGB, most recently in September 2019. The ECOP will require another update prior to implementation of the Proposed Action.

Construction is anticipated to begin in FY 2020, and the range is anticipated to be operational in FY 2022.

2.2.1 Range Construction

The MPMG Range would be constructed in accordance with the USACE Range Design Guide for a MPMG Range (US Army, 2017), TC 25-8, and TC 25-1. Construction activities would include up to 199.0 acres of disturbance and would require up to 170.5 acres of tree clearance to accommodate the range footprint, small arms range operations and control area (SAROCA) facilities, utility extensions, access and maintenance road development, and firebreaks.

2.2.1.1 MPMG Range Components

The proposed range components are summarized in **Table 2-1**. The physical range footprint would consist of firing positions and lanes, targetry, and support structures. Stationary Infantry Targets would be emplaced at approximately 100-meter intervals from the firing position at 100, 200, and 300 meters from the firing line. Moving Infantry Targets would be emplaced in the center lanes between 100 and 600 meters. Widened Stationary Infantry Targets and Double Target Arms would be emplaced between 400 and 800 meters. Individual Movement Techniques would be emplaced between 800 and 900 meters. Stationary Armor Targets would be emplaced between 1,000 and 1,500 meters from the firing line within the two extended lanes.

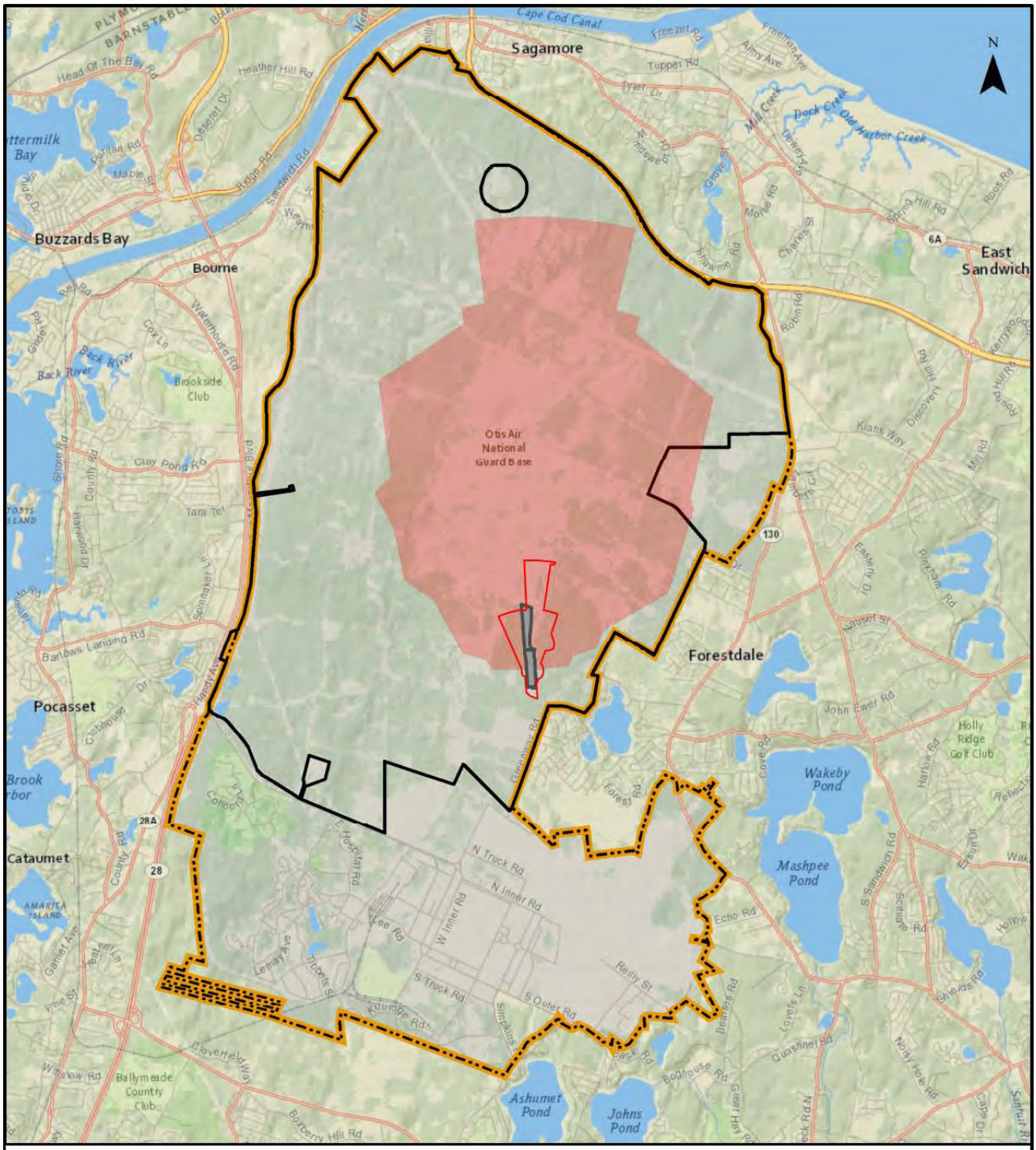

Figure 2.1
Proposed Action Area

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM

Table 2-1: Proposed MPMG Range Components

Component	Proposed Action
Range Area	• Six lanes (Lanes 1-4, 7, 8) – 800-meters long – Width of 25 meters at the firing line (each lane) – Width of 100 meters at 800 meters (each lane) • Two extended lanes (Lanes 5, 6) – 1,500-meters long – Width of 25 meters at firing line (each lane) – Width of 330 at 1,500 meters (each lane)
Targets	• Six lanes (Lanes 1-4, 7, 8) • 26 Double Target Arms • 18 Stationary Infantry Targets • 14 Widened Stationary Infantry Targets • 12 Moving Infantry Targets • Two extended lanes (Lanes 5, 6) • 4 Stationary Armor Targets • 4 Individual Movement Techniques
SAROCA	• Range Control Tower (657 SF) • Range Operations and Storage Facility (800 SF) • Ammunition Breakdown Building (185 SF) • Bleacher Enclosure (726 SF) • Range Classroom Building (800 SF) • Covered Mess Shelter (800 SF)

The Proposed Action would also include the construction of SAROCA facilities to support the overall control and operation of the range, training exercises, administrative services, and support facilities. The type of facilities and their basic functions are summarized below.

- **Range Control Tower** – The 657-SF range control tower would provide space for personnel conducting training exercises and accommodate required electronics and communications equipment. The range control tower would be 26 feet in height.
- **Range Operations and Storage Facility** – The 800-SF operations and storage facility would provide office space for range personnel and also functions as a storage area for range maintenance equipment, spare parts, tools, and supplies.
- **Ammunition Breakdown Building** – The 185-SF ammunition breakdown building would be used as an ammunition issue point for troops using the range. Troops would breakdown containerized small arms ammunition, load magazines, and issue for use in this building.
- **Bleacher Enclosure** – The 726-SF enclosure would protect troops from the weather and extreme elements before and after training events. It would also act as a troop staging area, a place for observing training events, and an assembly area for personnel during lightning events.
- **Range Classroom Building** – The 800-SF classroom provides a location for training units to conduct pre- and post-training briefs and reviews.
- **Covered Mess Shelter** – The 800-SF facility would provide an area for troop messing at the range site, including protection from the weather.

In addition to the main design features as described above, the following additional features and components would be constructed: antiterrorism and force protection (AT/FP) measures in accordance with

the DoD Unified Facilities Criteria (UFC) 4-010-01, *Antiterrorism Standards for Buildings*; range signage; and fire detection and alarm systems.

2.2.1.2 Utilities

Electricity is supplied to Camp Edwards by Eversource. In order to accommodate the MPMG Range, an aboveground power line (5 kV or 15 kV) with electrical and communication feeds would be connected from the closest power source at the H Range, located on the Forestdale-Pocasset Road, and run east approximately 0.5 mile to the MPMG Range. Tree clearing would not be anticipated for this connection as the line would keep to the existing roadways when possible. Utility extensions to all of the targets from the SAROCA would also be required, specifically electrical and telecommunication services. Buried electrical wire would be placed in a conduit running the entire length of the range. Heating in the SAROCA facilities would be provided by stationary electric heating units.

The MPMG Range would be available for limited night fire operations in accordance with existing Camp Edwards Range Regulations. Lighting would be designed to minimize potential lighting interference in adjacent off-range areas and contained within the confines of the MPMG Range. Additional light impact reduction would be based on behavior controls in range use SOPs (e.g., lights off when range not in use). Control of flood lighting would be via manual switching and would not be used during live-fire exercises. The site would also require red night lighting that is used to provide low level lighting for night live-fire exercises when the Soldiers are using night vision equipment. Temporary and permanent lighting for the Proposed Action would also be designed and installed in a manner to reduce interference with wildlife behaviors.

Portable toilet facilities would be provided as latrines are prohibited in accordance with EPS Standards 1.2. Wastewater and sewage from MAARNG training activities at Camp Edwards is pumped from portable toilet facilities and hauled off-base for disposal at licensed disposal facilities.

2.2.1.3 Access and Maintenance Roads, Parking, and Fencing

Access to the Proposed Action area would be provided through the existing Pocasset-Forestdale Road, which would be re-surfaced with aggregate pavement. Within the MPMG Range, compacted gravel access roads would be constructed every 100 meters and along the eastern and western exteriors of the limit of construction as shown on **Figure 2-1** to access target emplacements and for installation and maintenance operations. Sidewalks would be constructed of gravel and would connect the SAROCA facilities. A total of 9,450 SF of new parking space, for both military owned and privately owned vehicles, would be constructed. In addition, a total of 756 linear feet (LF) of fencing would be installed.

Access roads and impervious surfaces would be designed to meet site-specific engineering requirements to support proper stormwater flow management. The proposed MPMG Range would include an onsite stormwater management area to the south of the SAROCA. All stormwater measures would be designed to meet Massachusetts Stormwater Standards.

2.2.1.4 Firebreaks

Firebreaks would be incorporated into the MPMG design and located along existing roads where feasible and require up to 10.0 acres of clearing. MPMG design requires a maintenance road that encircles the range. This road has been to firebreak planning standards. The firebreak planning standard is a 15-foot gravel road with 30-feet of winter mowed grass/forb/low shrub and a 200-foot protective buffer on each side with understory mowing and mechanical tree thinning at 20 to 40 foot spacing.

The overarching goal for the firebreaks is to maintain or improve PPSO and SOS conditions, while reducing wildfire hazard from tracers and other ignition sources. Range use at Camp Edwards introduces significant wildfire hazard into unmanaged and high-risk fuels conditions through the use of tracers and ammunition.

Tracers are forms of ammunition that include a small pyrotechnic charge which makes the trajectory of the ammunition visible. Other ignition sources are flares (used to illuminate the range temporarily at night) and simulators (used to mimic artillery or grenades from opposing forces). All ranges using tracers need to be surrounded with firebreaks and managed fuel conditions. Natural communities within the Camp Edwards, such as pitch pine and scrub oak communities, are fire-dependent systems shaped over thousands of years. With Euro-American influence, the natural fire regime has mostly been suppressed and replaced with infrequent human induced catastrophic fires creating a severe wildland urban interface. It is imperative that the MAARNG and the surrounding communities address and plan for wildland fire.

While firebreaks are a critical component of the MPMG Range, the development, operation, and maintenance of firebreaks are part of a Camp Edwards-wide firebreak and management plan and the Integrated Wildland Fire Management Plan (IWFMP). Therefore, information on firebreaks under the Proposed Action is only discussed in the context of tree clearing required for construction of the MPMG Range; firebreak maintenance and fire management are addressed under the existing IWFMP and therefore addressed in detail in the cumulative effects section (see **Section 4.13**).

2.2.2 Military Training Operations and Usage

A description of the proposed training operations and site usage from the Proposed Action is provided below. Range operations would be conducted in accordance with AR 385-63, *Range Safety*, DA PAM 385-63, *Range Safety*, National Guard Regulation (NGR) 385-63, *Range Safety,* Camp Edwards Range Regulations 350-1, *Training and Training Support*, AR 200-1, *Environmental Protection and Enhancement*, and the EPS.

2.2.2.1 Military Missions

The Proposed Action would not result in a change to the MAARNG military and training missions, although it would allow all MAARNG units to meet their mission training objectives without traveling to an out-of-state facility. The MAARNG has Federal and State missions. The Federal mission is to provide the best organized, well-trained, and well-equipped soldiers to support National Security Objectives and interests. The State mission is to provide the Governor of Massachusetts with trained, equipped, and organized units to assist civil authorities in the preservation of life and property in the event of a manmade or natural disaster. The State mission also includes the reinforcement of first responders with a follow-on force comprising large numbers of highly trained professionals.

Camp Edwards' primary mission is to prepare soldiers for combat missions overseas as well as to serve and protect the homeland stateside.

2.2.2.2 Weapons and Ammunition

The types of weapons and ammunition to be used at the proposed MPMG Range are listed in **Table 2-2**.

Table 2-2: Anticipated Weapons and Ammunition Usage at the MPMG Range

Weapon(s)	Ammunition
Machine Guns: M4, M16, M27, M249	5.56 x 45 mm ball
Machine Guns: M60, M240B, M24, MK48, M134	7.62 x 51 mm Ball
Machine Guns: M2, M82	.50 caliber ball
Shotgun	12 Gauge 00 Buckshot
Grenade Launcher: MK19	40 mm
Pistol: M1911	.45 caliber ball

Source: (URS, 2007)
Notes: Caliber – Bullet diameter in hundredths of an inch (US) or mm (metric)
Ball – General-purpose cartridge with primer, ball, full powder charge

2.2.2.3 Surface Danger Zones

An SDZ is a mathematically predicted area where a projectile will impact upon return to earth, either by direct fire or ricochet. The SDZ is the area extending from a firing point to a distance downrange based on the projectiles fired and weapon system used. The SDZ has specific dimensions for the expected caliber or the weapon being fired so that all projectile fragments are contained in this area. The standard dimensions for SDZs are found in DA PAM 385-63, *Range Safety*. The SDZ for a range must be contained within the controlled boundaries of a training site for the range to be considered buildable and usable without a special waiver from regulations. The MAARNG proposes to configure ranges to allow common SDZs as much as possible without causing training conflicts (i.e., to allow all ranges to be used simultaneously, to the maximum extent possible).

Under the Proposed Action, approximately 5,197 acres would be required for the MPMG Range to accommodate the SDZs associated with the proposed weapons and ammunition, identified in **Table 2-2** (**Figure 2-1**). The SDZs would be managed by the MAARNG in accordance with AR 385-63, *Range Safety*, DA PAM 385-63, *Range Safety*, and NGR 385-63, *Range Safety*. These regulations require that all SDZs fall within lands controlled by the ARNG. No land disturbance is proposed within the designated SDZ area.

2.2.2.4 Projected Site Use

The MPMG Range would be available for all MAARNG units.. The MAARNG units that would utilize the proposed MPMG Range would include, but are not limited to: 164th Transportation Battalion, 126th Support Battalion, 1st Battalion 181st Infantry Regiment, and 126th Aviation Regiment.

A total of 94,974 man-days of training occurred at Camp Edwards for military personnel in Training Year (TY) 2019. Under the Proposed Action, it is anticipated that Camp Edwards site usage could increase by up to 18.6 percent (or by up to 17,650 man-days) as a result of military personnel utilizing the MPMG Range. Peak usage would occur from May through June, during the main annual training cycle from March through November. Night training would occur approximately 1 to 2 days per week, from sundown to 2:00 AM, for a total of 37 to 74 days during the annual training cycle. Projected site use under the Proposed Action in comparison to FY 2019 training use is provided in **Table 2-3**.

Table 2-3: Current and Projected Training Use at Camp Edwards

Area	Training Days/Events		Military Personnel (man-days)		Civilian Personnel (man-days)	
	TY 2019 Use	Proposed Action Use	TY 2019 Use	Proposed Action Use	TY 2019 Use	Proposed Action Use
Ranges	225	398	5,370	14,020	271	271
Training Areas	702	875	49,716	54,716	1,920	1,920
Training Support Areas	1,554	1,727	39,888	43,888	10,233	10,233
Total	**2,481**	**3,000**	**94,974**	**112,624**	**12,424**	**12,424**

Source: Camp Edwards State of the Reservation Report, Final Training Year (TY) 2019

2.3 Alternatives Considered

NEPA, CEQ regulations, and 32 CFR 651 require all reasonable alternatives to be explored and objectively evaluated. Alternatives that are eliminated from detailed study must be identified along with a brief discussion of the reasons for eliminating them. For purposes of analysis, an alternative was considered "reasonable" only if it would enable the MAARNG to accomplish the primary mission of providing land, facilities, and resources at Camp Edwards and to meet the purpose of and need for the Proposed Action.

"Unreasonable" alternatives would not enable the MAARNG to meet the purpose of and need for the Proposed Action.

2.3.1 Alternatives Development (Screening Criteria)

The MAARNG developed and applied the following 13 criteria to screen and evaluate possible alternatives for the Proposed Action. The MAARNG identified that a suitable site would meet the following requirements:

1. **Sufficient Land Area**: The proposed range should have a sufficient amount of land to accommodate the proposed range and its associated SDZs, in accordance with TC 25-8 and AR 385-63.
2. **Optimal Location**: The proposed range should be located within a MAARNG-controlled training area in Massachusetts to avoid excessive travel times and costs for MAARNG.
3. **Land Use Compatibility**: The proposed range should be sited so as to minimize conflicts with other existing ranges and training uses, thereby allowing multiple training ranges and facilities to be utilized concurrently and maximizing training efficiency.
4. **Co-Located Impact Areas**: The proposed range should be sited in a way that maximizes the use of existing impact areas with common SDZs. Such a layout would avoid the creation of new impact areas, avoid consuming additional training land, and reduce the area of potential hazard across Camp Edwards.
5. **Proximate to Existing Utilities**: The proposed range should be sited in close proximity to existing utility services (i.e., electric, telecommunications) in order to minimize construction costs and the need for new or extended utilities.
6. **Proximate to Existing Roads**: The proposed range should be sited in close proximity to existing access roads in order to minimize construction costs and the need for new roads.
7. **Minimal Environmental Concerns**: The proposed range should be sited in an area with few existing known environmental constraints (i.e., notably wetlands and other waters, wooded areas, endangered or threatened species habitat, or cultural resources) to minimize potential effects on existing onsite environmental concerns.
8. **Minimal Ground Disturbance**: The proposed range should be sited in previously disturbed areas to minimize the need for new ground disturbance, and as such, minimize the potential for new and additional impacts to onsite soils, water, biological, and cultural resources.
9. **Minimal Off-Site Disturbance**: The proposed range should be sited in a central location within a MAARNG-controlled training area in order to minimize potential impacts (i.e., dust, noise, lighting) to off-site areas, including residents and sensitive receptors.
10. **Meet Mission Requirements:** The proposed range should allow the MAARNG units to meet all training and ARRM data requirements to fulfill the MAARNG mission.
11. **Regulatory and Planning Compliance:** The proposed range should be in compliance with applicable regulations and planning documents developed for Camp Edwards and the surrounding area.
12. **Maintain Training Capacity**: The proposed range should ensure no net loss in the capacity of the MAARNG or Camp Edwards to support the military missions and conduct training operations.

Through application of the first two screening criteria and evaluation process provided in **Section 2.3.3**., it became readily apparent to the MAARNG that locating the MPMG Range at Camp Edwards was the only alternative capable of meeting these screening criteria. Therefore, the subsequent screening criteria were used to identify proposed project siting within Camp Edwards. Once Camp Edwards was identified as the

only viable location, the MAARNG undertook a rigorous siting analysis to identify potential range locations that could achieve the purpose and need for the Proposed Action, as well as best meet the above screening criteria. **Table 2-4** provides a summary of the alternatives considered and their abilities to meeting the screening criteria.

2.3.2 Evaluated Alternatives

This EA evaluates the potential direct, indirect, and cumulative environmental, cultural, socioeconomic, and physical effects of three alternatives to implementing the Proposed Action: the Preferred Alternative (Proposed Action), the Reduced-Scale Alternative (MILCON-funded alternative), and the No Action Alternative.

Currently, MILCON funding has not been appropriated for the implementation of the Preferred Action Alternative (Proposed Action). At the time of programming the MPMG MILCON funding request, the MAARNG did not include a provision for the additional M2 lanes. As such, the additional features associated with this alternative (e.g., extension of the two middle lanes from 800 feet to 1,500 feet) are not currently funded. These additional features would need to be constructed at a later date.

2.3.2.1 Preferred Alternative (Proposed Action)

The Preferred Alternative would carry out the Proposed Action as described in **Section 2.2** by constructing an eight lane MPMG Range with six lanes 800 meters long by 25 meters wide at the firing line and by 100 meters wide at a distance of 800 meters (**Figure 2-2**). The two middle lanes would extend an additional 700 meters to a distance of 1,500 meters long to accommodate the use of .50 caliber rifles.

The construction of the Proposed Action would fulfill the assigned mission and training requirements to have a machine gun range available within Massachusetts. The Preferred Alternative site is primarily forested and undeveloped, with the exception of maintained land and structures at the KD Range. The Preferred Alternative would require approximately 199.0 acres of land disturbance, including approximately 170.5 acres of tree clearance to accommodate the range footprint and associated support components.

This is the MAARNG's Preferred Alternative because it best meets the screening criteria set forth in **Section 2.3.1**. It effectively provides the best combination of land and resources to sustain quality military training and to maintain and improve MAARNG's readiness posture. This alternative provides many advantages including:

- Located within an existing MAARNG facility, which would keep costs down and reduce travel times.
- Provides ample space/acreage for the required facilities.
- Located in an area with minimal environmental constraints.
- Compatible with current and future land uses and other ranges.
- Located near existing infrastructure and available utility connections.
- Places noise-producing facilities further away from noise-sensitive areas within and adjacent to Camp Edwards.
- Allows for the use of .50 caliber rifles.
- Complies with range requirements per TC 25-8, TC 25-1, and AR 350-19.

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Table 2-4: Summary of Alternatives Eliminated from Further Consideration

Screening Criteria (Section 2.3.1)	Alternatives Carried forward and the Screening Criteria that would ***NOT*** be met		Alternatives Eliminated and the Screening Criteria that would ***NOT*** be met				
	Preferred Alternative (Section 2.3.2.1)	Reduced-Scale Alternative (Section 2.3.2.2)	Other Installation (Section 2.3.3.1)	Undisturbed Area at Camp Edwards (Section 2.3.3.2)	Different Existing Range (Section 2.3.3.3)	Standard-Size MPMG Range (Section 2.3.3.4)	Alternate Southern Location (Section 2.3.3.5)
1. Sufficient Land Area	--	--	✓	--	✓	✓	--
2. Optimal Location	--	--	✓	--	--	--	--
3. Land Use Compatibility	--	--	--	✓	✓		✓
4. Co-Located Impact Areas	--	--	--	✓	--	✓	--
5. Proximate to Existing Utilities	--	--	--	--	--	--	--
6. Proximate to Existing Roads	--	--	--	--	--	--	--
7. Minimal Environmental Concerns	--	--	--	✓	--	✓	✓
8. Minimal Ground Disturbance	--	--	--	✓	--	✓	✓
9. Minimal Off-Site Disturbance	--	--	--	--	--	✓	✓
10. Meet Mission Requirements	--	--	✓	--	--	--	--
11. Regulatory and Planning Compliance	--	--	--	--	--	✓	--
12. Maintain Training Capacity	--	--	✓	--	--	--	--
Reasonable Alternative?	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**

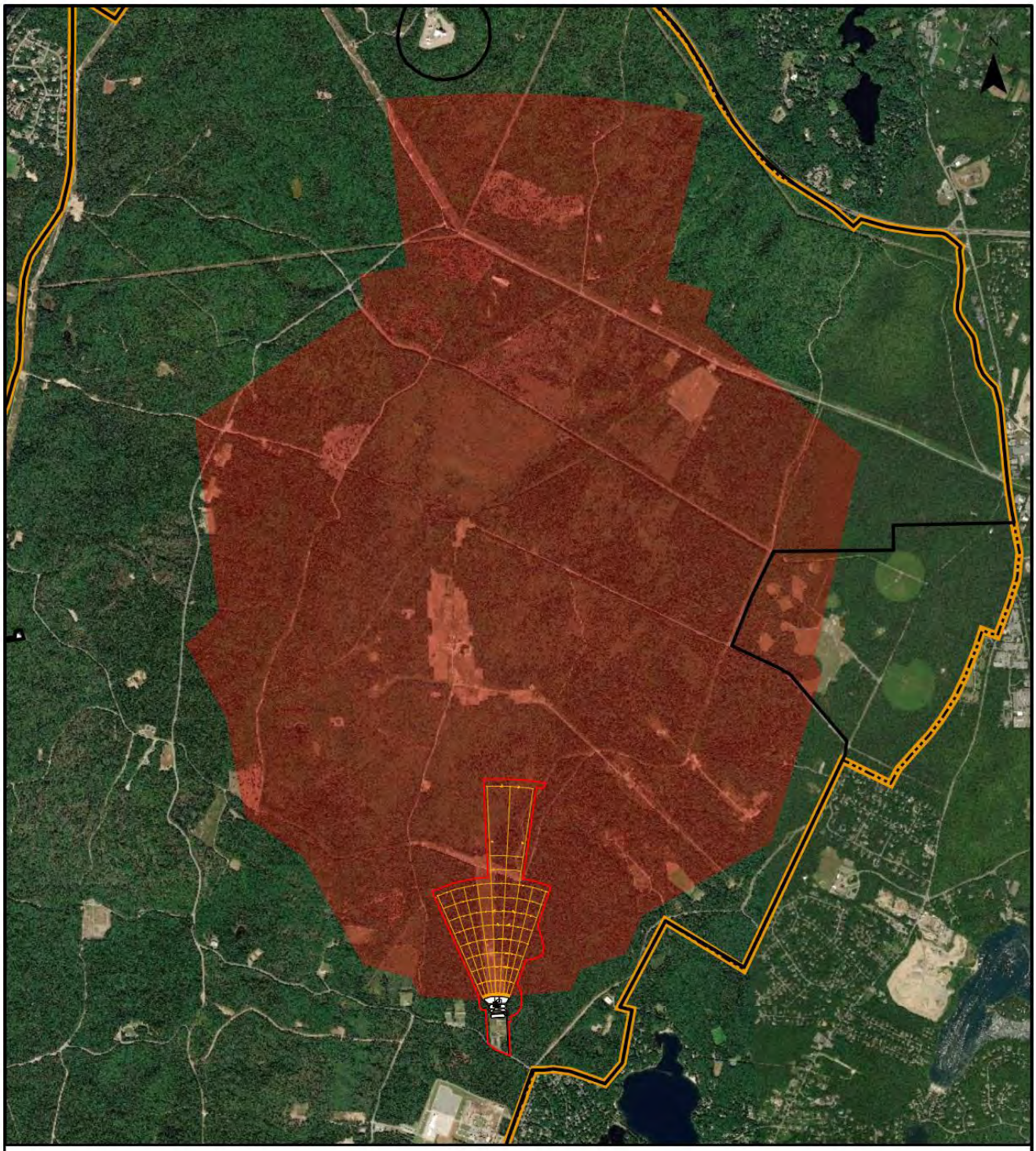


Figure 2.2
Preferred Alternative

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM

2.3.2.2 Reduced-Scale Alternative

The Reduced-Scale Alternative would implement a modified version of the Proposed Action. Approximately 128.0 acres of land would be disturbed during construction, including up to 99.5 acres of tree clearance. All eight lanes would be constructed to a distance of 800 meters, allowing for similar usage and advantages as the Preferred Alternative. However, under this alternative, Lanes 5 and 6 would not be extended to 1,500 meters and therefore, would not be able to accommodate the use of the M2 machine gun, the M82 sniper rifle, and their associated .50 caliber ammunition (**Figure 2-3**). All other range components would be as described under the Proposed Action (**Section 2.2**). The Reduced-Scale Alternative is the approved MILCON project-funded for FY 2020.

2.3.2.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented, and the existing training activities and operations would continue at the installation. Units would continue to travel to either New York, New Jersey, or Vermont for required training on the nearest MPMG Range as the facilities necessary to accommodate the MAARNG would continue to be unavailable in the State. Camp Edwards' full training potential would continue to be limited, causing MAARNG units to risk not meeting STRAC requirements, and wasting resources on excessive travel time and costs. This alternative would limit the capability of the MAARNG to carry out its assigned mission and would not meet the purpose of or need for the Proposed Action.

While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, this alternative was retained to provide a comparative baseline analysis as required under CEQ Regulations at 40 CFR Part 1502.14. The No Action Alternative reflects the status quo and serves as a benchmark against which the effects of the Proposed Action can be evaluated.

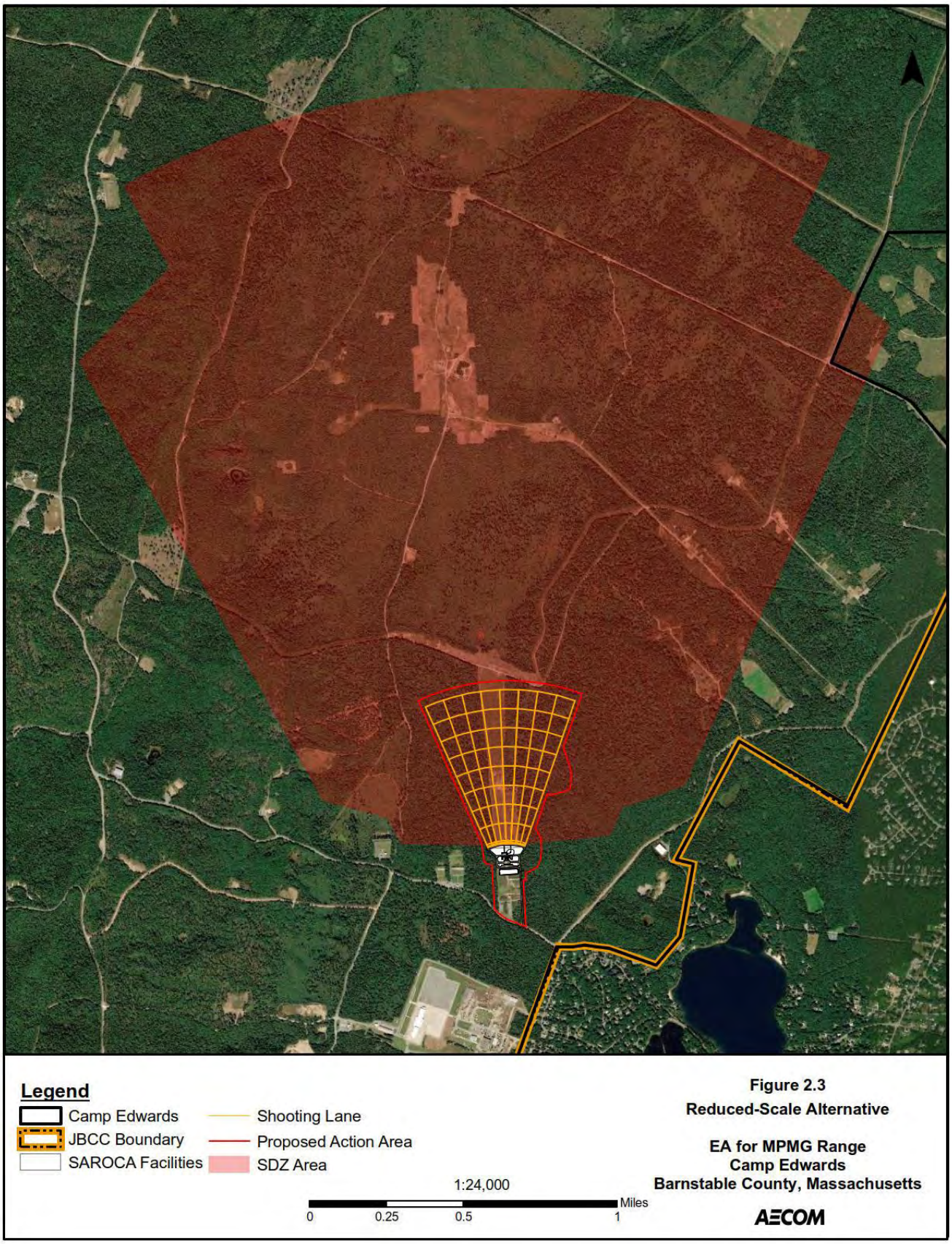
2.3.3 Alternatives Eliminated from Further Consideration

The MAARNG considered but dismissed from further analysis the following alternatives: 1) use a training site at another installation; 2) use an undisturbed area at Camp Edwards; 3) use a different existing range at Camp Edwards; 4) implement a standard-size MPMG range; and 5) use an alternate location 100 meters south of the Proposed Action.

These alternatives were eliminated from further consideration because they did not meet one or more of the screening criteria included in **Section 2.3.1. Table 2-4** provides a summary of the alternatives considered and their abilities to meet the screening criteria; rationales for dismissing these alternatives are summarized below.

2.3.3.1 Use of Other Installation

The MAARNG considered acquiring a completely new training site outside of JBCC for the construction and operation of the proposed MPMG Range. This alternative was examined but eliminated due to the fact that recent DoD initiatives are eliminating and/or consolidating many installations throughout the U.S; therefore, other sufficient land area is not available. Further, conducting training at a range outside of JBCC would still incur travel costs and time, affecting MAARNG efficiency and potentially degrading training capacity. As sufficient land area is available at Camp Edwards, the MAARNG determined that, in accordance with DoD directives and vision, establishment of a new training site at a different installation was neither feasible nor necessary. This alternative does not meet Screening Criteria #1, #2, #10, and #12, as outlined in **Table 2-4**, and was therefore dismissed from further evaluation.


Legend
Camp Edwards
JBCC Boundary
SAROCA Facilities
Shooting Lane
Proposed Action Area
SDZ Area
1:24,000
0
0.25
0.5
1
Miles
Figure 2.3
Reduced-Scale Alternative
EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

2.3.3.2 Use of Undisturbed Area at Camp Edwards

Constructing and operating the MPMG range within an undisturbed portion of Camp Edwards was considered. However, this alternative was eliminated due to the fact that it would require substantial ground disturbance and likely present more environmental concerns, such as impacts on rare species habitat and fragmentation, compared to siting the range at the already cleared KD Range. In addition, any available undisturbed land would be restricted by the existing ranges at Camp Edwards and potentially conflict with existing land use and training, as well as current SDZs and impact areas. This alternative does not meet Screening Criteria #3, #4, #7, and #8 as shown in **Table 2-4**, and was therefore dismissed from further evaluation.

2.3.3.3 Use of a Different Existing Range at Camp Edwards

The MAARNG considered siting the proposed MPMG Range on a different existing range at Camp Edwards. However, siting options were limited for the proposed range given the large amount of land this range requires, including the SDZs. During the range siting process, alternative range configurations were evaluated but were eliminated due to various land constraints and existing usage at other ranges. In some instances, in order to utilize a different existing range, the existing range would have to be dismantled and replaced elsewhere on the base resulting in additional substantial costs. This alternative does not meet Screening Criteria #1 and #3 as shown in **Table 2-4**, and was therefore dismissed from further evaluation.

2.3.3.4 Standard-Size MPMG Range

The standard-size MPMG range per TC 25-8 comprises 10 lanes, requiring more suitable land, which is already a limited resource at Camp Edwards. The standard-size range would require more ground disturbance which may result in substantial environmental impacts, particularly from clearing of rare species habitat. In addition, a larger range would increase noise impacts on adjacent sensitive receptors. The SDZs for this alternative would not comply with AR 385-63 and AR 25-30, as they would be located partially off-base. This alternative does not meet Screening Criteria #1, #4, #7, #8, and #9 as shown in **Table 2-4**, and was therefore dismissed from further evaluation.

2.3.3.5 Alternate Southern Location

An alternate southern location was considered for the proposed MPMG Range. Specifically, the alternate location would shift the entire MPMG Range (as proposed under the Preferred Alternative) south approximately 100 meters. This location would site the range approximately 100 meters north of the existing firing line at the KD Range. While this alternative would fulfill the assigned missions, it would be sited closer to the Camp Edwards and JBCC boundaries, resulting in greater impacts to off-site areas and adjacent uses and more ground disturbance. This alternative does not meet Screening Criteria #3, #7, #8, #9, and #11 as shown in **Table 2-4**, and was therefore dismissed from further evaluation.

2.4 Alternatives Impacts - Comparison Matrix

This EA evaluates the potential direct, indirect, and cumulative environmental, cultural, socioeconomic, and physical effects of three alternatives to implementing the Proposed Action. A comparison of the environmental consequences of these alternatives is provided in **Table 2-5**.

Table 2-5: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Land Use and Cover	*Long term,* ***potentially significant*** *adverse* impact on future land use from a reduction in training use of Camp Edwards.	Long-term, *less-than-significant* adverse impacts on land cover from the clearing of 170.5 acres and permanent conversion of forested areas to maintained grasslands. Long-term, *beneficial* impact on land use by maximizing training value and use of Camp Edwards. **Impacts would be greater than the Reduced-Scale Alternative.**	Long-term, *less-than-significant* adverse impacts on land cover from the clearing of 99.5 acres and permanent conversion of forested areas to maintained grasslands. Long-term, *beneficial* impact on land use by maximizing training value and use of Camp Edwards. **Impacts would be less than the Preferred Alternative.**
Air Quality	*Long-term, less-than-significant adverse* impact on climate change from continued vehicle-generated GHG emissions.	Short-term, *less-than-significant* adverse impacts on air quality from the clearing of 170.5 acres generating fugitive dust and exhaust emissions. Long-term, *less-than-significant* adverse impact on air quality from increased emissions due to training and firing operations. Long-term, *beneficial* impacts on air quality from decreased emissions due to reduced out-of-State travel. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on air quality from the clearing of 99.5 acres generating fugitive dust and exhaust emissions. Long-term, *less-than-significant* adverse impact on air quality from increased emissions due to training and firing operations. Long-term, *beneficial* impacts on air quality from decreased emissions due to reduced out-of-State travel. **Impacts would be less than the Preferred Alternative.**

Table 2-5: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Noise	No impact.	Short-term, *less-than-significant* adverse impacts on noise levels due to construction activities required for clearing 170.5 acres of land. Long-term, *less-than-significant* adverse impacts on noise levels due to increased site usage and weapons firing. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on noise levels due to construction activities required for clearing 99.5 acres of land. Long-term, *less-than-significant* adverse impacts on noise levels due to increased site usage and weapons firing. **Impacts would be less than the Preferred Alternative.**
Soils	No impact.	Short-term, *less-than-significant* adverse impacts on soils due to erosion, sedimentation, and compaction resulting from the disturbance of 199.0 acres of land. Long-term, *less-than-significant* adverse impact on soils from training activities. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on soils due to erosion, sedimentation, and compaction resulting from the disturbance of 128.0 acres of land. Long-term, *less-than-significant* adverse impact on soils from training activities. **Impacts would be less than the Preferred Alternative.**
Groundwater	No impact.	Short-term, *less-than-significant* adverse impacts on groundwater from potential contaminant spills during construction. Long-term, *less-than-significant* adverse impacts on groundwater from inadvertent release of contaminants during site maintenance and training operations. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on groundwater from potential contaminant spills during construction. Long-term, *less-than-significant* adverse impacts on groundwater from inadvertent release of contaminants during site maintenance and training operations. **Impacts would be less than the Preferred Alternative.**

Table 2-5: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Biological Resources	No impact.	Short-term, *less-than-significant* adverse impacts on vegetation from temporary clearing for construction of the MPMG range. Long-term, *less-than-significant* adverse impacts on vegetation from the permanent loss of 170.5 acres of forested land. Short-term, *less-than-significant* adverse impacts on wildlife species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on wildlife species from potential habitat loss and training range operations. Short-term, *less-than-significant* adverse impacts on special status species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on special status species from potential habitat loss and training range operations. Long-term, *beneficial* impacts on migratory birds from enhanced habitat due to wildfire management practices. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on vegetation from temporary clearing for construction of the MPMG range. Long-term, *less-than-significant* adverse impacts on vegetation from the permanent loss of 99.5 acres of forested land. Short-term, *less-than-significant* adverse impacts on wildlife species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on wildlife species from potential habitat loss and training range operations. Short-term, *less-than-significant* adverse impacts on special status species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on special status species from potential habitat loss and training range operations. Long-term, *beneficial* impacts on migratory birds from enhanced habitat due to wildfire management practices. **Impacts would be less than the Preferred Alternative.**
Cultural Resources	No impact.	*No effect* on cultural resources.	*No effect* on cultural resources.

Table 2-5: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Infrastructure	No impact.	Short-term, *less-than-significant* adverse impacts on traffic conditions from temporary construction congestion. Long-term, *less-than-significant* adverse impacts on traffic conditions from personal and military vehicles moving to and from the new MPMG Range. Short-term, *less-than-significant* adverse impacts on utilities from temporary utility interruptions during utility extensions and construction. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on traffic conditions from temporary construction congestion. Long-term, *less-than-significant* adverse impacts on traffic conditions from personal and military vehicles moving to and from the new MPMG Range. Short-term, *less-than-significant* adverse impacts on utilities from temporary utility interruptions during utility extensions and construction. **Impacts would be less than the Preferred Alternative.**
HTMW	No impact.	Short-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during construction. Long-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during training operations and site maintenance. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts associated with handling, storage, use, transportation, and disposal of HTMW during construction. Long-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during training operations and site maintenance. **Impacts would be less than the Preferred Alternative.**

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3. AFFECTED ENVIRONMENT

Per 40 CFR Part 1501.7(a)(3), the CEQ recommends agencies identify and eliminate from detailed study any issues that are not significant or that have been covered in another environmental review, narrowing the discussion to a brief presentation of why they will not have a significant effect on the human environment, or providing a reference to their coverage elsewhere. Therefore, this section specifically describes current baseline conditions within and in the vicinity of the proposed MPMG Range and associated SDZs, as appropriate, at Camp Edwards in Barnstable County, with emphasis on those resources that would be potentially affected by the implementation of the Proposed Action or its alternatives. **Section 4**, Environmental Consequences, identifies potential direct, indirect, and cumulative effects of the project alternatives on each of the issue areas presented in this section. Regulations relevant to resource areas analyzed in this EA are included in **Sections 3** and **4**, as appropriate.

The MAARNG determined the Proposed Action would have no adverse impact on the following resources: geology and topography; surface waters, wetlands, floodplains, and coastal resources; socioeconomic conditions, including health and safety, recreation, and protection of children; and environmental justice. The following sections discuss the reasons for eliminating these issues from further analysis in the EA.

Geology and Topography

The geology of Camp Edwards is composed primarily of Pleistocene Age sandstones, with sandstone deposits of Holocene age present along major drainage channels overlying Proterozoic-age schist, gneiss, and granite bedrock. Surficial glacial sediments deposited during the retreat of the Wisconsin glaciation underlie western Cape Cod. No geologic hazards or active significant faults are known to occur within the Proposed Action area's subsurface geology. Topography within Camp Edwards ranges from 250 feet above mean seal level (MSL) at the northern end of the installation to 50 feet above MSL at its southern end. Large glacial deposits dominate the northern and western portion of Camp Edwards with high topographic relief of rolling hills and deep kettle holes; slopes range from 0 to 15 percent (MAARNG, 2009). In contrast, the southern portion has low elevations and little topographic relief. Topographic conditions surrounding the proposed MPMG Range are relatively flat.

No geologic hazards are apparent in the Proposed Action area and no mineral resources would be anticipated. Topographic conditions surrounding the Proposed Action area are relatively flat and would not be altered. Therefore, the Proposed Action would have no impact on local geology and topography; these resources are dismissed from further analysis in the EA.

Surface Waters, Wetlands, Floodplains, and Coastal Resources

Surface water resources consist of lakes, rivers, and streams. Surface water resources are sparse on Camp Edwards. No large lakes, rivers, or streams exist on the property, only small palustrine (i.e., marshy) wetlands and ponds. No surface waters are present at or near the proposed MPMG Range. Similarly, no wetlands occur in or surrounding the Proposed Action area. Further, no 100-year floodplains, which are areas with a 1 percent chance of flooding each year (FEMA, 2019).

The JBCC is located within the Coastal Zone, as identified by the Massachusetts Office of Coastal Zone Management (CZM), which includes all of Cape Cod. In 1972, the U.S. Congress passed the Coastal Zone Management Act (CZMA), which establishes a national policy to "preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations." The CZMA requires a Federal Consistency Determination to evaluate a Federal action's compliance with the CZMA. DoD activities subject to CZM review include the location, design, acquisition, construction, or disposal of new or enlarged defense installations; establishment of impact, compatibility, or restricted use zones; and erosion control structures. As the development of the MPMG Range does not fall within any of these activities, the Proposed Action is not subject to CZM review and does not require a Federal Consistency Determination.

As no surface waters, wetlands, or floodplains occur within the Proposed Action area, and the Proposed Action is not subject to CZM review, the Proposed Action would have no effect on these resources. Further, the proposed MPMG Range would have an onsite stormwater management area and all stormwater measures would be designed to meet Massachusetts Stormwater Standards. Therefore, these resources were dismissed from further analysis in this EA.

Socioeconomics

Overall usage at Camp Edwards could increase up to 18.6 percent; however, the Proposed Action would not impact the overall long-term socioeconomic conditions of the region. An increase in local housing would not be anticipated as the proposed range training would not require Soldiers to remain at or in the vicinity of Camp Edwards for extended periods. Additional demand could be placed on police and fire protection services, as well as for medical services, should an accident occur during training activities; however, medical and emergency service providers would have the capacity to meet these demands. Construction of the Preferred Alternative would generate temporary jobs to support the construction workforce and benefit the local economy by generating income, taxes, and revenue due to project-related spending and expenditure of wages. These effects would only occur over the course of the construction period, however; thus, benefits would have minimal effect in the context of the regional economy and no long-term changes would be expected. Socioeconomic conditions would not change in the long-term with implementation of the Proposed Action. In addition, no recreational areas occur within the Proposed Action area and the proposed range would not be accessible to the public or children. Therefore, these resources are dismissed from detailed analysis in this EA.

Environmental Justice

In accordance with EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, the disproportionate placement of adverse environmental, economic, social, or health effects from Federal proposed actions and policies on minority and low-income populations must be avoided. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population of the large surrounding area. The Massachusetts Executive Office of Energy and Environmental Affairs identifies environmental justice communities in the State as having 25 percent or more residents identifying as a race other than white, or who have an income equal to or less than 65 percent of the Statewide median (MassDEP, 2019). The US Census Bureau defines a "poverty area" as a census tract where 20 percent or more of the residents have incomes below the poverty threshold, and an "extreme poverty area" as one with 40 percent or more below the poverty level.

Census data indicate that neither the Town of Sandwich nor the Town of Bourne contain minority populations exceeding 25 percent. The poverty rates for the Towns of Bourne and Sandwich, Barnstable County, Massachusetts, and the U.S. were all below 20 percent (US Census Bureau, 2015). Therefore, no specific concentrations of minority or low-income populations are located in the vicinity of the Proposed Action area, and the Proposed Action would not occur in an environmental justice area of concern. Low-income and minority populations would not be particularly or disproportionately affected by the Proposed Action. Therefore, consideration of environmental justice is dismissed from detailed analysis in this EA.

3.1 Location Description

JBCC is located in southeastern Massachusetts on Cape Cod within four towns (Bourne, Sandwich, Falmouth, and Mashpee) in Barnstable County, approximately 50 miles southeast of Boston (see **Figure 1-1**). JBCC is divided into two major sections: 1) the southern 5,000-acre Cantonment Area comprising of administrative buildings, barracks, aircraft and vehicle maintenance shops, housing, and runways; and 2) the northern 15,000-acre, largely wooded area comprising trails, paved roads, training areas and ranges, and the Central Impact Area. This area is designated as the Upper Cape Water Supply Reserve created for

the permanent protection of water supply, wildlife, and for compatible military training. Within the JBCC there are five military commands including: the MAARNG at Camp Edwards; the MA ANG at Otis ANGB; the 253rd Combat Communications Group also at Otis ANGB; the USAF at the 6th Space Warning Squadron phased array radar site at Cape Cod Air Force Station; and the USCG at Air Station Cape Cod. The MAARNG contains the largest amount of land at JBCC.

Camp Edwards encompasses approximately 15,000 acres of the approximately 20,554-acre JBCC (see **Figure 1-1**). Camp Edwards is situated within the boundaries of Bourne and Sandwich (see **Figure 1-2**), and is bound by U.S. Route 6, State Route 28, and State Route 130 to the north, west, and east, respectively. The Proposed Action area is situated within Camp Edwards, immediately south of the Central Impact Area, in the area previously used as a KD Range. The 38.5-acre KD Range was used for range training activities from 1966 to 2004 and is currently used for other training operations such as UAS.

The local climate is defined as humid continental. The neighboring Atlantic Ocean has a moderating influence on the temperature extremes of winter and summer. Winds of 30 miles per hour may be expected on an average of at least one day per month. Gale force winds can be common and more severe in winter. Average daily temperatures range from 29.6 ºF in February to 70.4 ºF in July. Mean annual rainfall and snow melt water ranges from 45 to 48 inches. The average net recharge to groundwater of this annual rainfall is 27 inches per year. Occasional tropical storms that affect Barnstable County may produce 24-hour rainfall events of five to six inches. Average annual snowfall is 24 inches.

3.2 Land Use and Cover

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring within a specified area. Land use can generally be separated into two primary categories: natural and human modified. Natural land cover includes woodlands, rangeland, grasslands, and other open or undeveloped areas. Human-modified land use includes residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and generally other areas developed from a natural land cover condition. Land use is regulated by management plans, policies, regulations, and ordinances (i.e., zoning) that determine the type and extent of uses allowable in specific areas and protect specially designated or environmentally sensitive areas.

Military training lands can be defined using the following land use categories: improved, semi-improved, and unimproved grounds. Improved grounds are developed areas that have either an impervious surface (e.g., sidewalks, buildings) or landscape plantings that require intensive maintenance and upkeep. Semi-improved grounds are where periodic grading or maintenance is performed for operational reasons (e.g., landing zones, wildlife food plots). Unimproved grounds receive little to no grounds maintenance (e.g., streams, wetlands, forests).

Camp Edwards is comprised of approximately 582 acres (4 percent) of improved grounds, 675 acres (5 percent) of semi-improved grounds, and 13,311 acres (91 percent) of unimproved grounds. The land use of Camp Edwards consists of training activities (e.g., assembly, tactical maneuvering, and small arms range firing), support and maintenance facilities, aviation facilities, and environmental management. There are six active small arms ranges on Camp Edwards, which the MAARNG uses for weapons familiarization, weapons zeroing, and qualification.

The Proposed Action area occurs on State-owned land leased to the Federal government that is licensed back to the MAARNG. The area consists of approximately 139.3 acres of unimproved grounds dominated by pine barrens, 37.4 acres of semi-improved ground where open areas are mowed to maintain grasslands, and 22.0 acres of improved grounds.

Camp Edwards is not subject to the requirements of local zoning ordinances as State-owned lands and military installations are not subject to local zoning or building permit codes. The activities within Camp Edwards are managed through the EPS's that guide both military and civilian users in the protection of

Camp Edwards' natural and cultural resources and the groundwater beneath the Reserve during conduct of compatible military training and civilian use activities, such as hunting.

Incompatible development of land close to military installations can adversely affect the ability of an installation to carry out its mission, public safety, and economic viability of a community if military operations and missions must relocate due to incompatible urban encroachment. For this reason, JBCC and Camp Edwards, in partnership with other governmental agencies and non-governmental organizations, have taken measures to restrict encroachment in lands adjacent to the installation. The Joint Land Use Study (JLUS) was funded by the DoD Office of Economic Adjustment and prepared by the Cape Cod Commission in 2012 to coordinate land-use planning effort between military installations and the surrounding communities (DoD Office of Economic Adjustment, 2005). The MAARNG is also required to develop Range Operations, Maintenance, and Management Plans (OMMP) for each range. Currently all OMMPs are being integrated into one plan.

3.3 Air Quality

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions. The ROI for air quality includes the Towns of Bourne and Sandwich in addition to the JBCC.

3.3.1 Federal Air Quality Regulations

The ambient air quality in an area can be characterized in terms of whether it complies with the primary and secondary National Ambient Air Quality Standards (NAAQS). The CAA, as amended, requires the USEPA to set NAAQS for pollutants considered harmful to public health and the environment. NAAQS are provided for six principal pollutants, called "criteria pollutants" as listed under Section 108 of the CAA: carbon monoxide (CO); lead (Pb); nitrogen oxides (NO_x); ozone (O_3); particulate matter (PM), divided into two size classes of (1) aerodynamic size less than or equal to 10 micrometers (PM_{10}), and (2) aerodynamic size less than or equal to 2.5 micrometers ($PM_{2.5}$); and sulfur dioxide (SO_2). The General Conformity Rule (40 CFR Part 51, Subpart W) requires Federal agencies to prepare written Conformity Determinations for Federal actions in or affecting NAAQS in nonattainment and maintenance areas, except when the action is covered under the Transportation Conformity Rule or when the action is exempted because the total increase in emissions is insignificant, or *de minimus*. NAAQS promulgated by the USEPA are defined as the maximum acceptable concentrations, both annual and short-term standards that may be reached. The short-term standards may not be exceeded. The allowable times per year a short-term standard may not be exceeded varies depending on the pollutant and averaging period of standard. Most NAAQS cannot be exceeded more than once per year.

According to the USEPA, air quality within Barnstable County and the ROI is in "attainment" for all NAAQS, though the area is treated as moderate non-attainment for ozone given its location within the Ozone Transport Region (OTR) designated by Section 176A of the CAA, with 1990 amendments (USEPA, 2019). However, for General Conformity purposes, non-attainment designations due solely to being part of the OTR are not applicable. Therefore, the procedural requirements of the General Conformity Provision of the CAA do not apply to the Proposed Action and no Conformity Determination is required.

3.3.2 State Air Quality Regulations

The CAA gives the authority to States to establish air quality rules and regulations. The Commonwealth of Massachusetts has adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants. The primary regulatory authority for air quality in Massachusetts is the

MassDEP – Air and Climate Division. Massachusetts has also developed a State Implementation Plan (SIP) to enforce the CAA. The Massachusetts Air Pollution Control Regulations (310 Code of Massachusetts Regulations [CMR] 6.00-7.00) outline emission limits necessary to attain ambient air quality standards for fugitive emissions, dust and particulates.

Camp Edwards is part of the Metropolitan Providence Intrastate Air Quality Control Region (AQCR 120) which was designated a serious non-attainment area for the 1-hour ozone and 8-hour ozone (1997) standards; those standards have since been revoked by USEPA. With the exception of CO, for which several areas of Massachusetts are unclassified, Massachusetts is in attainment for SO_2, $PM_{2.5}$, PM_{10}, NO_2, and Pb. The Metropolitan Providence Intrastate AQCR 120 is classified as attainment for all criteria pollutants except for the one-hour ozone standard which has been revoked as previously noted.

All activity at Camp Edwards must meet the EPS Air Quality Performance Standards which include, compliance with both the SIP for Air Quality and the Federal CAA, and air sampling if required by regulation of the activity. In addition, projects under the review of MEPA are required to conduct an analysis of impacts on greenhouse gas (GHG) emissions, in accordance with the MEPA Greenhouse Gas Emissions Policy and Protocol established in 2007.

3.3.3 Air Quality - Existing Conditions

Stationary source emissions at Camp Edwards are generally associated with installation wide natural gas/propane fired heating units, fuel transfer operations, as well as the operation of diesel-fired emergency generators located at essential facilities within the cantonment area. Based on current facilities and operations, Camp Edwards is considered a “minor source” of air emissions and is required to complete a Source Registration/Emissions Statement on a triennial basis in accordance with Massachusetts Code of Regulation 310 CMR 7.12.

Muzzle blast from small arms fire releases lead air emissions, although these emissions are expected to be a minor source of inhalation exposure limited to range users. Likewise, the detonation of unexploded ordnances associated with range clearance and clean-up activities release measurable amounts of emissions into the air. Emissions from these events are captured and reported in an annual Toxic Release Inventory report required under the Superfund Amendments and Reauthorization Act (SARA) Section 313. Camp Edwards does not require an air quality control permit for stationary sources because of the number of ARNG facilities base-wide.

Mobile sources, such as vehicles, equipment, and personally owned vehicles are present as well. Air pollution from fugitive dust may result from vehicles traveling on unpaved roads and troop training activities. These mobile sources are regulated in Massachusetts in accordance with the vehicle emissions regulations of 310 CMR 60.000.

In addition, Camp Edwards implements a prescribed burn program that requires an air quality control permit. The MassDEP Southeast Regional Office renewed the Camp Edwards prescribed burn permit (#4F02008) on 20 August 2018.

3.3.4 Sensitive Receptors

Sensitive receptors for air quality assessments include, but are not limited to, asthmatics, children, and the elderly, as well as specific facilities, such as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, and childcare centers.

Residential neighborhoods are present within the vicinity of the Proposed Action area. Over 100 houses are present in the neighborhood immediately adjacent to the JBCC eastern boundary. The closest residences are approximately 0.2 mile from the southeastern corner of the proposed MPMG Range **(Figure 2-2**). Other than residential areas, no other sensitive receptors occur within 1.0 mile of the proposed MPMG Range.

3.4 Noise

Noise is generally defined as unwanted sound. It can be any sound that is undesirable because it interferes with communications or other human activities, is intense enough to affect hearing, or is otherwise annoying. Noise may be intermittent or continuous, steady, or impulsive. Human response to noise varies, depending on the type of the noise, distance from the noise source, sensitivity, and time of day.

3.4.1 Noise Regulations

Land use guidelines identified by the Federal Interagency Committee on Urban Noise are used to determine compatible levels of noise exposure for land use planning and control (FICUN, 1980). Chapter 14 of AR 200-1 implements Federal regulations associated with environmental noise from Army activities across different noise zones, which are established based on average day-night levels (DNL) of noise over 104 days. The decibel (dB) is the accepted unit of measurement for noise level and uses a logarithmic scale. Per AR 200-1, noise-sensitive land uses, such as housing, schools, and medical facilities are acceptable within the Land Use Planning Zone (LUPZ) and Noise Zone I; noise-sensitive land uses are not recommended in Noise Zone II, and not compatible in Noise Zone III. **Table 3-1** includes the noise limits for small arms use within the noise zones and compatibility with noise-sensitive uses.

Table 3-1: Land Use Planning Guidelines

Noise Zone	Noise-Sensitive Land Use	Noise Limits Small Arms Peak (dB)
Land Use Planning Zone (LUPZ)	Generally Compatible	n/a
Zone I	Generally Compatible	< 87
Zone II	Generally Not Compatible	87 – 104
Zone III	Not Compatible	> 104

Source: AR 200-1
dB = decibel

The MassDEP has established a Noise Level Policy for implementing the Massachusetts Noise Control Regulations defined in 310 CMR 7.10. The policy specifies that a new noise source proposed in an area that is not likely to be developed for residential use because of development constraints, or proposed in a commercial or industrial area with no sensitive receptors, may not be required to mitigate its noise impact. However, a new noise source proposed in an area with current or proposed noise-sensitive receptors could be required to mitigate its noise impact in these areas. Public safety agencies (i.e., fire and police) and civil and national defense activities are exempt from these State regulations.

The MAARNG published a SONMP in December 2007 that provides a strategy for noise management at MAARNG facilities, including Camp Edwards. The plan includes a description of noise environments, including levels from small arms and aircraft training activities, and procedures for noise management.

3.4.2 Existing Noise Conditions

The ambient noise environment around JBCC is affected mainly by small arms training, helicopter and aircraft activity originating from the airfield on Air Station Cape Cod, and automobile traffic. The existing noise environment is characteristic of an active military installation, dominated by live-fire training ranges and helicopter traffic. Existing noise contours for small arm ranges are illustrated in **Figure 3-1**. Areas off-Post generally experience noise levels in Zone I or less from range operations, which are considered compatible with residential and other noise sensitive land uses. There are two small areas where the Zone

II contours fall outside the JBCC boundary, including one small area that includes an existing residential area.

Noise-sensitive receptors are individuals or groups that are more susceptible to adverse effects of high noise levels. These typically include children and the elderly, as well as specific facilities, such as long-term health care facilities, retirement homes, residences, and childcare centers. Sensitive noise receptors are present in the vicinity of the Proposed Action area and are the same as those listed for air quality (**Section 3.3.4**).

3.5 Soils

The term soil, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use.

Soils at Camp Edwards are generally sand or sandy loam with a high susceptibility to erosion. Five soil types occur within the proposed MPMG Range as provided in **Table 3-2**. The primary soils present in and around the Proposed Action area include the Merrimac sandy loam, with slopes of 0 to 3 percent. Enfield silt loam, 0 to 3 percent slopes, are present in the area underlying the proposed 1,500-meter lanes (**Figure 3-3).** Soils at the site are well-drained and have a low frequency of flooding and ponding. As previously mentioned, topographic conditions surrounding the Proposed Action area are relatively flat (**Figure 3-2**). None of the soils are designated as hydric. Primary soil management concerns for these soil types center around erosion.

Past soil contamination at the KD Range is further discussed in **Section 3.12.**

Table 3-2: Soil Map Units Occurring in Proposed Action Area

Map Unit Symbol	Map Unit Name	Prime Farmland	Comments
254A	Merrimac fine sandy loam, 0 to 3% slopes	Prime Farmland	Well Drained
254B	Merrimac fine sandy loam, 3 to 8% slopes	Prime Farmland	Well Drained
254C	Merrimac fine sandy loam, 8 to 15% slopes	Statewide Important	Well Drained
265A	Enfield silt loam, 0 to 3% slopes	Prime Farmland	Well Drained
435B	Plymouth loamy coarse sand, 3 to 8% slopes	None	Somewhat Excessively Drained
435C	Plymouth loamy coarse sand, 8 to 15% slopes	None	Somewhat Excessively Drained
435D	Plymouth loamy coarse sand, 15 to 35 % slopes	None	Somewhat Excessively Drained
665	Udipsamments, smoothed (soils on outwash plains altered by human activities	None	Excessively Drained

Source: (NRCS, 2017)

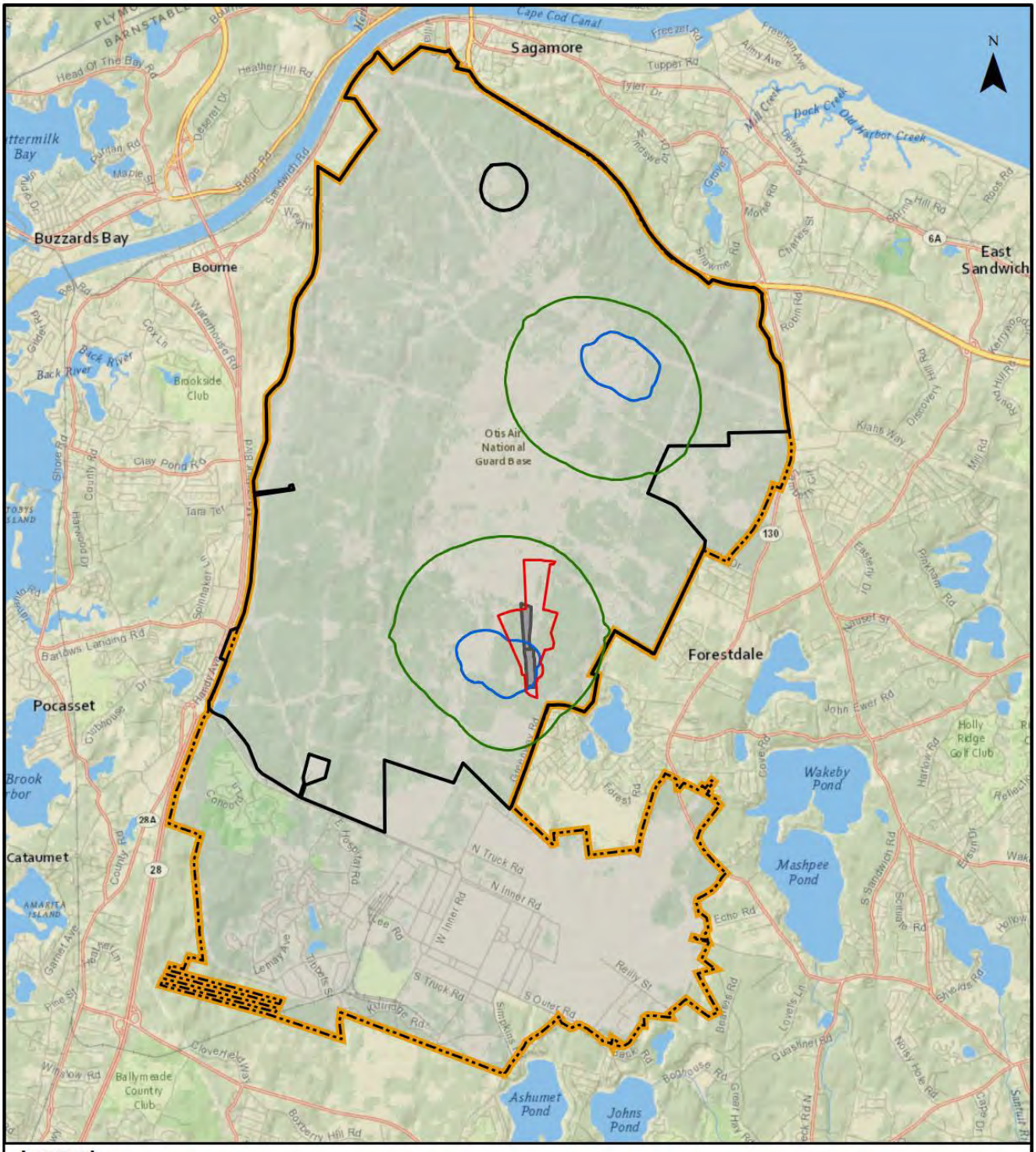


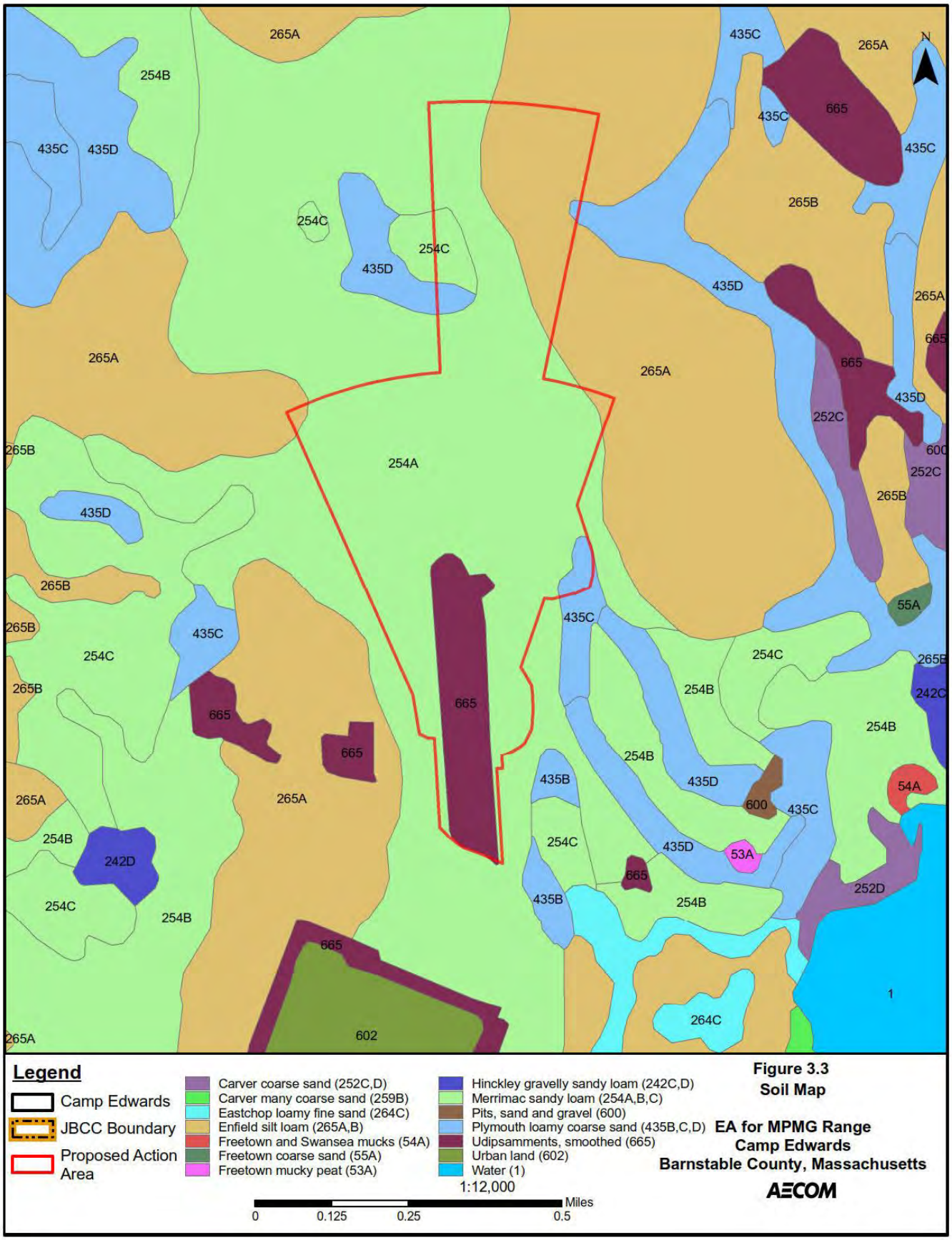
Figure 3.1
Existing Noise Contours

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM


Legend
Camp Edwards
JBCC Boundary
Proposed Action Area
10 ft Contour
1:10,000
0
0.125
0.25
0.5
Miles
Figure 3.2
Topography
EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

1148


265A
254B
435C
435D
254C
435D
265A
254A
435D
265B
265B
435C
254C
265B
665
665
265A
254B
242D
254C
254B
665
602
265A
435C
665
435C
265B
435D
435D
252C
665
435D
265A
600
252C
265B
55A
435C
254C
254B
254B
435B
435D
600
435C
254C
435D
53A
665
435B
254B
252D
1
264C
N
Legend
Camp Edwards
JBCC Boundary
Proposed Action Area
Carver coarse sand (252C,D)
Carver many coarse sand (259B)
Eastchop loamy fine sand (264C)
Enfield silt loam (265A,B)
Freetown and Swansea mucks (54A)
Freetown coarse sand (55A)
Freetown mucky peat (53A)
Hinckley gravelly sandy loam (242C,D)
Merrimac sandy loam (254A,B,C)
Pits, sand and gravel (600)
Plymouth loamy coarse sand (435B,C,D)
Udipsamments, smoothed (665)
Urban land (602)
Water (1)
1:12,000
0
0.125
0.25
0.5
Miles
Figure 3.3
Soil Map
EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

The Farmland Protection Policy Act (FPPA) (7 USC 4208[b]) was adopted in 1981 is intended to minimize the impact that any Federal programs would have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. For the purpose of FPPA, farmland includes Prime Farmland, Unique Farmland, and Land of Statewide Importance. Farmland subject to FPPA requirements does not have to be currently used for cropland and can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

While the majority of the MPMG Range is identified as containing Prime Farmlands and Farmland of Statewide Importance, the subject property is exempt from the FPPA in accordance with Section 1547(b) of this Act which exempts acquisition or use of farmland for national defense purposes. Further, the location of this range within the Impact Area and its past use as an active range make the site inappropriate for agricultural uses.

3.6 Groundwater

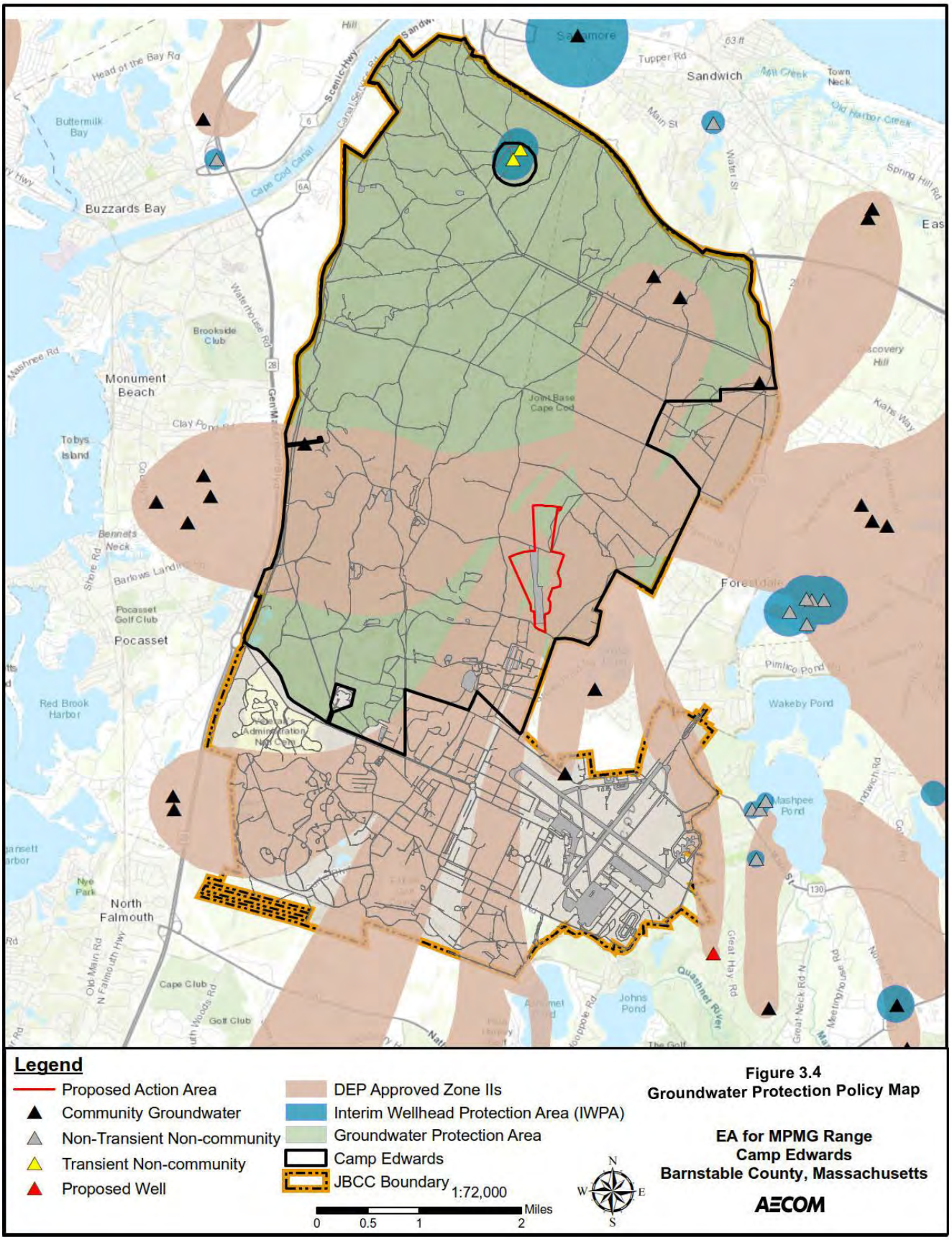
Groundwater is plentiful in and around Camp Edwards. The predominant source of groundwater is the Sagamore Lens of the Cape Cod Aquifer, designated as a sole-source aquifer under the Safe Water Drinking Act (SWDA). The water table is encountered at an average depth of 45 to 50 feet below ground surface. Groundwater at Camp Edwards has been classified as GW-1, water that might contribute to a Current Drinking Water Source Area or a Potential Drinking Water Source Area; and GW-3, groundwater resources that are considered a potential source of discharge to surface waters, in accordance with the Massachusetts Contingency Plan (310 CMR 40.0932). In addition, portions of Camp Edwards, including the proposed MPMG Range, lie within multiple Zone II areas, defined as the area of an aquifer that contributes water to a well under severe pumping and recharge conditions, as approved by MassDEP's Division of Water Supply pursuant to 310 CMR 22.00 (**Figure 3-4**).

In 2019, the four military agencies at JBCC signed a Memorandum of Agreement (MOA) to implement the JBCC Groundwater Protection Policy to enforce protections for the existing and future water supplies at the JBCC. The groundwater beneath Camp Edwards provides up to 3 million gallons of clean drinking water daily to Camp Edwards and the towns of Sandwich, Bourne, Falmouth, and Mashpee.

Due to JBCC's historical usage as a military training area, the installation is subject to groundwater contamination. Certain explosive related compounds have been detected in soils at a few training sites on Camp Edwards, including the KD Range. However, a Human Health Risk Screening was conducted to identify any analytes that warranted further evaluation, and no analytes were found that exceeded screening criteria (USEPA, 2019). To date, no response actions have been needed to address groundwater contamination at the KD Range. Further information on existing environmental contamination site is provided in **Section 3.12**.

3.7 Biological Resources

Biological resources include native or naturalized plants and wildlife and the habitats in which they occur. Special status biological resources are defined as plant and wildlife species that are Federally listed under the Endangered Species Act (ESA) and State-listed rare species protected under the MESA and its implementing regulations (321 CMR 10.00). MESA prevents a loss or take of State-listed rare species. The Massachusetts Natural Heritage and Endangered Species Program (NHESP) manages the State-listed species and implements the MESA regulations. Migratory birds, as listed in 50 CFR Part 10.13, are ecologically and economically important to recreational activities, including bird watching, studying, feeding, and hunting, that are practiced by many Americans. In 2001, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to focus attention of Federal agencies on the environmental effects to migratory bird species and, where feasible, implement policies and programs that support the conservation and protection of migratory birds.


Legend
Proposed Action Area
Community Groundwater
Non-Transient Non-community
Transient Non-community
Proposed Well
DEP Approved Zone IIs
Interim Wellhead Protection Area (IWPA)
Groundwater Protection Area
Camp Edwards
JBCC Boundary
1:72,000
0 0.5 1 2 Miles
N
W E
S
Figure 3.4
Groundwater Protection Policy Map
EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM
Sandwich
Buzzards Bay
Monument Beach
Pocasset
North Falmouth
Joint Base Cape Cod
Wakeby Pond
Mashpee Pond
Johns Pond
Red Brook Harbor
Cape Cod Canal

Biological resources of Camp Edwards were analyzed in detail in the 2009 Camp Edwards Integrated Natural Resources Management Plan (INRMP). The reader is referred to that document for further information. Preparation of an updated INRMP is currently underway.

3.7.1 Vegetation

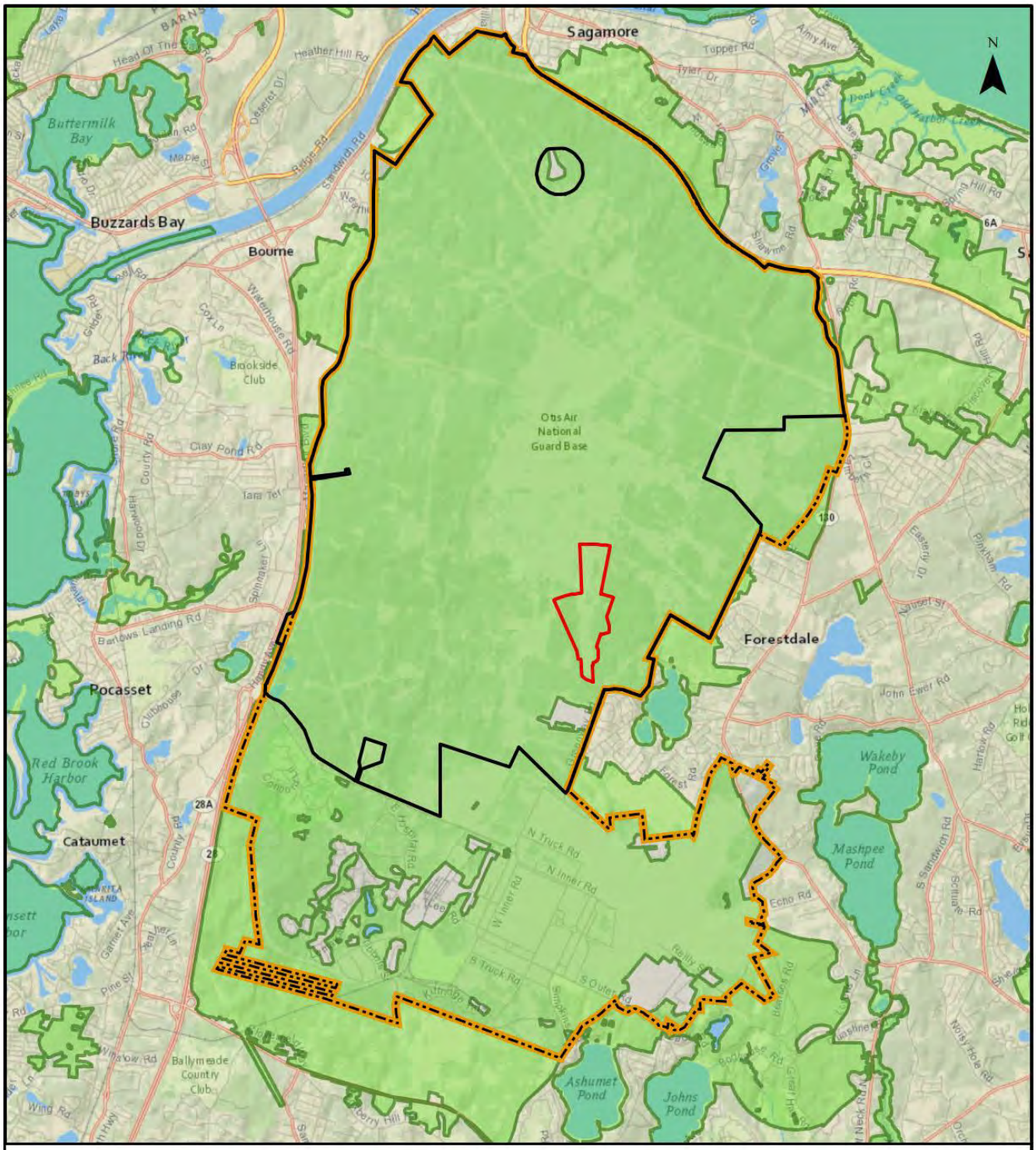
The biological and ecological significance of Camp Edwards is extremely high. Camp Edwards is the largest intact area of relatively unfragmented forest remaining on Cape Cod and serves as an important refuge for wildlife which require large ranges of interior forest habitat. There are a few small wetlands and ponds within this otherwise dry habitat that provide an important source of water for wildlife. The majority of the JBCC is within a Significant Natural Resource Area as identified and mapped by the Cape Cod Commission due to the presence of mapped rare species habitat (**Figure 3-5**) in addition to existing and potential water supplies.

The plant communities of Camp Edwards are dominated by cover types generally classified as mid- to late-successional forest with occasional early successional disturbed areas. Many of the plant communities at Camp Edwards have been influenced by several different disturbance types, including fire, ice storms, frost, drought, insect outbreaks, hurricanes, tropical storms, historic logging and grazing, and military use. A total of 13 natural communities and two altered land types are found at Camp Edward as shown on (**Figure 3-6).** Plant community types include: Black Oak-Scarlet Oak Forest, Pitch Pine-Scrub Oak Community, Cultural Grassland, Plantation, Red Maple Swamp, Scotch Pine-Pitch Pine-Oak Forest, Immature Pitch Pine, Scotch Pine-Pitch Pine-Scrub Oak, Non-Mapped Vegetation Community, Scrub Oak Shrubland, Pitch Pine Community, Wetlands, and Pitch Pine-Oak Forest. Two of these natural communities are ranked as "Imperiled in Massachusetts" by NHESP including the Pitch Pine-Scrub Oak Community and the Scrub Oak Shrubland. Much of Camp Edwards consists of Pitch Pine-Scrub Oak, making it one of the largest remaining habitats of this type in northeastern U.S. The Black Oak-Scarlet Oak Forest is ranked by NHESP as "Vulnerable in Massachusetts/Apparently Secure in Massachusetts", which indicates a wide range of uncertainty regarding this community.

The proposed MPMG Range footprint is primarily comprised of disturbed land, immature pitch pine, pitch pine oak forest, and pitch pine scrub oak. Common vegetation includes: black oak (*Quercus velutina*), pitch pine (*Pinus rigida*), black huckleberry (*Gaylussacia baccata*) shrubs, and Pennsylvania sedge (*Carex pensylvanica*) (MAARNG, 2009). Rare species habitat associated with the pine and scrub oak barrens and the large unfragmented sections of forest are present around the Proposed Action area (**Figure 3-6**).

3.7.2 Wildlife

Extensive surveys have been conducted to inventory the fauna of Camp Edwards. The Range and Training Land Assessment (RTLA) program inventories and monitors natural resource conditions and manages and analyzes natural resource information. Annual RTLA surveys have monitored the long-term trends in bird and small mammal populations since 1993, while other projects have surveyed faunal populations for 1 to 8 years. According to the 2009 INRMP, in total, 28 species of mammals, 105 species of birds, 11 species of amphibians, 12 species of reptiles, 528 species of macrolepidoptera (butterflies, insects), and 46 species of odonates (dragonflies) have been documented at Camp Edwards. This list is constantly being updated based on recent surveys. Common species that may occur at or near the Proposed Action area include: American toad (*Bufo americanus*), pine warbler (*Dendroica pinus*), blue jay (*Cyanocitta cristata*), white-tailed deer (*Odocoileus virginianus*), groundhog (*Marmota monax*), and red fox (*Vulpes vulpes*). As no surface waters are present in the Proposed Action area, no fish or aquatic species are expected to occur. The reader is referred to the 2009 INRMP for the full list of fish and wildlife at Camp Edwards.


Sagamore
Buzzards Bay
Bourne
Otis Air National Guard Base
Forestdale
Pocasset
Cataumet
Wakeby Pond
Mashpee Pond
Ashumet Pond
Johns Pond
Red Brook Harbor
Buttermilk Bay
Brookside Club
Ballymeade Country Club
N
Legend
NHESP Priority and Estimated Habitat for Rare Species
Proposed Action Area
Camp Edwards
JBCC Boundary
1:72,000
0 0.5 1 2 Miles
Figure 3.5
Rare Species Mapping
EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

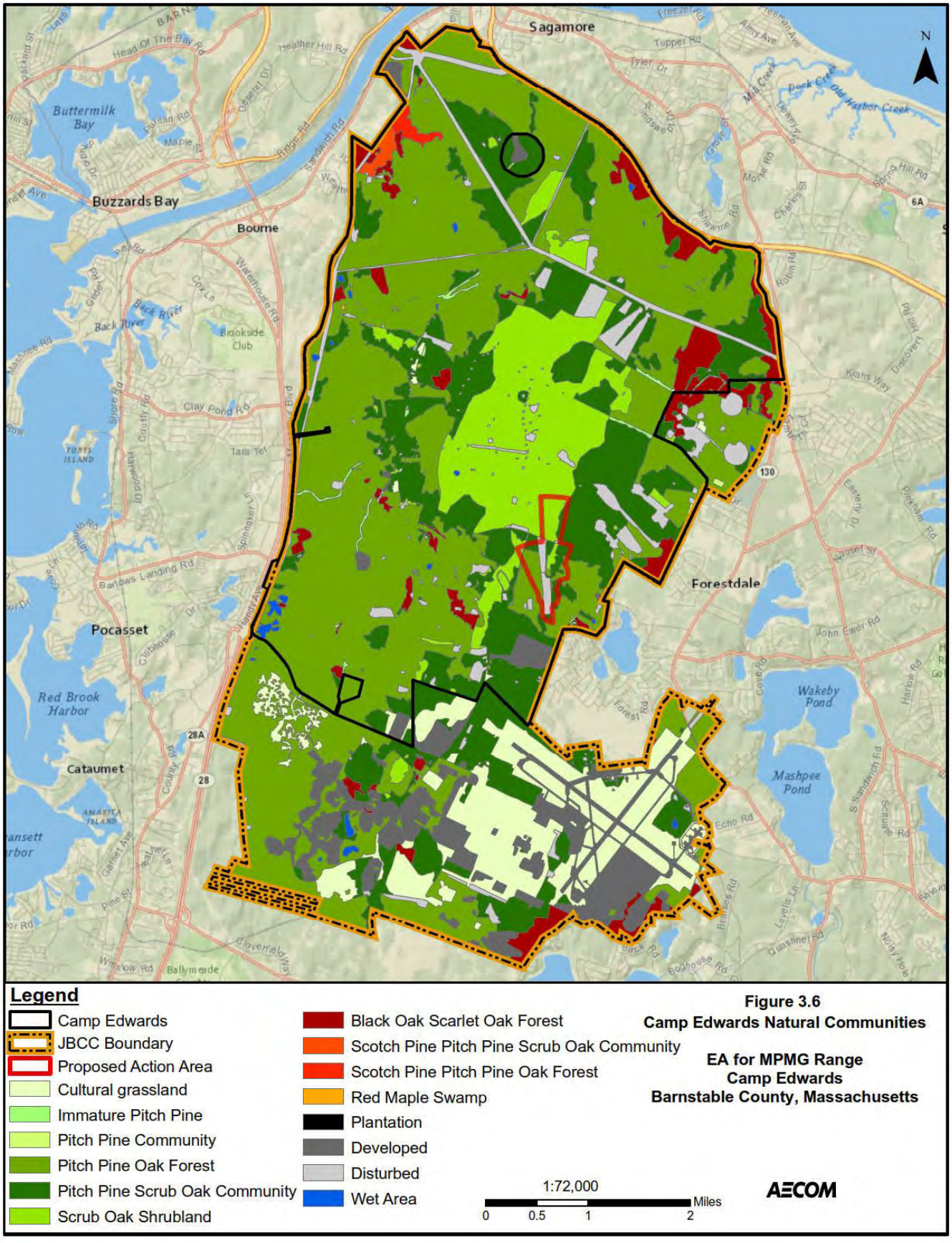


Figure 3.6
Camp Edwards Natural Communities

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

3.7.3 Special Status Species

Special status species include any species which is listed, or proposed for listing, as threatened or endangered by the USFWS under the provisions of the ESA; any species designated by the USFWS as a "candidate", "listing", or "sensitive" species; any species which is listed and protected by State statute in a category implying potential endangerment or extinction; any species covered by the Migratory Bird Treaty Act (MBTA); and any species covered by the Bald and Golden Eagle Protection Act (BGEPA) and the State eagle rule (68A-16.002, FAC).

3.7.3.1 Federally Listed Species

Federally listed species are protected under the ESA, administered by the USFWS. This Act protects listed species against killing, harming, harassing, or any action that may damage their habitat. An endangered species is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species “is likely to become an endangered species within the foreseeable future.” The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although “candidate species” receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA. Federally listed species with the potential to occur in the Proposed Action area include the Federally threatened northern long-eared bat (NLEB; *Myotis septentrionalis*), the federally endangered American chaffseed (*Schwalbea Americana*), and the federally endangered sandplain gerardia (*Agalinis acuta*) (USFWS, 2017).

The NLEB is typically found in cavities or crevices of live and dead trees during the summer. During the winter, the NLEB hibernates in caves and mines. Based on intensive acoustic and mist netting efforts on and around Camp Edwards, the majority of NLEB roosting occurs off-post. The installation likely provides foraging habitat away from roost sites with activity primarily associated with small water features within larger topographic depressions near or generally connected to larger kettle hole ponds. Foraging habitat tends to occur in much more oak-dominated forest stands. A single potential hibernaculum has been identified on Camp Edwards in a large, metal groundwater treatment facility approximately 0.3 mile east of the Proposed Action area. A single, male NLEB was documented roosting in the building during surveys conducted in 2016, suggesting potential use as a hibernaculum despite failure to confirm overwinter use through acoustic and visual surveys. As no hibernacula or maternity roosts occur within the Proposed Action area, NLEB presence is expected to be limited

The American chaffseed is typically found in fire-maintained longleaf pine flatwoods and savannas (USFWS, 2020). The species has not been historically detected in the Proposed Action area, nor during recent surveys. Conditions within the Proposed Action area are generally unsuitable.

The sandplain gerardia primarily occupies sandplain grassland habitats. The species has not been observed on JBCC although there are suitable locations nearby to the north and south of the base and similar conditions on the base, including managed sandplain grasslands, mowed roadsides, and mowed lawn areas. The MAARNG assists MADFW with annual surveys of the sandplain gerardia. The species has not been observed in the Proposed Action area nor has it been found during any survey efforts.

Section 7 consultation with USFWS was initiated on 14 April 2020; no response has been received to date. Correspondence with USFWS and an associated Biological Assessment providing detailed species discussion are included in **Appendix B**.

3.7.3.2 State-Listed Species

The MAARNG is required to comply with MESA and its implementing regulations to protect State-listed species. The NHESP manages the State-listed species and the MESA regulations. State-listed species at Camp Edwards are categorized in four broad groups:

1. Species that require large unfragmented sections of forest, such as the eastern box turtle (*Terrapene carolina*).
2. Species that are pine and scrub oak barrens specialists, such as most moths.
3. Species that occur in wetland areas, such as Torrey's beak sedge (*Rhynchospora torreyana)*.
4. Species that require grasslands, such as the upland sandpiper (*Bartramia longicauda*).

A total of 34 state-listed species have been documented at Camp Edwards (**Table 3-3**). Correspondence received from the NHESP on 16 August 2019 noted that the Proposed Action area is located within suitable habitat for all 34 species, as well as the papillose nut sedge (*Scleria pauciflora*), which has not been documented, and the Federally listed NLEB (**Appendix A**). The grasslands of Camp Edwards and Otis ANGB Cantonment Area are designated as Priority Habitat in accordance with MESA for four State-listed rare bird species: upland sandpiper (*Bartramia longicauda),* grasshopper sparrow *(Ammodramus savannarum),* vesper sparrow (*Pooecetes graminus*), and northern harrier (*Circus cyancus*). Grassland habitat is considered regionally rare and obligate habitat for these species. Suitable grassland habitat is present within the Proposed Action area.

Table 3-3: State-Listed Threatened and Endangered Species Previously Documented at Camp Edwards

Scientific Name	Common Name	State Status
Birds		
Ammodramus savannarum	Grasshopper sparrow	T
Bartramia longicauda	Upland sandpiper	E
Circus cyaneus	Northern harrier	T
Pooecetes gramineus	Vesper sparrow	T
Caprimulgus vociferus	Eastern whip-poor-will	SC
Reptiles and Amphibians		
Scaphiopus holbrookii	Eastern spadefoot	T
Terrapene carolina	Eastern box turtle	SC
Odonates		
Enallagma recurvatum	Pine barrens bluet	T
Moths		
Abagrotis nefascia	Coastal heathland cutworm	SC
Acronicta albarufa	Barrens daggermoth	T
Callophrys irus	Frosted elfin	SC
Catocala herodias gerhardi	Gerhard's underwing moth	SC
Chaetaglaea cerata	Waxed sallow moth	SC
Cicinnus melsheimeri	Melsheimer's sack bearer	T
Cingilia catenaria	Chain dot geometer	SC
Cycnia inopinatus	Unexpected cycnia	T
Euchlaena madusaria	Sandplain euchlaena	SC
Dargida rubripennis	Pink streak	T
Hemaris gracilis	Slender clearwing sphinx	SC

Table 3-3: State-Listed Threatened and Endangered Species Previously Documented at Camp Edwards

Scientific Name	Common Name	State Status
Hemileuca maia	Barrens buckmoth	SC
Lycia ypsilon	Pine barrens lycia	T
Metarranthis pilosaria	Coastal swamp metarranthis	SC
Papaipema sulphurata	Water-willow stem borer	T
Psectraglaea carnosa	Pink sallow moth	SC
Speranza exonerata	Pine barrens speranza	SC
Zale lunifera	Pine barrens zale	SC
Beetles		
Cincindela purpurea	Purple tiger beetle	SC
Crustacean		
Eulimnadia agassizii	Agassiz's clam shrimp	E
Plants		
Rhynchospora torreyana	Torrey's beak sedge	E
Triosteum perfoliatum	Broad tinker's weed	E
Ophioglossum pusillum	Adder's tongue fern	T
Eleocharis ovata	Ovate spike-sedge	E
Malaxis bayardii	Bayard's green adder's mouth	E
Juncus debilis	Weak rush	E

Notes:
E = Endangered, T = Threatened, SC = Special Concern

3.7.3.3 Migratory Birds and Eagles

The MBTA provides the USFWS regulatory authority to protect birds that migrate and prohibits any "take" of these species, except as permitted by the USFWS. The MAARNG is responsible under the MBTA, 50 CFR Part 21, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, to promote, support, and contribute to the conservation of migratory birds. Migratory birds are ecologically and economically important to recreational activities, including bird watching, studying, feeding, and hunting and include species with at least some populations breeding in the continental U.S. and/or Canada. Per 50 CFR Part 21.15, *Authorization of Take Incidental to Military Readiness Activities*, the DoD is authorized to incidentally take migratory birds in the course of military readiness activities, but with limitations. The primary threat to migratory birds from military readiness activities is wildfire; other threats, such as noise and human presence, are lesser concerns as evidence on-site suggests habituation to these activities would be anticipated to occur. As such, military readiness activities must be implemented in a manner to avoid or minimize impacts on migratory birds, as practicable. The MAARNG must confer and cooperate with the USFWS to develop and implement appropriate conservation measures for actions that, determined through the NEPA process, may result in a significant adverse effect on a population of migratory bird species.

EO 13186 requires each Federal agency to develop a Memorandum of Understanding (MOU) with the USFWS that promotes the conservation of migratory birds. The MOU between DoD and USFWS outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU specifically pertains to actions that are not classified as military readiness activities and places emphasis on migratory bird species of concern, which are species that may experience greater degrees of impacts from direct or indirect disturbances. A copy of this MOU is included in **Appendix C**. A query of the Information for Planning and Conservation database identified 26 birds of conservation concern (BCC) species with

potential to occur within the Proposed Action area. **Table 3-4** summarizes species presence and suitable habitat abundance within Camp Edwards and the Proposed Action area. Suitable habitat is only available in the Proposed Action area for five of these species: black-billed cuckoo (*Coccyzus erythropthalmus*), Canada warbler (*Cardellina candadensis*), Eastern whip-poor-will (*Antrostomus vociferous*), long-eared owl (*Asio otus*), and prairie warbler (*Dendroica discolor*). Several of these species have been shown to benefit from the expansion of fuels management and prescribed burning for pine barrens habitat improvement and wildfire risk reduction; they include the eastern whip-poor-will, prairie warbler, and black-billed cuckoos.

In addition, surveys of migratory species have shown statistically significant increasing trends of certain species at Camp Edwards due to positive responses to prescribed burning activities, such as timber harvesting and other fuels management actions. The primary migratory bird assemblage at Camp Edwards associates with pine barrens and responds well to moderate to high levels of disturbance and habitat management. Species such as ovenbird (*Seiurus aurocapilla*), Eastern towhee (*Pipilo erythrophthalmus*), and pine warbler (*Setophaga pinus*) have very high levels of occupancy and are either resilient to or benefit from the habitat impacts from prescribed burning and mechanical treatments. Of those species found to have significant population trends (n=26) at Camp Edwards, those with negative trends are primarily cosmopolitan (e.g., house finch [*Haemorhous mexicanus*], American crow [*Corvus brachyrhynchos*]), or severely declining regionally as to be beyond the buffering ability of isolated conservation efforts (e.g., Northern bobwhite [*Colinus virginianus*]).

The bald eagle (*Haliaeetus leucocephalus*) was delisted from the ESA in 2007, but remains protected by the MBTA, the BGEPA, and the State eagle rule (68A-16.002, FAC). The USFWS established National Bald Eagle Management Guidelines as a tool for landowners and developers to avoid disturbing bald eagles (USFWS, 2007). Bald eagles nest in mature canopy trees along the edges of forested habitat, often within 2 miles of their preferred foraging habitat, which includes large expanses of shallow water, such as inland lakes and river systems. While bald eagles utilize areas at and around the Bourne Landfill, adjacent to Camp Edwards, none have been observed on the installation and no suitable foraging conditions exist. Preferred nesting habitat is absent as well. As no water bodies are present within the Proposed Action area, bald eagles are not expected to occur.

Table 3-4: Birds of Conservation Concern with Potential Occurrence

Species	General Status		Habitat Presence (Y/N)	
	Upper Cape Cod	Camp Edwards	On Base	Project Area
American oystercatcher (*Haematopus palliates*)	Low density; coastal	None	No	No
Bald eagle (*Haliaeetus leucocephalus*)	Uncommon	Uncommon	Marginal	No
Black-billed cuckoo (*Coccyzus erythropthalmus*)	Low density breeding	Low density breeding	Yes	Yes
Bobolink (*Dolichonyx oryzivorus*)	Uncommon; post breeding dispersal	None	Yes	No
Canada warbler (*Cardellina candadensis*)	Uncommon migrant	None	Yes	No
Dunlin (*Calidris alpine arcticola*)	Low density; coastal migrant	None	No	No
Eastern whip-poor-will (*Antrostomus vociferous*)	Common	Common (responds favorably to fire management)	Yes	Yes
Evening grosbeak (*Coccothraustes vespertinus*)	Very rare, irruptive	None	No	No
Least tern (*Sterna antillarum*)	Common; coastal	None	No	No
Lesser yellowlegs (*Tringa flavipes*)	Common migrant	Not recorded; possible migrant	Yes	No
Long-eared owl (*Asio otus*)	Very rare	Very rare (single record)	Yes	Yes
Nelson's sparrow (*Ammocramus nelson*)	Uncommon	None	No	No
Prairie warbler (*Dendroica discolor*)	Common	Common (responds favorably to fire management)	Yes	Yes
Prothonotary warbler (*Protonotaria citrea*)	Uncommon migrant	None	Yes	No
Purple sandpiper (*Calidris maritima*)	Low density wintering	None	No	No
Red-throated loon (*Gavia stellate*)	Moderate density	Occasional flyover	No	No
Ruddy turnstone (*Arenaria interpres morinella*)	Common; coastal	None	No	No
Rusty blackbird (*Euphagus carolinus*)	Low density migrant; irregular wintering	None	Yes	No
Saltmarsh sparrow (*Ammospiza caudacuta*)	Common; coastal saltmarsh	None	No	No

Table 3-4: Birds of Conservation Concern with Potential Occurrence

Species	General Status		Habitat Presence (Y/N)	
	Upper Cape Cod	Camp Edwards	On Base	Project Area
Seaside sparrow (*Ammodramus maritimus*)	Very rare; coastal saltmarsh	None	No	No
Semipalmated sandpiper (*Calidris pusilla*)	Common; coastal	None	No	No
Short-billed dowitcher (*Limnodromus griseus*)	Common; coastal	None	No	No
Snowy owl (*Bubo scandiacus*)	Uncommon/irregular wintering; primarily coastal	Uncommon/irregular wintering (JBCC airfield only)	Yes	No
Whimbrel (*Numenius phaeopus*)	Low density; coastal	None	No	No
Willet (*Tringa semipalmata*)	Common; coastal	None	No	No
Wood thrush (*Hylocichla mustelina*)	Uncommon	Uncommon (single record)	Yes	No

3.8 Cultural Resources

Cultural resources are historic properties as defined by the NHPA, cultural items as defined by the NAGPRA, archaeological resources as defined by the Archaeological Resources Protection Act (ARPA), sacred sites as defined by EO 13007 to which access is afforded under the American Indian Religious Freedom Act, and collections and associated records as defined by 36 CFR 79. NEPA requires consideration of "important historic, cultural, and natural aspects of our natural heritage." Consideration of cultural resources under NEPA includes the necessity to independently comply with the applicable procedures and requirements of other Federal and State laws, regulations, EOs, presidential memoranda, and ARNG guidance.

The NHPA of 1966, as amended (Public Law 89-665; 54 USC §300101 et seq.), establishes the policy of the Federal government to provide leadership in the preservation of historic properties and administer Federally owned or controlled historic properties. Section 106 of the NHPA (54 USC §306108) requires Federal agencies to consider the effect an undertaking may have on historic properties; its implementing regulations, 36 CFR Part 800, describe the procedures for identifying and evaluating historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Office (SHPO). The Section 106 process requires each undertaking to define an Area of Potential Effect (APE). An APE is "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any properties exist…[and the APE] is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR Part 800.16[d]). The Proposed Action is an undertaking as defined by 36 CFR Part 800.3, and the MAARNG is required to comply with Section 106 of the NHPA.

The MAARNG has been managing cultural resources at Camp Edwards for several years under the ICRMP, last revised in 2009. Preparation of an updated ICRMP is currently underway. The MAARNG initiated consultation with MHC (the SHPO) in a letter dated 7 August 2019 (**Appendix A**). On 9 January 2020, the MAARNG contacted MHC by phone to inquire about the consultation request. MHC confirmed they would not be responding to the consultation and indicated this action falls under 36 CFR 800.3(c)(4), *Failure of the SHPO/THPO to respond*. An MFR summarizing the Section 106 consultation efforts by the MAARNG is included in **Appendix A**.

3.8.1 Archaeological and Architectural Resources

Historic properties on Camp Edwards include historic buildings and structures. Previous archaeological surveys of Camp Edwards identified 69 historic sites. Of these, 46 sites have been found to be ineligible for listing in the National Register of Historic Places (NRHP), while 23 sites required further evaluation. None of these sites are within the footprint of the proposed MPMG Range. An architectural survey of Camp Edwards has also been completed; no buildings, structures, or potential historic districts occur within the Proposed Action area.

The existing KD Range and Proposed Action area are in locations assessed with low archaeological sensitivity (Goodfellow 2003). At the request of the MAARNG, Public Archaeological Laboratory, Inc. conducted an intensive (locational) archaeological survey of the KD Range in 2016 as part of planning efforts for the range expansion (Heitert and Fahey 2016). The survey consisted of the excavation of 94 shovel test pits across 103 acres flanking the east and west sides of the existing range. No artifacts were collected, nor cultural features identified as part of the survey.

3.8.2 Native American Consultation

Federally recognized tribes that are historically affiliated with the Camp Edwards geographic region have been invited to consult on the Proposed Action. These include the Wampanoag Tribe of Gay Head – Aquinnah, the Mashpee Wampanoag Tribal Council, and the Stockbridge – Munsee Community Tribe of Mohican Indians of Wisconsin. Correspondence with these tribes is included in **Appendix A**, as well as an MFR summarizing the Native American consultation efforts by the MAARNG. As of 11 February 2020, no responses have been received. Tribes will be notified again when the final EA and draft FNSI is published for review.

3.9 Infrastructure

Existing infrastructure in the Proposed Action area include range buildings and a range tower at the KD Range, as well as existing target berms, concrete walls, and target supports. Electricity is supplied to the Proposed Action area by Eversource via overhead wires. There are no sewer or water services available in the Proposed Action area. Wastewater from JBCC is treated at a facility on base. The MA ANG 102nd Intelligence Wing maintains and operates base-wide services such as the drinking water supply, the wastewater treatment plant, roads, and electrical power.

Camp Edwards has an extensive transportation system including 120 miles of roads, a railroad access point, and an ARNG aviation facility with associated access points throughout the training area. Railroad access from the Bourne-Falmouth railroad line has historically served to transport large tracked vehicles (e.g., tanks and APCs) and other equipment that is typically too large for transporting on existing public roads to Camp Edwards.

Table 3-5 categorizes the road system on Camp Edwards based on road condition (paved, improved, unimproved).

Table 3-5: Road System of Camp Edwards

Road Condition	Miles	Percent Total
Paved	26.3	21.7%
Improved	23.1	2.5%
Unimproved	70.4	54.6%
Total	**119.8**	**100.0%**

The transportation systems outside of the installation that serve Camp Edwards are in good condition and provide adequate access. Camp Edwards is bound by U.S. Highway 6 and State Highways 28 and 130 to the north, west, and east, respectively. State Highway 28 provides access to Camp Edwards via the Bourne Gate, which is the most frequented gate, while State Highway 130 provides access to the Sandwich Gate. The Falmouth Gate is accessible via State Highway 151. Local highways are located on the east and west of Camp Edwards with the main access to Camp Edwards from MacArthur Boulevard to the west. This is a State-controlled four lane divided highway which leads north to the Bourne Bridge where it connects to State Highway 25 and State Highway 495.

Dirt roads are present to the north of the KD Range and access is provided through the existing paved Pocasset-Forestdale Road. The existing KD Range has paved parking and dirt access and maintenance roads. No other roads are present within the Proposed Action area aside from the existing roads in the KD Range.

3.10 Hazardous and Toxic Materials and Wastes

HTMW are generally defined as materials or substances that pose a risk (through either physical or chemical reactions) to human health or the environment. Regulated hazardous substances are identified by OSHA through a number of Federal laws and regulations. The most comprehensive list is contained in 40 CFR Part 302, and identifies quantities of these substances that, when released to the environment, require notification to a Federal government agency. Hazardous wastes, defined in 40 CFR Part 261.3, are generally discarded materials (solids or liquids) not otherwise excluded by 40 CFR Part 261.4 that exhibit a hazardous characteristic (i.e., ignitable, corrosive, reactive, or toxic), or are specifically identified within 40 CFR Part 261. Petroleum products are specifically exempted from 40 CFR Part 302, but some are also generally considered hazardous substances due to their physical characteristics (especially fuel products), and their ability to impair natural resources.

State wide, the Massachusetts Contingency Plan (310 CMR 40.00) provides State-specific cleanup protocol, documentation, and standards for activities that may cause, contribute to, or exacerbate a release or threat of hazardous materials . The Contingency Plan also contains a list of hazardous materials, including oils, and their reportable quantities and reportable concentrations. In addition, state-specific hazardous waste regulations (310 CMR 30.00) manage the generation, storage, collection, transport, treatment, disposal, use, and recycling of hazardous waste.

The JBCC's use as a military training area has resulted in potential and confirmed contamination at the installation, resulting from munitions, firefighting activities, chemical/fuel spills, legacy landfills, and sewage treatment facilities (Cape Cod Commission, 2020). Past operations and waste disposal practices have resulted in subsurface contamination in areas near the Impact Area, where the existing KD Range is located. Contaminants include fly ash, bottom ash, waste solvents, waste fuels, herbicides, and transformer oil. Additionally, seven groundwater plumes in the Impact Area are undergoing extraction and treatment. The nearest plume, located on L Range, is approximately 0.5 mile to the east of the KD Range. The plume is being remediated and is unlikely to affect conditions at the KD Range. Long-term groundwater

monitoring and operation and maintenance of treatment systems are expected to continue until groundwater cleanup levels are met.

The ECOP Pre-Construction Assessment (PCA) of the KD Range found evidence of potential contamination, specifically from munitions and explosives of concern (MEC) discovered in the surface and potentially existing in the subsurface (MAARNG, 2019). In addition, known propellant and explosive compounds and heavy metals, including lead, resulting from past range activities were previously identified in the soil. Although targeted soil remediation has been performed, there is a possibility that additional contamination is still present.

No stationary sources of HTMW occur within the Proposed Action area, although the area is accessed occasionally by military and civilian vehicles, which could act as mobile sources. Examples of hazardous materials often associated with vehicles include antifreeze, motor oil, brake fluid, hydraulic oil, grease, battery acid, fuel oil, diesel fuel, and other fuels for vehicle maintenance

4. ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section describes the potential direct, indirect, and cumulative effects of implementing the Proposed Action and alternatives, as well as Regulatory Compliance Measures (RCMs) and Best Management Practices (BMPs) the MAARNG would incorporate into the Proposed Action to proactively minimize potential adverse environmental impacts. In addition, mitigation measures are recommended, if applicable, for potential adverse impacts that would not be sufficiently reduced through these incorporated measures. As used in this section, these terms are defined as follows:

- RCMs are compliance measures that the MAARNG is required to conduct in accordance with applicable laws, regulations, and permit conditions (e.g., Section 7 consultation, net benefit under MESA, CMP requirements).
- BMPs are environmentally sensitive construction practices the MAARNG would conduct in order to minimize or avoid potential adverse environmental impacts (e.g., conducting construction activities outside the NLEB maternity season, implementing dust controls, installation of silt curtains)
- Mitigation measures are project-specific requirements not routinely implemented by the MAARNG necessary to reduce identified potentially significant adverse impacts, despite implementation of RCMs and BMPs, to less-than-significant levels.

The MAARNG considers RCMs and BMPs integral to implementation of the Preferred Alternative and are not considered separate from the Proposed Action. For more information on RCMs and BMPs, refer to **Section 4.13**. Based on the following analysis, no project-specific mitigation measures would be required to reduce adverse impacts to less-than-significant levels as a result of the Proposed Action.

4.2 Land Use and Cover

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on land use or cover:

- Conflict with, divide, or substantially change existing on- or off-base land use or land cover
- Conflict with the goals and objectives of the installation's Real Property Master Plan (RPMP).
- Limit the capability of the MAARNG to carry out its assigned mission to provide adequate training facilities at Camp Edwards

4.2.1 Preferred Action Alternative

Under the Preferred Alternative, long-term, *less-than-significant* adverse impacts to land cover are anticipated from the clearing of up to 170.5 acres, resulting in the permanent conversion of forest (unimproved grounds) to maintained grassland (semi-improved grounds). Up to 9,450 SF of impervious surfaces (aggregate pavement) would be created for the parking area, in addition to impervious surfaces for the interior roadways, walkways, and stormwater management system. The amount of clearing proposed would be relatively small in comparison to the abundant forest cover existing within Camp Edwards. MAARNG would minimize clearing and earthwork to the maximum extent possible to minimize disturbance.

Implementation of the Preferred Alternative would result in long-term, *beneficial* impacts from improving the training use, capability, and value of the training land. The Preferred Alternative would facilitate and enhance existing training activities at Camp Edwards by increasing the utility of the Proposed Action area; site usage of the former KD Range would increase by 100 percent. Land use would be similar in nature to

existing conditions. Further, the Preferred Alternative was sited to maximize the training value and use of the installation with minimal use conflicts. Implementation of the Preferred Alternative is not anticipated to conflict with on- or off-base land uses or zoning. In addition, the proposed MPMG is identified within the installation's current RPMP (September 2017), and the design and location are consistent with the goals and objectives of the RPMP.

4.2.2 Reduced-Scale Alternative

Under the Reduced-Scale Alternative, impacts on land use and land cover would be similar as those under the Preferred Action Alternative (**Section 4.2.1**). Since the Reduced-Scale Alternative would require less land clearing (99.5 acres) and land conversion, long-term, *less-than-significant* adverse impacts on land cover would be slightly less than impacts under the Preferred Action Alternative. The Reduced-Scale Alternative would also result in long-term, *beneficial* impacts from improving the utility and value of the site as a training facility for the MAARNG.

4.2.3 No Action Alternative

Under the No Action Alternative, existing land use and cover would not change, and current installation operations would continue. Minimal use of the KD Range would continue (i.e., UAS training) as there is presently no active live-fire training at this range. The MAARNG units would continue to travel out-of-State to meet weapons qualifications standards and training requirements. Further, this alternative would limit the capability of the MAARNG to carry out its assigned mission to provide adequate training facilities at Camp Edwards. Failure to provide the required training facilities would reduce the use of, and potential to enhance, training at Camp Edwards, resulting in a long-term, *potentially significant* adverse impact to future land use.

4.3 Air Quality

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on air quality:

- Cause an exceedance of the NAAQS and/or require a conformity analysis
- Substantially increase greenhouse gas emissions or airborne fugitive dust
- Increase health risks for nearby sensitive receptors

4.3.1 Preferred Alternative

Construction of the Preferred Alternative would result in short-term, *less-than-significant* adverse impacts on the existing air quality from air emissions. Air emissions, including fugitive dust and exhaust emissions, would be generated from construction equipment and vehicles. NO_x and PM are the pollutants of greatest concern with respect to construction activities and are generated by equipment engines, demolition, excavation, grading, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Impacts would be localized to the construction site and immediate surroundings, and last for the duration of construction (approximately 8 months). While there are residential areas located approximately 0.2 mile from the proposed MPMG Range, air emissions would be limited by the time and duration of construction activities. Any dust generated by equipment and construction activities would fall rapidly within a short distance from the construction site. The surrounding heavily wooded area would also limit the distance that fugitive dust would travel.

Construction emissions would be further reduced through implementation of the following BMPs:

- Use appropriate dust suppression methods during on-site construction activities, and if necessary, during dry weather training activities (i.e., available methods include application of water [fresh water only], soil stabilizers, or vegetation; use of enclosures, covers, silt

fences, or wheel washers; and suspension of earth-movement or disturbance activities during high wind conditions);
- Require a speed of less than 15 miles per hour for land clearing equipment on unpaved surfaces;
- Use low volatile organic compounds supplies and equipment;
- Repair and service vehicular and construction equipment to prevent excess emissions;
- Shut down heavy equipment when not needed;
- Clean excess soil from heavy equipment and trucks leaving the construction zone to prevent off-site transport; and,
- Brief dust-reducing measures to the contractor or Soldiers responsible for implementing these activities.

The MAARNG's on-site manager would be responsible for bringing air quality issues, if they arise, to Range Control or the MAARNG Environmental Affairs Office for resolution. In addition, any construction or demolition of a building requires notification to the MassDEP before start of work in accordance with 310 CMR 7.09 designed to protect public health and the environment by ensuring that the release of dust or other potentially hazardous air pollutants to the ambient air would be prevented. Compliance with these requirements would ensure air quality effects are minimized throughout the construction period.

Long-term, *less-than-significant* adverse operational air quality impacts are expected within the immediate vicinity of the proposed MPMG Range from training and firing operations. Increased vehicular activity during training events and routine maintenance operations (i.e., mowing) would generate air emissions as well. To minimize operational impacts, the BMPs noted above would be implemented during training activities as applicable. Overall, air emissions generated from the Preferred Alternative would be *de minimis*, and would not result in a significant or long-term adverse increase of criteria pollutants at the JBCC or the surrounding area.

Per EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, Federal agencies are required to implement sustainable practices and technologies, increase energy efficiency, and reduce greenhouse gas emissions. A GHG assessment was prepared in accordance with the MEPA Greenhouse Gas Emissions Policy and Protocol to determine estimated CO_2 emissions generated from the Proposed Action (MAARNG, 2020). Findings indicate both short- and long-term, *less-than-significant* adverse impacts on climate change from an increase in GHG emissions. While construction and land clearing activities would increase emissions, these activities would be temporary and only last for the duration of construction. Long-term emissions would be generated from training activities, although total emissions are estimated at only 3.0 US tons of CO_2.

Conversely, the Preferred Alternative would result in long-term, *beneficial* impacts from a reduction in vehicle-related emissions. Travel associated with personal and military owned vehicles would decrease significantly under the Preferred Alternative because the need to travel to out-of-State facilities to meet weapons qualifications standards and training requirements would be reduced, resulting in a long-term reduction in transportation related CO_2 emissions (i.e., over 82 percent reduction from baseline conditions) (MAARNG, 2020). As Camp Edwards currently provides carbon sequestration on an annual basis through maintenance of forest land, emissions from the Preferred Alternative would not be substantial. Construction of the Preferred Alternative would represent only 1.3 percent of the carbon sequestered in the forests at Camp Edwards. As such, the release of CO_2 from the Proposed Action would be alleviated in 3.5 years based on just the annual sequestration of GHG provided by the forested land at Camp Edwards (MAARNG, 2020).

4.3.2 Reduced-Scale Alternative

Impacts on air quality under the Reduced-Scale Alternative would be similar to those under the Preferred Alternative (**Section 4.3.1**). Construction of the Reduced-Scale Alternative would result in short-term, *less-*

than-significant adverse impacts on air quality from the use of construction equipment and vehicles. Operation of the MPMG Range would result in short- and long-term, *less-than-significant* adverse impacts as construction activities, land clearing, and training activities would generate emissions in the Proposed Action area. However, as there would be less land clearing under the Reduced-Scale Alternative, the resulting short- and long-term air quality impacts would be less than those anticipated from the Preferred Action Alternative. The reduction in localized GHG emissions from the absence of out-of-state travel would also result in a slight *benefit* on overall vehicle GHG emissions.

Implementation of BMPs would minimize air quality impacts to the extent practicable under the Reduced-Scale Alternative.

4.3.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed and current conditions at Camp Edwards would persist. Units would continue to travel to either New York, New Jersey, or Vermont for required training on the nearest MPMG Range as the facilities necessary to accommodate the MAARNG would continue to be unavailable in the State. As such, the No Action Alternative would have a long-term, *less-than-significant* adverse impact on vehicle GHG emissions. Current out-of-state travel results in the generation of 724 US tons of CO_2 emissions annually, whereas implementation of the Proposed Action would reduce this amount of vehicle emissions by 82 percent (MAARNG, 2020).

4.4 Noise

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on the noise environment:

- Create a Zone III (>104 dB) boundary that extends off-base during favorable weather conditions
- Include routine activities that result in a Zone II that extends off-base
- Substantially increase noise resulting from traffic
- Result in substantial disruptions to nearby sensitive receptors

4.4.1 Preferred Alternative

Under the Preferred Alternative, short-term, *less-than-significant* adverse effects to the local noise environment would occur from construction activities. Noise generating sources during land conversion activities would be associated primarily with standard construction and maintenance equipment. Peak noise levels would be intermittent and varied based on the equipment used. Construction contractors commuting to and from the work site or delivering materials would increase noise levels as well. Typically, peak noise levels within 50 feet of active construction areas and material transportation routes would be considered "striking" or "very loud," comparable to peak crowd noise at an indoor sports arena. At approximately 200 feet, peak noise levels would be loud, approximately comparable to a garbage disposal or vacuum cleaner at 10 feet. At 0.25 mile, construction noise levels would generally be quiet enough to be considered insignificant, although transient noise levels may be noticeable at times. Increased noise levels from construction could directly affect the areas adjacent to the proposed range, including the residential area located approximately 0.2 mile from the Proposed Action area. Construction noise would be temporary, however, and further dampened by the surrounding heavily wooded forests. Further, the following BMPs would be implemented by the MAARNG as appropriate to limit noise impacts during land conversion activities:

- Stationary equipment and material transportation routes would be located as far away from sensitive receptors as possible.
- Equipment would be operated per manufacturer's recommendations, and noise-generating heavy equipment would be shut down when not needed.

- Construction personnel would be directed to operate equipment in the quietest manner practicable (e.g., speed restrictions, retarder brake restrictions, engine speed restrictions, etc.).
- Noise-reducing measures would be briefed to the contractor or Soldiers responsible for implementing these activities.

The MAARNG's on-site construction manager would be responsible to bring noise issues, if they arise, to the Range Control or the MAARNG Environmental Affairs Office for resolution. In addition, these BMPs would be incorporated into construction contracts as necessary.

Long-term, *less-than-significant* adverse operational noise impacts are anticipated due to increased site use and firing operations from training activities on the MPMG Range. While site usage would increase by 100 percent as no weapons training is currently occurring at the KD Range, overall Camp Edwards site usage would only increase by approximately 18.6 percent under the Preferred Alternative. The U.S. Army Public Health Center (USAPHC) performed a Noise Assessment for the proposed MPMG Range in May 2019 (**Appendix D**). Under the Preferred Alternative, Zone III remains within the JBCC boundary, while Zone II extends less than approximately 0.5 mile beyond the nearest eastern boundary of JBCC, where there are multiple residential neighborhoods as well as an elementary school; however, these sensitive receptors are located approximately 1.5 miles from the Proposed Action area (**Figure 4-1**). Potential noise impacts on the surrounding communities and property owners can vary based on weather conditions due to differences in sound propagation. Citizens within these areas may find the activity noticeable and distinct, and there is a moderate risk of the MAARNG receiving noise-related complaints. However, peak noise levels above 130 dB, subjectively defined as very loud or possibly startling, would not extend beyond the JBCC boundary.

The MAARNG would minimize noise impacts partly through design. As a result of previous noise studies, the location of the MPMG Range was shifted to the north to reduce the Zone II location within the adjacent residential areas. In addition, with implementation of training activities in accordance with Camp Edwards Range Regulations and the MAARNG SONMP, the Preferred Alternative would not result in significant long-term noise impacts. The MAARNG would provide public notification of upcoming training events, particularly for .50 caliber activity. A Noise Notification Protocol would be established in the SONMP accordingly. In addition, because there is no specific Camp Edwards noise complaint procedure identified in the MAARNG SONMP, the MAARNG would update the SONMP to include a 24-hour noise complaint point of contact. Additional noise testing would be performed by the USAPHC once the range is constructed and the MPMG is under full training (weapons firing) conditions in order to determine the actual Zone II locations. Following this testing, pending USAPHC recommendation, additional minimization measures, such as constructing noise barriers, would be considered if necessary.

4.4.2 Reduced-Scale Alternative

The Reduced-Scale Alternative would result in short- and long-term, *less-than-significant* adverse impacts on the noise environment, similar to the Preferred Alternative (**Section 4.4.1**). As the Reduced-Scale Alternative would require less clearing and construction than the Preferred Alternative, its short-term noise impact would be slightly less. Similarly, operational noise impacts would be less under the Reduced-Scale Alternative because the M2 machine gun and the M82 sniper rifle, which utilize .50 caliber ammunition, would not be fired on the range. The USAPHC assessment found that under the Reduced-Scale Alternative, Zone III would remain within the JBCC boundary, while Zone II would extend slightly beyond the eastern boundary, although not as far as under the Preferred Alternative (**Figure 4-2**). The MAARNG would implement the same BMPs and minimization measures to reduce noise impacts under the Reduced-Scale Alternative to the extent practicable.

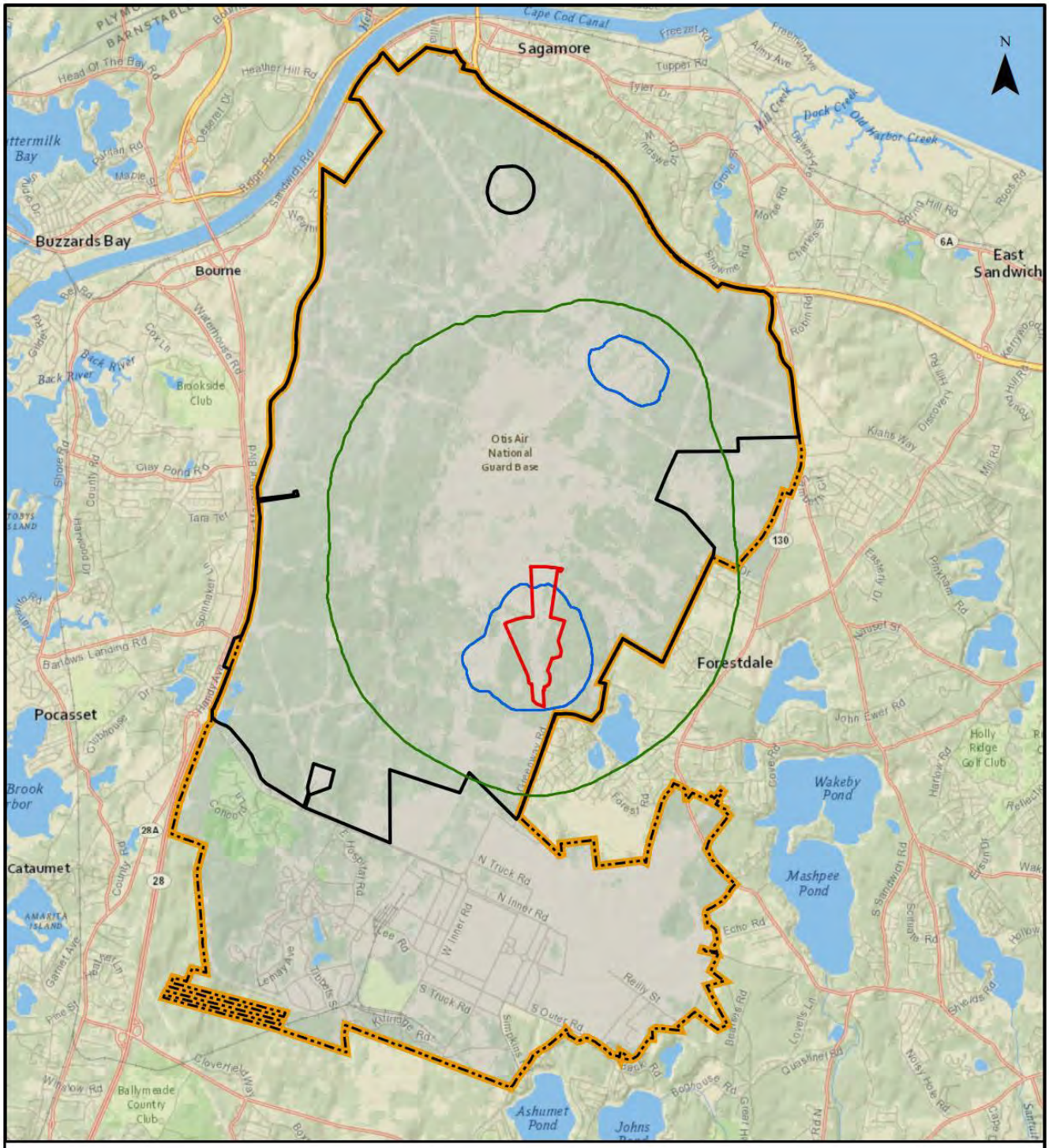


Figure 4.1

Proposed Noise Contours: Preferred Alternative

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM

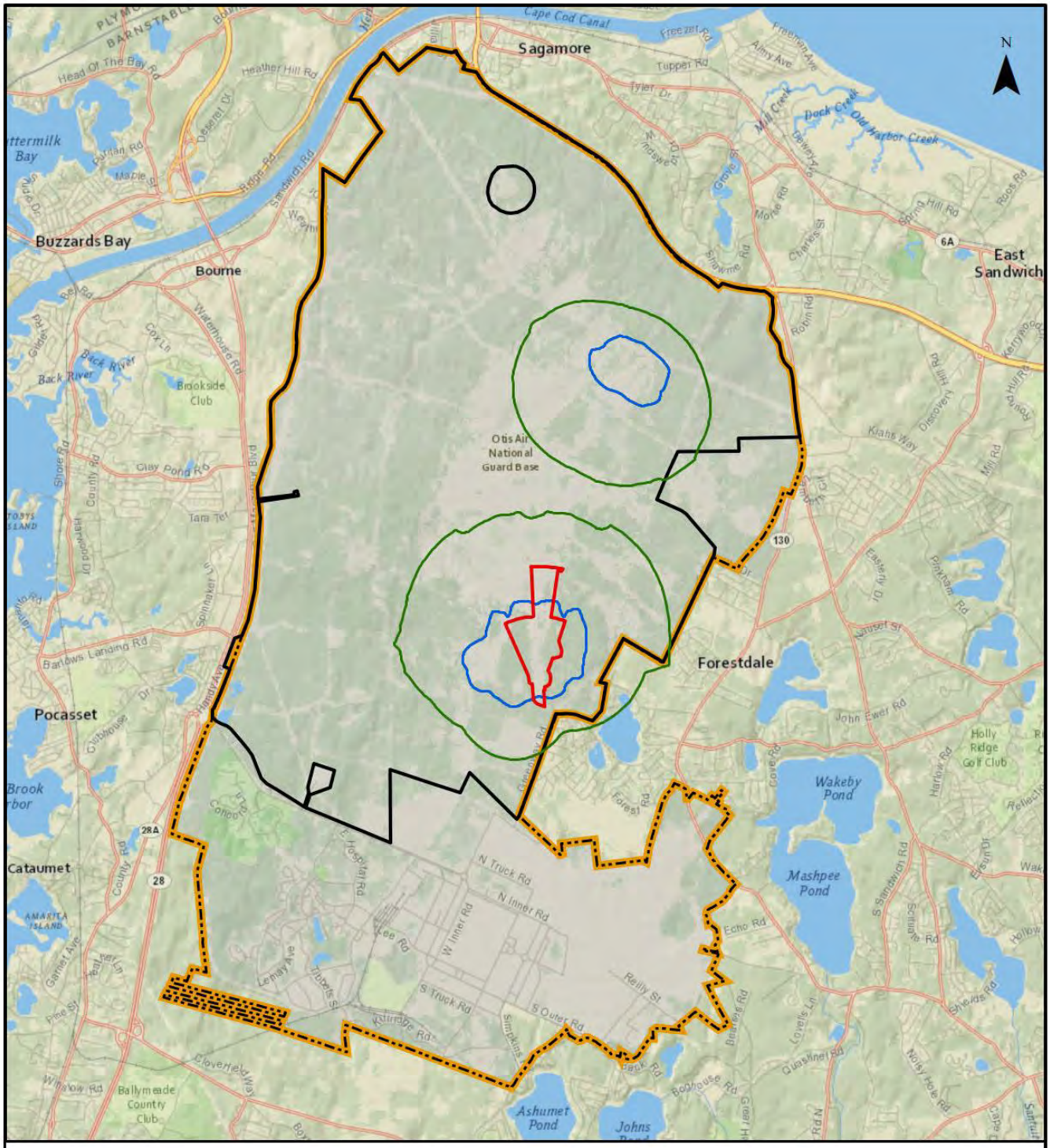


Figure 4.2
Proposed Noise Contours: Reduced-Scale Alternative

EA for MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM

4.4.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no noise impacts would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.5 Soils

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on soils:

- Substantially increase potential occurrences of erosion or sedimentation
- Subject new areas to training activities that would result in substantial changes to soils (i.e., impact area for explosions)

4.5.1 Preferred Alternative

Construction of the Preferred Alternative would result in short-term, *less-than-significant* adverse impacts on soils from land disturbing activities on a total of 199.0 acres. The disturbed surface soil would be susceptible to compaction as well as erosion by wind and surface runoff. However, due to the flat topography of the site and predominantly sandy soils, sedimentation would be minimal. Project activities that result in soil disturbance (e.g., clearing, grading, or excavating) of one-acre or more require a National Pollutant Discharge Elimination System (NPDES) permit from USEPA if water is discharged to a WOUS. However, as there are no wetlands or surface waters in or near the proposed MPMG Range site, a NPDES Construction General Permit is not required.

The MAARNG would prepare a site-specific Erosion and Sediment (E&S) Control Plan to address all earth-disturbance aspects of the Proposed Action. The E&S Control Plan would incorporate BMPs, including specific guidelines and engineering controls to address anticipated erosion and sedimentation impacts. BMPs include but are not limited to the following:

- Install and monitor erosion-prevention measures such as silt fences and water breaks, sedimentation basins, filter fences, sediment berms, interceptor ditches, straw bales, rip-rap, and/or other sediment control structures; re-spreading of stockpiled topsoil; and seeding/revegetation of areas temporarily cleared of vegetation.
- Plant and maintain native soil-stabilizing vegetation on the range where soils have been disturbed.
- Comply with the EPS general performance standards for pollution prevention and management of the Camp Edwards training ranges.
- Ensure all MAARNG field staff members are trained in spill response.

Implementation of the E&S Control Plan would ensure soil impacts are minimized to the extent practicable. Adherence to the E&S Control Plan would also ensure the MAARNG follow State and Federal water quality standards to minimize the potential for erosion and sedimentation.

Operation of the Preferred Alternative would result in direct long-term, *less-than-significant* adverse soil erosion impacts as a result of military training operations and equipment and vehicle use. Operational impacts would be minimized through the implementation of the above-listed BMPs.

4.5.2 Reduced-Scale Alternative

Under the Reduced-Scale Alternative, approximately 128.0 acres of land would be disturbed from construction activities. While the amount of clearing and ground disturbance for the Reduced-Scale Alternative would be less than required under the Preferred Alternative, it would still result in short-term, *less-than-significant* adverse impacts on soils. Clearing and construction activities would disturb soils and cause erosion and sedimentation. While impacts on soils under the Reduced-Scale Alternative would be similar to impacts under the Preferred Alternative (**Section 4.5.1**), the magnitude would be slightly less due

to less clearing and a smaller range size. The MAARNG would implement the BMPs listed above and follow the E&S Control Plan to minimize soil impacts under the Reduced-Scale Alternative.

4.5.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no impacts on soils would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.6 Groundwater

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on groundwater:

- Substantially alter the quantity or quality of groundwater
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations that have been adopted to protect or manage water resources

4.6.1 Preferred Alternative

Construction of the Preferred Alternative would result in short-term, *less-than-significant* adverse impacts on groundwater. During land conversion activities, the use of construction equipment and materials could inadvertently release contaminants or toxic materials (e.g., fuel and other petroleum products) into groundwater. Similarly, site maintenance and training operations could lead to the inadvertent release of contaminants, creating a long-term, *less-than-significant* adverse impact on groundwater. **Section 4.12** discusses potential pollution (i.e., from chemicals, fuels, etc.) impacts attributable to the Preferred Alternative and identifies BMPs that would minimize impacts to the extent practicable.

In addition to BMPs, adherence to regulatory requirements would also minimize impacts on groundwater. The MAARNG is also required to conduct periodic visual inspections to verify that the E&S Control Plan is being followed and is working to ensure compliance with State and Federal standards with regard to groundwater impacts. Long-term groundwater protection during training operations would also be accomplished by maintaining vegetative cover, implementing stormwater management measures, and complying with the Camp Edwards pollution prevention plan.

4.6.2 Reduced-Scale Alternative

Impacts on groundwater from the Reduced-Scale Alternative would be similar to impacts from the Preferred Alternative (**Section 4.6.1**). Under the Reduced-Scale Alternative, impacts would occur from potential inadvertent release of contaminants during construction activities. However, as the Reduced-Scale Alternative is smaller in size and requires less clearing than the Preferred Alternative, it would have slightly less potential for inadvertent release and impacts on groundwater. Adverse short- and long-tern impacts on groundwater would be *less-than-significant*.

4.6.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no impacts on groundwater would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.7 Biological Resources

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on biological resources:

- Convert or degrade existing rare habitats not currently managed in a conservation plan
- Convert or degrade a substantial amount of existing habitat
- Result in substantial mortality of wildlife
- Adversely affect populations of Federally or State threatened or endangered species

4.7.1 Preferred Alternative

Under the Preferred Alternative, short-term and long-term, *less-than-significant adverse* impacts on vegetation, wildlife, and special status species would be anticipated.

4.7.1.1 Vegetation

A short- and long-term, *less-than-significant* adverse impacts on vegetation would occur during land cover conversion required under the Preferred Alternative, due to the removal of existing vegetation. Under the Preferred Alternative, a total of approximately 170.5 acres of existing forest would be cleared and permanently converted to maintained grassland. As shown in **Figure 3-3**, the MPMG Range primarily comprises pine barrens and grasslands which are abundant at the installation. As such, the total amount of clearing would be negligible in relation to the overall vegetation composition at Camp Edwards and JBCC. Additionally, large scale restoration of these habitats is being conducted across the installation. Rare species protection programs are already underway in consultation with NHESP. Native species would be used when revegetating the cleared areas where targets and support structures are not proposed. Invasive plant management would be conducted consistent with current installation practices and include spot treatment to avoid overspray. The MAARNG has also prepared a Conservation and Management Permit (CMP) application to address potential impacts resulting from the loss of pine barrens habitat (**Appendix E**). The NHESP has 30 days to review the CMP application and would not be able to issue the CMP until the MEPA process has been fully completed.

4.7.1.2 Wildlife

Wildlife in the Proposed Action area would sustain direct and indirect, short- and long-term, *less-than-significant* adverse impacts associated with construction of the Preferred Alternative and required land clearing activities. Wildlife would experience increased noise, vibrations, and human presence, as well as temporary or permanent displacement due to the loss of habitat. Operation and maintenance of the Preferred Alternative would result in long-term, *less-than-significant* adverse impacts as well. Firing operations and human presence during training events would disturb nearby wildlife. Given the relatively small area of disturbance compared to available undeveloped land within Camp Edwards, and that the Proposed Action area was previously used for live-fire training and is adjacent to the existing Central Impact Area, impacts on wildlife would not be significant. In addition, individuals would be expected to vacate the immediate areas during these activities if they are able, although some less-mobile individuals (i.e., small mammals, reptiles, amphibians) could potentially suffer loss of life during land disturbing activities.

4.7.1.3 Special Status Species

As discussed in **Section 3.7**, one Federally listed species and 34 State-listed species have been documented at Camp Edwards. No Federally designated critical habitat is present. The Preferred Alternative would result in short- and long-term, *less-than-significant* adverse impacts on special status species.

The Federally threatened NLEB may have potential occurrence in the Proposed Action area; as such, construction activities could disturb nearby roosting bats or destroy trees that could potentially serve as maternal and night roosts, as well as pupping habitat for the NLEB. While marginal suitable habitat would be removed, there is no indication from extensive acoustic surveys that any roosting or notable foraging activity occurs in the Proposed Action area or the vicinity; NLEB presence is expected to be limited. While Camp Edwards does not formally implement tree clearing restrictions regarding NLEB maternity season,

the installation would avoid tree clearing, when feasible, from April to July to further minimize potential impacts during the maternity season. Primary clearing activities would occur predominantly in the inactive season for bats or, at minimum, after breeding season when juveniles would be fully flighted; therefore, the project *may affect, but is unlikely to adversely affect* NLEB.

While the American chaffseed has potential occurrence within the Proposed Action area, conditions are generally unsuitable and the species has not been detected historically in the past 20 years nor during intensive frost bottom rare plant surveys conducted annually in the vicinity of the Proposed Action area. Although no suitable habitat is currently present, the proposed MPMG Range could potentially reintroduce more favorable conditions for the species; therefore, the project *may affect, but is unlikely to adversely affect* American Chaffseed. As no suitable habitat exists within the Proposed Action area for the sandplain gerardia and the species has not been documented, the Preferred Alternative would have *no effect* on the sandplain gerardia. Section 7 consultation with USFWS was initiated on 14 April 2020; no response has been received to date. Correspondence with USFWS and an associated Biological Assessment providing detailed species discussion are included in **Appendix B.**

Large-scale habitat restoration at Camp Edwards and established avoidance procedures currently ensure minimal impacts on State-listed species from routine military activities. In addition, implementation of RCMs and BMPs would further minimize impacts (**Section 4.7.4**). During the consultation process, the MAARNG received correspondence from the NHESP on 16 August 2019 in which the NHESP noted the Proposed Action area is located within suitable habitat for all of the 34 State-listed species documented at Camp Edwards. The MAARNG would address rare species habitat concerns during the project design phase to minimize or avoid impacts to the extent practicable, as recommended by the NHESP. In addition, the MAARNG would adhere to the requirements described in the CMP, such as long-term habitat management and monitoring, to avoid or minimize impacts to the extent practicable (**Appendix E**). The CMP would provide a framework for protection of rare species during MAARNG activities at Camp Edwards.

In addition, to achieve net benefit[2] for State-listed species in accordance with MESA, the MAARNG would implement RCMs, including adherence to vegetation and wildland fire management recommendations outlined in the INRMP and IFWMP, as applicable; designing and installing temporary and permanent lighting so as not to interfere with State-listed moth species; conducting surveys of the Proposed Action area to locate any Eastern box turtle individuals for tracking throughout the life of the project; and coordinating with the NHESP to ensure measures are implemented to avoid and minimize take.

Of the 26 BCC species listed, only 5 have potential presence within the Proposed Action area. Land disturbing activities could have direct impacts on these species and other ground nesting birds during the breeding season due to potential stressors, such as the use of heavy machinery, vegetation removal, and increased noise. Indirect impacts on migratory birds could also result from the permanent or temporary loss of habitat. However, given the comparatively limited amount of vegetation removal and abundance of habitat on JBCC, as well as the geographical range of the migratory bird species, potential short- and long-term adverse impacts would be *less-than-significant*. Individual birds would be anticipated to leave the Proposed Action area during land clearance activities. Further, the MAARNG actively manages its property for the benefit of wildlife, including migratory birds. To minimize potential impacts associated with vegetation removal specifically in the Proposed Action area, land clearing activities would be scheduled to occur, to the extent feasible, outside of or late in the breeding season.

Operation of the Preferred Alternative would result in long-term, *less-than-significant* adverse impacts on migratory birds from land management operations (e.g., periodic mowing) and training activities. Proposed training activities could have the potential to injure or kill migratory birds, but the likelihood of birds being struck during operational activities is considered low and would be incidental. Window collisions with the

[2] Per 321 CMR 10.00, a net benefit means an action, or set of actions, that contributes, on its own or in the context of other actions, significantly to the long-term conservation of a State-listed species and that the conservation contribution to the impacted State-listed species exceeds the harm caused by a proposed project or activity.

new range control tower would be unlikely as well, as window surfaces would comprise less reflective glass. In addition, long-term, *beneficial* effects on migratory birds would be expected from wildland fire management activities implemented to reduce wildfire hazard from tracers and other ignition sources. Several BCC species have been shown to benefit from the expansion of fuels management and prescribed burning for pine barrens habitat management. Recent statistically significant increasing trends at Camp Edwards can be attributed to prescribed burning activities. BCC species on Camp Edwards have been observed to habituate to range noise and activity while benefiting from more open habitat conditions provided by the ranges and prescribed burning that occurs nearby. The Proposed Action would overall benefit the majority of migratory birds species at Camp Edwards, especially those of regional conservation concern.

To minimize potential impacts to migratory birds and special status species, operational activities would be conducted in accordance with the 2009 INRMP and the MOU between the DoD and USFWS (see **Appendix C**). In the unlikely event that proposed training activities start a fire from the use of tracers, flares, or simulators, the fire would be extinguished in accordance with existing range management rules before it reaches adjacent natural areas.

While bald eagles have the potential to occur at Camp Edwards, they have not been observed in recent surveys. Further, bald eagles prefer nesting near large waterbodies and none are present within the Proposed Action area. Therefore, they are not likely to nest within or in the vicinity of the proposed MPMG Range. *No impacts* on bald eagles are anticipated under the Preferred Action Alternative.

In addition to Federally and State-listed species and BCC, the MAARNG also considered effects of the Preferred Alternative on the monarch butterfly (*Danaus plexippus*), little brown bat (*Myotis lucifugus*), and spotted turtle (*Clemmys guttata*), which are scheduled for listing determinations in the next few years. The Preferred Alternative is likely to result in *beneficial* impacts to the monarch butterfly, little brown bat as typical range management provides for diverse grass/forb mix including milkweed, particularly at edges and low spots. The MAARNG would implement a system for marking no-mow small areas for killdeer nests and milkweed patches. The Preferred Alternative would also improve foraging habitat surrounding the expanded range for the little brown bat. The MAARNG also determined the Preferred Alternative would benefit the New England cottontail rabbit, a species of concern, by increasing pine barrens habitat improvement. The net impact for the species would be beneficial despite some direct loss of habitat in the range area. Finally, no effect to the spotted turtle is expected as no suitable habitat (i.e., shallow swamps) occurs within or in the vicinity of the Proposed Action area.

4.7.2 Reduced-Scale Alternative

Under the Reduced-Scale Alternative, impacts on biological resources would be similar to the Preferred Action Alternative (see **Section 4.7.1**), although the magnitude of impacts would be slightly less due to less land disturbance and tree clearance. The Reduced-Scale Alternative would result in short- and long-term, *less-than-significant* adverse impacts on vegetation, wildlife species, and special-status species from construction and operational disturbance, in addition to *beneficial* effects on migratory birds. Implementation of construction BMPs and RCMs would further minimize impacts on biological resources.

4.7.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no biological impacts would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.8 Cultural Resources

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on cultural resources:

- Degrade, or cause neglect of, an archaeological site, NRHP-listed or eligible resource, or cemetery
- Degrade, or decrease access to, cultural resources of value to Federally recognized Native American tribes

4.8.1 Preferred Alternative

The Preferred Alternative is anticipated to have *no effect* on historic, archaeological, or recorded tribal resources, as no historic structures or archaeological sites have been identified in the Proposed Action area. The MAARNG consulted with the MHC in a letter dated 7 August 2019. Given the SHPO's failure to respond within 30 days of the consultation request, the MAARNG may proceed to next step of the consultation process based on its finding of *no effect*. An MFR summarizing Section 106 consultation efforts is provided in **Appendix A**.

Native American consultation for this EA was initiated by the MAARNG in accordance with NEPA, NHPA, DoDI 4710.02, and AR 200-1. No sacred, religious, cultural, or traditional resources have been identified by the Native American Indian tribes that would be affected by the Preferred Alternative. A list of tribes contacted, copies of correspondence letters, and MFR of tribal correspondence are included in **Appendix A**.

The Proposed Action area abuts and expands into the Central Impact Area and has been determined to have low archaeological sensitivity. Therefore, the Preferred Alternative has low or no potential to affect archaeological resources. Should archaeological materials or human remains be inadvertently discovered during ground disturbing activities, all work shall cease immediately and the MAARNG ICRMP SOP Number 5 would be followed.

4.8.2 Reduced-Scale Alternative

Under the Reduced-Scale Alternative, there would be *no effect* on historic structures, archaeological resources, or recorded tribal resources, same as the Preferred Action Alternative (see **Section 4.8.1**) No cultural or historic resources occur within the Proposed Action area. Should archaeological materials or human remains be inadvertently discovered during ground disturbing activities, all work shall cease immediately and the proper authorities would be notified.

4.8.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no impacts on cultural resources would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.9 Infrastructure

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on area infrastructure or transportation:

- Increase traffic such that it exceeds the capacity of local roadways
- Restrict civilian airspace use outside the scope of any existing agreements with the FAA
- Alter utilities such that demand exceeds supply or capacity, or would cause substantial alterations to existing utility systems

4.9.1 Preferred Alternative

Short-term, *less-than-significant* adverse impacts on traffic may occur during construction of the Preferred Alternative. The transport of construction equipment and construction vehicles could temporarily increase local traffic congestion. However, given the isolated location of the Proposed Action area within Camp

Edwards, construction traffic is not anticipated to result in a noticeable effect. Further, no traffic detours or road closings are planned. Range operations could result in long-term, *less-than-significant* adverse traffic impacts from units transporting vehicles and other equipment to the MPMG Range; however, these impacts are not anticipated to be significant given the proposed training would only occur sporadically throughout the training year. Further, the surrounding area is relatively rural and lightly traversed; traffic congestion is generally not a concern.

Short-term, *less-than-significant* adverse impacts on utilities may occur during construction of the Preferred Alternative. The new MPMG Range project would require utility extensions for electricity and telecommunications services from existing nearby infrastructure. Potential service disruptions are likely to occur during utility connections. However, these disruptions would be temporary and avoided to the extent practicable. In the long term, wastewater and sewage would continue to be pumped from portable toilet facilities and hauled off base for disposal at licensed disposal facilities or discharged through the normal operation of existing septic systems. Required utilities for operating the Preferred Alternative would not exceed the existing supply or capacity at Camp Edwards.

4.9.2 Reduced-Scale Alternative

Implementation of the Reduced-Scale Alternative would result in similar impacts on infrastructure and transportation as the Preferred Action Alternative (see **Section 4.11.1**). The Reduced-Scale Alternative would cause short- and long-term, *less-than-significant* adverse impacts on traffic conditions from the movement of construction and military vehicles; and short-term, *less-than-significant* adverse impacts on utility services from utility extensions. However, as this alternative is smaller and requires less land clearing, the construction phase may be shorter, thereby further reducing impacts.

4.9.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no impacts on infrastructure would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.10 Hazards and Toxic Materials/Wastes (HTMW)

The Proposed Action was evaluated against the following significance criteria to determine if it would result in a significant impact on HTMW:

- Substantially increase generation of, or exposure of the public to, hazardous substances
- Substantially increase the presence of hazardous substances in the environment (i.e., contamination)
- Substantially restrict the use of property due to hazardous waste, materials, or potential site remediation requirements

4.10.1 Preferred Alternative

Under the Preferred Alternative, short- and long-term, *less-than-significant* adverse impacts associated with HTMW would be anticipated due to minor land conversion activities, as well as maintenance and training operations. The Preferred Alternative would produce minor increases in handling, storage, use, transportation, and disposal of HTMW, resulting from vehicle and equipment during vegetation removal activities and site maintenance. These proposed activities would have potential contamination sources (e.g., diesel fuel, oil, antifreeze, and lubricants). Even without major release events, multiple minor releases could have potential effects to the environment at the proposed firing point locations. Releases over a long period of time could potentially lead to soil and/or groundwater contamination, and thus could require some form of remediation. Implementation of the Preferred Alternative would not substantially affect the installation's hazardous materials storage and handling procedures and hazardous waste disposal processes.

All HTMW that would be used or generated would be handled and disposed of in compliance with Federal and State requirements, as well as the EPS to minimize potential impacts to the maximum extent feasible. The MAARNG maintains a Hazardous Waste Management Plan, as well as an installation-specific Spill Prevention Control and Countermeasure Plan (SPCCP). This plan identifies potential sources of pollution, BMPs to limit this potential, procedures to respond to pollution events, and procedures to handle hazardous materials. The MAARNG would also comply with EPS 19, *Range Performance Standards*, which requires efforts to minimize harmful impacts to the Reserve.

In addition, in the event that unexploded ordinance (UXO) or MEC are encountered during construction, an on-call UXO/MEC expert would be contacted immediately for safe handling and removal. This expert would handle all aspects of the removal process to include regulator notification, implementation of safety measures, and removal of such items. The MAARNG would contract an on-call UXO/MEC expert for the duration of the construction phase.

4.10.2 Reduced-Scale Alternative

Under the Reduced-Scale Alternative, potential HTMW impacts would be similar to those described under the Preferred Alternative (see **Section 4.12.1**). The Reduced-Scale Alternative would result in short- and long-term, *less-than-significant* adverse impacts on HTMW from construction activities and long-term maintenance and range activities. However, as the Reduced-Scale Alternative would occur on a smaller site and require less construction efforts, the resulting HTMW impact would likely be less than impacts under the Preferred Alternative.

4.10.3 No Action Alternative

Under the No Action Alternative, the MPMG Range would not be developed; thus, no impacts on HTMW would occur at Camp Edwards. Current conditions at Camp Edwards would persist.

4.11 Best Management Practices and Regulatory Compliance Measures

Per established protocols, procedures, and requirements, the MAARNG would implement RCMs and BMPs to proactively minimize potential adverse environmental impacts in association with the Proposed Action. These measures are included as components of the Proposed Action, as appropriate, and are applicable regulatory obligations and sensitive construction practices that the MAARNG regularly implements as part of their activities, as appropriate, across Massachusetts. These are different from "mitigation measures," which are defined as project-specific requirements (not routinely implemented by the MAARNG) necessary to reduce potentially significant adverse environmental impacts to less-than-significant levels. Under the Preferred and Reduced-Scale Alternatives, no significant impacts would be anticipated; therefore, no mitigation measures are required to reduce potentially significant adverse impacts.

4.11.1 Best Management Practices

Land Use and Cover. The MAARNG would minimize clearing and earthwork to the extent possible to minimize land disturbance while still providing adequate space to conduct the required training activities.

Air Quality. The MAARNG would ensure dust control associated with land clearing activities and proposed training activities are conducted in accordance with MassDEP – Air and Climate Division guidelines and EPS Air Quality Performance Standard 8 (which requires compliance with the SIP and the CAA). To minimize the potential for adverse air quality impacts, the MAARNG would implement the following typical dust control BMPs, such as the application of water, soil stabilizers, or vegetation; use of enclosures, covers, silt fences, or wheel washers; and suspension of earth-movement activities during high wind conditions. Equipment would be shut down when it is not in use. Construction equipment would be

repaired and serviced in accordance with the regular maintenance schedule recommended for each individual equipment type, and cleaned of excess soil before leaving the construction zone to prevent off-site transport. These dust-reducing measures would be briefed to the contractor or Soldiers responsible for implementing these activities. The MAARNG's on-site manager would be responsible for bringing air quality issues, if they arise, to Range Control or the MAARNG Environmental Affairs Office for resolution.

Noise. The following standard BMPs would be implemented by the MAARNG, as appropriate, to limit noise impacts during construction: 1) Stationary equipment and material transportation routes would be located as far away from sensitive receivers as possible; (2) Equipment would be operated per manufacturer's recommendations, and noise-generating heavy equipment would be shut down when not needed; and, (3) Construction personnel would be directed to operate equipment in the quietest manner practicable (e.g., speed restrictions, retarder brake restrictions, engine speed restrictions, etc.). Noise-reducing measures would be briefed to the contractor or Soldiers responsible for implementing these activities. The MAARNG's on-site construction manager would be responsible to bring noise issues, if they arise, to the Range Control or the MAARNG Environmental Affairs Office for resolution. A Noise Notification Protocol would be established in the SONMP to provide public notification of upcoming training events, particularly the .50 caliber activity. Additional noise testing would be performed by the USAPHC once the range is constructed and the MPMG is under full training (weapons firing) conditions in order to determine the actual Zone II locations. Following this testing, pending USAPHC recommendation, additional minimization measures, such as constructing noise barriers, would be considered if necessary. .

Soils. The MAARNG would prepare a detailed, site-specific E&S Control Plan to address all earth-disturbance aspects of the Proposed Action. The E&S Control Plan would include standard BMPs, such as specific guidelines and engineering controls to address anticipated erosion and resultant sedimentation impacts from establishing and operating the proposed MPMG Range. Control measures include: (1) Install and monitor erosion-prevention measures such as silt fences and water breaks, sedimentation basins, filter fences, sediment berms, interceptor ditches, straw bales, rip-rap, and/or other sediment control structures; re-spreading of stockpiled topsoil; and seeding/revegetation of areas temporarily cleared of vegetation; and (2) Plant and maintain native soil-stabilizing vegetation on the range where soils have been disturbed. The MAARNG would comply with the EPS general performance standards for pollution prevention and ensure all MAARNG field staff members are trained in spill response.

Groundwater. The MAARNG would conduct periodic visual inspections to verify that the E&S Control Plan is being followed and is working. Long-term groundwater protection during training operations would be accomplished by implementing stormwater BMPs, maintaining vegetative cover, and implementing the applicable EPS.

Biological Resources. The MAARNG would limit ground disturbing activities during the establishment of the proposed MPMG Range to the extent feasible. Native plant species would be used when revegetating the firing points. Invasive plant management would be conducted consistent with current installation practices and include spot treatment to avoid overspray. Long-term land management and training operations would be conducted in accordance with the INRMP and other applicable management plans for Camp Edwards.

Cultural Resources. Should archaeological materials or human remains be inadvertently discovered during construction activities, all work would cease immediately and the MAARNG ICRMP SOP would be followed.

HTMW. During construction and operation of the proposed MPMG Range, all HTMW that would be used or generated would be handled and disposed of in compliance with the MAARNG HWMP and SPCCP. In the event that unexploded ordinance (UXO) or MEC are encountered during construction, an on-call UXO/MEC expert would be contacted immediately for safe handling and removal. This expert would handle all aspects of the removal process to include regulator notification, implementation of safety measures, and removal of such items.

4.11.2 Resource Compliance Measures

Biological Resources. While impacts on biological resources would remain at *less-than-significant* levels, implementation of project-specific mitigation measures is required in compliance with MESA to achieve net beneficial effects on State-listed species. The MAARNG would minimize tree impacts from May through July to avoid impacts during the NLEB and bird breeding season. In addition, the MAARNG would implement the mitigation measures described in the CMP (**Appendix E**) and coordinate with the NHESP to ensure measures are implemented to avoid and minimize take of State-listed species. Further, permanent and temporary lighting for the MPMG Range would be designed and installed in a manner that would not to interfere with State-listed moth species. Surveys of the Proposed Action area would be conducted to locate any Eastern box turtle individuals for tracking throughout the life of the project.

4.12 Cumulative Effects

As defined by CEQ regulations in 40 CFR Part 1508.7, cumulative impacts are those that "result from the incremental impact of the Proposed Action when added to other past, present and reasonably foreseeable future actions, without regard to the agency (Federal or non-Federal) or individual who undertakes such other actions." A cumulative impact analysis captures the effects that result from a proposed action in combination with the effects of other actions in the same ROI. Because of extensive influences both within and outside a proposed action area, cumulative effects are the most difficult to analyze. NEPA requires analysis of cumulative environmental effects on resources that may often be manifested only at the cumulative level, such as traffic congestion, air quality, noise, biological resources, cultural resources, socioeconomic conditions, utility system capacities, and others.

Proposed short-term and long-term development projects for Camp Edwards are addressed in the Camp Edwards Master Plan. These represent the scope of known, defined development activities currently planned for Camp Edwards over the foreseeable future. NEPA analysis for these projects is being conducted separately. The MAARNG also researched regional plans and contacted several local entities (**see Section 9**) to identify past, present, and reasonably foreseeable future actions within the ROI. Actions considered for cumulative analysis under the Proposed Action include:

- **Firebreaks and Fire Management –** Strategic firebreaks are proposed to be constructed along the exterior of the MPMG Range in accordance with the Camp Edwards INRMP and IWFMP to reduce the risk of wildfire hazard from tracers and other ignition sources during training activities, and assist in managing the fighting of fires. Firebreak and fuels management involves the alteration of fuels to reduce the likelihood of a fire starting or to reduce its effects if one does start. These techniques may improve access for fire apparatus, increase water resources available on-site, adjust target placement, and provide buffer or safety zones. Direct and indirect fire management measures include protective buffers, prescribed fire, habitat management through range development, new or improved firebreaks, and ordnance remediation. Approximately 10.0 acres of clearing for firebreaks would occur under the Proposed Action; however, firebreaks and fire management are a separately funded MILCON project.
- **Cape Cod Bridge Project** – A new bridge over the Cape Cod Canal is proposed, along with new roadway systems connecting to existing roadways and an existing bridge (Bourne Bridge). This project is currently in the public meeting stage where design schemes are being introduced and comments taken. The Massachusetts Department of Transportation has acknowledged the proximity to Camp Edwards and the JBCC and have determined that no work would occur within the boundaries of the JBCC relative to this project.

4.12.1 Cumulative Effects of the Preferred Alternative

Implementation of the Preferred Alternative would not be expected to cumulatively significantly adversely impact any resource area discussed within this EA. While clearing for the Preferred Alternative and firebreaks under the IWFMP would result in a net loss in vegetation on JBCC, cumulative impacts would

be *less-than-significant* with adherence to RCMs, BMPs, and installation-specific management plans. Further, fire management would improve the health of fire-dependent habitats, such as pitch pine and scrub oak, contributing to future success of these communities. As such, the Preferred Alternative would not noticeably contribute to any degradation in natural resources, regionally or locally.

The Preferred Alternative and other reasonably foreseeable future projects would result in cumulative *net positive* impacts to the local socioeconomic environment, through the creation of temporary construction jobs. In addition, cumulative construction efforts would likely produce short-term, *less-than-significant* adverse cumulative impacts to the human environment through increases in local area traffic, air quality emissions, and noise in the immediate vicinity of the Proposed Action area. Regional cumulative impacts are not likely because impacts would be localized to areas immediately adjacent to Camp Edwards.

While the area immediately surrounding the Proposed Action area is experiencing commercial and residential growth, these local developments as well as the Preferred Alternative are consistent with development plans and policies. Population projections indicate that the Towns of Sandwich and Bourne will experience a net increase in total population (1.3 percent) between 2010 and 2035. Barnstable County and the State will experience slightly higher growth at 4.1 percent and 6.0 percent, respectively, while the U.S. as a whole is projected to have approximately double the growth (11.5 percent). As such, there will continue to be slow measured growth in the ROI.

4.12.2 Cumulative Effects of the Reduced-Scale Alternative

Incremental impacts of the Reduced-Scale Alternative when considered with impacts of other reasonably foreseeable future projects would result in similar cumulative effects as the Preferred Alternative. The magnitude of cumulative effects would be slightly less given the smaller range size and reduced amount of required clearing. Overall implementation of the Reduced-Scale Alternative would not be expected to cumulatively significantly impact any resource area discussed within this EA.

4.12.3 Cumulative Effects of the No Action Alternative

Under the No Action Alternative, the MPMG Range would not be constructed and the MAARNG's full training potential would continue to be limited. There would be no Proposed Action-related changes and, consequently, no incremental impacts on the resource areas from the No Action Alternative; therefore, no cumulative impacts would occur.

4.12.4 Inter-relationship of Cumulative Effects

The region will likely continue to experience increased growth and development in the future. This slow measured rate of development could lead to cumulative effects to the proposed project's ROI, but the Proposed Action would not be considered a significant contributor to these impacts. The majority of the recently constructed and planned projects within the ROI pertain to improving, growing, and maintaining local industry. Larger planned projects within the region would comply with the Cape Cod Commission's regional land use plans and policies, and would not facilitate degradation or strain on existing infrastructure or cultural and natural resources. Rather, proposed regional projects would be more likely to result in positive cumulative effects to regional socioeconomics.

Changes under the Proposed Action would not be anticipated to cause significant adverse cumulative impacts to the environment within the region. Coordination between the MAARNG and regional planning and community representatives would serve to minimize any potential land use conflicts in the future. Implementation of land use and resource management plans would continue to serve to control the extent of environmental impacts, and proper planning would ensure that future socioeconomic conditions maintain a good quality of life for residents in the area. Implementation of RCMs and BMPs would minimize or eliminate potential cumulative degradation of the natural ecosystem.

5. COMPARISON OF ALTERNATIVES AND CONCLUSIONS

5.1 Comparison of the Environmental Consequences of the Alternatives

This EA has evaluated the potential environmental, socioeconomic, and cultural effects of the MAARNG's proposal to establish the MPMG Range as detailed in **Section 2.2**. Three alternatives were evaluated: Preferred Alternative, Reduced-Scale Alternative, and No Action Alternative. A comparison of the environmental consequences of these alternatives is provided in **Table 5-1.**

5.2 Conclusions

The evaluation performed within this EA concludes there would be no significant adverse impact, either individually or cumulatively, to the local environment or quality of life as a result of implementing the Proposed Action. The RCMs and BMPs specified in this EA would enable the MAARNG to avoid or further minimize *less-than-significant* impacts on Camp Edwards and the surrounding area to the extent practicable. Therefore, this EA's analysis determines that an EIS is unnecessary to support the implementation of the Proposed Action, and that a FNSI is appropriate.

The Preferred Alternative was determined by the MAARNG to provide the best combination of land and resources to sustain quality military training and to maintain and improve the units' readiness postures. While the Reduced-Scale Alternative would carry out a modified version of the Proposed Action, it would still meet the purpose of and need for the Proposed Action. The No Action Alternative would not fulfill the purpose of and need for the Proposed Action. It would limit the capability of the MAARNG to carry out its assigned mission to provide adequate training facilities, and would jeopardize the proficiency and military readiness of the MAARNG and other military entities that require MPMG Range training. As such, this EA recommends implementation of the Preferred Alternative or Reduced-Scale Alternative.

Table 5-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Land Use and Cover	*Long term,* ***potentially significant*** *adverse* impact on future land use from a reduction in training use of Camp Edwards.	Long-term, *less-than-significant* adverse impacts on land cover from the clearing of 170.5 acres and permanent conversion of forested areas to maintained grasslands. Long-term, *beneficial* impact on land use by maximizing training value and use of Camp Edwards. **Impacts would be greater than the Reduced-Scale Alternative.**	Long-term, *less-than-significant* adverse impacts on land cover from the clearing of 99.5 acres and permanent conversion of forested areas to maintained grasslands. Long-term, *beneficial* impact on land use by maximizing training value and use of Camp Edwards. **Impacts would be less than the Preferred Alternative.**
Air Quality	*Long-term, less-than-significant adverse* impact on climate change from continued vehicle-generated GHG emissions.	Short-term, *less-than-significant* adverse impacts on air quality from the clearing of 170.5 acres generating fugitive dust and exhaust emissions. Long-term, *less-than-significant* adverse impact on air quality from increased emissions due to training and firing operations. Long-term, *beneficial* impacts on air quality from decreased emissions due to reduced out-of-State travel. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on air quality from the clearing of 99.5 acres generating fugitive dust and exhaust emissions. Long-term, *less-than-significant* adverse impact on air quality from increased emissions due to training and firing operations. Long-term, *beneficial* impacts on air quality from decreased emissions due to reduced out-of-State travel. **Impacts would be less than the Preferred Alternative.**
Noise	No impact.	Short-term, *less-than-significant* adverse impacts on noise levels due to construction activities required for clearing 170.5 acres of land. Long-term, *less-than-significant* adverse impacts on noise levels due to increased site usage and weapons firing. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on noise levels due to construction activities required for clearing 99.5 acres of land. Long-term, *less-than-significant* adverse impacts on noise levels due to increased site usage and weapons firing. **Impacts would be less than the Preferred Alternative.**

Table 5-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Soils	No impact.	Short-term, *less-than-significant* adverse impacts on soils due to erosion, sedimentation, and compaction resulting from the disturbance of 199.0 acres of land. Long-term, *less-than-significant* adverse impact on soils from training activities. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on soils due to erosion, sedimentation, and compaction resulting from the disturbance of 128.0 acres of land. Long-term, *less-than-significant* adverse impact on soils from training activities. **Impacts would be less than the Preferred Alternative.**
Groundwater	No impact.	Short-term, *less-than-significant* adverse impacts on groundwater from potential contaminant spills during construction. Long-term, *less-than-significant* adverse impacts on groundwater from inadvertent release of contaminants during site maintenance and training operations. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on groundwater from potential contaminant spills during construction. Long-term, *less-than-significant* adverse impacts on groundwater from inadvertent release of contaminants during site maintenance and training operations. **Impacts would be less than the Preferred Alternative.**

Table 5-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Biological Resources	No impact.	Short-term, *less-than-significant* adverse impacts on vegetation from temporary clearing for construction of the MPMG range. Long-term, *less-than-significant* adverse impacts on vegetation from the permanent loss of 170.5 acres of forested land. Short-term, *less-than-significant* adverse impacts on wildlife species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on wildlife species from potential habitat loss and training range operations. Short-term, *less-than-significant* adverse impacts on special status species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on special status species from potential habitat loss and training range operations. Long-term, *beneficial* impacts on migratory birds from enhanced habitat due to wildfire management practices. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on vegetation from temporary clearing for construction of the MPMG range. Long-term, *less-than-significant* adverse impacts on vegetation from the permanent loss of 99.5 acres of forested land. Short-term, *less-than-significant* adverse impacts on wildlife species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on wildlife species from potential habitat loss and training range operations. Short-term, *less-than-significant* adverse impacts on special status species from temporary displacement and disturbance during construction activities. Long-term, *less-than-significant* adverse impacts on special status species from potential habitat loss and training range operations. Long-term, *beneficial* impacts on migratory birds from enhanced habitat due to wildfire management practices. **Impacts would be less than the Preferred Alternative.**
Cultural Resources	No impact.	*No effect* on cultural resources.	*No effect* on cultural resources.

Table 5-1: Alternative Comparison Matrix

Technical Resource Area	No Action Alternative	Preferred Alternative (Proposed Action)	Reduced-Scale Alternative
Infrastructure	No impact.	Short-term, *less-than-significant* adverse impacts on traffic conditions from temporary construction congestion. Long-term, *less-than-significant* adverse impacts on traffic conditions from personal and military vehicles moving to and from the new MPMG Range. Short-term, *less-than-significant* adverse impacts on utilities from temporary utility interruptions during utility extensions and construction. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts on traffic conditions from temporary construction congestion. Long-term, *less-than-significant* adverse impacts on traffic conditions from personal and military vehicles moving to and from the new MPMG Range. Short-term, *less-than-significant* adverse impacts on utilities from temporary utility interruptions during utility extensions and construction. **Impacts would be less than the Preferred Alternative.**
HTMW	No impact.	Short-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during construction. Long-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during training operations and site maintenance. **Impacts would be greater than the Reduced-Scale Alternative.**	Short-term, *less-than-significant* adverse impacts associated with handling, storage, use, transportation, and disposal of HTMW during construction. Long-term, *less-than-significant* adverse impacts associated with the handling, storage, use, transportation, and disposal of HTMW during training operations and site maintenance. **Impacts would be less than the Preferred Alternative.**

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7. GLOSSARY

Ambient: The environment as it exists around people, plants, and structures.

National Ambient Air Quality Standards: Those standards established according to the Clean Air Act (CAA) to protect health and welfare (AR 200-1).

Aquifer: An underground geological formation containing usable amounts of groundwater which can supply wells and springs.

Attainment Area: Region that meets the National Ambient Air Quality Standard (NAAQS) for a criteria pollutant under the CAA.

Best Management Practices (BMPs): Environmentally sensitive construction practices the MAARNG would implement in order to minimize or avoid potential adverse environmental impacts.

Biodiversity: Biological diversity in an environment as indicated by numbers of different species of plants and animals

Central Impact Area: The 330-acre Central Impact Area located within the Impact Area; primary target area for artillery, mortar and other firing activities from the 1900s until 1997.

Commercial land use: land use that includes private and public businesses (retail, wholesale, etc.), institutions (schools, churches, etc.), health services (hospitals, clinics, etc.) and military buildings and installations.

Compaction: The packing of soil together into a firmer, denser mass, generally caused by the pressure of great weight.

Contaminants: Any physical, chemical, biological or radiological substances that have an adverse effect on air, water or soil.

Council on Environmental Quality (CEQ): An Executive Office of the President composed of three members appointed by the President, subject to approval by the Senate. Each member shall be exceptionally qualified to analyze and interpret environmental trends; to appraise programs and activities of the Federal Government. Members are to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Criteria Pollutants: The CAA of 1970 required the USEPA to set air quality standards for common and widespread pollutants in order to protect human health and welfare. There are six "criteria pollutants": ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), lead (Pb), nitrogen dioxide (NO_2), and particulate matter.

Cultural Resources: Cultural resources are historic properties as defined by the NHPA, cultural items as defined by the Native American Graves Protection and Repatriation Act (NAGPRA), archaeological resources as defined by the Archaeological Resources Protection Act, sacred sites as defined by EO 13007 to which access is afforded under the American Indian Religious Freedom Act, and collections and associated records as defined by 36 CFR 79.

Cumulative Impact: The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

dBA: "A-weighted" non-impulse noise measurement in decibels, weighted to match human hearing frequency response.

Decibel (dB): A unit of measurement of sound pressure level.

Direct Impact: A direct impact is caused by a Proposed Action, and occurs at the same time and place.

Elevation: Raising a building and placing it on a higher foundation so the first or lowest floor is above flood levels.

Emission: A release of a pollutant.

Endangered Species: Any species which is in danger of extinction throughout all or a significant portion of its range.

Environmental Assessment (EA): An EA is a publication that provides sufficient evidence and analysis to show whether a proposed system will adversely affect the environment or be environmentally controversial.

Erosion: The wearing away of the land surface by detachment and movement of soil and rock fragments through the action of moving water and other geological agents.

Farmland: Cropland, pastures, meadows, and planted woodland.

Fauna: Animal life, especially the animal characteristics of a region, period, or special environment.

Field (verb): to deploy weapons for use.

Floodplain: The relatively flat area or lowlands adjoining a river, stream, ocean, lake, or other body of water that is susceptible to being inundated by floodwaters.

FNSI: Finding of No Significant Impact, a NEPA document.

Fugitive Dust: Particles light enough to be suspended in air which are not caught in a capture or filtering system. For this document, this refers to particles put in the air by moving vehicles and air movement over disturbed soils at construction sites.

Geology: Science which deals with the physical history of the earth, the rocks of which it is composed, and physical changes in the earth.

Groundwater: Water found below the ground surface. Groundwater may be geologic in origin and as pristine as it was when it was entrapped by the surrounding rock or it may be subject to daily or seasonal effects depending on the local hydrologic cycle. Groundwater may be pumped from wells and used for drinking water, irrigation and other purposes. It is recharged by precipitation or irrigation water soaking into the ground. Thus, any contaminant in precipitation or irrigation water may be carried into groundwater.

Hazardous Substance: Hazardous materials are defined within several laws and regulations to have certain meanings. For this document, a hazardous material is any one of the following:

Any substance designated pursuant to section 311 (b)(2) (A) of the Clean Water Act.

Any element, compound, mixture, solution or substance designated pursuant to Section 102 of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Any hazardous as defined under the Resource Conservation and Recovery Act (RCRA).

Any toxic pollutant listed under TSCA.

Any hazardous air pollutant listed under Section 112 of CAA.

Any imminently hazardous chemical substance or mixture with respect to which the EPA Administrator has taken action pursuant to Subsection 7 of TSCA.

The term does not include: 1) Petroleum, including crude oil or any thereof, which is not otherwise specifically listed or designated as a hazardous substance in a above. 2) Natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas). c. A list of hazardous substances is found in 40 CFR 302.4.

Hazardous Waste: A solid waste, which when improperly treated, stored, transported or disposed of poses a substantial hazard to human health or the environment. Hazardous wastes are identified in 40 CFR 261.3 or applicable foreign law, rule, or regulation (see also solid waste).

Impact Area: The 2,200-acre Impact Area located in the center of the Upper Cape Water Supply Reserve/Camp Edwards Training Site where small arms range firing is focused.

Intensity: This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action.

Listed Species: Any plant or animal designated as a State or Federal threatened, endangered, special concern, or candidate species.

Mitigation: Project-specific requirements not routinely implemented by the MAARNG necessary to reduce identified potentially significant adverse impacts to less-than-significant levels.

Mobile Sources: Vehicles, aircraft, watercraft, construction equipment, and other equipment that use internal combustion engines for energy sources.

Monitoring: A process of inspecting and recording the progress of mitigation measures implemented.

National Ambient Air Quality Standards (NAAQS): Nationwide standards set up by the USEPA for widespread air pollutants, as required by Section 109 of the CAA. Currently, six pollutants are regulated by primary and secondary NAAQS: carbon monoxide (CO), lead, (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter, and sulfur dioxide (SO_2).

National Environmental Policy Act (NEPA):U.S. statute that requires all Federal agencies to consider the potential effects of Proposed Actions on the human and natural environment.

Nonattainment Area: An area that has been designated by the EPA or the appropriate State air quality agency as exceeding one or more national or State ambient air quality standards.

Particulates or Particulate Matter: Fine liquid or solid particles such as dust, smoke, mist, fumes or smog found in air.

Pollutant: A substance introduced into the environment that adversely affects the usefulness of a resource.

Potable Water: Water which is suitable for drinking.

Prime Farmland: A special category of highly productive cropland that is recognized and described by the U.S. Department of Agriculture's Soil Conservation Service (now the Natural Resources Conservation Service) and receives special protection under the Surface Mining Law.

Regulatory Compliance Measures: Compliance measures that the MAARNG is required to conduct in accordance with applicable laws, regulations, and permit conditions.

Remediation: A long-term action that reduces or eliminates a threat to the environment.

ROI: An often-used term for describing the affected area for socioeconomics, as well as broadly for other technical resource areas, is ―Region of Influence or ROI. (from ARNG Handbook)

Sedimentation: Deposition of eroded material in an alternate location by dispersing agents such as water or wind.

Sensitive Receptors: Include, but are not limited to, asthmatics, children, and the elderly, as well as specific facilities, such as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, and childcare centers.

Short-Term Impacts: Direct or indirect impacts resulting from an action in the near term. In this context, short-term does not refer to any rigid time period and is determined on a case-by-case basis in terms of the environmental consequences of the Proposed Action.

Significant Impact: According to 40 CFR 1508.27, "significance" as used in NEPA requires consideration of both context and intensity.

> Context. The significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the Proposed Action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

Soil: The mixture of altered mineral and organic material at the earth's surface that supports plant life.

Solid Waste: Any discarded material that is not excluded by section 261.4(a) or that is not excluded by variance granted under sections 260.30 and 260.3 1.

Special-concern: any plant or animal species which has been documented as suffering a decline that can cause an adverse response

State-listed: species that are listed by the Massachusetts Division of Fisheries and Wildlife as being either threatened, endangered, or of special concern, and protected under the Mass.

Threatened species: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Topography: The relief features or surface configuration of an area.

Toxic Material/Waste: A harmful substance that includes elements, compounds, mixtures, and materials of complex composition.

Watershed: The region draining into a particular stream, river, or entire river system.

Wetlands: Areas that are regularly saturated by surface or groundwater and, thus, are characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include swamps, bogs, fens, marshes and estuaries.

Wildlife Habitat: Set of living communities in which a wildlife population lives.

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8. LIST OF PREPARERS

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Pocasset, MA 02559

Name	Role	Degree	Years of Experience
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Jennifer Warf	NEPA analysis and oversight	M.S. Environmental Studies B.A. Zoology	18
Charlene Wu	Preparation of EA sections	M.S. Environmental Management B.S. Environmental Science and Policy	7
Jeremy Lessard	Map Preparation, GIS	B.S. Environmental Science	4
James P. Cowan, INCE Bd. Cert.	Acoustic and Noise Control	B.S. Mathematics M.S. Acoustic	34
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Vijay Apte	Greenhouse Gas Assessment	B.S. Civil Engineering M.S. Environmental Engineering	30

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9. AGENCIES AND INDIVIDUALS CONSULTED

Copies of all correspondence, including sample data request letters and responses, are included in **Appendix A**. Each of the agencies and individuals listed below have received a copy of the EA for the opportunity to review and comment.

FEDERAL AGENCIES

United States Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751
Attn: Col. William M. Conde, District Engineer, Commander

United States Department of Agriculture
Natural Resources Conservation Service (NRCS)
451 West Street
Amherst, MA 01002-2953
Attn: Nicole Viars, Acting State Conservationist

United States Environmental Protection Agency
Region 1
5 Post Office Square - Suite 100
Boston, MA 02109-3912
Attn: Deborah Szaro, Regional Administrator

United States Fish & Wildlife Service
Office of the Regional Director
300 Westgate Center Drive
Hadley, MA 01035-9589
Attn: Wendi Weber, Regional Director

STATE AGENCIES

Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108
Attn: Martin Suuberg, Commissioner

Massachusetts Department of Environmental Protection
Division of Waterways & Wetlands
One Winter Street
Boston, MA 02108
Attn: Stephanie Moura, Division Director

Massachusetts Natural Heritage and Endangered Species Program
MassWildlife
1 Rabbit Hill Road
Westborough, MA 01581
Attn: Eve Schluter, NHESP Assistant Director

Massachusetts Department of Conservation and Recreation
Planning and Engineering
251 Causeway Street, Suite 600
Boston, MA 02114-2104
Attn: Leo Roy, Commissioner

Massachusetts Department of Conservation and Recreation
Division of Water Supply Protection
251 Causeway Street, Suite 600
Boston, MA 02114-2104
Attn: John Scannell, Director

Massachusetts Historical Commission
State Historic Preservation Officer
220 Morrissey Boulevard
Boston, MA 02125
Attn: Brona Simon, Executive Director

Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2524
Attn: Katie Theoharides, Executive Secretary

Cape Cod Conservation District
303 Main Street
W. Yarmouth, MA 02673

Department of Natural Resources Conservation
University of Massachusetts, Amherst

205 Holdsworth Way
Amherst, MA 01003-9285

Environmental Management Commission
Building 3468, Beaman Street
Camp Edwards, MA 02542-5003
Attn: Leonard Pinaud

LOCAL CONTACTS

Town of Bourne
24 Perry Avenue
Buzzards Bay, MA 02532
Attn: Thomas Guerino, Town Administrator

Town of Mashpee
16 Great Neck Road North
Mashpee, MA 02649
Attn: Rodney C. Collins, Town Manager

Town of Sandwich
130 Main Street
Sandwich, MA 02563
Attn: George Dunham, Town Manager

Town of Falmouth
59 Town Hall Square
Falmouth, MA 02540
Attn: Julian Suso, Town Manager

TRIBAL CONTACTS

Wampanoag Tribe of Gay Head (Aquinnah)
20 Black Brook Road
Aquinnah, MA 02535
Attn: Bettina Washington, Tribe Historic Preservation Officer

Mashpee Wampanoag Tribe
P.O. Box 1048
483 Great Neck Road South
Mashpee, MA 02649
Attn: David Weeden, Tribal Historic Preservation Officer

Stockbridge - Munsee Tribe of Mohican, Wisconsin
W13447 Camp 14 Road
Bowler, WI 54416
Attn: Sherry White, Tribal Historic Preservation Manager/NAGPRA

REGIONAL AGENCIES

Cape Cod Commission
P.O. Box 226
Barnstable, MA 02630
Attn: Kristy Senatori, Executive Director
Attn: Jonathan Idman, Chief Regulatory Officer