CHAPTER 17. HAZARDOUS MATERIALS AND WASTE

17.1 INTRODUCTION

This chapter describes the potential environmental consequences of hazardous materials and waste associated with implementation of alternatives within the region of influence (ROI). For a description of the affected environment for all resources, including current hazardous substance handling, storage, transportation, and management plans, techniques, approaches, and potential mitigation measures refer to the respective chapter of Volume 2 (Marine Corps Relocation – Guam). The locations described in Volume 2 include the ROI for the Army Air and Missile Defense Task Force (AMDTF) component of the proposed action; the chapters are presented in the same order as the resource areas contained in this volume.

17.2 ENVIRONMENTAL CONSEQUENCES

17.2.1 Approach to Analysis

17.2.1.1 Methodology

Potential environmental consequences and mitigation measures related to the expansion of the utilities infrastructure on Guam were evaluated regarding:

- Army AMDTF construction impacts
- Army AMDTF operation impacts

These potential impacts were assessed for the general public as well as various media (i.e., soils, surface water, groundwater, air, and biota). This section presents an impact analysis for the proposed action and the no-action alternative. As the impacts would be island-wide in nature with little difference in effects among the various alternatives, the summary of impacts presented in Section 17.2.2 is applicable to all of the alternatives except the no-action alternative. Impacts under the no-action alternative are addressed in Section 17.2.3.

17.2.1.2 Determination of Significance

The determination of significance is based upon existing hazardous substance management practices, potential mitigation measures, and expected or potential impacts and environmental consequences with the planned actions. This determination evaluated the overall ability to mitigate or control environmental impacts and consequences to soils, surface water, groundwater, air, and biota. This determination considers current conditions and potential consequences relative to the anticipated ability of the hazardous substance management infrastructure system to accommodate added hazardous substance demand on the overall system. Specifically, for hazardous substances to be considered a significant impact, the following would have to occur:

- Leaks, spills, or releases of hazardous substances to environmental media (i.e., soils, surface water, groundwater, air, and/or biota) resulting in unacceptable risks to the environment.
- Violation of applicable federal, state, or local laws or regulations regarding the transportation, storage, handling, use, or disposal of hazardous substances.

17.2.1.3 Issues Identified During Public Scoping Process

Major issues identified during the public scoping process which involves input from regulatory stakeholders included the desire to:

- Address management practices for hazardous substances including hazardous wastes, toxic substances, hazardous materials, and ordnance.
- Describe the potential overall impacts of hazardous substances from construction and operation of proposed projects.
- Identify the projected hazardous waste types and volumes.
- Identify expected hazardous substance storage, disposal, and management plans.
- Evaluate measures to mitigate generation of hazardous waste, including pollution prevention.
- Discuss how hazardous substances on land and from ships would be managed.
- Discuss the potential for impacts to environmental media from spills, accidents, and/or releases of hazardous substances.
- Identify existing installation restoration sites.

17.2.2 Proposed Action

This description of environmental consequences addresses all components of the proposed action for the Army AMDTF. This includes the headquarters/housing component and the munitions storage component, each of which has three alternatives. The weapons emplacement component has four alternatives. Detailed information on the weapons emplacements is contained in a Classified Appendix (Appendix L). A summary of impacts is presented at the end of this chapter.

17.2.2.1 Construction

This subsection analyzes possible impacts related to the construction phase of the proposed Army AMDTF. Construction activities would be the same for all three components (headquarters/housing, weapons storage, and weapons emplacement) and for the alternatives of each component.

Specific activities include site preparation, site grading, trenching and excavation, installation of foundations and building structures, landscaping, and installation or improvement of roads, and other related infrastructure elements.

Hazardous Materials

Proposed construction activities for the proposed action would result in the use of hazardous materials. It is anticipated that the largest increases of hazardous materials would occur from the use of fuels for heavy construction equipment, construction vehicles, generators, and other construction activities. It is estimated that about 3,000 pounds (lbs) (1,361 kilograms [kg]) of hazardous materials would be used during Army AMDTF construction activities. This estimate was based upon professional judgment and Defense Reuse and Marketing Office (DRMO) Guam hazardous material disposal data. Best management practices (BMPs) and standard operating procedures (SOPs) would be used to:

- Prevent, contain, and/or clean up spills and leaks to protect the human health and the environment.
- Provide personnel training and operational protocol and procedures to protect human health and the environment.
- Ensure DMRO has the ability to properly manage and dispose of anticipated hazardous materials.

- Protect overall human health, welfare, and the environment.

The projected increase in the volume of hazardous material represents a potential hazardous material impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous material would be handled and disposed per BMPs and SOPs in accordance with all federal and local regulations, as well as with DoD requirements (see Volume 7). Therefore, the impacts from the increase in hazardous material would be less than significant. The BMPs and SOPs that would be used include (but are not limited to):

- Update/implement HMMP.
- Update/implement Facility Response plans.
- Update/implement SPCC plans (training, spill containment and control procedures, cleanup, notifications, etc.).
- Ensure DoD and construction subcontractor personnel are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous materials. Also, ensure personnel are trained in accordance with spill prevention, control, and cleanup methods.
- Implement aggressive HMMPs that substitute non-hazardous materials for hazardous materials.
- As necessary, expand DRMO's sufficient hazardous materials storage, transportation, and disposal capacity prior to any expected increases
- Verify through surveillance and inspection that construction contractors fully comply with federal and local regulations, as well as DoD requirements, including the use, storage, treatment, and disposal of hazardous materials. Also verify that proper erosion control methods are used during construction activities. Implement corrective actions as necessary.
- Minimize the risk of uncontrolled spills and releases through industry accepted methods for spill prevention, containment, control, and abatement.
- Minimize the use of contaminated sites for new construction. When new construction occurs on sites where contamination has been identified, ensure that the risk of human exposure to contaminated media is minimized via the use of a site-specific health and safety plan, engineering and administrative controls, and appropriate PPE.

Toxic Substances

The primary toxic substances being addressed on Guam regardless of any Department of Defense (DoD) expansion include: asbestos-containing materials (ACM), lead-based paint (LBP), polychlorinated biphenyls (PCBs), and radon. The proposed action would not be expected to result in impacts from ACM, LBP, and PCBs. The USEPA banned the most uses of PCBs in 1979 and banned LBP in 1978. In addition, ACM would not be used in new Army AMDTF facilities. Demolition of existing facilities could result in encountering LBP and/or ACM; however, licensed asbestos and LBP contractors used for these projects would follow established ACM and LBP handling protocol and procedures. Therefore, such impacts of LBP and/or ACM would be less than significant.

New facilities and/or structures could encounter radon intrusion; however, radon resistant construction techniques would be used and DoD would periodically test facilities constructed in known radon zones to verify that no unacceptable radon gas buildup occurs. As appropriate, radon mitigation measures would be installed.

Hazardous Waste

Proposed construction activities would result in an increase in the generation of hazardous waste. Construction activities would increase the use of adhesives, lubricants, solvents, corrosive liquids, and aerosols. It is estimated that approximately 8,000 lbs (3,629 kg) of hazardous wastes would be generated from Army AMDTF facilities construction projects. This estimate was based upon professional judgment and DRMO Guam hazardous waste disposal data. However, BMPs and SOPs would be used to:

- Prevent, contain, and/or clean up spills and leaks to protect the human health and the environment.
- Provide personnel training and operational protocol and procedures to protect human health and the environment.
- Ensure DMRO has the ability to properly manage and dispose of anticipated hazardous waste
- Protect overall human health, welfare, and the environment.

The projected increase in the volume of hazardous waste represents a potential hazardous waste impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous waste would be handled and disposed per BMPs and SOPs in accordance with all federal and local regulations, as well as with DoD requirements (see Volume 7). Therefore, the impacts from the increase in hazardous waste would be less than significant. BMPs and SOPs that would be used include (but are not limited to): used include:

- Update/implement HWMPs.
- Update/implement Facility Response plans.
- Update/implement SPCC plans (training, spill containment and control procedures, cleanup, notifications, etc.).
- Ensure DoD and construction subcontractor personnel are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous waste. Also, ensure they are trained in accordance with spill prevention, control, and cleanup methods.
- Implement aggressive hazardous waste minimization plans based on hazardous waste use minimization plans.
- As necessary, expand DRMO's sufficient hazardous waste storage, transportation, and disposal capacity prior to any expected increases.
- Verify through surveillance and inspection that construction contractors construction contractors fully comply with federal and local regulations, as well as DoD requirements, and implement corrective actions as necessary
- Minimize the risk of uncontrolled spills and releases through industry accepted methods for spill prevention, containment, control, and abatement.
- Minimize the use of contaminated sites for new construction. When new construction occurs on sites where contamination has been identified, ensure that the risk of human exposure to contaminated media is minimized via the use of a site-specific health and safety plan, engineering and administrative controls, and PPE.

17.2.2.2 Operation

This subsection analyzes possible impacts related to the operational phase of the proposed Army AMDTF. For the most part, operations associated with the headquarter/housing component would be residential/recreational and administrative in nature; the hazardous materials/waste impact of these activities would be less than significant through pollution prevention and community awareness/recycling

programs. Operational activities would be the same for all alternatives of each component (headquarters/housing, weapons storage, and weapons emplacement). Army AMDTF training operations involve missile transport/storage training, communications/ radar operations, and non-fire maneuvers. This section discusses the environmental consequences and potential mitigation measures associated with these activities.

Hazardous Materials

Army AMDTF activities would result in the use of military transport vehicles and increased usage of fuels and petroleum, oils, and lubricants (POLs). An estimated 1,600 lbs (726 kg) of hazardous materials would be generated from AMDFT operations annually. This estimate was based upon professional judgment and DRMO Guam hazardous material disposal data. BMPs and SOPs would be used to:

- Prevent, contain, and/or clean up spills and leaks to protect human health and the environment.
- Provide personnel training and operational protocol and procedures to protect human health and the environment.
- Ensure DMRO has the ability to properly manage and dispose of anticipated hazardous materials.
- Protect overall human health, welfare, and the environment.

The projected increase in the volume of hazardous material represents a potential hazardous material impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous material would be handled and disposed per per BMPs and SOPs in accordance with all federal and local regulations, as well as with DoD requirements (see Volume 7). Therefore, the impacts from the increase in hazardous material would be less than significant. The BMPs and SOPs that would be used include (but are not limited to):

- Update/implement HMMPs.
- Update/implement Facility Response plans.
- Update/implement SPCC plans. Also, ensure personnel are trained in accordance with spill prevention, control, and cleanup methods.
- Implement aggressive hazardous materials minimization plans that maximize the use of non-hazardous materials as appropriate.
- Ensure DoD personnel are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous materials.
- Verify through surveillance and inspection that construction contractors fully comply with federal and local regulations, as well as DoD requirements, and implement corrective actions as necessary.
- As necessary, expand DRMO's sufficient hazardous materials storage, transportation, and disposal capacity prior to any expected increases.

Toxic Substances

Activities associated with firing range operations are not expected to produce significant impacts from toxic substances (e.g., ACM, LBP, PCBs, or radon) or produce unwanted environmental consequences requiring potential mitigation measures. BMPs and SOPs would be implemented as appropriate.

Hazardous Waste

There may be limited generation of hazardous wastes as a result of Army AMDTF range operations. Hazardous wastes generated could include: solvents, corrosive or toxic liquids, pesticides/herbicides, and aerosols (primarily used for firing range vehicle maintenance). An estimated 2,500 lbs (1,134 kg) of hazardous waste would be generated from Army AMDTF operations annually. This estimate was based upon professional judgment and DRMO Guam hazardous waste disposal data.

BMPs and SOPs would be used to:

- Prevent, contain, and/or clean up spills and leaks to protect the human health and the environment.
- Provide personnel training and operational protocol and procedures to protect human health and the environment.
- Ensure DMRO has the ability to properly manage and dispose of anticipated hazardous waste
- Protect overall human health, welfare, and the environment.

The projected increase in the volume of hazardous waste represents a potential hazardous material impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous waste would be handled and disposed per per BMPs and SOPs in accordance with all federal and local regulations, as well as with DoD requirements (see Volume 7). Therefore, the impacts from the increase in hazardous waste would be less than significant. The BMPs and SOPs that would be used include (but are not limited to):

- Update/implement HWMPs.
- Update/implement Facility Response plans.
- Update/implement SPCC plans (training, spill containment and control procedures, cleanup, notifications, etc.).
- Ensure DoD personnel are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous wastes. Also, ensure they are trained in accordance with spill prevention, control, and cleanup methods.
- Perform all vehicular maintenance activities off-range at existing DoD maintenance shops
- Implement aggressive hazardous waste minimization plans based on hazardous waste use minimization plans.
- As necessary, expand DRMO's sufficient hazardous waste storage, transportation, and disposal capacity prior to any expected increases.
- Verify through surveillance and inspection that DoD construction contractors fully comply with federal and local regulations, as well as DoD requirements, and implement corrective actions as necessary.
- Minimize the risk of uncontrolled spills and releases through industry accepted methods for spill prevention, containment, control, and abatement.

17.2.2.3 Summary of Impacts

The projected increase in the volume of hazardous material and waste represents a potential hazardous material/waste impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous materials and waste would be handled and disposed per BMPs, SOPs, and all applicable federal and local regulations, as well as DoD requirements (see Volume 7). Therefore, the impacts from the increase in hazardous materials/waste would be less than significant.

17.2.3 No-Action Alternative

Under the no-action alternative none of the proposed DoD expansion activities would be implemented on Guam and baseline condition would remain unchanged. Therefore, there would be no environmental impacts or consequences under the no-action alternative. Furthermore, as a result having no consequences there would be no mitigation measures required. Implementation of the no-action alternative would not meet the mission, readiness, national security and international treaty obligations of the DoD.

17.2.4 Summary of Impacts

Tables 17.2-1, 17.2-2, 17.2-3 summarize the potential impacts of each major component – headquarters/housing, munitions storage, and weapons emplacement, respectively. A text summary is provided below.

Table 17.2-1. Summary of Headquarters/Housing Impacts – Alternatives 1, 2, and 3

Alternatives 1 ,2 and 3
Construction
LSI • Less than significant adverse impacts would occur • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release • BMPs and SOPs would keep the frequency and magnitude of the potential leaks, spills, and releases low • Less than significant impact to hazardous materials/waste management and disposal capacity due to expansion of facilities prior to expected increases
Operation
LSI • Less than significant adverse impacts would occur • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release • BMPs and SOPs would keep the frequency and magnitude of the potential leaks, spills, and releases low • Less than significant impact to hazardous materials/waste management and disposal capacity due to expansion of facilities prior to expected increases

Legend: LSI = Less than significant impact.

Table 17.2-2. Summary of Munitions Storage Impacts – Alternatives 1, 2, and 3

Alternatives 1 ,2 and 3
Construction
LSI • Less than significant adverse impacts would occur • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release • BMPs and SOPs would keep the frequency and magnitude of the potential leaks, spills, and releases low • Less than significant impact to hazardous materials/waste management and disposal capacity due to expansion of facilities prior to expected increases
Operation
LSI • Less than significant adverse impacts would occur • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release • BMPs and SOPs would keep the frequency and magnitude of the potential leaks, spills, and releases low • Less than significant impact to hazardous materials/waste management and disposal capacity due to expansion of facilities prior to expected increases

Legend: LSI = Less than significant impact.

Table 17.2-3. Summary of Weapons Emplacement Impacts – Alternatives 1, 2, 3 and 4

Alternatives 1 ,2, 3, and 4
Construction
LSI • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release • BMPs and SOPs would keep the frequency and magnitude of the potential leaks, spills, and releases low • The volume of hazardous waste to be generated by the proposed action construction would be well within the capacity that can be managed on Guam within the existing Navy and Air Force hazardous materials and waste system. The impacts would be less than significant.
Operation
LSI • As with all operations using hazardous substances, there is a possibility for an inadvertent leak, spill, or release • BMPs and SOPs would keep the frequency and magnitude of the potential leaks, spills, and releases low • The volume of hazardous waste to be generated by the proposed action operations would be well within the capacity that can be managed on Guam within the existing Navy and Air Force hazardous materials and waste system. The impacts would be less than significant.

Legend: LSI = Less than significant impact.

Proposed Army AMDTF operations involving non-fire maneuvers and troop movement exercises/training would result in increased opportunities for environmental impacts. These potential impacts could result from increased transportation, handling, use, and disposal of hazardous materials and hazardous wastes. It is expected that the largest increases in the use of hazardous materials would occur from the use of POLs and fuels. The proposed action also would increase use hazardous waste including solvents, corrosive or toxic liquids, and aerosols.

There are various controls in place to prevent unintended releases of such substances. These controls include:

- Spill prevention control and countermeasures plans
- Facility Response plans
- Waste management plans
- Stormwater pollution prevention plans
- Hazardous material/waste management plans (e.g., asbestos management plans and lead-based management plans, etc.)
- Mandatory personnel hazardous material/waste training
- Waste minimization plans
- Waste labeling, storage, packaging, staging, and transportation procedures
- DoD waste regulations
- Federal and territorial laws and regulations

Despite expected increases in hazardous materials and hazardous wastes, impacts would be less than significant because the controls discussed above would be properly implemented and related plans and procedures updated and modified as appropriate to meet the potential increased demand upon DRMO regarding hazardous substance transportation, handling, storage, use, and disposal.

17.2.5 Summary of Potential Mitigation Measures

No potential mitigation measures are identified. Table 17.2-4 summarizes the BMPs and SOPs that would be used related to Army AMDTF construction and operations activities for each action alternative.

Table 17.2-4. Summary of Potential Mitigation Measures

Headquarters/Housing Alternatives	*Munitions Storage Alternatives*	*Weapons Emplacement Alternatives*
Army AMDTF Construction and Operation		
• Update/implement HMMP's and HWMP's. • Update/implement Facility Response plans. • Update/implement SPCC plans (training, spill containment and control procedures, clean up, notifications, etc.). • Ensure DoD personnel are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous substances. Also, ensure they are trained in accordance with spill prevention, control, and cleanup methods. • Perform all vehicle maintenance activities at existing DoD maintenance shops. • Implement aggressive hazardous material/waste minimization plans that substitute hazardous material/waste for non-hazardous or less toxic waste as applicable and use LEEDs criteria. • As necessary, expand DRMO's sufficient hazardous materials/waste storage, transportation, and disposal capacity prior to any expected increases • Verify through surveillance and inspection that federal, local, and DoD laws and regulations are being observed and implement corrective actions as necessary. • Minimize the risk of uncontrolled spills and releases through industry accepted methods for spill prevention, containment, control, and abatement. • Minimize the use of contaminated sites for new construction. When new construction occurs on sites where contamination has been identified, ensure that the risk of human exposure to contaminated media is minimized via the use of a site-specific health and safety plan, engineering and administrative controls, and PPE.	• BMPs and SOPs under Alternative 2 are the same as under Alternative 1.	• BMPs and SOPs under Alternative 2 are the same as under Alternative 1.

Legend: DoD = Department of Defense; DRMO = Defense Reutilization and Marketing Office; HMMP = Hazardous Materials Management Plan; HWMP = Hazardous Waste Management Plan; LEED = Leadership in Energy and Environmental Design; PPE = personal protective equipment; SPCC = Spill Prevention Control and Countermeasures.

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