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 management plans and programs for hazardous substance handling, storage, transportation, and disposal, 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 establishment of the Army AMDTF 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 regional 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, expected or potential impacts and environmental consequences of the proposed action and alternatives. 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 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 human health and/or 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

As part of the analysis, concerns relating to hazardous substances that were mentioned by the public, including regulatory stakeholders, during the public scoping meetings were addressed.

These include:

- Address management practices for hazardous substances including hazardous wastes, toxic substances, hazardous materials, and munitions and explosives of concern (MEC).
- 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 emplacement alternatives 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. There is a possibility that some of these planned construction project footprints could encounter sites contaminated with hazardous substances and/or MEC. If relocation of various construction projects that may encounter hazardous substances and/or MEC is not possible, several Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) (see Volume 7) would be used including, but are not limited to: development of site-specific health and safety plans, the use of engineering controls (e.g., dust suppression, etc.) and administrative controls, and the use of personal protective equipment (PPE).

Hazardous Materials

Proposed construction activities for the proposed action would result in an increase 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 Reutilization and Marketing Office (DRMO) Guam hazardous

material disposal data. Human health, welfare, and the environment would be protected through use of BMPs and SOPs to:

- Protect human health and the environment
- Prevent, contain, and/or clean up spills, releases, and leaks
- Provide personnel training and operational protocol and procedures
- Ensure DRMO has the ability to properly manage and dispose of anticipated hazardous materials
- Properly identify manage, and dispose of MEC associated with construction and operation of the expanded mission facilities

Due to the the projected increase in the volume of hazardous material, Alternative 1 would have the potential to result in a 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 (Volume 7) in accordance with all federal and local regulations, as well as with Department of Defense (DoD) requirements. Therefore, the impacts from the increase in hazardous material would be less than significant. Note that BMPs and SOPs are not considered "mitigation measures" thus no mitigation measures are proposed. The BMPs and SOPs that would be used include, but are not limited to those listed on Table 17.2-1 below. A complete listing is contained in Volume 7.

Table 17.2-1. Summary of BMPs and SOPs

*All Components and Alternatives, Except as Noted With **
For Soils, Water, Air, and Biota Relative to Transportation, Construction, and Operations Functions
• Update/implement hazardous materials management plans (HMMPs) and hazardous waste management plans (HWMPs). • Update/implement Facility Response Plans • Update/implement spill prevention, control and countermeasure (SPCC) plans (training, spill containment and control procedures, clean up, notifications, etc.). • Update/implement stormwater pollution prevention plans (SWPPPs) • Ensure all DoD personnel and contractors are trained in accordance with the Guam public law (PL) 29-26 regarding the importation, handling, use, and application of pesticides (e.g., during maintenance, pre and post construction, and general operations activities). In addition, DoD will develop and implement a comprehensive Integrated Pest Management Plan (IPMP). This IPMP will encompass all activities regarding the importation, handling, storage, use, and application of pesticides as well as address prevention of the introduction of potential invasive species to Guam. • Ensure all DoD personnel and contractor 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 maintenance activities off-range at existing DoD maintenance shops. • Implement aggressive hazardous waste and hazardous material minimization plans that substitute hazardous waste for non-hazardous or less toxic waste as applicable, maximize recycling, and use Leadership in Energy and Environmental Design (LEED) green building criteria. • Ensure that DRMO has sufficient hazardous substance storage, transportation, and disposal capacity prior to any expected increases. Note that a Joint Military Master Plan provides specific details regarding several new facilities (e.g., operations and maintenance facilities, bilge and oily wastewater pump station, fuel storage areas, petroleum, oils, and lubricant (POL) storage areas, warehousing facilities, munitions magazine storage facilities, hazardous waste storage facilities, waste storage facilities, hazardous material storage, etc.). These new facilities will be required to store, handle, and dispose of the estimated increases in hazardous substances that would occur from the potential DoD unit transfers to Guam. • Verify through surveillances and inspections full compliance with federal, state and local regulations and adherence to DoD requirements. Implement corrective actions as necessary. • Minimize the risk of uncontrolled leaks, spills, and releases through industry accepted methods for spill

*All Components and Alternatives, Except as Noted With **
prevention, containment, control, and abatement. • Implement land use controls, fencing, signage, periodic inspections, and other means to ensure no unauthorized access to MEC, former landfills, and/or hazardous substances. • Implement public awareness education seminars and workshops regarding the dangers of MEC, the importance of staying off firing ranges, and what to do if possible MEC is found. • Conduct site investigation(s) to define existing conditions of former Landfill Site # 1.* • Ensure any work conducted in the area of former waste sites such as Landfill #1 is conducted in accordance with 29 CFR 1910.120 (hazardous waste operations and emergency response operations).* • Minimize the use of contaminated sites for new construction. When new construction occurs on sites where contamination and/or MEC has been identified, ensure that the risk of human/ecological risk and exposure is minimized via the use of a site-specific health and safety plans, engineering and administrative controls, and PPE. These site-specific health and safety plans must specifically address how these controls will be implemented to ensure the protection of human health and the environment. Conduct Phase I and II Environmental Site Assessments prior to construction activities and ensure designs consider and address contaminated sites as appropriate. Also, these projects would be subject to regulatory oversight from Guam Environmental Protection Agency and/or U.S. Environmental Protection Agency (USEPA). • Ensure that soils to be excavated are well characterized, properly handled, and disposed of in accordance with all applicable federal, state and local regulations and DoD requirements to minimize dispersal of any contaminants that may be present. • Ensure that site planning and activities are conducted in accordance with Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8020.15B Explosives Safety Review, Oversight, and Verification of Munitions Responses (DoN 2010).

Notes:* Does not apply to Headquarters/Housing Alternative 2 at Navy Barrigada

Toxic Substances

Toxic substances being addressed on Guam regardless of any DoD expansion include: asbestos-containing materials (ACM), lead-based paint (LBP), polychlorinated biphenyls (PCBs), and radon. LBP and PCBs originating in Guam are transported by licensed transporters and disposed in permitted facilities in accordance with applicable federal, state, and local regulations and DoD requirements. ACM is disposed of at federal facilities in Guam.

The proposed action would not be expected to result in impacts from ACM, LBP, and PCBs. The USEPA banned most uses of PCBs in 1979 and banned LBP in 1978. In addition, ACM would not be used in new Army AMDTF facilities. PCBs, LBP, and/or ACM could be encountered during demolition of existing facilities, since older facility building materials may have contained theses substances. However, licensed contractors used for these projects would follow applicable testing, handling, and disposal protocol, procedures, and requirements if PCBs, LBP, and/or ACM are encountered. Therefore, impacts of PCBs, LBP, and/or ACM would be less than significant and no mitigation measures are proposed.

New facilities and/or structures could encounter radon gas 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. Therefore, the impacts from toxic substances would be less than significant.

Hazardous Waste

Proposed construction activities would result in an increase in the generation of hazardous waste. Construction activities would increase the use of pesticides, herbicides, 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.

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, state and and local regulations, as well as with DoD requirements. BMPs and SOPs that would be used include, but are not limited to: used include but are not limited to, those listed on Table 17.2-1 and in Volume 7. Therefore, the impacts from the increase in hazardous waste would be less than significant.

Waste Sites

As described in Volume 2, Section 17.1.3; Volume 9, Appendix G; and shown in the various associated Chapter 17 figures, there are waste sites undergoing characterization and/or restoration under various DoD environmental programs located within or in close proximity to the overall areas of the proposed expansion. Consideration and careful attention during project design phases must be given prior to construction to avoid overlap with these sites. If relocation of proposed construction projects that may overlap these waste sites is not possible, then various BMPs and construction operational protocol must be followed to protect human health and the environment. In addition, special design techniques and methodology will be required to ensure the long-term structural integrity of proposed construction projects.

Under Headquarters/Housing Alternatives 1 and 3, Army AMDTF facilities housing and administrative facilities would be co-located with Marine Corps facilities in the vicinity of several waste sites. As described in Volume 2 Section 17, through implementation of site planning and investigation, BMPs, SOPs and land use controls, hazardous waste impacts associated with the waste sites would be less than significant. Under Headquarters/Housing Alternative 2 there would be no Army AMDTF construction at Finegayan, thus there would be no hazardous waste impact associated with the waste sites in the Finegayan area as a result of the Army action alone.

Explosives Safety Hazards

The proposed expansion areas are likely to contain MEC (NAVFAC Marianas 2010). NOSSA Instruction 8020.15B establishes the Explosive Safety Submission (ESS) process to provide effective review, oversight, and verification of the explosives safety aspects of munitions responses. In order to comply with this instruction, an island wide ESS is being prepared (NAVFAC Marianas 2010). When the ESS has been endorsed by NOSSA and approved by the DoD Explosive Safety Board, SOPs and operational protocol would be developed for addressing explosive safety hazards of MEC in the proposed construction areas (NAVFAC Marianas 2010b).

17.2.2.2 Operations

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 mitigation measures associated with the training activities.

Hazardous Materials

Army AMDTF training operations would require the use of military transport vehicles and thus increase the use of fuels and POLs. An estimated 1,600 lbs (726 kg) of hazardous materials would be generated from AMDTF operations annually. This estimate was based upon professional judgment and DRMO Guam hazardous material disposal data.

The projected increase in the volume of hazardous materials represents a potential impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous materials would be handled and disposed per BMPs and SOPs in accordance with all federal and local regulations, as well as with DoD requirements (see Table 17.2-1 and Volume 7). Therefore, the impacts from the increase in hazardous materials would be less than significant.

Toxic Substances

Activities associated with training operations would result in less than significant impacts from toxic substances (e.g., ACM, LBP, PCBs, or radon). BMPs and SOPs would be implemented as appropriate (see Volume Table 17.2-1 and Volume 7) making these potential impacts less than significant.

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 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.

The projected increase in the volume of hazardous waste represents a potential 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 Table 17.2-1 and Volume 7). Therefore, the impacts from the increase in hazardous waste would be less than significant.

17.2.2.3 Summary of Impacts

The projected increase in the volume of hazardous material/waste represents a potential hazardous impact to soils, surface water, groundwater, air, and biota. However, the increased volume of hazardous materials/waste would be handled and disposed per BMPs, SOPs, and all applicable federal and local regulations, as well as DoD requirements (see Table 17.2-1 and Volume 7). Therefore, the impacts from the increase in hazardous materials/waste for all alternatives 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 existing conditions would remain unchanged. Therefore, there would be no environmental impacts or consequences under the no-action alternative. However, the DoD required mission would not be fulfilled.

17.2.4 Summary of Impacts

Tables 17.2-2, 17.2-3, and 17.2-4 summarize the potential impacts of each major component – headquarters/housing, munitions storage, and weapons emplacement, respectively. A text summary is provided below.

Table 17.2-2. 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 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 • 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 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 • 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 • 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 17.2-4. 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 • 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 • 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

There are several waste sites in the general area proposed for Army AMDTF housing/administrative facilities to be co-located with similar Marine Corps facilities at at Finegayan under Headquarters/Housing Alternatives 1 and 3. Through implementation of site planning and investigation, BMPs, SOPs and land use controls, hazardous waste impacts associated with the waste sites would be less than significant. Under Headquarters/Housing Alternative 2 there would be no Army AMDTF construction at Finegayan, thus there would be no potential hazardous waste impact resulting from the waste sites under Alternative 2.

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, and use of hazardous materials. 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 the generation of hazardous waste including pesticides, herbicides, solvents, corrosive or toxic liquids, and aerosols. Toxic substances (LBP, PCBs, ACM) would not contribute significantly to the expected waste increases. The increase in hazardous materials and waste would be handled and disposed per applicable BMPs and SOPs (see Table 17.2-1 and Volume 7). DRMO's hazardous material/hazardous waste management capacity would be expanded as needed prior to expected increases to ensure sufficient capacity to accommodate added volume. Therefore, the increase in hazardous material/waste would result in less than significant impacts. A Joint Military Master Plan provides specific information regarding new planned waste facilities to accomadate increases in hazardous substances regarding the potential Army AMDTF actions.

17.2.5 Summary of BMPs and SOPs

Table 17.2-1 summarizes BMPs and SOPs (also see Volume 7 for a comprehensive listing) that would be implemented relative to hazardous substances associated with potential construction and/or operations activities. Note that BMPs and SOPs are not considered "mitigation measures".