



# Final Environmental Impact Statement Commonwealth of the Northern Mariana Islands Joint Military Training



**June 2026**  
EISX-007-17-XMC-1747255459



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## FOREWORD

The United States (U.S.) Marine Corps (USMC) prepared this Final Environmental Impact Statement (EIS) to support land-based training for ongoing and evolving joint expeditionary warfare tactics, specifically, distributed operations on the island of Tinian in the Commonwealth of the Northern Mariana Islands (CNMI). Distributed operations training relies on the use of small, dispersed land, sea, air, space, and cyber detachments conducting stealthy, coordinated, and independent actions from minimally developed and advanced island positions. The Proposed Action would accommodate U.S. Armed Forces forward-deployed to the Western Pacific and U.S. allies and partners.

To accommodate the proposed training, new training infrastructure would create a physical and virtual training environment to include two live-fire ranges, two surface radar towers, improvements to North Field, the development of Landing Zones, an expeditionary Base Camp at the former U.S. Agency for Global Media site, and biosecurity facilities. A communications system to support training would be established through the reuse of existing communications towers located on Tinian and Saipan, with portable sensors and emitters in the Military Lease Area. To ensure training unit and public safety during training, an on-island Training Area and Range Operations Command (Range Control) would be established. Range Control would schedule training and coordinate with local officials and the public. Two action alternatives (Alternatives 1 and 2) and a No Action Alternative are analyzed in this Final EIS. The nature and purpose of training under either action alternative would remain consistent with previously approved training activities, while incorporating updated tactics, techniques, and procedures utilizing new training infrastructure. Both alternatives include the same infrastructure but have different training tempos.

The USMC released a Revised Draft EIS on June 6, 2025, and solicited comments on the Proposed Action. This Final EIS considered and addressed, as appropriate, comments received on the Revised Draft EIS (see Appendix L). Many of the changes in the Final EIS reflect feedback from public comment received on the Revised Draft EIS as well as refinements to the Proposed Action and analysis made by the USMC.

In addition to modifications to improve clarity, notable changes made to the Final EIS are summarized below.

- **Chapter 2 (Proposed Action and Alternatives)**
  - Section 1.5.1 (Federal Cooperating Agencies): Removed the Federal Aviation Administration as a cooperating agency (per their request); however, coordination between the Federal Aviation Administration and the USMC will continue as noted in Section 1.5.2.
  - Section 2.1.12 (Phased Implementation of Construction and Training): This section and other sections of the Final EIS were updated to clarify that the proposed construction activities would be intermittent over 10-15 years.
  - Table 2.3-1 (Proposed Management Measures): Updated the table with two new management measures: 1) The Department of Defense (DoD) would conduct soil sampling at the two live-fire ranges prior to range certification and 2) The DoD would work with the CNMI to identify federal programs or funding sources to support the

siting and installation of fish aggregating devices to offset the potential impacts to subsistence fishers. Table 2.3-1 was also updated to clarify that the DoD would install up to four groundwater monitoring wells at each of the two live-fire ranges, establish a water monitoring plan, and include one year of baseline monitoring before ranges would become operational.

- **Chapter 3 (Affected Environment)**

- Section 3.10.6.1 (Wildfire): Added additional background information regarding fire history on Tinian, contributing factors to fire risk such as fuels, vegetation and weather, and discussed existing fire management and response capability.
- Section 3.11 (Utilities): Several clarifying edits were made throughout this section to include the most updated information, such as in Section 3.11.1 (Potable, Non-Potable, and Groundwater Water Supply).

- **Chapter 4 (Environmental Consequences)**

- Section 4.10.3.1 (Public Health and Safety – Alternative 1 – Ground Training): Added language about the Operational Range Assessment Program/Range Environmental Vulnerability Assessment Program.
- Section 4.10.3.4 (Public Health and Safety – Alternative 1 – Natural Hazards): Expanded the discussion of potential wildfire risk including risk reduction and management processes.
- Section 4.11 (Utilities): Several clarifying edits were made throughout the section to include the most updated information, such as in Section 4.11.3.1 (Utilities – Alternative 1 – Potable Water Supply).
- Section 4.15 (Cumulative Impacts): Included additional projects to the list that are still being planned, including the CNMI lease modification and U.S. Air Force Fighter operations in the CNMI. Also updated Table 4.15-1 (Present and Reasonably Foreseeable Future Actions).

- **Appendices**

- Appendix F (EIS Public Involvement Materials): This appendix was added since the release of the Revised Draft EIS and includes the notifications that announced the public review and comment period and public meetings, along with the materials made available at the public meetings.
- Appendix L (EIS Public Comment Responses): This appendix was added since the release of the Revised Draft EIS and includes an explanation of the public comment process for the Revised Draft EIS, a list of agencies, organizations, and other stakeholders that provided comments, the comment submissions received, and the USMC's corresponding responses to substantive comments.
- Appendix M (Utilities Studies): Several updates were made based on updated utility information, and reflect edits made in the main text of the Final EIS.

The USMC would like to thank elected officials, federal regulatory and local resource agencies, business and community leaders, organizations, and individuals for reviewing the CNMI Joint Military Training Revised Draft EIS, attending the public meetings, and submitting comments on the document. Appendix L of the Final EIS includes comments received on the Revised Draft EIS as well as USMC responses, as appropriate.

Finally, the terms “DoD” and “USMC” are used throughout the Final EIS. It is important to note that any proposed commitments that are listed in the Final EIS are the responsibility of the DoD and would be implemented by one of its military departments.

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## ABSTRACT

<b>Designation:</b>	Final Environmental Impact Statement EISX-007-17-XMC-1747255459
<b>Title of Proposed Action:</b>	Commonwealth of the Northern Mariana Islands Joint Military Training
<b>Lead Agency for the EIS:</b>	United States Marine Corps
<b>Cooperating Agencies:</b>	U.S. Department of the Interior, Office of Insular Affairs U.S. Fish and Wildlife Service U.S. Environmental Protection Agency National Marine Fisheries Service
<b>Affected Jurisdiction:</b>	Commonwealth of the Northern Mariana Islands

The United States (U.S.) Marine Corps (USMC) prepared this Final Environmental Impact Statement (EIS) to support land-based training for ongoing and evolving joint expeditionary warfare tactics, specifically, distributed operations on the island of Tinian in the Commonwealth of the Northern Mariana Islands (CNMI). Distributed operations training relies on the use of small, dispersed land, sea, air, space, and cyber detachments conducting stealthy, coordinated, and independent actions from minimally developed and advanced island positions. The Proposed Action would accommodate U.S. Armed Forces forward-deployed to the Western Pacific and U.S. allies and partners.

To support the proposed training, new training infrastructure would create a physical and virtual training environment to include two live-fire ranges, two surface radar towers, improvements to North Field, the development of Landing Zones, an expeditionary Base Camp at the former U.S. Agency for Global Media site, and biosecurity facilities. A communications system to support training would be established through the reuse of existing communications towers located on Tinian and Saipan, with portable sensors and emitters in the Military Lease Area. To ensure training unit and public safety during training, an on-island Training Area and Range Operations Command (Range Control) would be established. Range Control would schedule training and coordinate with local officials and the public. Two training Alternatives and a No Action Alternative on Tinian are analyzed in this Final EIS. Under the No Action Alternative, existing land-based training at levels analyzed in prior National Environmental Policy Act documents for Tinian would continue (see the 2010 *Mariana Islands Range Complex Final EIS/Overseas EIS* [OEIS], 2015 *Mariana Islands Training and Testing EIS/OEIS*, and associated consultations and authorizations). The nature and purpose of training would remain consistent with previously approved training activities, while incorporating updated tactics, techniques, and procedures utilizing new training infrastructure. Alternative 1 and Alternative 2 would represent varied increases over existing training tempos and include two new live-fire ranges.

Resources analyzed in this Final EIS include public access; land use and recreation; socioeconomics; biological resources; cultural resources; visual resources; transportation; noise; air quality; public health and safety; utilities; topography, geology and soils; groundwater and hydrology; and surface water and wetlands.

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## EXECUTIVE SUMMARY

### ES.1 Introduction

On April 6, 2015, the Department of the Navy (DON) published a Notice of Availability for the Draft Commonwealth of the Northern Mariana Islands (CNMI) Joint Military Training (CJMT) Environmental Impact Statement (EIS)/Overseas EIS (OEIS). Numerous comments were received on the Draft EIS/OEIS expressing concern about the scope and potential environmental impacts of the Proposed Action. On February 18, 2016, in response to concerns raised on the 2015 Draft EIS/OEIS, the United States (U.S.) Marine Corps (USMC) announced its intention to issue a Revised Draft EIS for proposed training on Tinian.

Beginning in 2016, and at the CNMI's request, the U.S. and CNMI governments held a series of virtual and in-person discussions pursuant to Section 902 of *The Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America*, approved in 1976. These discussions included, among other issues, concerns with the USMC expansive training proposal. During the global COVID-19 pandemic, the parties held small-group virtual meetings. The USMC re-engaged with the CNMI government on CJMT, with two virtual and seven in-person meetings between January 2020 and September 2024 to discuss changes to the Proposed Action and the Revised Draft EIS. The USMC also held public information sharing meetings in August 2023 to present a revised training proposal to the public.

In developing the Revised Draft EIS, the USMC evaluated changes in the way U.S. Armed Forces currently prepare for future conflicts and carefully considered the comments and suggestions submitted on the 2015 Draft EIS/OEIS and from the collaborative CNMI government coordination meetings. The current Proposed Action as described in this Final EIS and compared with the action proposed in 2015, eliminates training on Pagan, removes the High Hazard Impact Area from Tinian, and reduces the number of live-fire and maneuver ranges from 14 to 2. In addition, further consultations and technical studies have been performed to inform the impact analysis including for natural resources, cultural resources, and utilities. The USMC released a Revised Draft EIS on June 6, 2025, and solicited comments on the Proposed Action. This Final EIS considered and addressed, as appropriate, comments received on the Revised Draft EIS (see Appendix L). Many of the changes in the Final EIS reflect feedback from public comment received on the Revised Draft EIS as well as refinements to the Proposed Action and analysis made by the USMC.

The U.S. Indo-Pacific Command is the action proponent for the Proposed Action and has designated the U.S. Marine Corps Forces, Pacific to be the Executive Agent overseeing preparation of this Final EIS. This Final EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [U.S.C.] sections 4321-4347); and Marine Corps Order 5090.2, *Environmental Compliance and Protection Program*.

### ES.2 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to reduce joint training deficiencies for U.S. Armed Forces in the Indo-Pacific area of operations. The development and operation of a realistic and instrumented training environment on Tinian, sized to accommodate combined joint and allied forces training and readily available for scheduling, would enable forward-deployed U.S. Armed

Forces to meet evolving operational training requirements and support U.S. training with allied nations, changes in U.S. force structure, and geographic repositioning of forces.

The Proposed Action is needed to enable U.S. Armed Forces to meet their individual mandates in Title 10 to be trained and equipped to protect U.S. national security by being ready to effectively prosecute war and defend the nation (e.g., 10 U.S.C. sections 167, 7013, 7062, 8013, 8062, 8063, 9013, 9062). U.S. forward-deployed Armed Forces in the Indo-Pacific region need training areas and supportive training infrastructure to exercise evolving tactics, training, and procedures that would enable them to deter adversary aggression. The availability of the Military Lease Area to conduct joint sustainment training events would result in ready forces prepared to act immediately to respond to a threat to national security.

### **ES.3 Proposed Action and Alternatives**

The Proposed Action is to conduct joint military distributed operations training within the Military Lease Area on Tinian in order to support the ongoing and evolving expeditionary requirements of U.S. Armed Forces forward-deployed to the Western Pacific and U.S. allies and partners. The proposed distributed operations training and support infrastructure would leverage the capabilities of modern technology to create a realistic and integrated virtual and physical training environment on Tinian within the Military Lease Area using a combination of sensors, emitters, and communications. Proposed training would remain consistent with previously approved training activities, while incorporating updated tactics, techniques, and procedures utilizing new training infrastructure.

Resources analyzed in this Final EIS include public access; land use and recreation; socioeconomics; biological resources; cultural resources; visual resources; transportation; noise; air quality and greenhouse gases; public health and safety; utilities; topography, geology and soils; groundwater and hydrology; and surface water and wetlands.

Two action alternatives were considered and evaluated; Alternative 1, Enhanced Training and Range Infrastructure, and Alternative 2, Training and Range Infrastructure. The No Action Alternative is also considered and evaluated.

#### **ES.3.1 No Action Alternative**

Under the No Action Alternative, military training on Tinian would continue at the current tempo and intensity and all other actions in the CNMI that were independently evaluated in other NEPA documents with their Records of Decision, and associated consultations and authorizations would still be implemented. Those independent actions include land-based training activities in the 2010 *Mariana Islands Range Complex EIS/OEIS*, which was then updated in 2015 with the *Mariana Islands Training and Testing EIS/OEIS*, along with the 2016 *Divert Activities and Exercises Final EIS* and 2020 *Tinian Divert Infrastructure Improvements Supplemental EIS* (DON 2010a, 2010b, 2015a, 2015b; U.S. Air Force 2016a, 2016b, 2020, 2022).

The No Action Alternative would not meet the purpose of or need for the Proposed Action. NEPA documents are required to evaluate the No Action Alternative because the No Action Alternative serves to establish a comparative baseline for analysis of the action alternatives.

### **ES.3.2 Alternative 1**

Training tempo under Alternative 1 would increase by approximately 15 percent over land-based training already approved to occur on Tinian as defined in the No Action Alternative. The nature and purpose of training would remain consistent with previously approved training activities, while incorporating updated tactics, techniques, and procedures utilizing new training infrastructure. The USMC would also construct and operate new training infrastructure including two live-fire ranges (Multi-Purpose Maneuver Range, Explosives Training Range), Landing Zones, clearing between runways Able and Charlie for use as a Drop Zone, installation of an airfield surface known as AM2 matting, an expeditionary Base Camp, an aircraft shelter, ammunition holding areas, radar towers, and biosecurity facilities. The USMC would also repurpose existing communication towers on former U.S. Agency for Global Media (USAGM) sites on Tinian and Saipan (Figure ES-1). An on-island Training Area and Range Operations Command (Range Control) would be established. Range Control would schedule training and coordinate with local officials and the public.

### **ES.3.3 Alternative 2**

Alternative 2 would include currently authorized training events identified under the No Action Alternative and infrastructure described in Alternative 1. However, the training tempo under Alternative 2 would increase by approximately 5 percent from the baseline (No Action Alternative) land-based training already approved to occur on Tinian. The difference in training tempo is the only difference between Alternative 1 and Alternative 2.

### **ES.4 Summary of Environmental Effects**

Environmental effects that could result from implementing the Proposed Action are analyzed in Chapter 4 of this Final EIS. A summary of environmental impacts on Tinian is presented at the end of this section as Table ES-1. There would be no training or construction activities conducted at the USAGM Saipan site and the proposed activities would be the same or similar to existing use. The USMC would utilize existing communication towers on Saipan and should the towers need to be repurposed, the DoD would establish a new lease for the property with the CNMI. Therefore, there would be no impacts on Saipan.

### **ES.5 Cumulative Impacts**

Cumulative impacts are analyzed in Chapter 4, Section 4.15. Cumulative impacts include the impact of this project with reasonably foreseeable future actions. The aggregate impacts of past, present, and reasonably foreseeable future actions under Alternative 1 or Alternative 2 would contribute to and increase cumulative impacts, but such cumulative impacts would be less than significant.



Figure ES-1 Proposed Action Elements

## ES.6 Interagency Coordination

The USMC has actively involved other federal agencies and the CNMI government, its agencies, and local organizations as part of the NEPA process (refer to Section 1.5 for additional information). The following federal agencies have agreed to be cooperating agencies for this Final EIS:

- U.S. Department of the Interior, Office of Insular Affairs
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency
- National Marine Fisheries Service

Consultation with regulatory entities will be complete and incorporated, as appropriate, into the Record of Decision. Agency consultations include:

- Endangered Species Act Section 7: U.S. Fish and Wildlife and National Marine Fisheries Service
- Magnuson-Stevens Fishery Conservation and Management Act: National Marine Fisheries Service
- National Historic Preservation Act Section 106: CNMI Historic Preservation Officer, Advisory Council on Historic Preservation, National Park Service, and the Office of the Mayor of Tinian
- Coastal Zone Management Act: CNMI Bureau of Environmental and Coastal Quality

## ES.7 Public Involvement

The Notice of Availability/Notice of Public Meetings for the Revised Draft EIS was published in the Federal Register, local newspapers, and on the project website on June 6, 2025. The notice identified locations where the revised draft document was available for review, the timing of the 75-day public review and comment period, and the methods for submitting new comments. The USMC provided a 15-day extension of the public comment period for a total of 90 days, ending on September 4, 2025. Public comment meetings were held on Tinian, Saipan, and Rota as noted below:

- Tinian: Monday June 23, 2025, and Tuesday June 24, 2025, at Tinian Junior/Senior High School Cafeteria, Canal Street, San Jose
- Saipan: Wednesday June 25, 2025, and Thursday June 26, 2025, at Crowne Plaza (Hibiscus Hall), Coral Tree Avenue, Garapan
- Rota: Friday June 27, 2025, at Rota Mayor's Office

The public meetings were conducted in an open house format to encourage the sharing of information and discussion. Open house meetings provided increased flexibility for attendees, allowed for one-on-one interaction with experts and provided a casual atmosphere that encouraged more direct and comfortable participation and feedback. Each poster station presented the analysis of a key resource, and a representative was available to answer questions and direct the public to tables where individuals could submit written or oral comments. Public comments could be submitted in writing, by mail, on the website or through a court reporter at public meetings. Comments could be submitted in any language, and Chamorro and Carolinian translators were

available at the public meetings. Chamorro and Carolinian version translations of the fact sheet were available at the public meetings and on the project website. The Executive Summary in these languages was also made available to download from the project website and printed copies were available for review at the local libraries on Tinian, Saipan, and Rota. In addition, the USMC held office hours at the Commonwealth Bureau of Military Affairs Tinian Field Office for additional public engagement in August 2025 prior to the end of the public comment period. This Final EIS considers and addresses, as appropriate, comments received on the Revised Draft EIS (see Appendix L). A total of 83 comment submittals were received from individuals, community organizations, and local and federal government that contained 215 individual comments.

**Table ES-1 Summary of Environmental Impacts from Training and Construction on Tinian**

<i>Section and Resource</i>	<i>No Action Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
4.1 Public Access	No change	Less than significant impact from controlled access and surface danger zone restrictions during training events. The subdivision of the Military Lease Area into eight smaller training areas would allow selective closure of certain areas for training while allowing public access in others at the same time. Public access would be coordinated with the community through Range Control, which would work with CNMI on allowing public access to the Military Lease Area for special festivals and other events wherever such access can be safely accommodated during training.	Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.
4.2 Land Use and Recreation	No change	<p><u>Land Use</u> No impact from training in the Military Lease Area as no land use changes would occur. Training events and the operation and maintenance of the Military Lease Area Range Complex would be compatible and consistent with existing land use plans, policies, and agreements. Less than significant impact from construction in the Military Lease Area, which would be compatible and consistent with existing land use plans and policies. Construction of proposed biosecurity facilities at the Port of Tinian and the aircraft shelter at TNI would be subject to development of appropriate agreements with the Commonwealth Ports Authority.</p> <p><u>Recreation</u> Less than significant impact from controlled access and surface danger zone restrictions during training. Access for recreation would be coordinated through the establishment of on-island Range Control and subdivided training areas. Less than significant impact from intermittent and temporary construction activities.</p>	<p><u>Land Use and Recreation</u> Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>
4.3 Socioeconomics	No change	<p><u>Population, Economic Activity, and Public Services</u> Temporary activation of surface danger zones in waters north of Tinian during live-fire training at the Multi-Purpose Maneuver Range would significantly affect fishing and boating, as boaters may have to travel longer distances when the surface danger zone is active. There would be a modest economic and employment benefit from training, operation and maintenance of the Military Lease Area Range Complex and construction. All other socioeconomic impacts would be less than significant under Alternative 1.</p>	<p><u>Population, Economic Activity, and Public Services</u> Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>
4.4 Biological Resources	No change	<p><u>Terrestrial Plant Communities</u> Less than significant impact from construction-phase clearing of approximately 343 acres of predominantly non-native dominated vegetation to later be maintained (mowed/trimmed), with no impact to limestone coastal scrub, limestone native forest, and wetland habitats. Biosecurity protocols would be consistent with the existing Joint Region Marianas biosecurity program and applied to reduce the spread of non-native</p>	<p><u>Terrestrial Plant Communities</u> Identical impact as Alternative 1.</p> <p><u>Terrestrial Wildlife and Special Status Species; Marine Communities and Marine Special Status Species</u></p>

<i>Section and Resource</i>	<i>No Action Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
		<p>vegetation during training and construction. A Range Wildland Fire Management Plan is being finalized to guide prevention and suppression of fire from training.</p> <p><u>Terrestrial Wildlife and Special Status Species</u> Less than significant impact on federally and CNMI-listed species, migratory birds, and other wildlife from habitat removal or modification, direct strike, noise (from construction, aircraft, live-fire, and vehicular activity), human presence and/or habituation, introduction of invasive species, fire, night lighting, and radio frequency radiation. The USMC is consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.</p> <p><u>Marine Communities and Marine Special Status Species</u> Less than significant indirect impacts to marine special-status species and no impact to marine protected areas due to no in-water training or construction activities; unlikelihood of projectiles leaving primary targets on ranges and entering coastal waters; and most sound energy from explosive detonations reflecting off the water's surface. The USMC is consulting with the National Marine Fisheries Service under Section 7 of the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>
4.5 Cultural Resources	No change	<p>Less than significant impact on cultural resources from training, operation and maintenance activities, and construction. The division of the Military Lease Area into eight smaller training areas would allow for selective closures, enabling training in specific areas while maintaining public access to cultural resources where safety permits. The USMC is consulting with the CNMI Historic Preservation Officer, Advisory Council on Historic Preservation, National Park Service, and the Office of the Mayor of Tinian under Section 106 of the National Historic Preservation Act. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>
4.6 Visual Resources	No change	<p><u>Training Activities and Support Infrastructure</u> Less than significant impact on visual resources from land-based training activities, which are the same or similar to those currently being conducted on Tinian. In limited locations where night lighting would be required, it would be rated to limit light trespass and thus minimize potential for impaired night sky viewing. The proposed surface radar tower and support infrastructure at Puntan Taddong (also known as Ushi Point) would not present a visual barrier that would block or otherwise obscure views to the ocean particularly from the Ushi Point Fisherman's Memorial. Potential impacts</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>

<i>Section and Resource</i>	<i>No Action Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
		<p>would be further minimized by painting the structure using a color palette consistent with existing landscape.</p> <p><u>Construction</u> Less than significant impact on visual resources during construction of training and support infrastructure to be intermittently phased over approximately 10 to 15 years. Impacts would be temporary and localized to the footprint of each construction project, which are distributed throughout the Military Lease Area. Construction workers and equipment, fencing, and newly cleared areas may be visible to members of the public using the Military Lease Area, but the presence of extensive and dense intervening vegetation and the low height profile of newly constructed project elements would provide screening from most public viewpoints.</p>	
4.7 Transportation	No change	<p>Less than significant impact to ground, water, and air transportation from increased training events and construction activities. Training would not affect commercial aircraft operations at TNI or Saipan International Airport because radar and/or spotters would continuously monitor the airspace during live-fire training to detect approaching aircraft. If an aircraft is observed, live-fire training would be suspended until the aircraft has safely passed. Potential transportation impacts would be further minimized due to the establishment of an on-island Range Control that would coordinate with the CNMI to allow public access to the Military Lease Area for special festivals and other events wherever such access can be safely accommodated during training, and Range Control would provide advanced notification to the public for any areas where temporary access controls, including roadway closures, are required in the Military Lease Area.</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1</p>
4.8 Noise	No change	<p><u>Training</u> Less than significant impact to human populations from proposed ground and aviation training activities under Alternative 1. Range Control would apply temporary access restrictions in the Military Lease Area when needed to preserve safety; this would reduce the potential for human exposure to loud noise levels (e.g., aircraft take-offs and landings, small arms firing, and explosives detonations). Considering thresholds for both long-term cumulative exposure and single event noise levels, the public would not experience sound levels that would have the potential to cause hearing loss. However, new sources of noise would occasionally be audible beyond the Military Lease Area during some training events (e.g., at residential, education, or commercial areas in San Jose or the southern tip of Saipan), primarily from live-fire training at the Multi-Purpose Maneuver Range and Explosives Training Range and from use of different types of aircraft at North Field and proposed Landing Zones. Noise from training would be temporary, occur intermittently over the course of any given year, and be</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>

<i>Section and Resource</i>	<i>No Action Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
		<p>interspersed with quieter times where less noise-producing activities or even no military training would be audible. Training-related noise may cause effects such as annoyance, but would be unlikely to interrupt conversations, cause classroom learning interference, or disrupt sleep. Effects may vary over time based on environmental factors (i.e., under changing weather conditions, it is possible a sound source may be barely detectable one day but annoying the next) and individual sensitivity to noise.</p> <p><u>Construction</u> Less than significant impacts from temporary construction-generated noise during daytime hours at different construction locations over a 10-15-year period.</p>	
4.9 Air Quality	No change	Less than significant impact on air quality from training events, construction emissions, operational emissions, and fugitive dust. Emissions would be dispersed away from sensitive receptors.	Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.
4.10 Public Health and Safety	No change	<p><u>Training and Construction</u> Less than significant impact from ground and aviation training events and construction activities, including electromagnetic radiation. Potential impacts to the public would be minimized or avoided with establishment of Range Control, surface danger zones, subdivided training areas, and adherence to range safety protocols and best management practices. There would be no increased risk of wildfires from training due to development and implementation of a Range Wildland Fire Management Plan and no increase in flood zones or flood risks.</p> <p><u>Protection of Children</u> The Proposed Action would not result in environmental health risks or safety risks that may disproportionately affect children. In addition to the large distance between populated areas and construction and training events, active controls at construction sites and controlled access during training events would further reduce the potential for impacts. Potential impacts would be avoided by distances of construction and training events from populated areas, active controls at construction sites, and controlled access during training events to protect the public.</p>	Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.
4.11 Utilities	No change	<p><u>Potable Water, Wastewater, Solid Waste, Hazardous Waste, Green Waste, Stormwater, Electrical Power, Communications</u> Less than significant impact on utilities from increased training and construction activities. New water wells and septic system for wastewater would be installed to accommodate increased demand. Storage, handling, and disposal of hazardous</p>	Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but

<i>Section and Resource</i>	<i>No Action Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
		<p>materials generated under Alternative 1 would occur in accordance with all applicable laws and regulations, including during training, operation and maintenance of the Military Lease Area Range Complex, and construction. Military and construction-related solid waste would only be disposed of in permitted and compliant landfills authorized to accept the types of wastes being generated (i.e., solid waste would be transported to Marpi Landfill on Saipan or other off-island facility(ies) authorized to accept DoD waste until a permitted and compliant landfill is available on Tinian). Green waste would be processed by chipper and stockpiled for later use as mulch. Best management practices would be applied during construction, and low-impact design measures developed for proposed training support infrastructure would reduce potential for stormwater runoff impacts. The existing electrical power capacity on Tinian is sufficient to meet demand under training and construction. Small, short-term service interruptions would occur during connections to communications systems, and construction impacts would be minimized by repurposing existing towers on Tinian and Saipan.</p>	<p>with a decrease in training tempo when compared to Alternative 1.</p>
4.12 Topography, Geology, and Soils	No change	<p>Less than significant impact to topography, geology, and soils during training, operation and maintenance of the Military Lease Area Range Complex, and from clearing of vegetation and minor grading during construction. Best management practices would be applied to control erosion during construction. There would be no permanent loss of prime farmland soils.</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>
4.13 Groundwater and Hydrology	No change	<p>Less than significant impact to groundwater availability and quality. Groundwater modeling evaluated potential impacts by considering historic and future community demand with the addition of proposed demand under Alternative 1 (e.g., during training events, operation and maintenance of the Military Lease Area Range Complex, and construction). Based on the modeling results, the proposed new potable and non-potable water wells would not impact water quality or salinity.</p> <p>New proposed ranges would be managed in accordance with the USMC's Range Environmental Vulnerability Assessment program. The program includes conducting a baseline assessment to gain a better understanding of the potential transport of munitions constituents from the use of the proposed live-fire range areas. This assessment will include modeling scenarios for munitions constituents migration to off range areas including where pathways could reach groundwater.</p> <p>In addition to installing four groundwater monitoring wells, at the request of CNMI, the USMC has agreed to fund a one-time hydrogeological study to establish baseline data that could be used to support monitoring of Tinian's aquifer.</p>	<p>Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.</p>

<i>Section and Resource</i>	<i>No Action Alternative</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
4.14 Surface Water and Wetlands	No change	Less than significant impact to surface waters and wetlands from ground disturbance during construction and training. Training and construction sites are at least 1,400 feet from wetlands with no established stream flow to wetlands.	Similar impacts to those described for Alternative 1 from training, operation and maintenance of the Military Lease Area Range Complex, and during construction but with a decrease in training tempo when compared to Alternative 1.

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## Acronyms and Abbreviations

<i>Acronym</i>	<i>Definition</i>
C.F.R.	Code of Federal Regulations
CJMT	CNMI Joint Military Training
CNMI	Commonwealth of the Northern Mariana Islands
DoD	Department of Defense
DON	Department of Navy
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
MCO	Marine Corps Order
MITT	Mariana Islands Training and Testing
NEPA	National Environmental Policy Act
OEIS	Overseas Environmental Impact Statement
TNI	Francisco Manglona Borja / Tinian International Airport
U.S.	United States
U.S.C.	United States Code
USMC	United States Marine Corps
USAGM	United States Agency for Global Media
UXO	Unexploded Ordnance

## 1 PURPOSE AND NEED FOR PROPOSED ACTION

### 1.1 Introduction

The United States Marine Corps (USMC) prepared this Final Environmental Impact Statement (EIS) to support land-based training for ongoing and evolving joint expeditionary warfare tactics on the island of Tinian in the Commonwealth of the Northern Mariana Islands (CNMI) (Figure 1.1-1). The Proposed Action would accommodate U.S. Armed Forces forward-deployed to the Western Pacific and U.S. allies and partners.

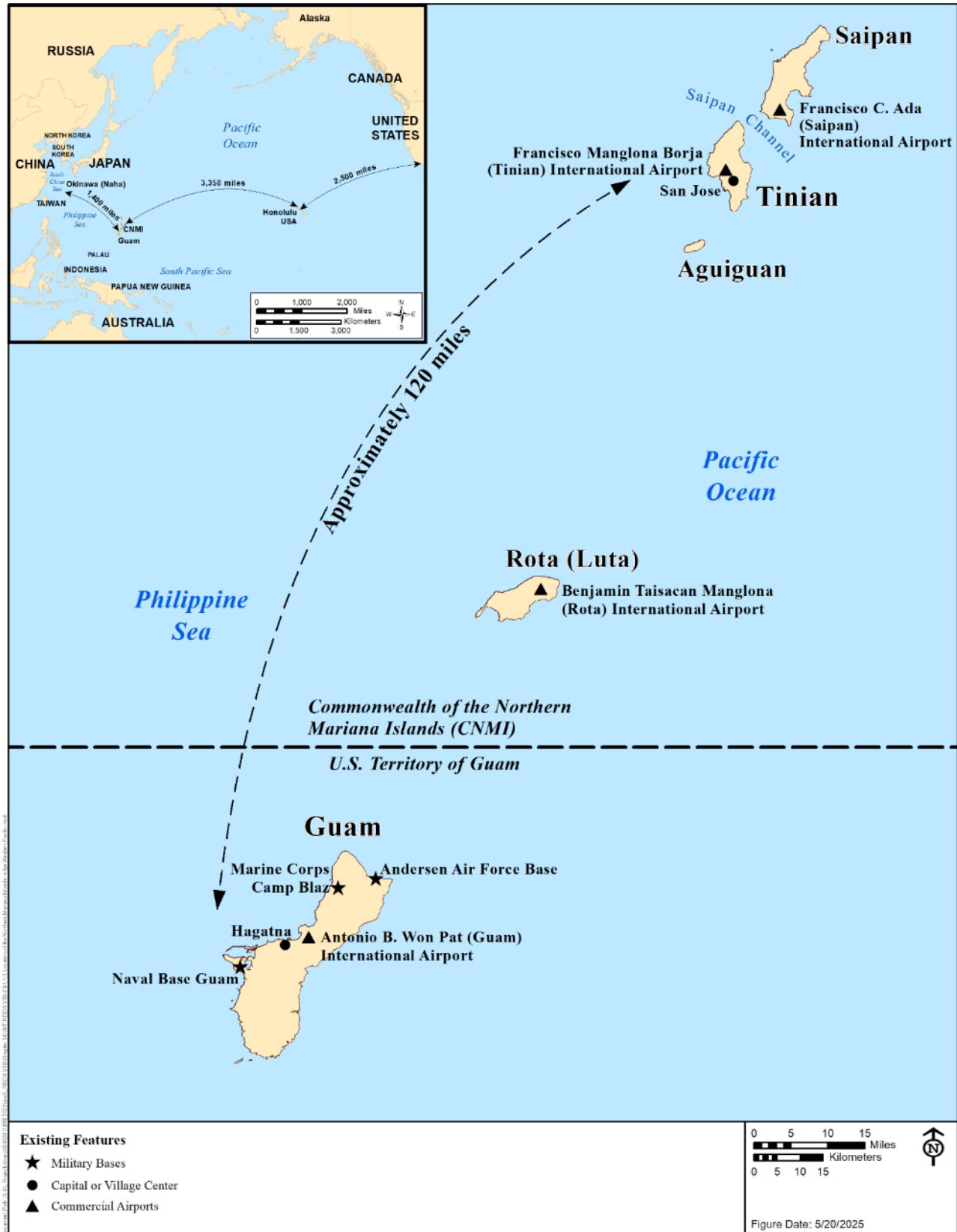
To support the proposed training, the Proposed Action would create a physical and virtual training environment within the lands leased by the military on Tinian to include two live-fire ranges, two surface radar towers, improvements to North Field, the development of Landing Zones, an expeditionary Base Camp at the former U.S. Agency for Global Media (USAGM) site, and biosecurity facilities. A communications system to support training would be established through the reuse of existing communications towers located on Tinian and Saipan,<sup>1</sup> with portable sensors and emitters in the Military Lease Area. To ensure training unit and public safety during training, an on-island Training Area and Range Operations Command (Range Control) would be established. Range Control would schedule training and coordinate with local officials and the public. The locations where the Proposed Action would occur on Tinian and Saipan are depicted on Figure 1.1-2. Two training alternatives and a No Action Alternative on Tinian are analyzed in this Final EIS.

The location of the CNMI supports the Department of Defense's (DoD) strategic posture in the Indo-Pacific area of operations and, pursuant to agreements between the U.S. and CNMI governments, U.S. Armed Forces have transited through and trained within the CNMI for many decades. The island of Tinian has played an important role in national security since World War II when runways were constructed to enable 24-hour bomber operations in support of Pacific operations. In recent decades, U.S. Armed Forces and our allies and partners have conducted ground, aviation, amphibious, and other non-live-fire training in the Military Lease Area on the northern two-thirds of the island.

The Military Lease Area on Tinian was established in a 1983 lease agreement pursuant to the *Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America* (hereinafter "The Covenant"). The Military Lease Area comprises 15,353 acres, separated into an Exclusive Military Use Area (7,574 acres) and a Lease Back Area (7,779 acres). Military training may be conducted throughout the Military Lease Area but has been concentrated within the Exclusive Military Use Area. The Lease Back Area contains grazing areas used by local ranchers. The USAGM, previously known as the International Broadcasting Bureau, formerly operated the Robert E. Kamosa Transmitting Station within the Military Lease Area under a separate agreement with the DoD. Additional information on The Covenant and leases is included in Section 1.3.

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<sup>1</sup> Prior to repurposing the towers on the former USAGM Saipan site, the DoD would need to establish a new lease for the property with the CNMI.



**Figure 1.1-1 Location of the Northern Mariana Islands in the Western Pacific**



Figure 1.1-2 Proposed Action Location

On March 14, 2013, the Department of the Navy (DON) published a Notice of Intent to prepare the CNMI Joint Military Training (CJMT) EIS/Overseas Environmental Impact Statement (OEIS). In 2015, a Draft EIS/OEIS was published that evaluated a Proposed Action that significantly expanded the scope of military training within the CNMI for use by forward-deployed U.S. Armed Forces and our allies and partners in the Western Pacific by proposing to establish a series of 14 permanent live-fire and maneuver ranges on the islands of Tinian and Pagan along with supporting infrastructure. Numerous comments were received on the Draft EIS/OEIS from citizens, government officials, and regulatory agencies expressing concern about the scope and potential environmental impacts of the Proposed Action. On February 18, 2016, in response to the concerns raised on the 2015 Draft EIS/OEIS, the USMC announced its intention to issue a Revised Draft EIS for proposed training in the CNMI.<sup>2</sup> Since that time, threats posed by U.S. geo-political and military competitors in the Western Pacific have led to changes in the way U.S. Armed Forces prepare for future conflicts. As a result, the USMC re-evaluated the extent to which the joint training deficiencies identified in the Mariana Islands (that informed the initial CJMT proposal) remain relevant to the emerging international security environment and should be assessed in a Revised Draft EIS.

To counter the defensive and offensive strategies of its military competitors in the Western Pacific, the U.S. is implementing the concept of distributed operations. Distributed operations rely on the use of small, agile, and highly capable dispersed land, sea, air, space, and cyber detachments conducting stealthy, coordinated, and independent actions from minimally developed and advanced island positions within the arc of an opponent's long-range weapons. Each "island position" would successively serve as a launching point to obtain a foothold on the next island in a "leapfrog movement." With each subsequent advance, these detachments secure more island footholds, threatening an opponent's freedom of movement along key sea and air lanes, and providing the time needed to assemble a larger task force for a broader response. The distributed operations training on Tinian, described further in Chapter 2, would be representative of such an initial "island position."

Both the 2022 National Defense Strategy and Global Posture Review acknowledge the emerging challenges to national security in the Indo-Pacific and have informed the next version of military training requirements for forward-deployed U.S. Armed Forces in the region. In recognition of the importance of the region to U.S. national security interests, the U.S. Government has invested in improving force posture, increasing readiness and presence, and building the capabilities of our allies and partners at various Western Pacific locations, including the Marianas. Thus, while training requirements have changed, the continuing need for sustainment training for forward-deployed U.S. Armed Forces in the Mariana Islands has not.

Under the Proposed Action evaluated in this Final EIS, the USMC would develop a realistic, one-of-one training environment within the Military Lease Area on Tinian. This location, west of the International Dateline and one of the farthest western DoD-controlled properties in the U.S., would provide an accessible and secure location for U.S. Armed Forces and our allies and partners to

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<sup>2</sup> Per Executive Order 12114, an "Overseas Environmental Impact Statement" is an environmental impact analysis that is required when a Proposed Action has the potential to significantly harm the environment outside of the U.S. and its territories and possessions. The Proposed Action analyzed in this Final EIS is limited to on-land training on Tinian and thus does not require analysis under Executive Order 12114 and this document is not an EIS/OEIS.

conduct training in distributed operations and other tactics. To leverage the capabilities of modern technology, the USMC would create an instrumented training environment within the Military Lease Area, integrating physical and virtual training, to replicate possible combat scenarios and teach particular skills and techniques. This would allow U.S. Armed Forces and allied forces to rapidly adapt to changing battlefield conditions in an island environment and build experience without the time and cost of an exclusively live exercise.

Many of the training events included in this Proposed Action would remain consistent with previously approved training activities, while incorporating updated tactics, techniques, and procedures utilizing new training infrastructure. Current land-based training events, meaning those that occur inland on Tinian from the mean high-water mark on the beach, are described in the 2010 *Mariana Islands Range Complex EIS/OEIS* (DON 2010a) and the 2015 *Mariana Islands Training and Testing (MITT) EIS/OEIS* (DON 2015a). This Final EIS addresses land-based training only. Environmental planning and permitting for other training in the CNMI, including in-water training occurring seaward from the high-water mark on Tinian within the Mariana Islands Range Complex, would continue to be addressed in the MITT EIS/OEISs.

The U.S. Indo-Pacific Command is the action proponent for the Proposed Action and designated the U.S. Marine Corps Forces, Pacific to be the Executive Agent overseeing preparation of this Final EIS. The USMC prepared this Final EIS in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [U.S.C.] sections 4321-4347) and Marine Corps Order (MCO) 5090.2, *Environmental Compliance and Protection Program*.

## **1.2 Purpose and Need**

### **1.2.1 Purpose of the Proposed Action**

The purpose of the Proposed Action is to reduce joint training deficiencies for U.S. Armed Forces in the Indo-Pacific area of operations. The development and operation of a realistic and instrumented training environment on Tinian, sized to accommodate combined joint and allied forces training and readily available for scheduling, is necessary to enable forward-deployed U.S. Armed Forces to meet evolving operational training requirements and support U.S. training with allied nations, changes in U.S. force structure, and geographic repositioning of forces.

Existing military training ranges, training areas, and support facilities used by the U.S. Armed Forces in the Indo-Pacific area of operations are widely dispersed with most located in foreign nations. As a result, scheduling these training areas is not always assured. Moreover, foreign-owned training areas do not provide the necessary level of security U.S. Armed Forces require when training in advanced tactics and with advanced weapons systems, nor are they capable of supporting combined joint and allied forces training “at scale” in a fully-instrumented network environment.

What makes the CNMI, and Tinian in particular, unique and valuable as a training area is its location as a U.S. Commonwealth within the Western Pacific, and its natural coastline, dense vegetation, and rugged terrain, all of which are representative of areas where U.S. Armed Forces and our allies and partners could deploy throughout the Pacific and Asia. The Proposed Action would allow an integrated force of multiple units to simultaneously react and respond to a single scenario as if in an actual combat situation. As the DoD faces a growing threat and increased

competition from non-allied nations in the Western Pacific, training on Tinian would allow the DoD to develop and preserve critical capabilities for protecting and defending the U.S. and the Marianas, ensuring a free and open Indo-Pacific region through training in a military-controlled and secure environment within a Commonwealth of the United States.

### **1.2.2 Need for the Proposed Action**

The Proposed Action is needed to enable U.S. Armed Forces to meet their individual mandates in Title 10 to be trained and equipped to protect U.S. national security by being ready to effectively prosecute war and defend the nation (e.g., 10 U.S.C. sections 167, 7013, 7062, 8013, 8062, 8063, 9013, 9062). Responsibilities include building, sustaining, and improving readiness capabilities. The preparedness and readiness of forward-deployed U.S. Armed Forces (rotational, transient, and permanently stationed forces outside the continental U.S.) are key to a robust U.S. defense strategy. In the Indo-Pacific region, U.S. forward-deployed Armed Forces need to exercise evolving tactics, training, and procedures that will enable them to deter adversary aggression. The availability of the Military Lease Area to conduct sustainment training events would result in ready forces prepared to act immediately to respond to a threat to national security.

The Proposed Action would support ongoing and evolving distributed operational training requirements, changes to U.S. force structure, geographic repositioning of forces, and U.S. training with allied nations and partners.

## **1.3 Location and Current Military Training**

### **1.3.1 The CNMI**

The CNMI is composed of 14 islands and their territorial waters in the Mariana Archipelago. The archipelago stretches about 400 nautical miles from north to south along critical sea lanes between the U.S. West Coast, Hawaii, and East Asia. Positioned west of the International Date Line, the CNMI is one of the westernmost points of U.S. territory.

From 1945 to 1972, the U.S. administered the Mariana Islands as part of the United Nations Trust Territory of the Pacific Islands. In 1972, negotiations with the U.S. began for new political status for the people of the CNMI. In 1975, a Covenant establishing a commonwealth was approved by Northern Mariana Islands residents, and, on March 24, 1976, this union with the U.S. became effective as memorialized in The Covenant. The CNMI government adopted its own constitution in 1977, and the constitutional government took office in January 1978.

The Covenant defines the relationship between the CNMI and the U.S. and recognizes U.S. sovereignty and the applicability of U.S. federal law (48 U.S.C. Chapter 17). Article VIII of The Covenant specifies certain property rights and addresses property leases between the CNMI and the U.S. Government. Section 802 of The Covenant makes areas in the CNMI available to the U.S. via lease to carry out its defense responsibilities.

Military training in the Northern Mariana Islands has been analyzed in a series of environmental planning documents prepared by the DON between 1999 and 2020. The first document, *Military Training in the Marianas EIS*, was completed in 1999, followed by the 2010 *Mariana Islands Range Complex EIS/OEIS*, the 2015 *MITT EIS/OEIS*, and a Supplemental EIS/OEIS for the MITT Study Area in 2020 (DON 1999, 2010a, 2015a, 2020). The Mariana Islands Range Complex

A **Range Complex** is a geographically integrated set of ranges, maneuver areas, and associated special use airspace, designated and equipped with a command and control system (i.e., Range Control) and supporting infrastructure.

encompasses land, ocean surface and undersea areas, and airspace surrounding the CNMI and Guam. This includes land training areas on Tinian, Rota, Saipan, Farallon de Medinilla, and Guam, along with 501,873 square nautical miles of open ocean and littorals (coastal areas) for in-water training (DON 2010a). The MITT Study Area includes the Mariana Islands Range Complex, additional areas on the high seas, and a transit corridor where training and testing activities may occur (DON 2015a, 2020).<sup>3</sup> The 2010 *Guam and CNMI Military Relocation EIS* and the 2015 *Guam and Commonwealth of the Northern Mariana Islands Military Relocation (2012 Roadmap Adjustments) Supplemental EIS* provided additional analysis (DON 2010c, 2015).

### 1.3.2 The Island of Tinian

Agreements made between the U.S. and the CNMI, including The Covenant and *Technical Agreement Regarding Use of Land to Be Leased by the United States in the Northern Mariana Islands* (hereinafter “Technical Agreement”), and the 1983 lease agreement, subsequently amended in 1994, 1999, and 2023, provide for the northern two-thirds of Tinian to be used for military training. The Military Lease Area (15,353 acres) on Tinian is leased by the U.S. Government (Figure 1.1-2). The 1983 lease originally included approximately 177 acres at Tanapag Harbor on Saipan, 206 acres encompassing the entirety of Farallon de Medinilla and the waters immediately adjacent, and 17,799 acres of land and the waters immediately adjacent on Tinian. The 1983 lease was for an initial term of 50 years and includes a pre-paid option for an additional 50 years (Section 803(a)). Between 1994 and 1999, 2,446 acres of the original 17,799 leased acres were returned to Tinian. The U.S. Navy is the federal agency responsible for management of the lease, with delegated authority to Joint Region Marianas. Under this Proposed Action, the USMC, on behalf of Joint Region Marianas, would be responsible for the day-to-day management and scheduling of training in the Military Lease Area, which would be designated as a USMC Range Complex. The U.S. Air Force holds a separate lease with the Commonwealth Ports Authority for infrastructure improvements at Francisco Manglona Borja / Tinian International Airport (TNI) and the Honorable Jose Pangelinan San Nicolas Commercial Port of Tinian (Port of

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<sup>3</sup> At sea training and testing activities in the MITT Study Area are authorized through 2027 under environmental documents or permits issued to the DON, Commander U.S. Pacific Fleet, including the 2020 Final Supplemental EIS/OEIS (DON 2020), 2020 Marine Mammal Protection Act Letter of Authorization (National Marine Fisheries Service 2020a), and 2020 Endangered Species Act Biological Opinion (National Marine Fisheries Service 2020b). Future at sea training activities beyond 2027 would require regulatory consultations and a request for a letter of authorization by Commander, U.S. Pacific Fleet under the Marine Mammal Protection Act and incidental take statements under the Endangered Species Act.

Tinian) to support divert (i.e., contingency) airfield operations. This lease was established in 2019 and amended in 2023.

Another federal agency, USAGM, signed a Memorandum of Agreement in 1993 with the Assistant Secretary of Defense for International Security Affairs on behalf of the DoD to use a portion of the Military Lease Area for a transmitting station in support of Voice of America operations. The Robert E. Kamosa Transmitting Station is situated along the northwestern coast of the island approximately 3 miles north of TNI, bordered by 8th Avenue to the east. The site consists of 834 acres, with 300 acres surrounded by three-strand barbed wire fence and government property signs. Since 1999, the fenced portion has not been used for military training due to its existing federal use, although the DoD was able to use the remainder of the site for training purposes. The USAGM operations on Tinian were supported by a second transmitter station on an approximately 8-acre site located on the southwestern tip of Saipan. USAGM leased the Saipan property from the CNMI Department of Public Lands. The transmitting stations on Tinian and Saipan broadcasted until August 2024, when the USAGM announced operations had ceased and closure process had begun for the facilities on both Tinian and Saipan (Marianas Variety 2024).

U.S. Armed Forces training currently occurs within the Military Lease Area. As described above in Section 1.3.1, the existing land-based training in the Military Lease Area on Tinian has been analyzed in a series of environmental planning documents (DON 2010a, 2015a) and includes activities such as observing enemy forces, using electronic warfare to disrupt communication, airfield and logistics operations, and rehearsing attacks and defense strategies. The Proposed Action would increase the tempo and scope of current land-based training on Tinian and provide for more consistent engagement with the CNMI government and the Tinian municipality.

#### **1.4 NEPA Environmental Review Process and Public Involvement**

Figure 1.4-1 illustrates the NEPA environmental review process, including opportunities for public and agency input. The following sections summarize this NEPA process, including the events that occurred leading up to this Final EIS and the steps that follow.

##### **1.4.1 2015 Draft EIS/OEIS NEPA Process**

On March 14, 2013, the DON published a Notice of Intent to prepare an EIS/OEIS for the construction and operation of training ranges on Tinian and Pagan in the Federal Register (78 FR 16257). The Notice of Intent announced a 45-day public scoping period; the dates, times, and locations for public scoping meetings; and the various methods available for submitting comments on the Proposed Action. In addition, the Notice of Intent stated the public scoping process would be used to satisfy National Historic Preservation Act Section 106 public engagement requirements in accordance with 36 C.F.R. section 800.8(c). The public scoping period was extended an additional 14 days on April 23, 2013 (78 FR 23920) and ended on May 12, 2013. Three public scoping meetings were held in the CNMI on April 10–12, 2013.

Collectively, the scoping comment submittals from government agencies, elected officials, business and commercial entities, interest groups, and individual citizens included 1,363 comments on 24 different topics. The six topics that received the most comments were the proposed use of Tinian and Pagan for military training, socioeconomics, land use,

indirect/cumulative impacts, environmental justice, and biological effects. Commenters also questioned the need for live-fire training given the availability of computer simulation and existing training ranges on Farallon de Medinilla, Guam, and Hawaii.

On April 6, 2015, the DON published a Notice of Availability for the Draft EIS/OEIS (80 FR 18385). The Notice of Availability announced a 60-day public review and comment period and identified locations where the Draft EIS/OEIS could be reviewed; the dates, times, and locations for public meetings; and indicated the NEPA process, including the Draft EIS/OEIS public meetings, would also satisfy National Historic Preservation Act Section 106 requirements. Advertisements containing similar information concerning the availability of the Draft EIS/OEIS were also placed in local newspapers. With three announced extensions, the public comment period lasted approximately six months, from April 6 through October 1, 2015. Three public meetings were held, two on Saipan and one on Tinian.

During the Draft EIS/OEIS public comment period, 28,527 comments were received. Commenters included the CNMI and federal government agencies, elected officials, business and commercial entities, interest groups, and individual citizens. Of the total number of comments received, 2,748 comments were unique, with the remaining comments consisting of petition signatures and form letters. The Proposed Action analyzed in the 2015 Draft EIS/OEIS included 14 live-fire ranges, an airfield, amphibious landings, permanent housing, and a High Hazard Impact Area on Tinian, and a combined arms training with aerial and ship bombardment with a High Hazard Impact Area on the island of Pagan. The comments received on the 2015 Draft EIS/OEIS were critical of the Proposed Action. Information can be found in Appendix B and on the project's website: <https://www.cnmijointmilitarytrainingeis.com/>.

### 1.4.2 Revised Draft EIS and CNMI Coordination

In developing the revised Proposed Action described in Chapter 2, the USMC evaluated the changes in the way U.S. Armed Forces currently prepares for future conflicts and carefully considered the comments and suggestions submitted on the 2015 Draft EIS/OEIS by elected officials and government agencies of the CNMI, federal agencies, the public, and collaborative interagency coordination (described further in Section 1.5). The various meetings, collaborative exercises, and comments from the prior NEPA effort, along with the changes in training requirements since 2015 (refer to Section 1.1), all helped inform the current Proposed Action, which, among other changes, eliminated training on Pagan, removed the High Hazard Impact Area on Tinian, and reduced the number of live-fire ranges from 14 to 2. The USMC then engaged the CNMI government in a series of virtual and in-person discussions on this revised training concept

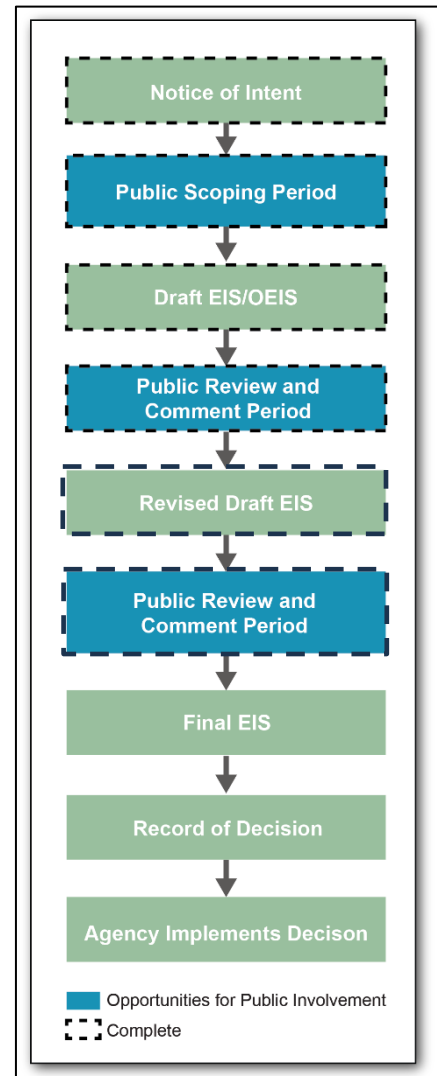


Figure 1.4-1 NEPA Process

and the revised environmental analysis between January 2020 and September 2024. Additionally in August 2023, the USMC held public information sharing sessions on the islands of Tinian, Saipan, and Rota to inform the public at large of the revised training concept that would be evaluated in a Revised Draft EIS.

The USMC further considered if the revised scope of the Proposed Action, along with new or modified laws and regulations, circumstances, and available information since the 2015 Draft EIS/OEIS was published, required additional data collection or studies to evaluate potential impacts. As a result, further technical studies for natural resources, cultural resources, and utilities have been performed to inform the impact analysis, and areas of analysis have been modified to reflect these changes. The updated utilities studies focused on electrical power, potable water, wastewater, stormwater, and solid waste disposal. The analysis factored in the anticipated population increases related to construction, training, and operations and maintenance of the proposed Range Complex on Tinian, including direct, indirect, and induced growth (refer to Table C.1-2 in Appendix C, *Training and Construction Assumptions*). The utilities studies identified any needed utility upgrades, technical solutions for upgrades, and options for implementation, as appropriate (refer to Appendix M, *Utilities Studies*). Other resources have changed more gradually over time, such as topography, geology, and soils, and thus references cited in the 2015 Draft EIS/OEIS are still valid and did not require updated data collection or technical analysis to be performed. The Revised Draft EIS presented updated environmental baseline conditions and the potential environmental effects of implementing the revised Proposed Action and alternatives.

The Notice of Availability/Notice of Public Meetings for the Revised Draft EIS was published in the Federal Register, local newspapers, and on the project website on June 6, 2025. The notice identified locations where the revised draft document was available for review; the timing of the 75-day public review and comment period; the allowable methods for submitting new comments; and the dates, times, and locations of public meetings for the Revised Draft EIS. The USMC provided a 15-day extension of the public comment period for a total of 90 days, ending on September 4, 2025. Public comment meetings for the Revised Draft EIS were held on Tinian, Saipan, and Rota as noted below:

- Tinian: Monday June 23, 2025, and Tuesday June 24, 2025, at Tinian Junior/Senior High School Cafeteria, Canal Street, San Jose
- Saipan: Wednesday June 25, 2025, and Thursday June 26, 2025, at Crowne Plaza (Hibiscus Hall), Coral Tree Avenue, Garapan
- Rota: Friday June 27, 2025, at Rota Mayor's Office

The public meetings were conducted in an open house format to encourage the sharing of information and discussion. Open house meetings provided increased flexibility for attendees, allowed for one-on-one interaction with experts and provided a casual atmosphere that encouraged more direct and comfortable participation and feedback. Each poster station presented the analysis of a key resource, and a representative was available to answer questions and direct the public to tables where individuals could submit written or oral comments. Public comments could be submitted in writing, by mail, on the website or through a court reporter at public meetings. Comments could be submitted in any language, and Chamorro and Carolinian translators were available at the public meetings. Chamorro and Carolinian version translations of the fact sheet

were available at the public meetings and on the project website. The Executive Summary in these languages was also made available to download from the project website and printed copies were available for review at the local libraries on Tinian, Saipan, and Rota. In addition, the USMC held office hours at the Commonwealth Bureau of Military Affairs Tinian Field Office for additional public engagement in August 2025 prior to the end of the public comment period.

### **1.4.3 Final EIS**

This Final EIS considered and addressed, as appropriate, comments received on the Revised Draft EIS (see Appendix L). Many of the changes in the Final EIS reflect feedback from public comment received on the Revised Draft EIS as well as refinements to the Proposed Action and analysis made by the USMC. A total of 83 comment submittals were received from individuals, community organizations, and local and federal government that contained 215 individual comments. The publication of the Final EIS was announced, and the document circulated in the same manner as the Revised Draft EIS, including publication of a Notice of Availability in the Federal Register and advertisements in local newspapers.

### **1.4.4 Record of Decision**

No sooner than 30 days following the issuance of the Final EIS, a decision document, called a Record of Decision, would be signed. The Record of Decision sets out the decision made, explains the reasons for the decision, and details any commitments to monitoring or mitigation. When the decision document is final, the USMC will issue notices in local newspapers and other publications and post the decision on the project website.

### **1.5 Interagency Coordination**

The USMC has actively involved other federal agencies and the CNMI government, its agencies, and local organizations (Table 1.5-1) as part of the NEPA process for this Final EIS. Additional information on interagency coordination is provided in Appendix A.

**Table 1.5-1 Interagency Coordination: Agencies and Organizations**

<i>Federal</i>	<i>CNMI</i>
<ul style="list-style-type: none"> <li>• United States Navy</li> <li>• Joint Region Marianas</li> <li>• United States Air Force</li> <li>• United States Army</li> <li>• Advisory Council on Historic Preservation</li> <li>• Department of the Interior, Office of Insular Affairs</li> <li>• DoD Office of Local Defense Community Cooperation (formerly known as Office of Economic Adjustment)</li> <li>• National Marine Fisheries Service</li> <li>• National Park Service</li> <li>• U.S. Agency for Global Media</li> <li>• U.S. Environmental Protection Agency</li> <li>• U.S. Federal Aviation Administration</li> <li>• U.S. Fish and Wildlife Service</li> </ul>	<ul style="list-style-type: none"> <li>• The CNMI Governor’s Office</li> <li>• The CNMI Legislature</li> <li>• Tinian Mayor’s Office, Municipal Council</li> <li>• Commonwealth Bureau of Military Affairs/CNMI Military Integration Office</li> <li>• Bureau of Environmental and Coastal Quality</li> <li>• Commonwealth Ports Authority</li> <li>• Commonwealth Utilities Corporation</li> <li>• Department of Commerce</li> <li>• Department of Finance Customs and Biosecurity Division</li> <li>• Department of Fire and Emergency Medical Services</li> <li>• Department of Lands and Natural Resources Division of Fish and Wildlife</li> <li>• Department of Labor</li> <li>• Department of Public Works</li> <li>• Department of Public Lands</li> <li>• Department of Public Safety</li> <li>• Historic Preservation Office</li> <li>• Mariana Visitors Authority</li> <li>• Office of Planning and Development</li> <li>• Tinian Cattleman’s Association and other cattle ranchers</li> </ul>

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; DoD = Department of Defense; U.S. = United States.

**1.5.1 Federal Cooperating Agencies**

The following agencies are cooperating agencies for the development of this Final EIS:

- U.S. Department of the Interior, Office of Insular Affairs
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency
- National Marine Fisheries Service

**1.5.2 Airspace and Aviation**

In order to execute the Proposed Action, the USMC would coordinate with the Commonwealth Ports Authority as the agency responsible for operating all airports and seaports on Tinian, Saipan, and Rota. The USMC and Commonwealth Ports Authority would site needed infrastructure on TNI, coordinate access arrangements, and deconflict air operations to ensure continuing and uninterrupted civil aviation activity. The USMC intends to discuss its proposed airspace safety protocol for the Multi-Purpose Maneuver Range and Explosives Training Range with the FAA. The Federal Aviation Administration (FAA) would advise USMC whether there is a need to establish a controlled firing area airspace designation over either or both proposed live-fire ranges in the Military Lease Area.

### **1.5.3 Cultural Resources**

In accordance with Sections 106 and 110 of the National Historic Preservation Act, the USMC is consulting with the CNMI Historic Preservation Officer, Advisory Council on Historic Preservation, the National Park Service, and the Office of the Mayor of Tinian on potential effects to historic properties.

### **1.5.4 Biological Resources**

The USMC is consulting with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on potential impacts to endangered species under Section 7 of the Endangered Species Act and with National Marine Fisheries Service under the Magnuson-Stevens Fishery Conservation and Management Act on potential impacts to essential fish habitat. In addition, the USMC has prepared a federal consistency determination under the Coastal Zone Management Act (Appendix N).

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## 2 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action and alternatives evaluated in this Final EIS, including the No Action Alternative.

### 2.1 Proposed Action

The Proposed Action is to conduct joint military distributed operations training within the Military Lease Area on Tinian, in order to support the ongoing and evolving expeditionary requirements of U.S. Armed Forces forward-deployed to the Western Pacific, and U.S. allies and partners. This training builds upon previously approved expeditionary and combined-arms training activities and incorporates updated tactics, techniques, and procedures commonly described as distributed operations.

Distributed operations training relies on the use of small, agile, and highly capable dispersed land, sea, air, space, and cyber detachments conducting stealthy, coordinated, independent actions from minimally developed and advanced island positions within the arc of an opponent's long-range weapons. To support the proposed distributed operations training within the Military Lease Area, the USMC would use modern technology to create a realistic virtual and physical training environment on Tinian. A communications system to support training would be established through the reuse of existing communications towers located on Tinian and Saipan, with portable sensors and emitters in the Military Lease Area.

Non-live-fire offensive and defensive training actions would continue to be conducted in the Military Lease Area with an increase in existing land-based training events, including both ground and aviation training, that are consistent with, and similar in nature to, training activities previously conducted and analyzed for Tinian. All training would occur within the lands leased by the military on Tinian, and in accordance with any required coordination, or new or modified agreements.

Live-fire training would be limited to two ranges that would be developed within the Military Lease Area, remote from the residential and commercial areas of Tinian (i.e., village of San Jose) (Figure 2.1-1):

- Multi-Purpose Maneuver Range – A live-fire range occupying approximately 200 acres at the northern tip of Tinian that would support movement and maneuver training and include two surface radar facilities.
- Explosives Training Range – A live-fire range on approximately 2.5 acres in the central part of the Military Lease Area for the employment of demolitions and military explosives in support of offensive and defensive training events.



Figure 2.1-1 Military Lease Area with Proposed Action Features

The following are also included in the Proposed Action to support training events (Figure 2.1-1):

- Establishment of two large (1,200 feet by 1,200 feet) and eleven small (600 feet by 600 feet) Landing Zones with associated access roads. The Landing Zones would also be used to provide staging, camping, gathering, and rendezvous areas.
- Two ammunition holding areas for temporary ammunition storage.
- Ground and aviation improvements at North Field, including establishment of a Drop Zone and the placement of an AM2 matting surface over runway Baker.
- Construction and operation of a Base Camp.
- Clearance and improvements of roads required to support military training in the Military Lease Area.
- Biosecurity facilities at the Port of Tinian and an aircraft shelter within the U.S. Air Force Divert lease area on TNI, subject to development of appropriate agreements with the Commonwealth Ports Authority.

An on-island Range Control would be established under the Proposed Action. Range Control would be responsible for scheduling training, managing range safety and emergency response, publishing announcements and notices about proposed training, coordinating communications and data requirements, range maintenance, and ensuring regulatory compliance.

During some training events, public access may be limited in order to ensure the safety of the public and service members participating in the training. However, when possible, public access to recreational beaches, tourism areas, and the Tinian Landing Beaches, Puntan Taddong (also known as Ushi Point) and North Field, and Tinian North Field National Historic Landmark (North Field National Historic Landmark) would continue to be available to the local community and tourists even when training may be occurring. Additionally, the USMC would work with the CNMI government to identify holidays, festivals, or other important days for which public access to the Military Lease Area is needed.

### **2.1.1 Distributed Operations Training in a Live-Virtual-Constructive Environment**

Integral to the proposed distributed operations training within the Military Lease Area would be the creation of a virtual and physical training environment on Tinian. Some of the training would occur in the virtual/physical environment and some training would only occur in the physical environment.

Distributed operations training under the Proposed Action would occur mostly in a Live-Virtual-Constructive environment where signature management (i.e., avoiding detection by radar or any other electronic systems) and stealth in the field is essential to reducing the chances of U.S. Armed Forces being detected when operating in proximity to a military opponent. Live-Virtual-Constructive training capabilities can be defined as follows:

- **Live** training involves people physically training on foot or in vehicles or aircraft using weapons systems. Visuals, opposing forces, and communications are “real” (i.e., no virtual components). In a live environment, human participants have the capacity to take information that is occurring in real-life (such as location, sight, sound, etc.) and connect it to real-life situations and conduct problem-solving. Example: Service members physically conduct reconnaissance and surveillance operations on a range with other service members who are physically present in the environment.

- **Virtual** training involves people training with simulated (virtual) systems in part or in whole. In a virtual environment, human participants make decisions that drive or control one, several, or all aspects of the simulation, but visuals and communications are computer-generated. Example: Service members physically conduct reconnaissance and surveillance operations on a range but react or respond to computer-generated data inputs and/or data received from emplaced sensors and emitters in the environment that simulate opposing forces, or report activity or effects that do not actually occur in the physical environment.
- **Constructive** training incorporates both live and virtual elements where human participants in training are presented with computer-simulated scenarios and must react to them using live and virtual input. Example: Service members conduct reconnaissance and surveillance operations on a range against a computer-controlled scenario being operated by the unit training officer.

A Live-Virtual-Constructive environment would allow training units of various sizes to work together under increasing levels of simulation to respond to threats generated by a combination of live activities, sensors and emitters, and actions by the training unit's operations command or exercise command. Engaging in electronic warfare training is a key part of the Live-Virtual-Constructive environment, where training units experience the types of electronic warfare threats that an opposing force may employ during real-world operations. Units would train to identify and disrupt the opposing force via electronic signals and learn to conceal their own electronic signatures to remain undetected. This type of electronic warfare training is best performed in locations like the CNMI that are within the territory of the U.S., allowing U.S. Armed Forces to fully control oversight and visibility of these training events.

### 2.1.2 Military Lease Area Training and Proposed Training Events

The entirety of the Military Lease Area is currently used for military training and would continue to be so under the Proposed Action. Additionally, under the Proposed Action, the Military Lease Area would receive a designation as a USMC Range Complex. Designation as a USMC Range Complex means that all training in the Military Lease Area would be coordinated and overseen by the newly created Range Control established by this Proposed Action. However, individual training events would only utilize locations in the Military Lease Area necessary to accomplish training objectives of the particular event. For scheduling purposes, the Military Lease Area would be subdivided into eight smaller training areas forming a comprehensive range complex (Figure 2.1-2). Range Control would schedule training in one or multiple discrete training areas based on training requirements. This approach to scheduling would allow the USMC to efficiently and effectively balance safe public access within the Military Lease Area when restrictions are not necessary to conduct military training.

Military training events would be consistent with existing uses. Within the Military Lease Area, certain portions would be designated as no training areas (Figure 2.1-3). These no training areas include the former Tinian Mortar range, and specific areas to protect natural and cultural resources. Areas to protect natural and cultural resources are discussed further in Section 4.4 Biological Resources and Section 4.5 Cultural Resources. The CNMI's proposed site for the Atgidon landfill is located at the intersection of Riverside Drive and 86th Street in the southwestern portion of the Military Lease Area. While not depicted in Figure 2.1-3 as a proposed restricted area, once operational, this landfill could be designated a no training area. Additionally, the military would not train in areas currently fenced and actively occupied by grazing cattle.



Figure 2.1-2 Military Lease Area Range Complex and Training Areas



**Figure 2.1-3 Existing and Proposed No Training Areas within the Military Lease Area**

Within the Military Lease Area, training units would conduct a variety of non-live-fire mission-specific training to include reconnaissance and surveillance, seizing an airfield, establishing an expeditionary airfield, non-combatant evacuation, humanitarian assistance/disaster relief, assault, and raids. As previously discussed, many of these training events are the same or similar to those currently authorized for Tinian under prior environmental analyses. The Proposed Action would expand on that baseline, adding enhanced expeditionary airfield operations and the establishment of Landing Zones in the Military Lease Area. Except for the continued approved use of installing and utilizing bullet traps in existing structures and the development of two proposed live-fire ranges, no live-fire activities are proposed to occur elsewhere in the Military Lease Area. Visitors to the Military Lease Area may see service members in vehicles or on foot equipped with weapons to be used in non-live-fire training activities anywhere in the Military Lease Area.<sup>4</sup>

Prior to military units arriving for training on Tinian, all equipment, vehicles, and gear would undergo a pre-departure biosecurity cleanliness inspection at the place of origin. Upon arrival of the training units to the island, an arrival biosecurity inspection would be conducted. After completion of training, each unit would be responsible for cleaning all vehicles and gear in accordance with Joint Region Marianas biosecurity requirements in designated areas as discussed in Section 2.1.9.2, and ensure the training area and ranges are in “left as found” condition. Personnel and equipment would arrive and depart for training through three possible locations: (1) Francisco Manglona Borja / Tinian International Airport (TNI), (2) Honorable Jose Pangelinan San Nicolas Commercial Port of Tinian (Port of Tinian), or (3) North Field.

Training events would vary in duration and size and could range from hours within a day involving a small squad or unit (e.g., approximately 15 to 40 personnel) to a large-scale joint exercise with multiple U.S. Armed Forces participating over a longer period (e.g., up to four weeks). Table 2.1-1 presents the small, medium, and large training event categories with the anticipated number of personnel, duration, and frequency. Training schedules are highly variable as they are dependent on individual and collective unit readiness requirements, deployment cycles, and resource availability. Small, medium, and large training events may overlap, with up to 1,000 service members participating in training on Tinian at any one time. Because training units need opportunities to operate in darkness and low-light conditions, training events could extend over a 24-hour period. Some activities may start and stop or move throughout different training areas in the Military Lease Area and may not be continuous for the entire duration listed in the table below.

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<sup>4</sup> Live-fire training means ammunition and/or military explosives (e.g., demolition charges) would be used that could present a hazard to both participating and non-participating personnel and thus require safety boundaries to be established around them called surface danger zones. These zones may be monitored using spotters and supported by additional physical controls such as gates, fencing, warning signs, and surface radar to ensure that non-participating personnel are warned and restricted from entering these zones when events are occurring.

**Table 2.1-1 Training Event Size Categories**

<i>Size of Training Event</i>	<i>Approximate Number of Personnel</i>	<i>Approximate Training Duration<sup>1</sup></i>	<i>Approximate Training Frequency<sup>2</sup></i>
Small	Up to 100 personnel	1-2 weeks	Routinely occurring throughout the year
Medium	Up to 250 personnel	1-2 weeks	Once per quarter
Large	Up to 1,000 personnel	2-4 weeks	2-4 times per year

Notes: <sup>1</sup> Includes time before and after training events for logistics (e.g., set up and turnover activities).

<sup>2</sup> Small, medium, and large training events could overlap, but the number of personnel on Tinian for training at any one time would be up to 1,000.

Large training events involving up to 1,000 personnel on Tinian could include, but not be limited to, units such as a Marine Littoral Regiment, a Marine Expeditionary Unit, a U.S. Army Multi-Domain Task Force, or a battalion-size unit with or without allied forces or partner nations. An example of a large training event that has occurred on Tinian previously would be a Valiant Shield exercise. Medium training events could involve a company or multiple smaller units with up to 250 personnel. The portion of the Cope North exercises that have previously occurred in the CNMI is an example of a medium training event. If a large or medium event includes planning, execution, and military training activities across multiple domains (i.e., air, sea, and land), the at-sea portions of these events may include naval operations, carrier-based flight activities, and maritime warfare scenarios, as addressed in and covered by the *Mariana Island Range Complex EIS/OEIS* (DON 2010a) and *MITT EIS/OEISs* (DON 2015a, 2020). However, the land-based portion of the event that would occur on Tinian is analyzed in this Final EIS and may, for example, include such activities as helicopter operations launching to or from North Field or Landing Zones, aircraft providing maritime patrol, strike fighter aircraft arriving or departing from North Field, or the use of various unmanned aerial systems to support expeditionary and amphibious warfare objectives.

Small training events could involve a platoon or a detachment of aircraft consisting of up to 100 personnel, and some small events may include a single squadron with approximately 10 service members. An example of small training events that have previously occurred on Tinian would be a Construction Battalion (i.e., Seabees) conducting road repairs, or a platoon of Navy Sea, Air, and Land Team (i.e., SEALs) conducting training.

The on-island USMC authority for training area and range operations, referred to as Range Control, would be located within the Base Camp. Range Control would oversee and coordinate training area and range operations, ensuring operational compliance with safety protocols and USMC range policies and regulations. Additional details on the functions that would be performed by Range Control are provided in Section 2.1.8.

### 2.1.3 Ground Training

Ground training events on Tinian would be conducted throughout the Military Lease Area including the two new live-fire training ranges, at North Field, and along roads or other previously disturbed access paths. Portions of the ground training would be accomplished in a Live-Virtual-Constructive environment. Proposed training activities would include ground-based surveillance and reconnaissance, force-on-force, electronic warfare, military operations in urban terrain, evacuation operations, command and control, logistics, camping, land navigation, ground and maneuver convoy training, non-combatant evacuation operations, and other non-live-fire activities. Force-on-force training would use training simulators, pyrotechnics (e.g., smoke

grenade or pop-up flare), signaling devices, blanks, or Special Effects Small Arms Marking System ammunition, which is a non-lethal training ammunition that provides marking during force-on-force training. Pyrotechnics would be used only when conditions would allow safe use as identified in a Range Wildland Fire Management Plan for the Military Lease Area, which would be developed with the establishment of Range Control.

Vehicles used in ground training would be used on paved and unpaved roads or Landing Zones/cleared areas within the Military Lease Area. Proposed training events would also involve vehicle-mounted weapons systems involved in non-live-fire training events, including machine guns and missile rocket systems. For example, units could conduct notional (non-live-fire) training using rocket and missile systems such as the High Mobility Artillery Rocket System anywhere in the Military Lease Area training area, but the ordnance for the system would not be brought to Tinian and the actual weapon would not be fired. Training with simulated fire or blank munitions, electronic equipment, listening devices, lasers, unmanned aerial systems, and robotic equipment would occur at designated areas. Foot patrols and foot maneuvers would also occur in the Military Lease Area, except for designated no training areas or in areas that are currently fenced and actively occupied by grazing cattle.

As previously identified, live-fire training would be conducted on the two proposed ranges to be constructed within the Military Lease Area. On the Multi-Purpose Maneuver Range, training units would use live-fire to engage fixed, portable, and robotic targets spread out across four engagement or objective areas with the purpose of training in offensive and defensive operations. These objective areas would contain objects of military value such as a simulated opposing force target to be captured or neutralized by the training unit. In addition, training for explosive breaching of an obstacle would also be conducted on the Multi-Purpose Maneuver Range.

On the Explosives Training Range, explosive ordnance and combat engineer personnel would conduct sustainment training that meets DoD service specifications for use and employment of explosives in various applications such as response to unexploded ordnance, breaching operations that include explosive hazards, mine/countermine operations, and the employment of demolitions and military explosives in support of offensive and defensive operations. The construction and layout of the live-fire ranges are described in Section 2.1.6.

#### **2.1.4 Aviation Training**

As described in Section 1.3 and Section 2.1.2, at-sea effects from aviation operations, including overflights around Tinian's coastal waters extending from the high-water mark seaward from Tinian, are addressed in and covered under the MITT EIS/OEISs (DON 2010a, 2015a, 2020). Aviation training operations would follow applicable procedures specified in those environmental or permitting documents. Effects from aviation training occurring over land (i.e., those that occur inland on Tinian from the mean high-water mark on the beach) are evaluated in this Final EIS.

Aviation training on Tinian would focus on expeditionary airfield training operations such as combat search and rescue, insertions and extractions, and training to establish, secure, maintain, and operate an expeditionary airfield. These types of operations are austere and temporary, occurring near combat operations to provide support functions (i.e., aircraft can be refueled, rearmed, and serviced) that allow the aircraft to return to action as fast as possible and as many times as possible in a given length of time. Such operations are a scalable event: large-scale

operations would consist of one or two aircraft providing fuel and ammunition to up to four receiving aircraft, while small-scale operations would consist of a single aircraft refueling ground forces.

Aviation training would also involve landings and take-offs of aircraft at North Field and Landing Zones throughout the Military Lease Area using helicopters, fixed-wing aircraft, tilt-rotor aircraft, and unmanned aerial systems. Aircraft operations would occur in the airspace over the Military Lease Area and include conducting air assault missions, search and rescue, intelligence, surveillance, and reconnaissance, and simulated close air support. Aviation training would occasionally occur at night.

Operations at North Field would include take-offs and landings by fixed-wing transport/tanker (e.g., KC-130) and jet aircraft (e.g., F/A-18 and F-35B/C), rotary-wing aircraft (e.g., CH-53E; CH-53K), tilt-rotor aircraft (e.g., MV-22), and unmanned aircraft systems (e.g., “UASs” or drones). Proposed tilt-rotor and jet operations would include short take off and vertical landing operations. Landing operations could also periodically include the use of mobile aircraft arresting gear installed in the North Field area. This gear is a tactical cable-system used to quickly slow down and stop tailhook-equipped aircraft, similar to the system used on an aircraft carrier. Other aviation training that could occur on North Field would include parachute drops of personnel, cargo, or equipment, aviation command and control, and electronic warfare training. Fuel and supplies would be transported to North Field via aircraft (e.g., KC-130s, helicopters, or tilt-rotor aircraft) or by truck from the Base Camp. During expeditionary aviation operations, temporary fuel containment systems with an approved spill containment plan would be used. At least two fuel connection points using fuel bladders (ranging in size from 20,000 to 50,000 gallons) would be in place, with a pop-up secondary containment for spill control. Operations at Landing Zones would also include take-offs and landings by rotary-wing aircraft and tilt-rotor aircraft.

As part of expeditionary aviation training on Tinian, the USMC would use a portable metal surface known as AM2 matting (Figure 2.1-4) to support airfield operations. This system is designed for use in austere environments where permanent runways are not available. AM2 matting provides a stable surface necessary for the safe operation of certain fixed-wing and tilt-rotor aircraft that require a prepared landing area. It also enables Marines to train in the rapid deployment, maintenance, and breakdown of temporary airfields, which is a critical skill for expeditionary operations. The system supports a range of aviation operations—from small-scale refueling missions to larger-scale logistical



**Figure 2.1-4 AM2 Matting**

support—while minimizing long-term environmental disturbance due to its temporary and reusable nature. The use of AM2 matting aligns with the USMC’s expeditionary mission and supports the development of critical operational capabilities. Routine inspection, repair, and occasional panel replacement are anticipated for any expeditionary matting system in a hot, corrosive environment. Any associated waste streams would be appropriately managed in accordance with established procedures and waste management plans.

AM2 matting would be used at two locations on Tinian: North Field (Figure 2.1-5) and Landing Zone 9 (refer to Figure 2.1-1 for the location of Landing Zone 9). At North Field, training units would install AM2 matting to create a temporary runway approximately 8,000 feet long and 96 feet wide on runway Baker.

The matting would be secured using stakes within a 200-foot by 200-foot section at each end, and clear zones would extend approximately 500 feet from both runway ends, with vegetation maintained at a height between 7 and 14 inches. The AM2 matting would remain in place between training events and would be subject to periodic inspection and maintenance to ensure continued operational safety. At Landing Zone 9 (1,200 feet x 1,200 feet), AM2 matting would be provided as a capability for training exercises and would be installed within the cleared Landing Zone footprint (cleared of vegetation to 6-8 inches) using stakes within a 200-foot by 200-foot section at each end and would be removed based on specific training objectives.

Additionally, a Live-Virtual-Constructive training environment would be employed to simulate real-world threats, using systems similar to other existing military and civilian radar. This would involve radars, sensors, and tracking systems such as the Navy Marine Expeditionary Ship Interdiction System, Marine Air Defense Integrated System, Light Marine Air Defense Integrated System, and Ground/Air Task Oriented Radar. Forces would analyze the gathered data to detect and classify virtual airborne threats and simulate ground-based air defense counteractions.

### **AM2 Matting**

AM2 matting is aluminum plank coated with a non-skid epoxy coating and can be assembled in a brickwork pattern to form runways, taxiways, aircraft aprons, or other areas for aircraft operations and maintenance. Minimal site preparations are required prior to installation of AM2 matting planks, which may be laid over grass, pebbles, or asphalt. Water can infiltrate to the surface below the AM2 matting, and it is normally installed in the smallest area required to safely conduct training.

Installation is by hand, with each plank locking to another. Stakes would be used to secure the locked planks to the ground surface and keep them from shifting. The stakes are 5 inches in diameter and 5 feet 10 inches in length. Once installed, the matting can be safely used by heavy transport aircraft or jet aircraft.



**Figure 2.1-5 Location for AM2 Matting at North Field**

### 2.1.5 Training Infrastructure

The Proposed Action would include the construction of two live-fire ranges and the establishment of two large and eleven smaller Landing Zones in the Military Lease Area. This training infrastructure would integrate with the virtual training environment to support proposed distributed operations training and enhance particular skills or techniques. Table 2.1-2 lists representative types of weapons and ammunition that may be used on the two live-fire training ranges, the Multi-Purpose Maneuver Range and Explosives Training Range, which are further described in the following sections.

**Table 2.1-2 Representative Weapons and Ammunition Proposed for Live-Fire Ranges**

<i>Weapon Type</i>	<i>Details (e.g., Model, Ammunition)</i>
Small Arms	0.338 Norma Magnum and below, 40-millimeter training practice ammunition
Machine Guns	0.50 caliber and below, 40-millimeter training practice ammunition
Mortars	60- and 81-millimeter training practice ammunition
Rockets	84 millimeters and below training practice ammunition
Demolition	Grenades, Anti-Personnel Obstacle Breaching System, Field Expedient Bangalore, Claymore Mines
Weapons-mounted lasers	Class 3b and Class 4
Other	Tracer rounds, battlefield illumination

#### 2.1.5.1 Multi-Purpose Maneuver Range

The Multi-Purpose Maneuver Range would be constructed for conducting offensive and defensive training to include live-fire and non-live-fire training. The proposed range would include two surface radar towers, an ammunition holding area, and range targets and other training equipment that would be set up when the range is active and stored when not in use. The following criteria were used to identify potential alternative locations for the proposed Multi-Purpose Maneuver Range:

- Site within the Military Lease Area approximately 200 acres in size, in order to support platoon-size fire and maneuver training and accommodate the use of small arms (0.50 caliber and below).
- Away from, or minimally affected by, commercial air routes that disrupt training.
- Minimizes noise and other impacts of military operations on the local residential populations of Tinian and Saipan.
- Minimizes potential impacts to ecologically or culturally sensitive areas including the North Field National Historic Landmark.
- Maximizes the use of previously disturbed areas bounded by existing roadways to help provide clear boundaries for the proposed range.

Applying these criteria, the USMC determined the proposed Multi-Purpose Maneuver Range could only be located north of the North Field National Historic Landmark on the northern tip of Tinian facing to the northwest (Figure 2.1-6).



**Figure 2.1-6 Multi-Purpose Maneuver Range and Explosives Training Range Locations**

The location and orientation would place the Multi-Purpose Maneuver Range as far as possible from the village of San Jose to minimize potential impacts from training events on residents. It is also situated away from commercial air routes, ensuring that training activities do not interfere with civilian air traffic. The proposed configuration would take advantage of the location of the 1940s mapped roads in this area and conform to the shape of the north tip of Tinian, with the northern proposed range boundary following the edge of the natural terrain. The range is designed to allow for firing from within the range boundary toward targets positioned within the range. Proposed weapons authorized for use in the Multi-Purpose Maneuver Range would include small arms, training rounds, and practice rounds. The Multi-Purpose Maneuver Range would also be certified with appropriate danger zones for use of Class 3b and Class 4 lasers. Class 3B and Class 4 lasers would be used only within approved laser danger zones established and certified in accordance with applicable DoD and service laser safety policies and installation range operating procedures. Laser operations would be suspended immediately if nonparticipants are detected within the controlled area, consistent with standard range safety practices.

The Multi-Purpose Maneuver Range would comply with Marine Corps Order 3570.1D, *Range Safety*, and all firing activities would be conducted in accordance with the established surface danger zones (described further in Section 2.1.6 Live-Fire Range Safety Areas). Firing positions for indirect weapons, such as mortars firing inert ammunition, would be constructed on or adjacent to the Multi-Purpose Maneuver Range.

The proposed range would include four objective areas, ranging in size from 5 to 15 acres, where objects of military value could be placed (e.g., fixed, portable, or robotic targets to be captured or neutralized by the training units). When not in use, targets may be stored at the Base Camp or in a storage container, similar to a shipping container or “CONEX” box at the Multi-Purpose Maneuver Range. The vegetation within each objective area would be cut and maintained at approximately six inches in height as would the vegetation around designated firing positions. Firing lanes would be cut and maintained to ensure that line-of-sight is maintained along their entirety. A cleared, unimproved road would be constructed down the center of the Multi-Purpose Maneuver Range to allow access by safety and emergency services. Ushi Point Road runs through the Multi-Purpose Maneuver Range and will be maintained as an emergency access road within the Multi-Purpose Maneuver Range. Boston Post Road runs along the southeastern perimeter of the Multi-Purpose Maneuver Range and will be maintained to serve as a fire break road. All roads will maintain vegetation to a height of 12 inches and to a width of 4 feet on each side of the road to reduce the risk of fire. The remainder of the vegetation on the Multi-Purpose Maneuver Range would not be cleared.

One ammunition holding area is proposed for the southeast area of the Multi-Purpose Maneuver Range, to provide a secure location for holding small quantities of munitions. This ammunition holding area would be used only when training is occurring (i.e., its use is temporary). All ammunition would be brought into and removed by the training unit after each training event. The ammunition holding area would meet all requirements to be in place while ammunition is present (refer to Section 2.1.7 Ammunition Holding Areas). A Landing Zone would be established southeast of the Multi-Purpose Maneuver Range to facilitate troop insertions or other associated training activities. Water infrastructure for firefighting purposes is proposed to be installed at North Field, just south of the Multi-Purpose Maneuver Range. The system would be designed for

non-potable use and include up to two new or rehabilitated groundwater wells, two 100,000-gallon aboveground water tanks, a booster pump station, and a 1,200 square foot pump house.

To minimize physical barriers and maintain access, the USMC would rely on perimeter signs to delineate the Multi-Purpose Maneuver Range, with fencing considered only where needed to address specific safety, security, or environmental protection needs. Gate(s) and/or road guard(s) would be utilized to ensure public awareness of range boundaries (refer to Section 2.1.6 Live-Fire Range Safety Areas for more detail) when live-fire training is being conducted. Additional physical indicators (e.g., red flag or red warning light) may be utilized to indicate the range is in use. Additional safety features would include two surface radar towers proposed for sites along the shoreline to survey the ocean surface to detect and provide an early warning should a boat, or a member of the public or other non-participant, approach the range surface danger zones from offshore. These towers would directly connect with Range Control, and should an unplanned encroachment occur, all training would cease until the non-participant is out of the area. Before the surface radar towers are constructed, the USMC would employ trained field spotters to monitor the surface danger zone and the overlying airspace (refer also to Section 2.1.6.3 Airspace Safety Protocol). Following construction, field spotters would continue to be used as needed to supplement radar operations or during periods when radar systems are unavailable due to maintenance or equipment outages. The sites for the proposed surface radar towers would be at Puntan Taddong (also known as Ushi Point) and south of Unai Babui (Figure 2.1-7). There would be a dedicated access road for each site. Each tower would be approximately 45-foot-tall and equipped with radar, video, and/or thermal imaging equipment supported by underground power and communication utilities, along with a generator for emergency backup power. The area around each tower would be enclosed with fencing to provide security and restrict unauthorized access. A red light mounted at the top of each tower would indicate to non-participants when live-fire training is in progress.

### **2.1.5.2 Explosives Training Range**

An Explosives Training Range would be constructed on Tinian to conduct explosives training such as response to unexploded ordnance, breaching operations that include explosive hazards, mine/countermine operations, and the employment of demolitions and military explosives in support of offensive and defensive training.

The following criteria were used to identify potential alternative locations for the proposed Explosives Training Range:

- A 2.5-acre (minimum) site within the Military Lease Area that could contain both fragmentation and non-fragmentation detonations when using explosives and munitions with a maximum net explosive weight of 40 pounds.
- Minimize potential noise impacts to the Mariana fruit bat.
- Minimize potential impacts to culturally sensitive areas, including the North Field National Historic Landmark.
- Isolated from other areas in the Military Lease Area where simultaneous training events may occur.
- Isolated from local residences to reduce potential noise and other related impacts.



**Figure 2.1-7 Surface Radar Sites**

Applying these criteria to the land area available in the Military Lease Area, the USMC initially identified two potential sites. Further analysis of environmental and operational factors determined that the site shown on Figure 2.1-6 is the only reasonable location for this range due to suitability for training and minimized impacts on the surrounding areas.

The location is also isolated from other training activities to reduce the risk of interference and ensure safe separation between concurrent operations. The proposed site is located south of the North Field National Historic Landmark, placing the Explosives Training Range away from the village of San Jose and in an area that minimizes potential impacts from training events on residents and natural resources. This includes minimizing potential noise disturbances to sensitive species such as the Mariana fruit bat. The following would be located within the 2.5-acre site: two concrete pads for staging explosives (to be used only when active live-fire training is occurring) separated by a cleared, unimproved road, a cleared area where training would be conducted and that could serve for fire access, and an observation area.

The Explosives Training Range boundary would not be fenced, but a gate would be installed on the access road to the range, which would be closed during demolition training. A road guard and the gate would be used to restrict access to the Explosives Training Range while live-fire training is occurring. Other visual indicators such as a red flag and/or warning light could also be employed to warn approaching persons that the range is in use. The Explosives Training Range would comply with Marine Corps Order 3570.1D, *Range Safety*. Range Control would control access to ensure safe operations within the surface danger zone established around the proposed Explosives Training Range (refer to Section 2.1.6 Live-Fire Range Safety Areas for more detail). Spotters would be used during training events. Should spotters observe a non-participating vehicle or person approaching the Explosives Training Range or an aircraft in the overlying airspace, all training in the range would cease until the non-participant is out of the area (refer also to Section 2.1.6.3 Airspace Safety Protocol). Access restrictions would be in effect only when range operations are underway. Following the completion of each training event, the DoD would conduct post-event clearance and inspection activities, as required, to ensure the range area is safe before public access is restored.

### **2.1.5.3 Landing Zones and North Field Drop Zone**

The Proposed Action would establish 13 Landing Zones—2 large and 11 small—in the Military Lease Area. The Landing Zones would allow for the insertion or extraction of personnel and equipment from two to four aircraft, provide staging, field headquarters, camping, and gathering and rendezvous areas in support of distributed operations and logistics training. Aviation operations consisting of take-offs and landings would be limited to specific Landing Zones.

The following criteria were used to identify proposed alternative Landing Zone sites:

- Level ground (i.e., less than 5 percent slope).
- 1,200 feet by 1,200 feet (approximately) for large Landing Zones (to accommodate up to four tilt-rotor aircraft or helicopters).
- 600 feet by 600 feet (approximately) for small Landing Zones (to accommodate up to two tilt-rotor aircraft or helicopters).
- Capable of being cleared with minimal effort and maintained with 6 to 8 inches of grass to allow replication of reduced visibility landings.
- Accommodate east to west prevailing winds.
- Avoid wetlands and limestone forests with attendant altitude restrictions (typically must remain 1,000 feet above ground level).
- Provide proximity and clearance requirements for vertical obstructions (e.g., existing power poles).
- Minimize potential impacts to ecologically or culturally sensitive areas, including the North Field National Historic Landmark.

Additionally, an area between runways Able and Charlie would be cleared of vegetation for use as a drop zone. The drop zone would provide a designated area for conducting aerial delivery training operations, such as parachute or cargo drops, in support of military training objectives. It would be situated to allow for safe aircraft approaches, avoid conflicts with other training activities, and meet required size and clearance specifications. Like the Landing Zones, the drop zone would be selected and maintained to avoid ecologically or culturally sensitive areas and ensure minimal disturbance to the surrounding environment.

The following criteria were used to identify the proposed drop zone site:

- Level ground (i.e., less than 3 percent slope).
- 4,000 feet by 3,000 feet (approximately) for the drop zone, to support personnel or container delivery system drops from rotary- or fixed-wing aircraft, consistent with U.S. military aerial delivery standards.
- Capable of being cleared with minimal effort and maintained with 6 to 8 inches of grass to allow replication of reduced visibility parachute operations.
- Provide proximity and clearance requirements for vertical obstructions (e.g., existing power poles).
- Minimize potential impacts to ecologically or culturally sensitive areas, including the North Field National Historic Landmark.

Figure 2.1-8 shows the potential locations identified for large and small Landing Zones and the drop zone. Locations were selected to avoid existing agricultural use areas. Each Landing Zone would be cleared and maintained of vegetation to 6 to 8 inches. AM2 matting may be installed on Landing Zone 9 in support of aviation training objectives (refer to Section 2.1.4 Aviation Training).



**Figure 2.1-8 Proposed Landing Zones and Drop Zone Location**

### **2.1.6 Live-Fire Range Safety Areas**

As mentioned previously and described in the following subsections, special safety areas would be designated over land and water and in airspace to safely separate non-participants from training events.

#### **2.1.6.1 Surface Danger Zones**

The USMC would establish surface danger zones to provide for safe separation of non-participating personnel and the public from live-fire training at the Multi-Purpose Maneuver Range and Explosives Training Range. Surface danger zones are three-dimensional areas consisting of the ground and airspace within which a potential ricochet or fragmentation associated with live-fire activities, to include explosives and demolitions, would be contained or to contain laser energy when lasers would be used.

These surface danger zones and associated controlled access areas would be active only during live-fire and explosive detonation training. As defined in MCO 3570.1C, *Range Safety*, danger zones represent minimum safety requirements for every weapon system and its associated ammunition/explosives. The surface danger zones that would be established at Tinian's proposed live-fire ranges are shown in Figure 2.1-9. Information and analysis on how public access would be managed when the surface danger zones are active can be found in Section 3.1 and 4.1 of this Final EIS.

#### **2.1.6.2 Sea Space Safety**

The USMC is proposing to obtain U.S. Army Corps of Engineers designation of a danger zone for the portion of the surface danger zone that is over coastal waters in accordance with Section 7 of the Rivers and Harbors Act of 1917, 33 C.F.R. Part 209.200 to provide for safe separation of non-participating personnel and the public who may be offshore during live-fire training at the proposed Multi-Purpose Maneuver Range. A danger zone would be plotted on nautical charts and the Notice to Mariners, published weekly by the U.S. Coast Guard, would identify when the danger zone would be active.

In addition to the publication of Notice to Mariners by the U.S. Coast Guard, the USMC in conjunction with government of the CNMI would explore forms of communication such as social media, print, and broadcast media to advise mariners, including those transiting the Saipan Channel, to avoid the over-water danger zone when live-fire activities are underway. Other forms of communication identified through public meeting input include multilingual notices, physical posting of schedule and other pertinent information at marinas, and use of social media or radio. The sea space would be open to the public when no live-fire training is occurring on the range. The surface radars and/or spotters would maintain sea space safety, allowing the Officer in Charge or Range Safety Officer to immediately cease training should a non-participating entity enter a danger zone and only continue training after the entity is outside the safety area.



**Figure 2.1-9 Surface Danger Zones for Multi-Purpose Maneuver Range and Explosives Training Range**

### 2.1.6.3 Airspace Safety Protocol

The Proposed Action is designed to minimize impacts on air travel associated with the use of live-fire ranges. Air travel and commercial aircraft operations at Tinian and Saipan Airports would not be restricted. The USMC plans to use spotters for early detection of any approaching non-participating aircraft, ensuring the safety of civilian aircraft operating in the airspace above the ranges during live-fire training. If a non-participating aircraft is detected near or approaching the airspace over either the Multi-Purpose Maneuver Range or the Explosives Training Range during training, the Officer in Charge and Range Safety Officer would be immediately notified. All training activities would then cease until the aircraft has cleared the area.

The USMC intends to discuss its proposed airspace safety protocol for the Multi-Purpose Maneuver Range and Explosives Training Range with the FAA. The FAA would advise USMC whether there is a need to establish a controlled firing area airspace designation over either or both proposed ranges. A controlled firing area is airspace designated by the FAA to contain activities that, if not conducted in a controlled environment, could be hazardous to non-participating aircraft (FAA Joint Order 7400.2N, Chapter 27, June 17, 2021). Regardless of whether the FAA requires the formal designation of a controlled firing area, the USMC would immediately suspend training if any non-participating aircraft approaches the area of operations. Additionally, Range Control would coordinate with the appropriate CNMI point of contact regarding the flight schedules for the Tinian and Saipan airports in an attempt to avoid firing and explosions at live-fire ranges during these times.

### 2.1.7 Ammunition Holding Areas

There would be no permanent or established areas for receipt, storage, segregation, and issuance of munitions at the Multi-Purpose Maneuver Range or the Explosives Training Range. However, there are two proposed ammunition holding areas where ammunition or other explosive material would be temporarily staged during training events, one located southeast of the Multi-Purpose Maneuver Range (AHA 1), and one located at the Base Camp (AHA 2). Explosive materials for use during training would arrive on Tinian with the units participating in each training event. The ammunition would be staged at either of the ammunition holding areas for the duration of the training exercise, in accordance with Naval Sea Systems Command Ordnance Publication 5 Volume I. During a training event, while explosive materials are present, access would be controlled through the posting of sentries, temporary fencing, or signage in affected areas. If temporary fencing is used, it would typically consist of triple-strand concertina wire, a security barrier made up of three layers of razor wire arranged in either a pyramid or stacked formation. The wire is secured in place using metal stakes driven into the ground. Temporary fencing would be installed by training units when ammunition is staged at the holding area and then removed at the end of each training event.

The USMC would establish explosive safety quantity distance arcs around each ammunition holding area. These arcs would be active on a temporary basis during training events, when ammunition is present. These safety arcs represent the prescribed minimum safe distance between sites storing or handling the explosive material and the people that could be in the area, either military participants or the public. The required separation distance is determined based on the types and amounts of explosive material that would be present and additionally considers the types

of activities or uses that could occur in the area. Figure 2.1-10 depicts two separate arcs, shown as circles around each ammunition holding area, where access to the area would be controlled while explosive materials are present.

- The inner circle, called the “Public Transportation Route” arc, defines the area where access would be temporarily restricted during training events when ammunition is present.
- The larger circle, known as the “Inhabited Building Distance” arc, marks the area where people should not remain for extended periods (e.g., homes or businesses) while ammunition is present.
- There are no regularly inhabited buildings located within either of these safety zones.
- People may pass through the area between the two circles but are not allowed to stop or remain in the area while ammunition is present.
- Range Control will notify the public of these temporary restrictions during training events.

These restrictions would be communicated to the public along with other notices by Range Control.



Figure 2.1-10 Ammunition Holding Area Explosive Safety Quantity Distance Arcs

**2.1.8 Range Control: Scheduling, Environmental Management, and Public Access**

The primary duties of Range Control are summarized in Table 2.1-3. Direct supervision of range safety, sustainment, and management would be the responsibility of the Commanding Officer, Marine Corps Base, Camp Blaz.

**Table 2.1-3 Summary of Range Control Duties and Activities**

<i>Category</i>	<i>Description</i>
Range Safety	Coordinates range and training area safety, including the facilitation of public access to the Military Lease Area consistent with safety protocols, coordinates emergency response, coordinates response to explosive ordnance, conducts required inspections and investigations, provides personnel briefs, enforces occupational health and industrial hygiene regulations, certifies and recertifies ranges, develops and publishes range and training area regulations, develops and publishes the Range Control facility manual, promotes environmental sustainability, and ensures compliance with cultural and natural resource management requirements, including the development and implementation of a Range Wildland Fire Management Plan for the Military Lease Area.
Range Scheduling and Communications	Schedules training and internally coordinates communication and data requirements. Informs the public of live-fire times in accordance with U.S. Coast Guard and FAA regulations. Coordinates with appropriate CNMI agency points of contact regarding the flight schedules for the Tinian and Saipan airports. Provides information and responds to questions from the public on training-related noise.
Range Maintenance	Coordinates operational range clearance, unexploded ordnance clearance, maintenance of fire breaks, signage, gates, fences, cameras, communication systems, etc.
Governmental Coordination	Coordinates with CNMI government agency officials and local officials, the public, Port of Tinian and TNI, and federal regulatory agencies before, during, and after scheduled training events. This would include announcements and notices concerning the training schedule and working with local officials to avoid scheduling training events during holidays, festivals, or other special days on Tinian, and to review any lessons learned from training events, which could be used to adapt, update, and provide coordination and training processes and procedures to better assimilate training on Tinian.
Adherence to Range SOPs (Regulatory Compliance)	Manages and enforces compliance with best management practices, rules, regulations and agreements for environmental compliance, biosecurity cleanliness procedures, pollution prevention, and conservation for all training. Trained staff would ensure all training units understand and comply with applicable laws, rules, regulations, and policies that govern protection of natural and cultural resources, air emissions, drinking water, wastewater, solid waste, munitions, hazardous materials, hazardous wastes, emergency planning, and right-to-know provisions.

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; FAA = Federal Aviation Administration; Port of Tinian = Honorable Jose Pangelinan San Nicolas Commercial Port of Tinian; SOP = standard operating procedure; TNI = Francisco Manglona Borja / Tinian International Airport; U.S. = United States.

**2.1.8.1 Scheduling and Logistics for Use of the Military Lease Area Training Areas and Ranges**

The USMC is committed to developing an approach for community access that balances the need for military readiness with safe public access to the Military Lease Area. Through Range Control, the USMC would coordinate with the CNMI and Municipality of Tinian to ensure transparent scheduling of training events and ongoing communication about temporary access restrictions within the Military Lease Area. The scheduling process would be designed to minimize restrictions, maximizing the areas that could remain open when safety permits. The USMC would utilize adaptive management to review how well the Range Control process is working and consider potential adjustments, as needed.

Training units would make scheduling requests for training area and live-fire range use with Range Control using the USMC scheduling tool (Range Facility Management Support System), identifying the type of training requirements to be met and land areas within the Military Lease Area that would be needed. The subdivision of the Military Lease Area into smaller training areas would help safely separate civilian access to the Military Lease Area from active training events.

After a training unit has been scheduled for use of the Military Lease Area, Range Control would review the requested training plan and inform the training unit of the safety protocols and any environmental requirements to be followed, such as:

- Gates or guards to secure access roads where non-participants must be restricted from a training area to ensure their safety and the safety of training units.
- Logistical requirements for entering and departing the training area and ranges, including but not limited to, biosecurity measures, allowed uses, and movement of materials and equipment from the Port of Tinian and TNI to the Military Lease Area.
- Any “no training” areas that protect cultural or natural resources within the training area.

Before a unit arrives on Tinian for training, Range Control would coordinate with the training unit regarding placement of training support devices (i.e., emplacement of sensors, emitters, and other portable/mobile communications equipment and targets) throughout the Military Lease Area. This equipment is critical to the creation of a Live-Virtual-Constructive environment for the training unit since the equipment would mimic the sensors and signals of a potential enemy and provide input from friendly forces.

#### **2.1.8.2 Monitoring of Training Events and Range Turnover**

Range Control would monitor exercise activities to ensure safety regulations are followed, cultural and natural resources are protected, and wildland fire measures are observed. Each training unit would designate individuals responsible for coordinating with Range Control, specifically the Officer in Charge and the Range Safety Officer, whose responsibilities would focus solely on exercise safety. Should a medical emergency or wildland fire occur during training exercises, Range Control would notify and coordinate an appropriate response by authorized agencies.

To protect participants and the public, Range Control would ensure that everyone within a training unit understands which training areas or ranges have been scheduled for their exercise including any associated danger zones, in the event training involves live-fire activities. Access to training areas would be restricted based on ensuring the safety of non-participating military personnel or civilians. Events posing a public risk (e.g., live-fire activities) would result in limited access to specific training areas of the Military Lease Area and coastal areas within the boundaries of surface danger zones.

During live fire training, Range Control would restrict access within surface danger zones and monitor the airspace and coastal waters for safety. If an aircraft approaches the range’s airspace or boaters approach the boundaries of the surface danger zones along the northern coast of Tinian, the unit would be notified, and all live-fire activities would cease immediately. Surface radar, communications with Tinian and Saipan international airports, and range spotters would be methods used by Range Control and training units to provide early detection for approaching aircraft and boats.

Range Control would monitor the airspace and inform military aircrews about commercial or civilian aircraft in the vicinity on an ongoing basis.

Upon completion of training, Range Control would inspect the training areas of the Military Lease Area scheduled by the training unit to verify compliance with exercise plans, agreements, and environmental requirements outlined in the appropriate range control guidance documentation. The training unit would be responsible for ensuring that all military equipment maintained on Tinian for training purposes is accounted for and returned to Range Control, and that all wastes and recyclables are properly disposed of or transported off the island in accordance with established requirements.

Range Control would implement the MCO 3550.12A, *Operational Range Clearance Program*, to ensure the long-term safety and sustainability of the live-fire ranges (i.e., the Multi-Purpose Maneuver Range and Explosives Training Range) within the Military Lease Area Range Complex. This program periodically conducts thorough clearances of any remaining ammunition, dunnage (packing/protective materials), and other debris resulting from military activities on the live-fire ranges. Additionally, a Range Environmental Vulnerability Assessment would be conducted one year after each live-fire range begin operations and reassessed every five years. This program serves as a proactive and comprehensive approach to ensure the environmental sustainability of USMC operational ranges. It aims to mitigate environmental impacts from active ranges and complies with the requirements outlined in DoD Instruction 4715.14, *Operational Range Assessments* (see Section 4.10.3.1 for additional information on Operational Range Assessments).

### **2.1.8.3 Public Access and Use**

When scheduling training, Range Control would consider where civilian access to the Military Lease Area could be safely accommodated during training events. As described in Section 2.1.2 (Figure 2.1-2), the subdivision of the Military Lease Area into smaller training areas would allow Range Control to restrict access to discrete areas where training is occurring to maintain safety. The training schedule would be made available to the public on an ongoing basis and via multiple methods (e.g., using social media/print and broadcast media, and posting at the Tinian Mayor's Office or signage at key locations). Notices would provide information such as training areas in the Military Lease Area that would be in use, where and for what period of time access may be restricted, and any additional applicable information (e.g., may hear small arms fire or see military aircraft).

Through Range Control, the USMC would coordinate with the CNMI and Municipality of Tinian to ensure transparent scheduling of training events and ongoing communication about temporary access restrictions. The scheduling process is designed to minimize restrictions, allowing certain areas to remain open when safety permits. In some cases, the entire Military Lease Area may be accessible during training events.

The goal is to create a structured and user-friendly process for Range Control to provide advance notice of the training schedule to non-participating civilians (tourists, recreational users, those who use the Military Lease Area for subsistence and foraging, etc.) and facilitate a safe and well-managed environment during training events occurring within the Military Lease Area. The USMC would utilize adaptive management to review how well the Range Control process is working and may adjust as needed.

#### **2.1.8.4 Environmental Management of the Military Lease Area**

Joint Region Marianas currently manages the training area and ranges in the region, including the Military Lease Area on Tinian, in coordination with the USMC, consistent with the U.S. Navy's foundational pillars of environmental compliance and stewardship, including proactive management of natural and cultural resources. Adherence to these foundational pillars would ensure that environmental considerations are integrated early into decision-making to minimize the impacts of training on the people and resources of Tinian, and to preserve the use of the Military Lease Area into the future, enhance operational readiness, protect public health, and maintain and improve environmental quality within the Military Lease Area. Day-to-day range operations and training execution would be coordinated through Range Control which would ensure units scheduled for training on Tinian comply with requirements that will be established in the future Record of Decision and consultations for training activities evaluated in this Final EIS.

Joint Region Marianas has developed an Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan for Tinian. These plans would be updated as needed with additional management tools developed in coordination with the U.S. Fish and Wildlife Service, National Marine Fisheries Services, CNMI Department of Land and Natural Resources, Bureau of Environmental and Coastal Quality, CNMI Historic Preservation Officer, and other federal and CNMI management agencies. The USMC will continue to support initiatives by Joint Region Marianas to reduce or eliminate pollution. An example program includes Recycling Programs for spent brass, aluminum cans, cardboard, etc. Upon the conclusion of any training event in the Military Lease Area, units are required to remove all trash, debris, and ammunition dunnage (including bullet casings, packaging, etc.), restoring the land to its original state to the maximum extent practicable. Range Control would be responsible for ensuring unit compliance with the standard operating procedures for cleanup and recycling of trash from training areas.

Finally, a Range Wildland Fire Management Plan would be developed for the Military Lease Area Range Complex. The Range Wildland Fire Management Plan would identify a comprehensive approach to reduce the frequency of wildland fires and lay out specific guidance, procedures, and protocols in the prevention and suppression of wildland fires. The goal of the plan would be to convey the methods and protocols necessary to avoid fires, and minimize wildland fire frequency, severity, and size.

#### **2.1.9 Base Camp and Related Support Facilities**

The current training conducted on Tinian is logistically supported by a combination of field camping, use of the Camp Tinian facilities, and rented commercial lodging. USMC proposes to provide infrastructure to include a Base Camp, an aircraft shelter, communications facilities, utilities, biosecurity facilities, and an ammunition holding area to support the expanded training that would occur on Tinian under the Proposed Action.

##### **2.1.9.1 Base Camp and Utilities**

The proposed Base Camp on Tinian would be designed to support up to 500 personnel in expeditionary field conditions during large-scale training events. While the Base Camp would serve as the primary hub for logistics, command, and sustainment functions, exercises may involve up to

1,000 personnel at one time. The additional personnel would be staged and bivouacked in other designated areas within the Military Lease Area. Outside of major training events, the Base Camp would support approximately 30 to 50 full-time personnel year-round. The following criteria were used to identify potential alternative locations for the Base Camp:

- Approximately 100 acres on relatively level ground (slope less than 5 percent). The Base Camp would only need approximately 20 acres of space for buildings, circulation or other hardscape, and storage/laydown areas. Since the layout of these Base Camp features would be determined in a future design, the disturbance of the 20 acres could occur anywhere within the 100-acre site, to allow for adjustments during design.
- Accessible by existing roads in order to facilitate the transport of personnel and equipment for training to and from TNI and the Port of Tinian.
- Close to utility connections with existing Commonwealth Utility Corporation systems.
- Outside of recognized hazard areas (e.g., existing natural hazards and proposed surface danger zones).
- Minimize potential impacts to ecologically or culturally sensitive areas.

The Base Camp would consist of up to three main buildings:

- Administration Building for operational personnel and Range Control.
- Training Support Building for training unit communication and classrooms.
- Warehouse for equipment storage.

Other facilities and services at the Base Camp would include tent pads that could accommodate 500 personnel during training events, restroom facilities, and an ammunition holding area to be used while training is occurring (AHA 2, as described in Section 2.1.7), utilities (electrical power, potable water, wastewater, sewage treatment), and fuel storage. The Base Camp would accommodate up to 30 commercial vehicles (cars and trucks) for use by Range Control, and temporary storage and use of tactical vehicles during training events.

Two support areas are proposed to be constructed outside of the Military Lease Area, after negotiation of appropriate agreements or authorizations with the Commonwealth Ports Authority: an aircraft shelter within the U.S. Air Force Divert lease area on TNI and a biosecurity area at the Port of Tinian (Figure 2.1-1). The shelter would be sized and constructed to provide protection for aircraft from inclement weather including typhoon winds. The shelter could also be used for performing emergent minor aircraft repairs or maintenance, equipment staging, training unit mustering, or similar purposes. The biosecurity area is described below in Section 2.1.9.2.

Utilities that would be installed to support the day-to-day operations of the Base Camp include:

- A new potable water system supplied by up to four new or rehabilitated groundwater wells with a storage tank within the Military Lease Area. This proposed new water system would be owned and operated by the USMC and would be sized to meet a peak demand of a large training event of 1,000 personnel. No connection to the Commonwealth Utilities Corporation water system is proposed.
- New septic tanks, leach fields, and sanitary sewer collection pipelines. This new wastewater infrastructure would be owned and operated by the USMC and would be sized to meet the peak demand of 1,000 personnel during a large training event. Sludge from the CNMI Joint Military

Training septic tanks would also be disposed of at a septage disposal site approved by the CNMI Bureau of Environmental and Coastal Quality per section 65-120-1405 (CNMI Code of Regulations). Septic sludge that contains free liquids cannot be disposed in the existing Puntan Diablo Landfill or at the planned Atgidon Landfill. Wastewater service outside of the Base Camp would be provided using portable toilets. These portable toilets would be periodically emptied and disposed of at a septage disposal site approved by the CNMI Bureau of Environmental and Coastal Quality per section 65-120-1405 (CNMI Code of Regulations).

- Electrical and communications infrastructure to support the Base Camp (including communications infrastructure), and locations for surface radar towers. The USMC would connect to the existing Commonwealth Utilities Corporation infrastructure and construct new underground utility lines.

Applying these criteria, two sites were initially identified as capable of accommodating a Base Camp. Both sites were adjacent to and north of TNI. As the USMC was evaluating these sites, the USAGM announced the closure of its transmitting stations on Tinian and Saipan in August 2024. As described in Chapter 1, the USAGM site on Tinian is situated in the Military Lease Area on the northwest coast of the island. Used under an agreement with the DoD, the property is approximately 834 acres, with 300 acres surrounded by three strand barbed wire fences and government property signs. Approximately 110 acres are cleared and maintained for administration, warehouse buildings, and transmitting antennae. The fenced 300 acres are currently designated as a “No Training” area due to the existing use by USAGM. However, upon closure, the Tinian facility and property would revert to the DoD. Upon learning of the availability of the USAGM site and evaluation using those criteria provided above, the USMC found this site to be suitable for the Base Camp. When compared to the initial two Base Camp locations north of TNI, the USAGM site presents some significant advantages. First and foremost, the site offered the USMC the unique opportunity to reuse existing buildings, utilities, and communication towers, and a large area of cleared and maintained land to the greatest extent possible, thereby minimizing the cost and associated environmental impacts of new construction.

While the two Base Camp locations north of TNI were considered, they were not pursued due to the need for all new construction and the requirement for significant cut and fill to regrade the terrain. In addition, the USAGM site is not within either a Class I or II Aquifer Recharge Area/Groundwater Protection Zone on Tinian. As a result, the USMC has identified the USAGM site, as shown on Figure 2.1-11, as the only reasonable location for the Base Camp, a determination with which the CNMI Bureau of Environmental Quality has concurred (B. Bearden, Bureau of Environmental and Coastal Quality, March 13, 2025).



Figure 2.1-11 Proposed Base Camp

A brief summary of the facilities, utilities, and other infrastructure that would be reused or modified to support the Base Camp at the USAGM site is presented below, with additional detail provided in Appendix C. As envisioned, Administration, Range Control, and Training Support functions would use the existing operation and administration building, and warehouse requirements would be partially met with the existing warehouse building. Other previously disturbed, cleared areas within the site would accommodate other proposed Base Camp new construction needs, including tactical vehicle parking, tent pads that could accommodate 500 personnel during training events, an open space marshaling/camping area, additional restroom facilities, an ammunition holding area (AHA 2) used while training is occurring, utilities (potable water, additional wastewater and sewage treatment), and additional fuel storage.

The ability to reuse some of the existing communication towers on the Tinian and Saipan USAGM sites eliminates the need to construct any additional communication towers within the Military Lease Area. Therefore, the proposed communication system would retain three of the existing towers on Tinian and up to four of the existing towers on Saipan. Repurposing the towers for communication systems on Saipan would require the DoD to establish a new lease with the CNMI for the former USAGM Saipan site. Any facilities or infrastructure not retained for use by the USMC has been or would be removed by USAGM as part of their closure activities. Potential cumulative effects related to the demolition and closure activities to be undertaken by the USAGM are analyzed in Section 4.15 Cumulative Impacts of this Final EIS.

#### **2.1.10 Biosecurity Protocols and Facilities**

The USMC is committed to complying with existing Joint Region Marianas biosecurity protocols and expanding biosecurity facilities on Tinian to prevent the introduction and reduce the spread of invasive species. Proposed facilities would be integrated into the Joint Region Marianas biosecurity program. As part of the Proposed Action, the USMC is proposing to construct a vehicle and equipment wash rack facility and brown tree snake quarantine barrier at the Port of Tinian to support the volume of equipment and vehicles arriving by vessel. Additionally, the USMC proposes utilizing a portable wash rack for equipment and vehicles arriving/departing Tinian at North Field and/or TNI. Materials and equipment to be used for construction or during training events would arrive on-island through three possible entry points: TNI, North Field, and the Port of Tinian.

At the Port of Tinian, both a wash rack and brown tree snake barrier would be constructed after obtaining an appropriate agreement or authorization from the Commonwealth Ports Authority. The site would comprise approximately 26,000 square feet of paved and fenced area with brown tree snake traps and be located within close proximity to the Port for conducting visual and canine inspections of all cargo arriving via vessel to Tinian. Permanent brown tree snake barriers on asphalt or other hardscape would be constructed and brown tree snake traps would be set up and maintained. The biosecurity facility would include a wash rack (requiring approximately 5,400 square feet of space) with an oil-water separator and water storage tanks. Connections to existing Commonwealth Utility Corporation sources for water and power at the Port of Tinian would be established to operate the wash rack. No wastewater facilities or connections would be established at the biosecurity facility. Material collected in the oil water separator would be tested prior to determining appropriate disposition. Washing would be conducted using only water and no soaps or solvents and wash water would be filtered and recycled through the wash rack system. When

required to be flushed or replaced, wash water from the storage tanks would be discarded in accordance with all applicable laws, regulations, and permits.

A portable wash rack would be stored at the Base Camp and made available for use at either TNI or North Field in the event cargo/material arrives that does not meet cleanliness standards and for cargo/equipment departing from TNI or North Field. A water truck would supply water to the water bladder attached to the portable wash rack. Wash water would be contained during the washing cycle. Wash water from the portable wash rack would be run through an oil water separator and discarded in accordance with all applicable laws, regulations and permits. The oil/water separator would be periodically pumped out and disposed of in conformance with CNMI regulations for oily waste.

Pre-departure biosecurity cleanliness inspections will be required. These inspections will occur for all military and contractor cargo (palletized cargo, containers, rolling stock, and breakbulk) before departing place of origin outside the Mariana Islands by military and contractor personnel to ensure compliance with the Armed Forces Pest Management Board Technical Guide No. 31 cleanliness standards. Redundant arrival inspections would be conducted on Tinian by qualified biosecurity staff. Pre-departure brown tree snake canine inspections and redundant arrival canine inspections would be required for all cargo/equipment departing Guam.

#### **2.1.11 Emergency Services**

Initially, USMC medical and emergency services (e.g., firefighting) personnel and equipment would be provided by the training unit and made available within the Base Camp. These assets would rotate in with the unit and integrate into the overall training support team. Over time, Joint Region Marianas and the USMC would work toward establishing agreements with the CNMI and/or Municipality of Tinian for the provision of fire and security services. Security related to the Base Camp would meet all requirements of MCO 5530.15A, *USMC Physical Security Program Manual*, to include a combination of rotational federal civilian employees, federal security services, and support by the local police department. For firefighting, non-potable water infrastructure is proposed to be constructed at North Field, as described in Section 2.1.5.1 Multi-Purpose Maneuver Range. Additionally, water trucks would be located at the Base Camp (and, when necessary, pre-staged in the Military Lease Area) and at the live-fire ranges to supply water to extinguish fires.

#### **2.1.12 Phased Implementation of Construction and Training**

Construction is expected to start soon after the Record of Decision and would involve construction projects phased intermittently over approximately 10 to 15 years. The first 5 to 7 years of construction would include trimming and clearing of vegetation, establishing utility connections, instituting Range Control functions, clearing vegetation for Landing Zones, North Field improvements, developing biosecurity facilities at the Port of Tinian, and establishing the Multi-Purpose Maneuver Range, including associated surface radar towers and ammunition holding areas. The remaining years would include construction of Base Camp elements (e.g., tent pads), aircraft shelter at TNI, and Explosives Training Range. Construction may be accomplished through military troop labor or a federal construction contractor. The number of construction workers required would fluctuate depending upon which facilities are constructed in any given year, with the largest number of construction workers anticipated at any one time being approximately 50.

The USMC intends to continue training within the Military Lease Area before and during the construction of the Base Camp and supporting infrastructure. During this interim period, training events would include activities that are similar to those that currently occur on land under existing NEPA documents (DON 2010a, 2015b) and in accordance with associated consultations, and authorizations. Standard operating procedures and measures that are currently used for existing training on Tinian would continue to be followed, such as biosecurity protocols, procedures for fueling military vehicles used during training, and others specified in the natural and cultural resources consultation documentation.

Training may be phased in accordance with infrastructure availability and resource allocation following the Record of Decision. This approach would allow selected activities to be initiated as facilities and supporting capabilities become available, ensuring that operational requirements for the U.S. Armed Forces are maintained throughout the development period. For example, following the Record of Decision and prior to the completion of construction projects, the USMC intends to establish Range Control functions and conduct limited live-fire training on the Multi-Purpose Maneuver Range. This interim training activity would incorporate wildland fire prevention measures and engineering controls to minimize risks and ensure safety. A range of activities within the Military Lease Area, including but not limited to the following, could be conducted:

- **Non-Live-Fire Training.** Distributed operations training activities, including ground maneuver, tactical coordination, and insertion/extraction operations, could be conducted using existing cleared areas, paved and unpaved roadways, or Landing Zones.
- **Limited Live-Fire Training.** Live-fire activities could be conducted at the Multi-Purpose Maneuver Range in a reduced capacity, provided that initial site preparations, range safety measures, and surface danger zones are established. Live-fire training would be restricted in scale, type of munitions, and frequency until range certification is achieved, once the Multi-Purpose Maneuver Ranger is fully developed. Until the surface radar system is fully operational, trained spotters positioned on land would be used to actively monitor surface danger zones and ensure public safety during all live-fire activities.
- **Aviation Training.** North Field would be available to support a range of aviation training operations, including helicopter and tilt-rotor landings, establishment of the drop zone, and logistical support activities associated with expeditionary airfield operations. Military aircraft would be able to land during training events at North Field in advance of AM2 matting being installed on runway Baker but following completion of the U.S. Air Force's planned improvements under the Agile Combat Employment program. Designated Landing Zones could also be utilized to support rotary-wing and tilt-rotor aircraft operations. Landing Zones 8 and 13 (refer to Figure 2.1-8) would be cleared first and could serve as medical evacuation landing areas. Use of these aviation facilities would be condition-based and dependent on site-specific improvements to ensure safe operations.

In addition to the activities described above, initial operating capability for infrastructure development could be supported through the use of military labor assets. Engineering units could conduct field exercises involving the clearing and grading of Landing Zones, improvement of existing roads, limited site preparation of designated portions of the Multi-Purpose Maneuver Range, and improvement of operational areas at North Field. During this period, Range Control would ensure any training scheduled complies with all environmental requirements including those

resulting from consultations, formal U.S. Army Corps of Engineers rulemaking to establish the surface danger zones for the Multi-Purpose Maneuver Range, the installation of appropriate stormwater controls at live-fire ranges, and the provision of adequate medical support and fire protection.

## 2.2 Alternatives Considered and Evaluated

Two action alternatives were considered and evaluated; Alternative 1, Enhanced Training and Range Infrastructure, and Alternative 2, Training and Range Infrastructure. The No Action Alternative is also considered and evaluated. As described in Chapter 1, military readiness and training have occurred in the CNMI and on Tinian for decades, with the tempo and types of training and testing events fluctuating over time. A number of factors can influence the amount and types of training that are scheduled within any given year (e.g., new technologies, international events, advances in warfighting, doctrine and procedures, and military force structure changes).

Alternative 1 would represent an approximate 15 percent increase over existing analyzed land-based training (No Action Alternative), with proposed adjustments to the training tempo to allow for additional training capacity to address future training requirements. Alternative 2 would represent an approximate 5 percent increase over existing analyzed land-based training (No Action Alternative) and consists of the same types of activities that would occur under Alternative 1. The proposed training tempo would allow for current and planned training requirements.

Training under both Alternative 1 and Alternative 2 would focus on distributed operations in a secure and instrumented Live-Virtual-Constructive environment that would be created on Tinian. Facilities and infrastructure would be the same in both alternatives, along with the establishment of the Range Control function to provide centralized, on-island scheduling and communication for training. Table 2.2-1 describes the training activities that would occur on Tinian under the Proposed Action. The at-sea portion of training activities listed below falls under the MITT EIS/OEISs, and may include naval operations, helicopter support, drones, ship-to-shore movements, and maritime support. Additional details on current and proposed training are provided in Appendix C, *Training and Construction Assumptions*.

**Table 2.2-1 Land-Based Training Activities Currently Occurring or Proposed on Tinian**

<i>Training Activity</i>	<i>Description</i>
Expeditionary Airfield Operations at North Field	Expeditionary airfield operation training exercises are designed to enhance rapid deployment and air combat capability in austere environments. These operations establish and utilize an airfield to support rotary- and fixed-wing aircraft in forward-deployed locations.
Assault	An amphibious assault is a coordinated military operation where forces move from ships at sea to conduct an attack on a land-based objective. This type of operation is designed to secure a landing site, allowing follow-on forces to move inland and achieve strategic objectives. The land-based portion that would be covered under this Final EIS includes activities such as troop landings, vehicle deployment, maneuver operations, and securing objectives onshore.

<i>Training Activity</i>	<i>Description</i>
Raid	A raid training exercise is a military operation designed to train forces in executing rapid, small-scale, and precision attacks on a land-based objective before withdrawing to the sea. Unlike a full-scale amphibious assault, a raid focuses on speed, surprise, and minimal engagement duration to achieve objectives such as intelligence gathering, infrastructure disruption, or enemy force neutralization. Small unit forces move swiftly for a specific short-term mission. These are quick operations with raids sized to the mission requirement and no larger. This activity may employ small unit non-live-fire operations. The land-based portion that would be covered under this Final EIS includes troop insertion, target engagement, and coordinated withdrawal.
Anti-Terrorism/Force Protection	An Anti-Terrorism/Force Protection training event is designed to enhance the ability of military personnel to detect, deter, and respond to potential threats, ensuring the security of personnel, facilities, and assets. This training prepares forces to handle asymmetrical threats, including terrorist attacks, unauthorized intrusions, and security breaches. The land-based portion would be covered under this Final EIS and includes perimeter defense, access control procedures, active threat response, and security patrols. Training may involve simulated attacks, surveillance detection, and defensive tactics to enhance force readiness.
Combat Search and Rescue	A Combat Search and Rescue training event prepares military forces to locate, recover, and provide medical assistance to isolated or downed personnel in hostile environments. The land-based portion would be covered under this Final EIS and includes insertion and extraction of recovery teams, tactical evasion techniques, simulated medical treatment, and engagement with potential threats.
Direct Action (Combat Close Quarters and Breaching)	A Direct Action training event focuses on combat close quarters and breaching involves high-intensity operations designed to neutralize threats in confined spaces and penetrate fortified structures. The land-based portion would be covered under this Final EIS and includes close-quarters combat drills, breaching techniques, room-clearing operations, and small-unit coordination.
Embassy Reinforcement	An Embassy Reinforcement training event involves military personnel practicing the procedures for securing and defending a U.S. embassy in the event of a security threat or crisis. The land-based portion would be covered under this Final EIS and includes securing embassy perimeters, defending critical infrastructure, and coordinating evacuation operations.
Field Training Exercise	A Field Training Exercise is a comprehensive, hands-on training event that simulates real-world military operations in an outdoor environment. The exercise includes ground-based tactical drills, movement exercises, logistics operations, field combat scenarios, and force protection drills. Units may engage in terrain navigation, command and control operations, and emergency medical response training.
Humanitarian Assistance/ Disaster Relief Operations	Humanitarian Assistance/Disaster Relief operations are designed to provide immediate aid and support in the aftermath of natural or man-made disasters, focusing on the rapid delivery of essential supplies, medical care, and infrastructure repair to affected populations. These operations may include search and rescue missions, medical assistance, food and water distribution, and the restoration of critical infrastructure such as roads and utilities. The land-based portion would be covered under this Final EIS and includes establishing emergency response zones, setting up field hospitals, medical triage, and logistical hubs, and coordinating the delivery of supplies and restoration of essential services.
Intelligence, Surveillance, and Reconnaissance	Intelligence, Surveillance, and Reconnaissance operations are designed to gather critical information to support military decision-making and operational effectiveness. These operations involve the collection of intelligence through aerial, ground, and maritime assets, enabling real-time surveillance and reconnaissance of enemy forces, terrain, and infrastructure. The land-based portion would be covered under this Final EIS and includes ground-based reconnaissance, signal interception, visual and thermal imagery, and the deployment of various platforms such as drones, manned aircraft, and sensors.

<i>Training Activity</i>	<i>Description</i>
Land Demolitions (UXO, IED Discovery/Response)	Land demolitions training is designed to prepare military personnel for safely identifying and neutralizing explosive threats in the field, focusing on the discovery and response to unexploded ordnance and improvised explosive devices.
Marine Air Ground Task Force Exercise – Battalion	A Marine Air Ground Task Force Battalion Exercise is a large-scale training event that involves integrating various elements of the Marine Corps, including ground combat units, aviation assets, and logistics support, to conduct coordinated military operations. The exercise typically lasts 10 days and simulates real-world combat scenarios where units work together to perform missions such as offensive operations, defense, and sustained operations in support of expeditionary missions. The land-based portion would be covered under this Final EIS and includes ground maneuver operations, live-fire exercises, command and control coordination, and combat support and logistics operations.
Non-combatant Evacuation Operations	Non-combatant Evacuation Operations are designed to facilitate the safe evacuation of civilians—including U.S. citizens, foreign nationals, and diplomatic personnel—from areas experiencing conflict, natural disasters, or instability. The land-based portion that would be covered under this Final EIS includes security operations at evacuation points, transportation coordination, escort missions, and managing evacuation logistics to ensure the orderly movement of civilians.
Parachute Insertion	Parachute operations involve training exercises designed to deploy personnel via aircraft into designated Landing Zones for tactical missions. The land-based portions, covered under this Final EIS, include drop zone preparation, parachute Landing Zone security, and ground recovery operations.
Personnel Insertion/Extraction	Personnel insertion and extraction operations are training exercises focused on the rapid deployment and retrieval of personnel in challenging or hostile environments. The land-based portions, covered under this Final EIS, include ground-based insertion techniques, such as airborne drops, vehicle convoys, or helicopter landings. Extraction can also involve helicopter extractions and vehicles to retrieve personnel.
Marine Expeditionary Unit Exercise <sup>1</sup>	Typically a 10-day at-sea and ashore exercise similar to the Marine Air Ground Task Force Battalion Exercise described above. A Marine Expeditionary Unit Exercise is a training event focused on enhancing the readiness and coordination of a self-contained, rapid-response Marine Corps unit capable of deploying to crisis areas worldwide. The Marine Expeditionary Unit consists of ground, air, and logistics components, and the exercise typically includes amphibious assaults, humanitarian missions, combat operations, and force protection in diverse environments. The land-based portion that would be covered under this Final EIS includes ground maneuver operations, combat training, medical response drills, and force protection exercises.
Seize Airfield	A seize airfield exercise involves military personnel and assets conducting operations to capture and secure an airfield in a contested or hostile environment. The land-based portion covered under this Final EIS includes ground combat operations, including assault tactics, defensive perimeter establishment, and force protection after the airfield is secured.
UAS Operation (including Intelligence, Surveillance, and Reconnaissance, and Training and Certification)	UAS operations, including Intelligence, Surveillance, and Reconnaissance, and training and certification, involve the deployment of unmanned aircraft to perform surveillance, gather intelligence, and support military missions. The land-based portion that would be covered under this Final EIS includes target tracking, battlefield reconnaissance, and environmental monitoring. Training and certification exercises focus on launch, recovery, and operation of UAS platforms, and data collection, analysis, and reporting for intelligence purposes.
Urban Warfare Training/Exercise	Urban warfare training/exercises are designed to prepare military forces for operations in dense, built-up environments, such as cities or towns, where they must contend with complex terrain, civilian populations, and diverse threats. This training focuses on tactics for close-quarters combat, building clearance, hostage rescue, and crowd control in urban settings. The land-based portion that would be covered under this Final EIS includes clearing of urban training sites, and simulated combat operations in buildings, streets, and other urban structures within the Military Lease Area.

<i>Training Activity</i>	<i>Description</i>
Water Purification	Water purification operations are training exercises that prepare military forces to obtain and treat water in austere or combat environments where clean water is not readily available. These operations involve the use of portable or established water purification systems to convert contaminated or saline water into safe, drinkable water for military personnel and supporting operations. The land-based portion that would be covered under this Final EIS includes field water purification, where military personnel deploy mobile purification units or set up water filtration systems in training areas.

*Legend:* CJMT = CNMI Joint Military Training; IED = Improvised Explosive Device; TNI = Francisco Manglona Borja / Tinian International Airport; U.S. = United States; UAS = Unmanned Aerial System; USMC = U.S. Marine Corps; UXO = Unexploded Ordnance.

*Notes:* <sup>1</sup> Special Purpose Marine Air Ground Task Force Exercise renamed Marine Expeditionary Unit Exercise.

### 2.2.1 No Action Alternative

No action means the proposed additional training and construction of associated facilities on Tinian would not take place. Analysis of the No Action Alternative is a requirement of NEPA and provides a benchmark, enabling decision makers to compare the magnitude of the environmental effects of the Proposed Action to the anticipated impacts if the action were not implemented. Should the No Action Alternative be selected, land-based military training on Tinian would continue at the current tempo and intensity and all other actions in the CNMI that were independently evaluated in other NEPA documents and associated consultations and authorizations would still be implemented. Those independent actions include the 2010 *Mariana Islands Range Complex EIS/OEIS*, which was then updated in 2015 with the *MITT EIS/OEIS* (DON 2010a, 2010b, 2015a, 2015b), and the 2016 *Divert Activities and Exercises Final EIS* and 2020 *Tinian Divert Infrastructure Improvements Supplemental EIS* (U.S. Air Force 2016a, 2016b, 2020, 2022). Under the No Action Alternative, a Live-Virtual-Constructive environment would not be created.

Pursuant to the 2016 *Divert Activities and Exercises Final EIS*, the U.S. Air Force is constructing facilities and infrastructure at the TNI to support cargo, tanker, and similar aircraft for U.S. Air Force Divert operations, periodic exercises, and humanitarian assistance and disaster relief. Pursuant to the 2020 *Divert Infrastructure Improvements Supplemental EIS*, the U.S. Air Force is constructing a fuel pipeline and associated infrastructure at the seaport to transport fuel from the seaport to the airport. The U.S. Air Force would also improve existing roads between the seaport and airport to support U.S. Air Force Divert activities. Additionally, projects under the U.S. Air Force’s Agile Combat Employment program would also continue, which would include the clearance of vegetation and restoration of the runways and other engineered surfaces at North Field. These projects would result in the North Field runways and surrounding area having the appearance of a working airfield, allowing easier ground and aircraft access to better maintained surfaces with less dense jungle vegetation in and around the immediate runway areas.

Military training within the Military Lease Area currently includes non-live-fire ground-based reconnaissance, urban terrain operations, evacuation operations, command and control, logistics, camping, land navigation, convoy training, non-combatant evacuations, amphibious landings, sniper shots into bullet traps, and expeditionary airfield operations training on North Field. In addition, some logistical aviation activities and training (take-offs, landings, refueling) are conducted at TNI (CNMI 1993 and 1999 lease amendments).

Under the No Action Alternative, an on-island Range Control does not exist. Currently, Joint Region Marianas staff on Guam schedule training events and travel to Tinian to monitor, track, and report on training events. The practice of conducting training on Tinian without centralized, on-island scheduling, and communication entity would continue.

While the No Action Alternative would meet a portion of the non-live-fire training requirements of the U.S. Armed Forces, it would not meet the purpose of and need for the Proposed Action. Specifically, this alternative would not support additional, needed training in the Western Pacific, including training in distributed operations. Consequently, forward-deployed U.S. Armed Forces would not be able to exercise evolving tactics, training, and procedures that would enable them to deter adversary aggression and respond to a threat to national security.

### **2.2.2 Alternative 1 – Enhanced Training and Range Infrastructure**

Alternative 1 is designed to meet DoD’s current and foreseeable training requirements. It would support distributed operations training in a secure and instrumented Live-Virtual-Constructive environment on U.S. soil. Under Alternative 1, land-based training events and events approved in the previous NEPA documents (DON 2010a, 2015b; U.S. Air Force 2016a, 2020) and associated consultations and authorizations would continue. Some, but not all, of these existing activities would increase under Alternative 1. In total, the training tempo under Alternative 1 would increase by approximately 15 percent over training already approved to occur on Tinian. Descriptions of training activities currently occurring or proposed on Tinian are presented in Table 2.2-1, with additional detail in Appendix C, *Training and Construction Assumptions*.

The proposed training activities described in Table 2.2-1 could be conducted during a large, medium, or small training event. Training events of various sizes may be conducted simultaneously and/or sequentially, with up to 1,000 service members total on Tinian. Alternative 1 would include aviation training at North Field and at the newly established Landing Zones throughout the Military Lease Area with new aircraft types such as the F-35 and unmanned aerial systems. Many of the training events would involve both ground and aviation components. The frequency (how often), intensity (how many personnel, aircraft, and equipment), and duration (how long) of training events would vary each year based on a number of factors including availability of aircraft and personnel, training requirements, weather, and Range Control scheduling around on-island events.

The entire Military Lease Area would be used for non-live-fire training although, as noted previously, training typically occurs in discrete locations at any one time thus allowing most of the Military Lease Area to be open for public access. Two live-fire ranges and their associated infrastructure would be constructed and operated within the boundaries of the Military Lease Area, as described in Sections 2.1.5.1 Multi-Purpose Maneuver Range and 2.1.5.2 Explosives Training Range. Alternative 1 would provide enhanced expeditionary airfield and logistics training and operations at North Field and would include clearing between runways Able and Charlie for drop zone training, along with the installation of an AM2 matting to provide an expeditionary airfield surface on runway Baker. The AM2 matting on runway Baker would integrate with the existing paved airfield and be used by fixed-wing transport and jet aircraft, helicopters, and tilt-rotor aircraft to conduct expeditionary and short take off and vertical landing operations.

In addition, under Alternative 1, two large and eleven small Landing Zones are proposed for the Military Lease Area (Section 2.1.5.3). Expeditionary airfield training at Landing Zone 9 would include the installation of AM2 matting to train on how to construct, maintain, and remove expeditionary airfield surfaces. All training events would be supported by the construction and operation of a Base Camp, as described in Section 2.1.9, with associated utilities and infrastructure. Biosecurity facilities would be used to support training, as described in Section 2.1.9.2. Alternative 1 would both clear and improve existing roads. Road improvements would be conducted in accordance with current leases for the Military Lease Area, including any required coordination and agreements. The USMC would continue to operate at the airfield at TNI primarily for logistics support of training within the Military Lease Area, using cargo and transport aircraft. Aircraft requiring use of the maintenance shelter would also land and take off at TNI.

### **2.2.3 Alternative 2 – Training and Range Infrastructure**

Alternative 2 would include all the currently authorized training events identified under the No Action Alternative and infrastructure described in Alternative 1. However, the training tempo under Alternative 2 would increase by approximately 5 percent from the baseline (No Action Alternative) land-based training already approved to occur on Tinian. The difference in training tempo is the only difference between Alternative 1 and Alternative 2.

### **2.2.4 Preferred Alternative**

The preferred alternative has been identified as Alternative 1. Both Alternative 1 and Alternative 2 meet the purpose and need to support the ongoing and evolving training requirements of U.S. Armed Forces and U.S. allies for distributed operations training on Tinian. Alternative 1 was selected as the preferred alternative because it allows a greater tempo of training to maintain readiness, when considering potential changes in the national security environment, fluctuations in training and deployment schedules, and anticipated in-theater demands. The increased training tempo under Alternative 1 encompasses the greatest flexibility given potential budget increases, and future training and testing requirements, while having similar environmental impacts as Alternative 2.

## **2.3 Management Measures**

As described in Section 1.4.2 of this Final EIS, following the 2015 release of the Draft EIS/OEIS and in consideration of the comments received from CNMI government and agencies and the public, the USMC re-evaluated the Proposed Action to ensure the way U.S. Armed Forces prepare for future conflicts in the emerging international security environment are met, while prioritizing avoiding, minimizing, or reducing potential impacts on the community and environment. The USMC collaborated extensively with the CNMI to develop the Proposed Action evaluated in the Revised Draft EIS and this Final EIS, which is substantially smaller in impact than the original 2015 CJMT Draft EIS/OEIS. Proposed management measures detailed in Table 2.3-1 are those that have been developed to address the impacts anticipated from the Proposed Action and are also based on consultations with federal and CNMI agencies responsible for ensuring compliance with resource-specific regulations. Examples include Section 106 consultation with CNMI Historic Preservation Officer and Section 7 consultations with U.S. Fish and Wildlife Service. Additional best management practices, standard operating procedures, minimization measures that are

inherent to the training and construction under this Proposed Action are summarized in Appendix D.

**Table 2.3-1 Proposed Management Measures**

<i>Resource Area</i>	<i>Proposed Management Measure</i>
Socioeconomics (Public Services) and Public Health and Safety	The DoD, through coordination with the CNMI and Tinian Leadership, would, where possible, develop agreements with key local agencies to enhance and build local fire and security capacity and infrastructure to support the DoD mission.
Utilities (Solid Waste)	The DoD would develop a solid waste management plan for military operations on Tinian within the Military Lease Area Range Complex and only dispose of waste from military operations in permitted and compliant landfills authorized to accept DoD waste.
Groundwater (Water Quality), Public Health and Safety,	The DoD would install up to four (4) groundwater monitoring wells at each of the two live-fire ranges, establish a water monitoring plan, and include one year of baseline monitoring before ranges would become operational. The locations of wells would be determined in collaboration with CNMI Bureau of Environmental Quality.
Public Health and Safety, Topology, Geology, and Soils.	The DoD would conduct soil sampling at the two live-fire ranges prior to range certification.
Utilities (Potable Water), Groundwater (Water Availability and Water Quality)	The DoD would fund a one-time hydrogeological study to establish baseline data that could be used to support monitoring of Tinian’s aquifer. This study would consist of groundwater sampling at existing well locations, and laboratory testing of water samples.
Transportation	The DoD would maintain roadways within the Military Lease Area and key transportation routes used by the military from the Port of Tinian to the Military Lease Area.
Biological Resources (Biosecurity)	Consistent with the overall Joint Region Marianas biosecurity program, the DoD would collaborate with the CNMI Customs and Biosecurity, Department of Land and Natural Resources Invasive Species Program, and Invasive Species Council, along with other federal regulatory partners on biosecurity and implementation of biosecurity measures.
Public Access, Socioeconomics, Public Health and Safety	The DoD would provide a variety of informational outreach methods to update the public on upcoming training events, including signage in San Jose.
Biological Resources	The DoD would implement avoidance and minimization measures, as well as best management practices to reduce impacts to biological resources.
Utilities (Potable Water), Socioeconomics	The DoD would provide access to water for ranching needs at its tank dispensing sites.
Socioeconomics, Public Access	The DoD would work with the Marianas Visitors Authority or appropriate CNMI agency to promote vacation and/or travel opportunities for permanently stationed service members living in Guam and Japan.
Socioeconomics, Public Access	The DoD would work with CNMI to identify federal programs or funding sources to support the siting and installation of fish aggregating devices to offset the impacts for subsistence fishers.
Cultural Resources	The DoD would perform cultural resource mitigation as defined in the National Historic Preservation Act Section 106 Programmatic Agreement for this project.

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; DoD = Department of Defense; USMC = U.S. Marine Corps.

**2.4 Alternatives Considered but not Carried Forward for Analysis**

A number of alternatives were considered and eliminated from detailed analysis in this Final EIS because they did not meet the purpose and need for the Proposed Action. These alternatives include conducting simulated training exclusively and potential training locations within the Western Pacific but outside the CNMI. Some of these alternatives were identified based on the comments and suggestions submitted by elected officials and government agencies of the CNMI, federal

agencies, and the public on the 2015 Draft EIS/OEIS. For each alternative identified below, an explanation is provided for why it was eliminated from further consideration.

#### **2.4.1 Simulated Training Exclusively**

The U.S. Armed Forces continue to research new ways to provide training using simulation, but there are limits to the realism that current technology can provide. Unlike live training, computer-based training does not provide the requisite level of realism necessary to attain combat readiness. Simulation cannot replicate the inherent high-stress environment and complexity of coordination needed to combine multiple military assets and personnel into a single fighting unit. Most notably, simulation cannot mimic dynamic environments involving numerous forces or the impact of real-world physical conditions such as weather. As such, live training as part of Live-Virtual-Constructive training would still be required within the Military Use Area. Using simulation exclusively as an alternative to completely replace live training in the field would result in an unacceptable and significant decrement to training capability and ongoing readiness and does not meet the purpose of and need for the Proposed Action.

#### **2.4.2 Other DoD Training Locations within the CNMI**

The DoD currently uses another CNMI island, Farallon de Medinilla, for training. Farallon de Medinilla is a wholly DoD-controlled area and is currently used for live-fire naval and U.S. Air Force surface fire training. Access to Farallon de Medinilla is restricted to specially trained explosive ordnance personnel. The training conducted on Farallon de Medinilla would not be compatible with the training proposed under the Proposed Action due to its small size, inaccessibility, and inconsistency with aerial live-fire training. Therefore, this alternative was not carried forward for analysis.

#### **2.4.3 Training Locations Outside of the CNMI**

The USMC considered several alternatives to conduct training events in whole or in part at other areas outside of the CNMI, including foreign training ranges and ranges on the Continental U.S. The following sections discuss the evaluation of other locations.

##### **2.4.3.1 Foreign Training Ranges in Japan and Korea**

U.S. Armed Forces currently train at allied-nation ranges in the Western Pacific, specifically ranges located in Japan and Korea. These allied-nation ranges have some, but not all, of the capabilities necessary to meet the Proposed Action's military training requirements. Moreover, these ranges' ability to meet the training requirements is further limited because access to foreign-operated ranges is not assured for U.S. Armed Forces, as host nation forces have priority on their ranges.

The U.S. does also train on some areas under U.S. control in this region, but the U.S. does not have the authority to freely expand and/or improve the capabilities of such training ranges in these nations. For example, spectrum availability and management present challenges for U.S. Armed Forces training in these countries. More specifically, the Government of Japan has final approval authority to permit the use of any system that radiates in the electromagnetic spectrum. As a result, Japan often denies U.S. requests to train with certain weapons systems if the operations would require emissions in parts of the spectrum reserved for use by the Japanese government. These kinds of limitations directly hinder the U.S. Armed Forces' ability to train to mission requirements

(e.g., Strike Warfare, Electronic Combat, Anti-Air Warfare, and Anti-Surface Warfare) in mission areas on bases in this region.

Another factor affecting the training capacity and capabilities of foreign ranges is urban development. Population increases occurring in the areas surrounding the foreign-operated ranges in Japan and Korea are causing noise, light, and traffic impacts that limit the ability to conduct realistic training. These alternatives would not meet the purpose of or need for the Proposed Action and were therefore not carried forward for further analysis.

#### **2.4.3.2 Training Ranges in Australia**

The U.S. currently forward deploys a rotational force of U.S. Marines to Australia. These forces train at ranges within the Northern Territory of Australia with the Australian military. These ranges have some, but not all, of the capabilities necessary to meet the military training requirements that are included in the Proposed Action. This alternative would not meet the purpose of or need for the Proposed Action and it was not carried forward for analysis.

#### **2.4.3.3 Training Ranges in Other Western Pacific Island Nations**

U.S. Armed Forces have conducted sustainment training at island nations in the Western Pacific other than the CNMI, including the Philippines and Palau. In the Philippines, joint exercises with the Filipino military are conducted under the 1998 Philippines-United States Visiting Forces Agreement. U.S. Armed Forces also conduct training in Palau, a nation with which the U.S. signed a Compact of Free Association in 1982, under which the U.S. is responsible for Palau's defense until 2044. The training conducted in these nations involves amphibious landings, close quarters tactics, demolitions, raids, parachute insertions and some live-fire missile exercises. As with other foreign nations, the continued ability of U.S. Armed Forces to conduct training in these island nations is not assured and training in advanced tactics and with advanced weapons systems is constrained by the fact that the training occurs on foreign soil. Consequently, this alternative would not meet the purpose of or need for the Proposed Action and it was not carried forward for analysis.

#### **2.4.3.4 Training Ranges on Guam**

Unlike training ranges in Japan, Australia, and other nations, Guam offers training within the U.S., resolving concerns about assured access. Forces permanently based in Guam and transiting elements, currently train on Guam at live-fire ranges, which support individual level and common skills live-fire training, and non-live-fire ranges that support company-level patrolling, jungle training, land navigation, and air ground operations. Guam does not support collective live-fire maneuver training. Convoy operations, Military Operations in Urban Terrain (MOUT)-related maneuver training and general maneuver and air ground operations also occur at Andersen South. Locating the realistic Live-Virtual-Constructive training of this Proposed Action on Guam was considered but not carried forward for further analysis for several reasons. First, locating this training on Guam would require additional land to support the proposal, which is inconsistent with the Navy's commitment that the DON would not acquire any additional lands on Guam (known as the "Four Pillars Agreement"). Second, even if the acquisition of additional land on Guam was possible, training on Tinian offers the opportunity to train in a comparatively more austere environment than offered on Guam. Developing additional ranges on Guam that would closely replicate the existing conditions on Tinian is not an efficient use of DoD resources or the limited land available on Guam. Third, this would focus DoD training ranges in one central location on

Guam. This is inconsistent with the DoD desire for more dispersed training throughout the Western Pacific region. Therefore, this alternative would not meet the purpose of and need for the Proposed Action.

#### **2.4.3.5 Training Ranges in Hawaii**

Four issues render this alternative infeasible. First, Hawaii is not “forward” presence when considering force employment against a near-peer threat in the Western Pacific and therefore investing in extensive ranges on Hawaii would not meet the purpose of and need for the Proposed Action. Second, the existing ranges on Hawaii do not have sufficient availability to schedule the amount of training required by the forward-deployed forces to maintain their mission-essential ground and aviation warfighting skills. Finally, land use in Hawaii is highly constrained. Acquiring additional land to develop new ranges on Hawaii would be infeasible. As such, this alternative was not carried forward for analysis.

#### **2.4.3.6 Training Areas in Southern California**

Like the situation described for Hawaii, the USMC ranges in Southern California, including USMC Air Ground Combat Center Twenty-Nine Palms and USMC Base Camp Pendleton, or the U.S. Navy’s San Clemente Island Complex or Silver Strand Training Complex, are not “forward” presence for operations in the Western Pacific. This alternative would not meet the purpose of or need for the Proposed Action and it was not carried forward for analysis.

#### **2.4.4 2015 Draft EIS/OEIS Alternatives**

As discussed in Chapter 1 of this Final EIS, the alternatives identified and analyzed in the 2015 Draft EIS/OEIS received considerable adverse comments and much concern from local communities, government officials, and regulators. Since the publication of the 2015 Draft EIS/OEIS, U.S. Armed Forces capabilities and force structure have evolved and changed and the joint training deficiencies that informed the initial CJMT proposal no longer remain relevant to the emerging international security environment. Consequently, the original alternatives from the 2015 Draft EIS/OEIS were not carried forward for analysis.

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### 3 EXISTING ENVIRONMENT

This chapter describes the existing environment or future baseline that may be affected by the Proposed Action. The future baseline includes the continuation of approved onshore training events in the CNMI as described in prior NEPA documents (DON 2010a, 2015c). The baseline also includes construction and operations associated with the U.S. Air Force's Divert project (U.S. Air Force 2016, 2020). Additionally, projects under the U.S. Air Force's Agile Combat Employment program would also continue, which would include the clearance of vegetation and restoration of the runway and other engineered surfaces at North Field. This chapter is organized in 14 sections: Public Access, Land Use and Recreation; Socioeconomics; Biological Resources; Cultural Resources; Visual Resources; Transportation; Noise; Air Quality; Public Health and Safety; Utilities; Topography, Geology, and Soils; Groundwater and Hydrology; and Surface Waters and Wetlands.

#### 3.1 Public Access

The Military Lease Area (northern two-thirds of Tinian and shoreline areas immediately adjacent to Tinian) is currently available to residents of Tinian and tourists during festivals and holidays and for fishing and boating, commercial ranching, cultural activities, recreation, tourism, and subsistence activities like hunting and gathering of both plants and animals. Access to the Military Lease Area is restricted only when needed to comply with safety and security requirements during military training activities, consistent with the terms of the 1983 Lease Agreement.

Current military training on Tinian includes large training events like Valiant Shield (June 2024), which occurs over a period of approximately four weeks. During these large training events, access has been restricted around North Field, with closure of the taxiway between runways Able and Baker and the two ends of runway Baker for the duration of training activities. No access has been permitted on runway Baker during aviation operations and airdrops. Small and medium training events, typically lasting a few weeks, are also conducted throughout the year on Tinian in conjunction with at-sea training. The portion of the Cope North exercises that have previously occurred in the CNMI (February 2025) is an example of a medium training event. In addition, Seabee units conduct training at Camp Tinian and the Military Lease Area throughout the year.

The USAGM, formerly the International Broadcasting Bureau, operated two broadcast facilities in the Mariana Islands—one on Tinian and one on Saipan. The Tinian site is located within the Military Lease Area. The Saipan site is situated in the southwest area of the island adjacent to the Commonwealth Utilities Corporation Agingan wastewater treatment plant. Both USAGM sites supported international shortwave radio transmissions and are collectively referred to as the Robert E. Kamosa Transmitting Station. Public access to both sites is restricted due to the presence of sensitive communications infrastructure and federal security requirements.

#### 3.2 Land Use and Recreation

The island of Tinian encompasses approximately 25,000 acres. Land use on Tinian includes residential and commercial uses on privately owned land, with the population primarily located in the village of San Jose. Commercial uses include grocery and dry goods stores, restaurants, agriculture, hotels, TNI, and the Port of Tinian. Public land uses include civic and government functions, homesteads, conservation areas, and recreation. Recreation on Tinian is outdoor-focused and includes land uses such as beaches and parks, and recreational activities such as

visiting cultural resources, swimming, fishing, snorkeling, diving, boating, wild plant collection, and bicycling.

Since the 1983 Lease Agreement, several land use agreements have defined DoD management of the Military Lease Area (see Appendix E for a description of these agreements). The Lease Back Area was leased back to the CNMI by the U.S. Government for agricultural and other uses. Roads within the Lease Back Area and a 10-acre youth camp parcel within the area were returned to the CNMI, but DoD retains use rights and easements over these areas. The Lease Back Area is no longer managed as a separate section within the Military Lease Area and will only be referenced in a limited capacity regarding past actions and/or agreements. The youth camp area within the Military Lease Area is not currently being used as a youth camp. A 936-acre Natural Resources Conservation Area has also been dedicated within the Military Lease Area. The DoD also negotiated with the Commonwealth Ports Authority to lease an area south of the Military Lease Area on the northern end of TNI under the U.S. Air Force’s Divert Activities and Exercises program.

The Department of Public Works manages all public lands within the CNMI in accordance with the 2019 and 2021 updated Public Land Use Plan. The plan provides guidance and planning for capital improvements over a 5-year planning horizon (CNMI Department of Public Lands 2019) and identifies five categories of public land uses as shown in Table 3.2-1. Approximately 90 percent of land on Tinian is considered public land with 67 percent of that public land in the northern half of the island leased to the military and the other 33 percent located on the southern half of the island. Figure 3.2-1 shows the land uses on Tinian and land-based recreational sites.

**Table 3.2-1 Tinian Land**

<i>Tinian</i>	<i>Acres<sup>1</sup></i>	<i>% of Total Land</i>	<i>Public Land Acres</i>	<i>% of Public Land</i>
<b>Total Land Area</b>	<b>25,115</b>	—	—	—
Private Land	2,434	10	—	—
Public Land	22,681	90	—	—
-Grant of Public Domain Land	—	—	1,604	7
-Designated/In Use Public Land	—	—	1,278	6
-Undesignated/Not in Public Use Public Land	—	—	2,874	13
-Leased Public Land	—	—	1,572	7
-Covenant/Military Leased Public Land	—	—	15,353	67

Legend: % = percent.

Note: <sup>1</sup> Acreages are from CNMI Department of Public Lands 2019.

Source: CNMI Department of Public Lands 2019.



Figure 3.2-1 Existing Land Uses and Land-Based Recreation Sites on Tinian

### **3.2.1 Land Uses and Recreation Outside of the Military Lease Area**

Existing land uses south of the Military Lease Area include the Port of Tinian, TNI, agricultural, residential, commercial businesses (restaurants, hotels, grocery stores, offices), a power plant, civic buildings, open space, mining, a waste disposal site (Puntan Diablo disposal site), homestead designated areas, parks, and conservation land (3,358 acres along the cliff line on the southeast side of island). Most of Tinian's population and commercial activities are in San Jose near the Port of Tinian. The Tinian Dynasty Hotel and Casino, a large resort, operated on the island until its permanent closure in 2016. A new 40-unit hotel and casino, the Tinian Diamond Hotel and Casino, opened in 2023, but the casino closed in 2024. The CNMI government leased a parcel on the southeast end of the port to Bridge Investment Group for potential commercial development, although the project has not been approved or constructed.

The CNMI Department of Public Lands Homesteads Division is responsible for reviewing and accepting applications for homesteads on public lands, which are available to eligible residents (CNMI Department of Public Lands 2023a). The homestead program includes village lots up to 1,000 square meters and agricultural lots up to 10,000 square meters, or 0.2 and 2.4 acres, respectively. As of January 2019, there were 528 deeded village homesteads and 384 deeded agricultural homesteads where the owners are currently farming and raising livestock in the lands south of the Military Lease Area (CNMI Department of Public Lands 2019). The Department of Public Lands has planned for future development of both village and agricultural homesteads on Tinian, in an area of approximately 1,549 acres in the southeastern portion of the island (CNMI Department of Public Lands 2019). A new public highway (Route 205) is planned to provide vehicular access to the future Kastiyu homestead area and provide multiple connections to the existing roadways on Tinian (CNMI Department of Public Lands 2019).

Recreation sites frequented by both Tinian residents and visitors are located on the west side of the island and include Unai Leprosarium/Unai Tinian, Unai Kammer, Unai Taga, and Unai Tachogna (Figure 3.2-1). Annual festivals hosted at these beaches include the Pika Festival in February and the San Jose Fiesta in May (Marianas Visitors Authority 2019). These festivals are managed by the Tinian Mayor's Office, which also maintains the cultural sites outside the Military Lease Area including the House of Taga ruins and Suicide Cliff. Other recreational features include parks, the Tinian Community Gym and Sports Field Complex, and the Tinian Community Park and Outdoor Amphitheater. Ocean-based activities on Tinian include fishing, snorkeling, diving, and boating. Known popular dive sites surrounding the island are shown in Figure 3.2-2.

### **3.2.2 Land Uses and Recreation within the Military Lease Area**

Current training within the Military Lease Area consists of units engaging in maneuvers on roads and in offroad areas, simulated live-fire training, aircraft operations and live-fire small arms training using bullet traps (in existing structures only) (DON 2013). Large-scale training events can take place on Tinian for up to four weeks per event and can occur any time of the year. Public uses include tourism, public recreation, subsistence agriculture, and wildlife conservation.



Figure 3.2-2 Tinian Popular Dive Sites

For cultural sites, the most popular destinations include the Tinian Landing Beaches, Ushi Point Field, and the North Field National Historic Landmark. Several annual ceremonies are held to commemorate Iwo Jima in March, Battles of Saipan and Tinian in June and July, end of the War in the Pacific in August, and Memorial Day and Veterans Day in May and November (DON 2020). Other recreational uses within the Military Lease Area include hiking, shoreline fishing, wild plant collection, hunting, gathering, bicycling, and other outdoor activities. All recreational activities occur year-round (Marianas Visitors Authority 2023).

Cattle grazing occurs on the east side of Broadway and along 8<sup>th</sup> Avenue. Grazing and agricultural uses continue even though permits issued by the Department of Public Lands have expired. Other agricultural uses in the Military Lease Area include subsistence growing and harvesting of fruits and vegetables.

Wildlife conservation is another land use within the Military Lease Area. In 1999, the DON, in cooperation with U.S. Fish and Wildlife Service, CNMI Division of Fish and Wildlife, and the FAA, dedicated 936 acres as a conservation area for the Tinian monarch (*Monarcha takatsukasae*). This existing Tinian Military Retention Land for Wildlife Conservation (also known as the FAA Mitigation Area but hereinafter referred to as the Natural Resources Conservation Area) allows low-impact military training that does not adversely modify habitat. Though the Tinian monarch was removed from the endangered species list in 2004 due to recovery of the species, the conservation area remains an existing land use within the Military Lease Area. In addition, the U. S. Fish and Wildlife Service recovery plan for the Mariana common moorhen identifies Lake Hagoi within the northern portion of the Military Lease Area as primary habitat for the moorhen (U.S. Fish and Wildlife Service 1991). Lake Hagoi is currently restricted from training activities.

The Military Lease Area also includes approximately 300 acres formerly used by USAGM on the northwest side of the Military Use Area. The USAGM operated 13 curtain antennae, each of which consisted of two vertical steel towers between 150 and 400 feet tall with a curtain of horizontal and vertical cables hung between the towers of the same height (DON 2010b). The site also contains administration buildings and equipment. During operation at the USAGM communications site, shore fishing from Puntan Lamanibot Sanhilo (Sanhilo) was restricted due to hazards from electromagnetic radiation and all access to the shoreline along Lamanibot Bay (Dump Coke) from Puntan Lamanibot Sanhilo to Puntal Lamanibot Papa was also restricted.

On August 13, 2024, the USAGM announced the closure of the Robert E. Kamosa Transmitting Station facilities located on both Tinian and Saipan. The Saipan site contains a few buildings and five towers on public land adjacent to a water treatment plant and a golf course. The Saipan site itself is fenced and does not contain public recreation uses.

### 3.3 Socioeconomics

Socioeconomic considerations include population, demographics, economic activity, and public services. The island of Tinian is small, approximately 12 miles long and 6 miles wide. Residents live in the village of San Jose, located on the southern one-third of the island. The livelihood of the Tinian community is dependent on both commercial markets and subsistence practices and relies on social cohesion to adapt to external factors such as pandemics (e.g., SARS and COVID-19) or natural disasters that adversely affect the economy of the island. Residents rely on many of the natural resources found in the Military Lease Area. Information on local resources and producers (e.g., ranching, fishing, and cultivation or gathering of other traditional food sources or

goods) is presented below to highlight their importance to the island’s economy. The Proposed Action includes establishing a new lease for the USAGM property on Saipan and the reuse of the existing facilities and communications towers. Under the new lease, the use of the property and terms of the lease would be similar to the past lease but operate under a different federal agency, the DoD. Thus, there would be no impact to socioeconomics related to the Saipan site and the existing environment is not described further in this section.

### 3.3.1 Population and Demographic Composition

Table 3.3-1 shows population trends on Tinian, Saipan, and the CNMI for the past six decades based on U.S. Census data. Non-resident workers are included in these numbers.

**Table 3.3-1 Population of CNMI and Tinian, 1970-2020**

<i>Location</i>	<i>1970</i>	<i>1980</i>	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2020<sup>1</sup></i>
CNMI Overall	9,640	16,780	43,345	69,221	53,883	47,329
Saipan	7,976	14,549	38,896	62,392	48,220	43,385
Tinian	710	866	2,118	3,540	3,136	2,044

*Notes:* Population numbers include non-resident workers. Data from the 2020 decennial census is the most recent census data. Population data for the island of Tinian was released in October 2021 (U.S. Census Bureau 2021), and census-tract level data on the island was released in July 2023 (U.S. Census Bureau 2023). The U.S. Census Bureau’s American Community Survey that updates census data on an annual basis is not conducted in the CNMI (U.S. Census Bureau 2022a).

<sup>1</sup> According to the U.S. Census Bureau, the COVID-19 pandemic had a minimal impact on data collection for the 2020 Census of the CNMI (U.S. Census Bureau 2022b).

*Sources:* Pacific Web 2025; U.S. Census Bureau 1970, 2000, 2010, 2020.

Tinian has experienced periods of substantial population growth and decline since 1970, mirroring the population trend in the CNMI. On Tinian, economic growth was primarily related to the casino industry, which, along with the garment industry in the CNMI, generally brought an influx of migrant non-resident workers. Notably, Tinian’s population increased by 48 percent corresponding with the opening of the Tinian Dynasty Hotel and Casino. The permanent closure of the resort in March 2016 (Saipan Tribune 2019) resulted in a subsequent population decline on Tinian. Typhoon Soudelor in 2015 was another contributing factor to Tinian’s population decline and falling populations in the CNMI (CNMI Report to the President on 902 Consultations 2017). The U.S. Census estimates that 2,044 residents were living on Tinian in 2020, concentrated in the developed southern end of the island in the village of San Jose.

According to the 2020 U.S. Census, the ethnicity on Tinian primarily falls into two categories: “Native Hawaiian and Other Pacific Islander” and “Asian.” An estimated 51 percent of the population is Native Hawaiian and Other Pacific Islander while 38 percent are Asian. The 2020 U.S. Census provided the following subcategories under the “Native Hawaiian and Other Pacific Islander” category: Carolinian, Chamorro, Chuukese, Kosraen, Marshallese, Palauan, Pohnpeian, Yapese, and Other. Subcategories under the “Asian” category include Bangladeshi, Chinese (except Taiwanese), Filipino, Japanese, Korean, Nepalese, Thai, and Other (U.S. Census Bureau 2020). Of the 1,033 Native Hawaiian and Other Pacific Islanders on Tinian, 937 are Chamorro (91 percent) (U.S. Census Bureau 2020).

In both the CNMI and in Tinian, an estimated 74 percent of the population speaks a language other than English at home. Prominent languages are Chamorro and Filipino. Carolinian and various Asian languages are also spoken within the CNMI but not as frequently on Tinian. The average

age in the CNMI and on Tinian is about 35 and 36, respectively. About 40 percent of the CNMI and nearly 46 percent of Tinian's population have a high school diploma. There are 14,282 households in the CNMI and 609 in Tinian, and the average household size in both the CNMI and on Tinian is three people. In addition, more than 30 percent of Tinian's residents have incomes below the annual statistical poverty thresholds.

No military personnel are permanently stationed on Tinian but in 2020, the U.S. Navy Seabees constructed a temporary Base Camp on the island, referred to as Camp Tinian. Typically, one Naval Mobile Construction Battalion is assigned to the island for a 6-month period at a time. Training events currently approved under the *Mariana Islands Training and Testing EIS/OEIS* occur periodically, some lasting up to four weeks at a time, and bringing approximately 1,000 service members temporarily to Tinian. Major training events include Valiant Shield and Cope North.

### 3.3.2 Economic Activity

As of 2016, the most recently published available data, the largest employment sectors on Tinian were public administration (371 with an average annual pay of \$31,678) and construction (120 with an average annual pay of \$31,283). In 2019, the average per capita income was \$21,657, based on the 980 workers employed on Tinian (U.S. Census Bureau 2020). The U.S. Air Force Divert project has been constructing new facilities north of TNI. Some employees are working on the project under the H1B Visa program. The U.S. Air Force construction contractor, Black Micro Corporation, identified an average annual salary of \$29,056 in 2023 under its H1B visa program (H1BGrader.com 2024, MyVisaJobs.com 2024).

Revenue generated by the CNMI government supports local public administration jobs on Tinian and the other islands within the CNMI. Various revenue sources fund local appropriations including direct taxation and fees charged for specific government services. In total, there are 11 categories of local taxation that generate revenue, with the primary sources of tax revenue being the Business Gross Revenue Tax on commercial operations and the Wage and Salary Tax paid by employees based on their annual total income and salary. As of 2020, CNMI government revenue was \$223.0 million, largely consisting of gross business receipts taxes (\$82.7 million), income taxes (\$57.5 million), and charges for services (\$25.6 million) (CNMI Office of the Public Auditor 2020). Trends in CNMI government revenue track with the population trends described in the previous section, with revenues declining since 2017 with the loss of garment manufacturing and declines in the casino industry. Natural disasters such as Super Typhoon Yutu in 2018 and the wide-spread impacts of the COVID-19 pandemic further constrained revenues.

Federal grants constitute a substantial share of overall expenditures, accounting for approximately 34 percent of the CNMI's gross domestic product in 2020. The decline in economic activity during the COVID-19 pandemic and the long-term economic impacts resulting from natural disasters highlight the importance of federal aid in the CNMI and its impact on the health of the island economy (CNMI Governor's Council of Economic Advisers 2021).

#### 3.3.2.1 Local Economic Factors

Tinian's local economy is primarily driven by tourism and commercial agriculture, supported by the aircraft and vessels that transport people and goods to and from the island. The CNMI as a region relies heavily on imported food resources and the local ranchers and fishers on Tinian have

worked to develop sustainable sources of locally grown and sourced meat and fish, which has played a key role in reducing the CNMI's dependence on imported goods (Saipan Tribune 2024). Additionally, the community's subsistence practices offer additional security in the face of fluctuations in the global markets that affect both the availability and price of goods on the local economy.

Tourist arrivals to Tinian occur via air taxi operations at TNI, with passengers traveling from other island locations through Saipan. Star Marianas Air offers direct passenger and air cargo service between Tinian, Saipan, and Rota. The other available mode of goods transport to Tinian is by cargo vessels. Large cargo vessels arrive at the Port of Tinian's North Wharf to unload, and smaller non-commercial cargo service is provided at the small boat dock at the Port of Tinian's marina. In fiscal year 2021, a total of 427,348 revenue tons of cargo were delivered through CNMI seaports (Commonwealth Ports Authority 2021). This has been a 5 percent decrease in the movement of goods since 2020, which could be attributed to the decrease in shipping activity due to the global pandemic. The largest imports to CNMI are construction materials such as raw cement and petroleum products. The vast majority (approximately 80 percent) of exports from CNMI are the return of containers with wastepaper and packaging. Tinian has historically accounted for roughly 4 percent of CNMI's total trade volume (Commonwealth Ports Authority 2018).

### **Tourism**

Tourism is the primary economic industry for CNMI and Tinian by not only increasing the exchange of goods but also increasing tax revenue through both local purchases and income tax. In 2022, Tinian had an estimated 26,058 visitors, which represents a recovery from a recent downturn in the tourism industry. Tourism peaked on Tinian in 2013, with approximately 58,000 annual visitors, but by 2015 that number had declined to 24,346 visitor arrivals, a more than 50 percent decrease (Marianas Visitors Authority 2015). Reasons for the decline include the exit of Japan and Korean Airlines from the CNMI market, the world-wide recession, and visa complications for Russian and Chinese visitors (Marianas Visitors Authority 2015). Tourism continued to decline as a result of Typhoon Soudelor in 2015, the closure of the Tinian Dynasty Hotel and Casino in 2016, Typhoon Yutu in late 2018, and the global pandemic in 2020.

In 2021, the most recent year for which island-specific data is available, Tinian reported 20,333 visitor arrivals, down over 16 percent from 2015 (Commonwealth Ports Authority 2023). In 2022, the Tourism Resumption Investment Plan was established by the Mariana Visitors Authority to provide subsidies to airlines, hotels, travel agencies, and related businesses to help restart the tourism industry. The recent gains in tourist arrivals are due in part to this effort, along with Marianas Visitors Authority promotions and infrastructure improvements. Visitor arrivals in Fiscal Year 2024 increased 22 percent compared to the previous year, but the total number of visitors is still 44 percent lower than Fiscal Year 2019, which is the last year direct flights from China were available (Marianas Visitors Authority 2024).

Tourism on Tinian includes activities such as visiting historic and cultural sites, exploring unique environmental features, shopping, eating at local restaurants, SCUBA diving, and relaxing on its many beaches. Although tourism occurs on the whole island, specific tourism resources found in the Military Lease Area include the 107<sup>th</sup> U.S. Naval Construction Monument, Japanese Village Ruins, the Old Japanese Communications Center, Mount Lasso, Shinto Shrine, Blowhole, runway

Able, the Atomic Bomb Loading Pits, Puntan Taddong (also known as Ushi Point), three dive locations, and six distinct beaches (Mariana Visitors Authority 2024).

## **Commercial Agriculture**

### *Ranching*

Thirty-two cattle ranching operations occupy approximately 2,442 acres of leased land on Tinian (Northern Marianas College Cooperative Research, Extension and Education Services 2023). There are no recent cattle population surveys. However, the Tinian Cattleman's Association provided an unofficial count of 1,500 total cattle after a wildfire occurred in 2018 (Tinian Cattleman's Association 2023). Cattle ranches are family-owned and operated. An estimated 75 percent of ranchers on the island utilize military land (Tinian Cattlemen's Association 2023). Although the land use permits between the CNMI government and the ranchers expired in 2016, the ranchers continue to graze cattle primarily on grassland in the Military Lease Area on a holdover basis. According to the Tinian Cattlemen's Association chairman, ranchers need a long-term lease agreement to qualify for U.S. Department of Agriculture Natural Resources Conservation Service grant funding. Without such funding, many ranchers will struggle to continue operations (Tinian Cattlemen's Association 2023).

Historically cattle ranching has been a subsistence activity on Tinian, but in April 2023, the Tinian Cattlemen's Association initiated the development of commercial beef production with the construction of a new slaughterhouse, the Tinian Kualidat Meat Processing Center. The facility, which was certified by the U.S. Department of Agriculture in the summer of 2023, can now process up to four cattle per week and is able to sell Tinian beef (Tinian Cattlemen's Association, Personal Communication, 2023).

### *Farming*

There are two farms on Tinian that grow vegetables and leafy greens for two local markets, with no farm larger than 2 acres. Such small farms do not require commercial farm permits (Tinian Mayor's Office, Personal Communication, 2023).

### *Fishing and Aquaculture*

As with other islands in the Pacific, fishing is an important practice for the people of Tinian and the CNMI as a whole. Beyond its importance as a commercial industry, fishing provides the community with food security and serves to strengthen social connections and propagate cultural traditions, which are discussed further below in this section. Fisheries in the CNMI have been small and fluid, with businesses that are highly sensitive to changes in the economy, regulations, population and other factors.

The majority of small-scale commercial fishing in the CNMI is located on Saipan, occurring within 20 miles of the island using 16-to-20-foot boats, typically on 1- to 2-day trips and that may conduct multiple fishing activities during a single trip (e.g., troll fishing, bottom fishing, spearfishing) to target various species like pelagic fish, bottomfish, and coral reef fish (Western Pacific Regional Fisheries Management Council 2023; Department of Fish and Wildlife 2024). However, the waters around the CNMI are extensive and contain abundant fishery resources, with substantial development potential for underutilized bottom fish and pelagic species (Western Pacific Regional Fishery Management Council 2024). The Western Pacific Regional Fishery Management Council and the National Marine Fisheries Service established an annual catch limit of 84,000 pounds and

an annual catch target of 78,000 pounds for each year between 2020–2023 for the 13 bottom fish management unit species, which include snappers, groupers, and jacks. The bottom fish fisheries are managed as a single multi-species stock complex that is assessed as one unit whether the fish are in territorial or federal waters (from the shoreline out to 3 nautical miles and from generally 3 to 200 nautical miles from shore, respectively) (86 FR 10526). The CNMI’s catch in 2022 was 47,567 pounds and the three-year average catch was 55,916 pounds, both of which are well below the regulatory limits (Western Pacific Regional Fishery Management Council 2023).

Challenges for the commercial fishing industry in the CNMI include the conditions of seaports and the relatively fixed or flat average commercial fish prices in the region against the increasing costs for fishing gear, tackle, boats and maintenance, and fuel. The Tinian seaport has limited space for the expansion of commercial fishing businesses, and the pressures of fixed pricing create tight profit margins that leave the commercial fishing industry in the CNMI, including locally-owned fish markets and vendors, largely reliant on less expensive foreign labor. Natural disasters such as typhoons have also affected the industry by disrupting fishing activities due to sediments in nearshore waters after the event, gasoline rationing, and lack of available running water and electricity to prepare and store catch. Additionally, on Tinian, the lack of lighted channel markers to the Port of Tinian entrance constrains fishers from leaving early or returning to port when it is dark due to safety concerns (National Oceanic and Atmospheric Administration 2018).

According to a survey of 112 boat-based fishers across the CNMI, even operations with higher catch and profits were only able to derive around half of their personal income from selling their catch (Hospital and Beavers, 2014, as cited in National Oceanic and Atmospheric Administration 2018). Data on commercial fish sales is not collected for Tinian but, according to interviews, there are approximately 25 active fisherman who operate from Tinian and 20 who engage in cliff fishing, crabbing, and diving regularly. Commonly caught fishes include rudderfishes, unicornfishes, and drumfishes, along with harvesting shellfish and coconut crabs from the cliffs and nearshore rocky areas. While individuals may sell directly to local vendors, the catch is more commonly consumed or shared with family and friends and thus fishing has more cultural and subsistence value. Use of boats for pelagic, reef, and bottom fishing is less popular, due to the higher costs (e.g., fuel, insurance, maintenance) and seasonality considerations (e.g., sea state and safety considerations) and boats tend to stay closer to shore (within around 800 feet for bottom fishing and 300 feet for trolling). On Tinian, fishing is becoming more common on the weekends compared to the weekday, with most fishers going out approximately once a week (R. DeLa Cruz, Personal Communication, 2025; R. Sablan, Joint Region Marianas, Personal Communication, 2025). Fishing for reef fish using small boats beyond the reef is seasonal and dependent on weather conditions. Fishing on the windward side of Tinian usually occurs between the months of April and October (Trianni et. al. 2018; CNMI Division of Fish and Wildlife 2024).

Tinian also cultivates aquaculture, including fish nurseries and shrimp raceways (Northern Marianas College Cooperative Research, Extension and Education Services 2023). An Aquaculture Feasibility Study is underway to expand aquaculture in both CNMI and on Tinian. Preliminary plans include three offices, two laboratories, six raceways, a mesocosm tank field for fish nurseries, and a seawater well reservoir on Tinian (Northern Marianas College Cooperative Research, Extension and Education Services 2023).

### Subsistence Activities

Recent impacts to Tinian's economy from disasters such as Super Typhoon Yutu and social and economic crises like the COVID-19 pandemic highlight the importance of subsistence activities practiced on the island. This type of activity serves to both supplement income and provide stability if imports become expensive or scarce due to global supply chain disruptions.

Subsistence activities practiced on Tinian include agriculture, gathering, hunting, fishing, and ranching when conducted for a family's own use or for income substitution (U.S. Census Bureau 2010a). Subsistence activity was not evaluated in the 2020 Census, but the 2010 Census identified 103 Tinian residents over the age of 16 who participated in subsistence activities (4.5 percent of the over-16 population) (U.S. Census Bureau 2010). Interviews conducted by the DON in 2016 for the *Tinian Food Survey Report and Socioeconomic Assessment* suggest that more people may be engaged in subsistence activities than indicated in the 2010 census data (DON 2018). Given the closure of the Tinian Dynasty Hotel and Casino and associated loss of jobs, the estimates provided in the structured interviews could more accurately reflect current levels of subsistence activities that occur on Tinian. These interview estimates suggest that as much as 53 percent of the average Tinian citizen's diet is locally sourced.

Agricultural products grown for subsistence on Tinian include taro, sweet potatoes, and melons. Other agricultural products harvested on Tinian include hot peppers (Donni Sali or Pika), yams, and breadfruit (DON 2018). While the slaughterhouse on Tinian was recently certified by the U.S. Department of Agriculture for commercial sale of beef, the 2016 Food Survey found that 82 percent of the interviewees indicated beef from local cattle was an important part of the community's diet, and they consumed more local than imported beef products. Individuals also raise pigs for their personal use and sell them to other local households as a subsistence practice (Tinian Cattlemen's Association 2023).

In addition to agriculture and ranching, throw net, spearfishing, rod and reel, and bottom fishing are important subsistence activities on Tinian throughout most of the year. (Tinian Department of Lands and Natural Resources 2023). In 1999, the National Marine Fisheries Service officially identified the CNMI, including Tinian, as a "fishing community," which is "a community...substantially dependent on, or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs" (National Oceanic and Atmospheric Administration 2012). According to the Tinian Department of Lands and Natural Resources and the Western Pacific Fishery Management Council, Tinian fishermen typically fish to obtain food for themselves and their family. The 2016 Food Survey found locally sourced fish and shellfish were a common and important part of the diet on Tinian, with interviewees estimating about 60 percent of the fish consumed on Tinian was locally caught. Other data indicates that 90 percent of the fish harvested on Tinian were consumed by the fishermen, family, and friends, with less than 10 percent sold commercially (DON 2018).

Locally hunted wildlife including turtledoves, coconut crabs, sea crabs, and goats and chickens, also supplement Tinian diets (Department of Land and Natural Resources, Personal Communication, 2023). While the entire island could be considered a hunting ground, most hunting occurs in the Military Lease Area. Medicinal plants are also gathered on Tinian and used for traditional healing. These plants are often gathered in the areas around North Field and along rocky coastlines and cliff lines (DON 2015).

According to the Northern Marianas College's Cooperative Research, Extension, and Education Services, access to subsistence agriculture, gathering, fishing, and hunting sites was substantially reduced due to Typhoon Yutu. Although cattle fencing, water catchment facilities, shade trees, and cattle corrals were damaged in the storm, no cattle were lost (Tinian Cattlemen's Association 2023). Many of the fruit trees, plants, and game were killed by the storm and by the ensuing drought and wildfires (DON 2018). The COVID-19 pandemic also impacted subsistence activities by restricting movement and travel and limiting the number of people who could gather (Northern Marianas College's Cooperative Research, Extension, and Education Services 2023). All these events had impacts on the availability of resources and the ability of residents to engage in subsistence activities.

### 3.3.2.2 Social Cohesion

Socioeconomics also considers social cohesion, which is the level of “relationship between individuals, groups, and organizations within a community” (Holdsworth and Hartman 2009). The Chamorro population and its historical reliance on agriculture, fishing, hunting, and gathering defines the Tinian community today and contributes to the community character and social cohesion of Tinian. In a community with strong social cohesion, several factors, such as high levels of social ties, interdependence, trust, and reciprocity, exist that bind people together within that community. The Chamorro concept of *inafa'maolek* is closely linked with the concept of community cohesion. *Inafa'maolek* is a core Chamorro value that continues to be passed down to each new generation and refers to the “interdependence within the kinship group,” literally translated as “making it good for each other” or “getting along” (Cunningham 1992). In other words, society is based on good relationships and mutual respect. *Inafa'maolek* is grounded in familial relationships and reciprocal obligations between people in these relationships. Relationships tend to be guided by the age of the parties, with the older person owing the younger person responsibility and the younger owing the older deference.

The Carolinian (Rafaluwasch) population holds the concept of *tipiyeew* as the sentiment of social cohesion and a sense of belonging within the community. *Tipiyeew*, which translates to “to be decided, of one mind, to agree,” represents a deeper connection and shared identity among community members. It facilitates unity, cooperation, and a collective vision, serving as a guiding principle for decision-making and community engagement. Through *tipiyeew*, the Carolinian community nurtures a strong sense of unity, cultural preservation, and inclusive community dynamics (Kuehling 2012).

### 3.3.3 Public Services

#### 3.3.3.1 Public Safety

As of 2021, the Tinian Department of Public Safety was staffed by 25 police officers (a ratio of 12 officers for every 1,000 residents) and 21 firefighters (a ratio of 10 firefighters per 1,000 residents) (CNMI Department of Public Safety 2022; CNMI Department of Fire Emergency Medical Services 2022). The Commonwealth Ports Authority also maintains firefighting capability at TNI as a requirement for airport operations. This capability is available to the Tinian Department of Public Safety in the event of an emergency. TNI has one firefighting vehicle and nine personnel. The personnel have dual roles as Aircraft Rescue Firefighters and Ports Police officers (Commonwealth Ports Authority 2023).

### 3.3.3.2 Public Health

There are two medical facilities on Tinian including the Tinian Healthcare Center and the Isla Community Health Clinic. The Tinian Healthcare Center, part of the Commonwealth Healthcare Corporation, is the island's primary health care facility and is located in San Jose Village. The facility was built in 1987 and has five holding beds and provides emergency services, an outpatient clinic, laboratory, x-ray, radiology, pharmacy, dentistry, and public health operations (Commonwealth Healthcare Corporation 2022).

In 2023 alone, the Tinian Healthcare Center and the Isla Community Health Clinic encountered 4,419 and 1,777 patients, respectively (Commonwealth Healthcare Corporation, 2023). Information provided by the Tinian Mayor's Office indicates that as of September 2023, there was one Physician's Assistant at the Tinian Healthcare Center and one Nurse Practitioner at the Isla Community Health Clinic (Tinian Mayor's Office, Personal Communication, 2023).

## 3.4 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife, both of which include terrestrial and marine species. Habitat can be defined as the conditions present in an area that support plants and wildlife.

Biological resources are divided into five categories: (1) terrestrial vegetation, (2) terrestrial wildlife, (3) terrestrial special-status species<sup>1</sup>, (4) marine communities, and (5) marine special-status species.

### 3.4.1 Terrestrial Vegetation

Terrestrial vegetation is defined as plant species or groups of plants (plant communities) that occur and interact with each other, animal populations, and the physical environment. Plants that are of cultural or societal importance on Tinian are also described in this section. The vegetation present in an area provides habitat that supports different wildlife species. The plant communities on Tinian and within the Military Lease Area are described according to plant associations and the dominant species.

The 12 plant communities that occur on Tinian are shown on Figure 3.4-1 and Figure 3.4-2 and listed in Table 3.4-1. Following the table, the six most prevalent plant communities on Tinian are described, with definitions of all plant communities provided in Appendix G.

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<sup>1</sup> When species are mentioned for the first time, they are listed using their common name followed by their scientific name in parentheses; only the common name is used afterwards. If there is no common name, only the scientific name is used. Appendix G identifies the Chamorro names for species, where applicable.



Figure 3.4-1 Plant Communities on Tinian (North)



Figure 3.4-2 Plant Communities on Tinian (South)

**Table 3.4-1 Plant Communities on Tinian and Within the Military Lease Area**

<i>Plant Community</i>	<i>Acres</i>	<i>% of Total Land Cover on Tinian</i>	<i>Acres within the Military Lease Area</i>	<i>% of Total Land Cover within the Military Lease Area</i>
<i>Leucaena</i> Forest	8,283.20	33.1	5,750.40	37.6
Secondary Limestone Forest	6,206.86	24.8	4,098.10	26.7
Other Scrub/Grassland <sup>1</sup>	5,176.60	20.7	3,229.50	21.1
Developed	1,683.00	6.7	407.90	2.7
Limestone Native Forest	1,032.59	4.1	268.30	1.8
<i>Casuarina</i> Forest	779.08	3.1	528.20	3.5
Scrub/Shrub <sup>2</sup>	718.33	2.9	451.10	3.0
Limestone Coastal Scrub	614.22	2.5	339.20	2.2
Barren	353.31	1.4	123.00	0.8
Coconut Forest	106.84	0.4	50.80	0.3
Wetland <sup>3</sup>	30.62	0.1	34.00	0.2
<i>Bambusa</i> Forest <sup>4</sup>	15.56	0.1	11.80	0.1
<b>Total</b>	<b>25,000.21</b>	<b>100.0</b>	<b>15,292.40</b>	<b>100.0</b>

Legend: % = percent.

Notes: <sup>1</sup> Common non-native species include several considered invasive (that is, species that cause significant ecological harm when introduced to a new environment) such as: lantana (*Lantana camara*), paper rose (*Operculina campanulat*), climbing hempweed (*Mikania scandens*), mission grass (*Pennisetum polystachion*), giant sensitive plant (*Mimosa diplotricha*), and the African tulip tree (*Spathodea campanulate*).

<sup>2</sup> Characterized by the predominance of low-stature woody vegetation that can occur as a mixture of native and non-native species.

<sup>3</sup> The term “wetland” refers to the plant community and is not meant to infer a jurisdictional determination as defined under the Clean Water Act.

<sup>4</sup> Non-native bamboo (*Bambusa vulgaris*).

Source: NAVFAC Pacific 2019.

**Coconut Forest.** This plant community is almost exclusively dominated by coconut palm (*Cocos nucifera*). Stands of this forest type can support a relatively diverse understory of mixed native and non-native shrubs, herbs, and/or ferns, or have minimal understory. Some of these stands may be remnants of previous coconut plantations while others may be the result of natural dispersion. Approximately one-third of the island’s coconut forests are located in five stands within the Military Lease Area.

**Leucaena Forest.** This plant community is dominated by tanga-tanga (*Leucaena leucocephala*) and typically occurs on limestone substrate where it can occur in pure stands (Amidon et al. 2017). In areas adjacent to native forests, tanga-tanga can be invasive, mixing with native woody species. *Leucaena* forests dominate much of the level and moderately sloping lowland habitat areas on Tinian, especially in the northern portions of the island within the Military Lease Area. While not considered a native plant community on Tinian, *Leucaena* forest does provide habitat for some native bird species, including species protected under the Migratory Bird Treaty Act.

**Limestone Coastal Scrub.** This plant community, also simply referred to as coastal scrub, is found primarily on limestone terraces and cliff edges (Amidon et al. 2017). Species include *Ficus* spp., bantigue (*Pemphis acidula*), and great woolly Malayan lilac (*Callicarpa candicans*).

**Secondary Limestone Forest.** This plant community consists of limestone forest habitat that has been significantly disturbed by clearing, invasive plants, and non-native animals (Amidon et al. 2017). Secondary limestone forest is often referred to as degraded forest and exhibits a mixture of non-native trees, shrubs, and dense herbaceous plants. This community provides habitat for

federally listed and CNMI-listed plant species and native birds, including those protected under the Migratory Bird Treaty Act.

**Limestone Native Forest.** This plant community consists of relatively undisturbed forest that occurs on shallow limestone soils dominated by native tree and shrub species (Amidon et al. 2017). Forest clearings from ungulates (i.e., mammals with hooves) and other disturbances are absent or very limited. The term “limestone native forest” also describes areas that may have been cleared and have regrown with native tree and shrub species.

The total area of limestone native forest has been significantly reduced on Tinian due to past human activities and land uses, including widespread cultivation of non-native species (e.g., sugar cane), ground disturbance during World War II, introduction of non-native plants and animals, and grazing by non-native ungulates. Limestone native forest is important because it retains the functional ecological components that provide habitat for most of Tinian’s native species, including federally listed and CNMI-listed species, and migratory birds. The few areas of limestone native forest remaining on Tinian within the Military Lease Area occur along cliff lines near Mount Lasso, along cliff lines to the west and south of Unai Chiget, along the coast of Lamanibot Bay (known locally as Dump Coke), and above and to the south-southeast of Unai Masalok (Figure 3.4-1).

**Wetland.** These plant communities are areas of grasses, sedges, herbs, or woody species typically found in standing water or soils that are saturated for most of the year. Wetlands include marshes, swamps, bogs, and similar areas. See Section 3.14 Surface Waters and Wetlands for discussion of the jurisdictional status of these wetlands. There are two main types of wetland communities on Tinian:

- *Wetland Herbaceous*, dominated by herbaceous plants and, in most cases, dominated by only a few plant species. The most common herbaceous species found in this community is tall reed (*Phragmites karka*), which often forms a dense monoculture.
- *Wetland Shrub/Herb*, found in areas subject to permanent or periodic inundation or prolonged soil saturation. Wetland shrub/herb communities tend to be dominated by shrubs or a mixture of shrubs and herbs. They are located in low areas along coasts and streams, in depressions or in poorly drained volcanic soils, and in areas of fresh or brackish water.

Wetlands on Tinian provide habitat for the federally endangered Mariana common moorhen (*Gallinula chloropus guami*) and migratory birds. Wetland habitat occurs in three areas within the Military Lease Area: Lake Hagoi, Mahalang Complex, and Bateha. See Section 3.14 Surface Waters and Wetlands for discussion of the jurisdictional status of these wetlands. Lake Hagoi (Figure 3.4-1) is the only permanent wetland vegetative community within the Military Lease Area (NAVFAC Pacific 2013). The wetland consists of a band of tall reed and large patches of bulrush (*Schoenoplectus litoralis*) around the perimeter, and patches of giant swamp fern (*Acrostichum aureum*) and knotgrass (*Paspalum distichum*), all of which are native to Tinian (Raulerson 2006).

The Mahalang ephemeral wetland complex consists of at least 24 individual sites located on a plateau within the northern portion of the Military Lease Area, south of Lake Hagoi. These sites are located within a matrix of grasslands (herbaceous-scrub), *Leucaena*, and mixed secondary forest. A few sites contain water during the wet season, but all are dry during the dry season. The two largest sites are approximately 1.2 acres each (AECOS, Inc. and Wil Chee Planning, Inc. 2009). The majority of the sites are likely bomb craters from World War II. Invasive species

including mission grass and various species of non-native weedy vines dominate the interior of the craters. Other sites in the complex consist of shallow depressions with various weedy vines and herbs.

The Bateha ephemeral wetland site consists of two shallow depressions that contain water during the wet season. Each area is approximately 1 to 2 acres. The larger western site at Bateha is dominated by the non-native giant sensitive plant and contains the non-native shrub candle bush (*Senna alata*) along with other weedy species. Mission grass occurs along the perimeter. The eastern site is a deeper depression surrounded by ridges dominated by an overstory of non-native Formosan koa (*Acacia confusa*) and mission grass. Candle bush is dispersed throughout the northern and southern portions of the site.

**Culturally Important Plants.** Multiple plant species occurring throughout Tinian have served as important sources of food or medicine to the people of Tinian, both historically and currently. These culturally important plants on Tinian include wild yams (*Dioscorea villosa*), breadfruit (*Artocarpus altilis*), Donni Sali (*Capsicum chinense*), and medicinal plants including puntan talisai (*Terminalia catappa*), galak (*Asplenium nidus*), niyok (*Cocos nucifera*), and ahgao (*Premna obtusifolia*) and are fairly evenly distributed throughout the Military Lease Area.

### 3.4.2 Terrestrial Wildlife

The term wildlife is used to describe animals that are not assigned special status protection by law, and include birds, mammals, reptiles, amphibians, and invertebrates. Non-protected, native wildlife species on Tinian include five birds, seven reptiles, and an undefined number of invertebrates (DON 2023; Joint Region Marianas 2023). Special status species are described in Section 3.4.3.

**Birds.** The non-protected native bird species on Tinian include: the Micronesian myzomela (*Myzomela rubratra*), rufous fantail (*Rhipidura rufifrons uraniae*), bridled white-eye (*Zosterops conspicillatus saypani*), Micronesian starling (*Aplonis opaca guami*), and Tinian monarch (*Monarcha takatsukasae*) (U.S. Fish and Wildlife Service 2013).

The most abundant native bird species on Tinian are bridled white-eye, rufous fantail, and the Tinian monarch (Camp et al. 2009b, Camp et al. 2012; NAVFAC Pacific 2014; Spaulding et al. 2022). Analyses of population trends from 1982 to 2013 indicate increases in population densities for the Micronesian starling and rufous fantail and decreases in population densities for the Micronesian myzomela. Population densities have remained stable for the bridled white-eye and Tinian monarch (NAVFAC Pacific 2014; Spaulding et al. 2022). The five naturalized, non-native birds occurring on Tinian include red jungle fowl (*Gallus gallus*), rock dove (*Columba livia*), island collared dove (*Streptopelia bitorquata*), Eurasian tree sparrow (*Passer montanus*), and orange-cheeked waxbill (*Estrilda melpoda*). All five of these species are common and widespread on Tinian (DON 2023).

The Tinian monarch was previously listed as an endangered species in 1970 (35 FR 8491). In 1999, the U.S. and the CNMI dedicated approximately 970 acres of land for wildlife conservation for the Tinian monarch. In accordance with the conservation agreement, and as stated in the U.S. Fish and Wildlife Service Biological Opinion 1-2-98-F-07 issued to Federal Aviation Administration and Commonwealth Ports Authority for the expansion of West Tinian Airport. The military retained the right to use the Natural Resources Conservation Area for low impact, non-

habitat-destructive military training. However, in 2004, the U.S. Fish and Wildlife Service removed the Tinian monarch from the Federal List of Endangered and Threatened Wildlife (69 FR 56367). At the time, the U.S. Fish and Wildlife Service found that the Tinian monarch has continued to thrive despite historical and ongoing impacts to its habitat on Tinian (83 FR 65133).

**Mammals.** Non-native mammals include the black rat (*Rattus rattus diardii*), Polynesian rat (*Rattus exulans*), Norway rat (*Rattus norvegicus*), house mouse (*Mus musculus*), Asian house shrew (*Suncus murinus*), domestic cat (*Felis catus*), domestic dog (*Canis lupus familiaris*), goat (*Capra hircus*), cattle, pigs (*Sus scrofa*) and Philippine deer (*Rusa marianna*). Non-native rodents (rats, mice, and shrews) can have a profoundly negative effect on island populations of native birds, reptiles, and invertebrates (Doherty et al. 2016; Spatz et al. 2017). The dietary intake of rats also includes native plants, seeds, and fruit, leading high rodent densities to be correlated with negative changes in forest composition (Weiwei et al. 2009). High densities of black rats on Tinian, which are present in all plant communities in the Military Lease Area, pose a threat to flora and fauna, including Tinian's bird species (Wiewel et al. 2009; DON 2023, Leo and Wiewel 2013).

Feral domestic cats and dogs are common on Tinian and have been observed hunting in native forests at night (DON 2013a). Goats have been transported from Aguiguan to Tinian, and a coastal survey in October 2008 confirmed at least 20 goats at Puntan Kastiyu, south of the Military Lease Area (Kessler 2009). No goats have been observed in the Military Lease Area. Cattle and pigs occur on Tinian as domesticated livestock found penned or pastured on leased lands.

**Reptiles and Amphibians.** During surveys on Tinian in 2008, the U.S. Fish and Wildlife Service observed eight native terrestrial reptile species, including the mangrove monitor lizard (*Varanus indicus*), mourning gecko (*Lepidodactylus lugubris*), Micronesian gecko (*Perochirus ateles*), Indo-Pacific house gecko (*Hemidactylus granitic*), oceanic snake-eyed skink (*Cryptoblepharus poecilopleurus*), littoral skink (*Emoia atrocostata*), Pacific blue-tailed skink (*Emoia caeruleocauda*), and Brahminy blind snake (*Ramphotyphlops braminus*) (Rodda et al. 2009, Weijola et al. 2020). The mourning gecko was the most abundant lizard species in secondary limestone and limestone native forest habitats (Rodda et al. 2009).

Non-native reptiles include the oceanic gecko (*Gehyra oceanic*), mutilating gecko (*Gehyra mutilata*), curious skink (*Carlia fusca*), emerald skink (*Lamprolepis smaragdina*), and green anole (*Anolis carolinensis*). The marine toad (*Bufo marinus*) is the only amphibian that occurs on Tinian (Wiles et al. 1989; DON 2023).

**Invertebrates.** The coconut crab (*Birgus latro*), blue land crab (*Discoplax hirtipes*) and the brown land crab (*Cardisoma carnifex*) are regulated as native game species by the CNMI Department of Fish and Wildlife; a license is required for harvesting them during regulated hunting seasons (land crabs from April 1 to June 30; coconut crab from September 15 to November 15). Although the coconut crab occurs in limestone native forests, females regularly migrate to the ocean to spawn. Coconut crab densities on Tinian have been estimated at 2 crabs per acre in limestone native forest and 0.7 crab per acre in *Leucaena* forest (Vogt 2009). Land crabs are a common terrestrial burrowing crab found throughout the Indo-Pacific and are generally associated with wetland or coastal habitats on Tinian (DON 2023).

The mangrove crab (*Scylla serrata*), introduced as a potential food source, is the only non-native terrestrial crustacean on Tinian (Commander, U.S. Naval Forces Marianas 2004; NAVFAC Pacific and NAVFAC Marianas 2010; DON 2023).

Butterfly surveys were conducted on Tinian from June through October 2008 (Hawley and Castro 2009). Known host plants for several species were extensively monitored at four sites on the island, two of which are in the Military Lease Area. During these surveys, Hawley and Castro (2009) observed adults, caterpillars, and chrysalis of three non-protected species at a site in the Military Lease Area referred to as the Japanese Caves: blue moon butterfly (*Hypolimnys bolina*), guardian butterfly (*Hypolimnys anomala*), and the common evening brown (*Melanitis leda*).

The predatory New Guinea flatworm (*Platydemus manokwari*) was introduced to Tinian to help control the non-native giant African snail (*Achatina fulica*). The flatworm poses a serious threat to native tree snails, including the humped tree snail (Hopper and Smith 1992; NAVFAC Pacific 2014; U.S. Fish and Wildlife Service 2015).

Although the coconut rhinoceros beetle (*Oryctes rhinoceros*) is established on Guam and was discovered on Rota in October 2017, it has not yet been reported on Tinian (CNMI Department of Land and Natural Resources 2017). This invasive pest is a highly detrimental threat to coconut palms in the Marianas, and a monitoring program has been established on Tinian (CNMI Department of Land and Natural Resources 2017). Under this program, panel traps for the beetles were deployed on the North Field during training events between February 2020 and February 2023. Since then, panel traps have been deployed to approximately 40 locations throughout the Military Lease Area and are maintained as early detection tools.

### **3.4.3 Terrestrial Special Status Species**

Special status species are those species listed as threatened or endangered under the Endangered Species Act (referred to as federally listed species), those designated by the CNMI Department of Lands and Natural Resources as threatened or endangered, and bird species protected under the Migratory Bird Treaty Act (referred to as migratory birds) that occur or have the potential to occur on Tinian.

#### **3.4.3.1 Terrestrial Federally Listed and CNMI-listed Species**

Table 3.4-2 describes the federally listed and CNMI-listed species known or having the potential to occur on Tinian. Figure 3.4-3 shows the locations of known occurrences of these species.

**Table 3.4-2 Occurrence of Terrestrial Federally Listed and CNMI-listed Species on Tinian**

<i>Common Name/ Scientific Name</i>	<i>Federal Status</i>	<i>CNMI Status</i>	<i>Habitat</i>	<i>Occurrence</i>
<b>Birds</b>				
Mariana common moorhen/ <i>Gallinula chloropus guami</i>	E	E/T	Freshwater wetlands.	Monthly counts of moorhen at Lake Hagoi between 2002 and 2012 resulted in annual means of between 7 and 17 birds. Moorhen population estimates at Lake Hagoi between 2015 and 2017 averaged less than 20 birds. Similar numbers were estimated between 2018 through September 2024.
Micronesian megapode/ <i>Megapodius laperouse</i> <sup>4</sup>	E	E/T	Limestone forest and coconut forest.	Multiple reports of individual birds seen since the 1980s, but none detected by sight or sound since 2014.
<b>Mammals</b>				
Mariana fruit bat/ <i>Pteropus mariannus mariannus</i>	T	E/T	Limestone forest, coastal forest, and coconut forest.	Occasional sightings by residents; four surveys were conducted between 2000 and 2008, with five fruit bats observed in 2005. A colony consisting of up to approximately 100 individuals was discovered in the limestone native forest region north of Mount Lasso in 2023.
<b>Reptiles</b>				
Green turtle/ <i>Chelonia mydas</i> <sup>1,3</sup>	E	E/T	Suitable beaches for basking and nesting.	Suitable nesting beaches occur at Unai Chulu, Unai Babui, Unai Lam Lam, Unai Chiget, Unai Dankulo, and Unai Masalok. Twenty-three nests were observed in the Military Lease Area in 2023 (at Unai Dankulo and Unai Masalok).
Hawksbill turtle/ <i>Eretmochelys imbricata</i> <sup>3,4</sup>	E	E/T	Suitable beaches for basking and nesting.	During monthly nesting surveys from 1999–present, one nest observed at Unai Dankulo in 2010.
Micronesian gecko/ <i>Perochirus ateles</i>	-	E/T	Forested areas.	Reported at Mount Lasso and Carolinas Plateau in 2008.
<b>Invertebrates</b>				
Humped tree snail/ <i>Partula gibba</i> <sup>4</sup>	E	-	Intact limestone forest.	Humped tree snail surveys have documented two discrete populations within limestone native forest along Lamanibot Bay (Dump Coke).
<b>Plants</b>				
Fadang/ <i>Cycas micronesica</i> <sup>2</sup>	T <sup>2</sup>	-	Forest and savanna ecosystems.	<i>C. micronesica</i> is not known to historically occur on Tinian. In 2008, the DON planted 1,000 cycad seedlings in native forest near Mount Lasso. Cycads have also been planted at memorials, shrines, and World War II landmarks and individual cycads are found within the village of San Jose.

<i>Common Name/ Scientific Name</i>	<i>Federal Status</i>	<i>CNMI Status</i>	<i>Habitat</i>	<i>Occurrence</i>
Ufa-halomtano/ <i>Heritiera longipetiolata</i>	E	-	Moist forest on limestone cliffs and in coastal sites with windy conditions.	Observed during 2018 and 2023 surveys within the Military Lease Area at Unai Masalok on the east coast and south of the Military Lease Area along the eastern/southeastern coast.
No common name/ <i>Dendrobium guamense</i>	T	-	Grows on tree trunks and branches in native forest.	Observed during 2016, 2017, 2018 and 2023 surveys on and near Mount Lasso.

*Legend:* - = not listed; E = endangered; ESA = Endangered Species Act; T = threatened; E/T = the CNMI Administrative Code does not specify whether a species is threatened or endangered: all species are considered threatened *and* endangered.

*Notes:* <sup>1</sup> Central West Pacific Distinct Population Segment.  
<sup>2</sup> Threatened, but no federal status on Tinian. Individuals established on Tinian by the DON via outplanting and residents via seeds from Rota are not included in the species’ range in U.S. Fish and Wildlife Service determinations (2014, 2015). The species will not be consulted on under the Endangered Species Act.  
<sup>3</sup> Land occurrence and nesting is under jurisdiction of U.S. Fish and Wildlife Service and aquatic occurrence is under jurisdiction of National Marine Fisheries Service. Marine occurrence of these Endangered Species Act-listed turtle species are described under Marine Special Status Species.  
<sup>4</sup> Due to a lack of presence within the Proposed Action areas, this species will not be analyzed in the U.S. Fish and Wildlife Service Section 7 consultation under the Endangered Species Act.

*Sources:* Berger et al. 2005; Vogt 2008a, 2008b; Brooke 2009; Kessler and Amidon 2009; Marshall et al. 2009; DON 2011, 2012, 2013a, 2020, 2023; NAVFAC Pacific and NAVFAC Marianas 2010; Summers et al. 2018; U.S. Fish and Wildlife Service 2012a, 2014, 2015; Holland and Sischo 2013; Liske-Clark 2015; NAVFAC Pacific 2014, 2014, 2017, 2018, 2019; NAVFAC Marianas 2019, Joint Region Marianas 2023, Cardno Government Services – AECOM Pacific Joint Venture 2023.



Figure 3.4-3 Occurrences of Federally Listed and CNMI-listed Species on Tinian

**Birds.** Two federally endangered bird species, the Mariana common moorhen and Micronesian megapode (*Megapodius laperouse*), occur within the Military Lease Area. The Mariana common moorhen relies on emergent vegetation of freshwater marshes, ponds, and placid rivers for breeding, foraging, and sheltering (U.S. Fish and Wildlife Service 1992; NAVFAC Pacific and NAVFAC Marianas 2010). Its preferred habitat includes freshwater lakes, marshes, and swamps. The U.S. Fish and Wildlife Service (1992) recovery plan for the Mariana common moorhen identifies Lake Hagoi within the northern portion of the Military Lease Area as primary habitat for the moorhen. Analysis of survey data collected between 1998 and 2014 suggest the moorhen population on Tinian has been stable to slightly increasing (Camp et al. 2014). The population estimate at Lake Hagoi in 2017 was less than 20 individuals (NAVFAC Marianas 2017). From 2018 to September 2024, up to 54 moorhens potentially occurred throughout the year at Lake Hagoi and at the seasonal Bateha and Mahalang ephemeral wetlands when water was present, based on point-count survey data (DON 2023, NAVFAC Pacific 2024). However, these data were based only on acoustic counts and reflect at least some degree of replication.

Surveys in the Military Lease Area have shown the Micronesian megapode occurs only occasionally at very low numbers. In the years that megapodes were detected (seen in 2001, 2004, 2005 and 2013; and one identified by sound in 2009), they were recorded in the Mount Lasso area, south of Lake Hagoi, and a small area of native forest adjacent to Cross Island Road in the southern portion of the Natural Resources Conservation Area (Figure 3.4-3) (Krueger and O’Daniel 1999; Witteman 2001; Vogt 2006; NAVFAC Pacific and NAVFAC Marianas 2010; DON 2012, 2014b, 2023). The infrequent sightings of the species on Tinian is likely the result of movement of these transient birds from Aguiguan or Saipan as no resident breeding population has been identified on Tinian (DON 2013a).

**Mammals.** Tinian once readily supported colonies of Mariana fruit bats (*Pteropus mariannus mariannus*) but following native forest clearing during Spanish colonial times, sugarcane production under the Japanese administration and World War II, only 5 percent of their native forest habitat remained on the island, resulting in the virtual absence of Mariana fruit bats on Tinian. Today, there are approximately 8,140.9 acres of suitable foraging and roosting habitat (i.e., limestone native forest, secondary limestone forest, *Casuarina* Forest, and coconut forest) remaining for fruit bats on the island, 61 percent (4,957.2 acres) of which occurs in the Military Lease Area. Habitat loss and poaching are the primary reasons for the decline of Mariana fruit bats on Tinian.

During surveys for the then-proposed USAGM site in 1995, locals reported that fruit bats were known to roost in the southern portion of what would become the proposed Base Camp footprint (Voice of America 1995). A fruit bat colony consisting of up to approximately 100 individuals was discovered in the limestone native forest region north of Mount Lasso in 2023 (CNMI Department of Lands and Natural Resources 2024, Mildenstein 2024). Prior to this, no fruit bat colony was known to occur on Tinian. Habitat loss and poaching are the primary reasons for the near absence of Mariana fruit bats on Tinian (Wiles and Johnson 2004). Fruit bats may fly between islands in the southern Mariana Islands, including Aguiguan and Tinian (Mildenstein and Mills 2013; DON 2023).

**Reptiles.** Both the Central West Pacific distinct population segment of green turtle (*Chelonia mydas*) and the hawksbill turtle (*Eretmochelys imbricata*) have been documented nesting on Tinian beaches (Joint Region Marianas 2023).

Abundance and density of green turtle nesting is highest along Tinian's relatively uninhabited east coast (Kolinski 2001), as nesting green turtles require deep sand beaches with open ocean exposure and minimal disturbance (NAVFAC Pacific and NAVFAC Marianas 2010; DON 2012). Of the 13 distinct beaches or beach complexes on Tinian that could support nesting, 10 are within the Military Lease Area, 6 of which have continually been surveyed once a month since 1998: Unai Chulu, Unai Lam Lam, Unai Chiget, Unai Dankulo, Unai Masalok, and Unai Babui. After 21 years (1999 to 2019) of monthly beach surveys, approximately 55 percent of all green turtle activity on the six regularly surveyed Military Lease Area beaches was observed on the Unai Dankulo pocket beaches (DON 2020). In 2023, 17 nests occurred on Unai Dankulo and another 5 nests were documented on Unai Masalok (NAVFAC Marianas 2024). On July 19, 2023, the U.S. Fish and Wildlife Service issued a proposed rule for the designation of 6 acres of terrestrial critical habitat for the green turtle along the southwest coast of Tinian (88 FR 46376), none of which occurs within the Military Lease Area (Figure 3.4-3). Furthermore, section 4(a)(3)(B)(i) of the Endangered Species Act designates that areas owned or controlled by the DoD are exempt from critical habitat designation if an Integrated Natural Resources Management Plan is in place that provides a benefit to the species. Joint Region Marianas completed an Integrated Natural Resources Management Plan in 2019. Therefore, proposed critical habitat for the green turtle is not discussed further in this Final EIS.

Hawksbill turtles will nest on small pocket beaches and, because of their small body size and greater agility, hawksbill turtles can traverse fringing reefs that limit access to other sea turtle species (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1998). During monthly surveys from 1998 to 2017, only a single hawksbill turtle nest was documented at Unai Dankulo in 2010 (DON 2020). These monthly surveys are ongoing.

The Micronesian gecko (*Perochirus ateles*) is native to Micronesia and is the only CNMI-listed threatened/endangered terrestrial reptile in the Mariana archipelago. The species has never been abundant on Tinian and was believed extirpated on the island after 1946 (Rodda et al. 2009) until it was collected in southern Tinian in August 2003, was sighted in 2007 near Mount Lasso, and was collected again in limestone native forest on Mount Lasso in 2008, suggesting it may occur at very low densities (Rodda et al. 2009; NAVFAC Pacific and NAVFAC Marianas 2010). No further surveys have been conducted for the species on Tinian.

**Invertebrates.** The humped tree snail was historically present on Tinian but was thought to be extirpated from the island until a June 2013 DON survey documented two discrete populations of the species within limestone native forest along Lamanibot Bay (known locally as Dump Coke). A total of 92 individuals were counted between the two sites, including adults, subadults, and juveniles (NAVFAC Pacific and NAVFAC Marianas 2010; NAVFAC Pacific 2014). Bleached humped tree snail shells were also observed on the ground in limestone native forests in the vicinity of Unai Chiget, south of Lake Hagoi, the Mount Lasso area, and Unai Masalok.

A 2019 survey conducted in the southern portion of Lamanibot Bay to locate these two humped tree snail populations post-Typhoon Yutu (NAVFAC Pacific 2019) found only old shells of humped tree snails at both locations. No living tree snails were observed (NAVFAC Pacific 2019);

nor were any living humped tree snails observed during 2023 surveys for federally listed species, with only bleached, weathered shells discovered in the Mount Lasso region (Figure 3.4-3).

**Plants.** *Cycas micronesica* is not known to historically occur on Tinian. The cycads on Tinian are the result of a 2007 Joint Region Marianas project to collect cycad germplasm from geographically and genetically diverse plants on Guam and plant saplings on Tinian to ensure a broad genetic representation of Guam's cycads in a living seed bank (DON 2023). The collection has been and continues to be actively managed. In addition, approximately 50 cycads were planted by the Tinian Mayor's office in the early 2000s, at numerous memorials, shrines, and World War II landmarks (e.g., North Field historic landmark, Chulu roundabout) within the Military Lease Area, and at other locations in the south of Tinian (DON 2016). Tinian residents have also brought seeds from Rota and individual cycads are found within the village of San Jose. Because the individuals on Tinian were artificially planted outside of their natural range, they do not maintain a federal protection status in Tinian. No training events or construction would occur where these individuals have been planted on Tinian. Therefore, this species is not discussed further in this Revised EIS.

*Heritiera longipetiolata* is an endangered tree species reported from Guam, Saipan, and Tinian and is known outside the Marianas only in Pohnpei (U.S. Fish and Wildlife Service 2015, Raulerson 2006, Costion and Lorence 2012). Within the Military Lease Area, *H. longipetiolata* has been found in coastal forests near Unai Masalok on the east coast (NAVFAC Pacific 2017a), along the Lamanibot Bay (Dump Coke) escarpment (Hawaiian Agronomics International, Inc. 1985; DON 2016), and in limestone native forest between Puntan Barangka and Puntan Kastiyu (NAVFAC Pacific 2014; U.S. Fish and Wildlife Service 2015). During the 2023 surveys, known *H. longipetiolata* groves were revisited and mapped in the Unai Masalok region. One new grove was also discovered south of Unai Chiget. In total, 290 individuals (250 mature and 40 seedling/sapling) were mapped within 12 distinct groves in 2023 (Figure 3.4-3), all of which appeared to be vigorous and healthy.

*Dendrobium guamense* is a threatened orchid that grows on tree trunks and branches in forest habitats. During the 2023 survey efforts, 23 occurrences of *D. guamense* were recorded, totaling 208 individuals. These ranged from individual plants to localized populations of up to 34 individuals. The majority of these were found growing on dead and/ or downed trees and branches, all within the Mount Lasso region (Figure 3.4-3). Dead or downed trees were most likely the result of Typhoon Yutu in 2018.

### 3.4.3.2 Migratory Birds

Of 64 species of birds documented on Tinian, 55 are currently protected under the Migratory Bird Treaty Act (DON 2023). The 13 Migratory Bird Treaty Act-protected birds that are most likely to be exposed to project activities are listed in Table 3.4-3. A list of all 64 Migratory Bird Treaty Act-protected bird species is provided in Appendix G.

**Table 3.4-3 Migratory Bird Treaty Act Bird Species Documented on Tinian Potentially Affected by the Proposed Action**

<i>Common Name</i>	<i>Scientific Name</i>
black noddy	<i>Anous minutus</i>
brown booby	<i>Sula leucogaster</i>
brown noddy	<i>Anous stolidus</i>
Eastern cattle egret	<i>Bubulcus coromandus</i>
Mariana fruit dove	<i>Ptilinopus roseicapilla</i>
Mariana kingfisher	<i>Todiramphus albicilla</i>
Pacific golden plover	<i>Pluvialis fulva</i>
Pacific reef heron	<i>Egretta sacra</i>
Ruddy turnstone	<i>Arenaria interpres</i>
White tern	<i>Gygis alba</i>
White-tailed tropicbird	<i>Phaethon lepturus</i>
white-throated ground-dove	<i>Gallicolumba xanthonura</i>
yellow bittern	<i>Ixobrychus sinensis</i>

*Sources:* Reichel and Glass 1991; Stinson 1994; U.S. Fish and Wildlife Service 1992, 1998, 2013; Vogt and Williams 2004; Kessler 2009; DON 2013a, 2023; NAVFAC Marianas 2017a; NAVFAC Pacific 2017b; recent records retrieved from eBird (Sullivan et al. 2009); Taxonomy follows Gill and Donsker 2018.

The gray-tailed tattler (*Tringa brevipes*), wandering tattler (*Tringa incana*), Pacific reef heron (*Egretta sacra*), black noddy (*Anous minutus*), brown noddy (*Anous stolidus*), brown booby (*Sula leucogaster*), yellow bittern (*Ixobrychus sinensis*) and white tern (*Gygis alba*) commonly occur in and utilize the shoreline areas of the Military Lease Area (Kessler 2009; NAVFAC Pacific 2017b).

Three native species of Migratory Bird Treaty Act-protected land birds are known to occur on Tinian: Mariana kingfisher (*Todiramphus albicilla*), Mariana fruit dove (*Ptilinopus roseicapilla*), and white-throated ground-dove (*Gallicolumba xanthonura*) (Kessler 2009; NAVFAC Pacific 2017b).

The population of Mariana kingfishers has varied considerably since surveys began in 1982. In terms of abundance by habitat type, there were decreases from 2008 to 2013 in limestone native forest, secondary forest, and *Leucaena* forest habitats, with the greatest decrease in the latter at 83 percent (NAVFAC Pacific 2014). However, the trend for Mariana kingfisher abundance and density since 1982 is increasing (NAVFAC Pacific 2014; Spaulding et al. 2022).

The population of Mariana fruit doves has varied considerably since surveys began in 1982. There was a notable decrease from 2008 to 2013 in both herbaceous-scrub and *Leucaena* forest habitats and a slight increase in limestone native forest populations (NAVFAC Pacific 2014). The trend for Mariana fruit dove abundance since 1982 is increasing (NAVFAC Pacific 2014; Spaulding et al. 2022). This conclusion is further supported by 1999 to 2015 breeding bird survey data from the CNMI Department of Fish and Wildlife (2015), which showed an increasing or stable fruit dove population on Tinian.

Abundance estimates for white-throated ground-doves have varied greatly, but the trend for both abundance and density of the species has increased since 1982 (NAVFAC Pacific 2014; Spaulding et al. 2022).

### 3.4.4 Marine Communities

Marine biological resources include marine species and habitats that could be affected by training and construction activities. Marine communities that may occur in the marine environment surrounding Tinian include aquatic vegetation and marine invertebrates, fish, Essential Fish Habitat, sea turtles, and marine mammals. Marine mammals, sea turtles, marine invertebrates (e.g. corals and giant clams) and certain fish species are discussed under Marine Special Status Species (see Section 3.4.5). This section describes existing environmental conditions for marine communities that could occur within and adjacent to the Proposed Action area and may be affected by the Proposed Action described in Sections 2.2 and 2.3.

#### 3.4.4.1 Aquatic Vegetation and Marine Invertebrates

Vegetation communities along the Tinian shoreline include seagrass beds, coastal strand vegetation, and algae. Mangroves are not present on Tinian; instead, coastal strand vegetation—comprised of flowering plants, vines, and salt-tolerant grasses—is prevalent along portions of the coasts and beaches (Plentovich 2020). Common coastal strand plant species include love vine (*Cassytha filiformis*), velvet leaf (*Heliotropium foertherianum*), sea-hibiscus (*Hibiscus tiliaceus*), bunchgrass (*Lepturus repens*), beach pea (*Vigna marina*), rosewood (*Thespesia populnea*), and seashore rush grass (*Sporobolus virginicus*), among other species.

Algae are widespread in nearshore waters around Tinian and are commonly associated with reef habitats, where they provide structure and food resources supporting diverse fish and invertebrate assemblages (DON 2015). Macroalgae, microalgae, coralline/red algae and turf algae all occur throughout the CNMI region. Regional inventories report 109 species of red algae, 31 species of brown algae and 71 species of green algae within CNMI waters; although island-specific algae surveys for Tinian are limited, algae are expected to be common throughout suitable nearshore habitat in the Proposed Action area (DON 2023b).

Tinian is surrounded by a shore-attached fringing reef system that covers approximately 9 square miles and includes some of the oldest and most developed reefs in the CNMI (National Oceanic and Atmospheric Administration 2018). Seven defined reef flats have been identified around Tinian: Unai Chulu, Unai Babui, Unai Dankulo, Unai Masalok, Unai Barcinas, Unai Leprosarium, and Taga Beach (DON 2015).

Macroinvertebrates are ecologically important components of CNMI reef ecosystems; however, portions of the reef structure surrounding Tinian may provide relatively limited habitat for some invertebrate groups compared to other areas in the archipelago (National Oceanic and Atmospheric Administration 2018). Recent regional assessments indicate overall declines in some invertebrate populations across the Mariana Islands, including areas around Tinian, and identify potential relationships among heat stress, human density, and habitat loss with these observed declining trends. Surveys conducted during the three years of Mariana Archipelago Reef Assessment and Monitoring Program reported relatively low abundance of giant clams, sea cucumbers, and sea urchins around Tinian compared to the other surveyed locations within the Mariana Archipelago (Waddell and Clarke 2008; Couch et al. 2023).

#### 3.4.4.2 Fish

Fish communities around Tinian are associated with reef and nearshore habitats. A 2011 rudimentary survey of the fish population in the Tinian Marine Reserve recorded nine commonly observed reef fish families, including surgeonfishes (*Acanthuridae*), butterfly fishes (*Chaetodontidae*), groupers and seabasses (*Serranidae*), damselfishes (*Pomacentridae*), wrasses (*Labridae*), triggerfishes (*Ballistidae*), emperors or ray-finned fishes (*Lethrinidae*), and snappers *Lutjanids* (Plass-Johnson 2011).

More recent site-specific surveys of the fish population in the study areas were conducted under the Mariana Archipelago Reef Assessment and Monitoring Program in 2023. These efforts integrated multiple data streams and applied a spatial downscaling approach to evaluate ecological patterns of resilience at management-relevant scales (Gajdzik et al. 2023). Species richness, with a range of 24 to 37 species per 100 square meters, was broadly similar to values reported from earlier survey efforts in 2003. Damselfishes—many observed as juveniles—were among the most abundant taxa, with princess damsel (*Pomacentrus vaiuli*), jewel damsel (*Plectroglyphidodon lacrymatus*), and midget chromis (*Chromis acares*) particularly common. Wrasses and surgeonfishes were also frequently observed.

Across survey years, total fish biomass at the Rapid Ecological Assessment sites around Tinian was moderately low, with a mean of 3.85 kilograms per 100 square meters across the three survey years for Mariana Archipelago Reef Assessment and Monitoring Program. Island-scale comparisons indicate Tinian exhibited among the lowest biomass values in the available Mariana Islands dataset (DON 2023b; Gajdzik et al. 2023).

#### 3.4.5 Marine Special Status Species

Marine special status species include marine mammals protected under the Marine Mammal Protection Act, Endangered Species Act-listed and CNMI-listed special status species, and Essential Fish Habitat, as regulated under the Magnuson-Stevens Fishery Conservation and Management Act. Marine mammals and sea turtles, as well as select invertebrate and fish taxa of conservation concern (e.g., corals and giant clams), are discussed in the following sections.

##### 3.4.5.1 Marine Mammals

Several species of marine mammals are known to occur or potentially occur in the waters around Tinian. Multiple scientific field surveys documented the presence of whales and dolphins, including photo-documentation sightings of short-finned pilot whales (*Globicephala macrorhynchus*), and sperm whale (*Physeter macrocephalus*), spinner dolphin (*Stenella longirostris*), false killer whales (*Pseudorca crassidens*), offshore of Tinian and humpback whales (*Megaptera novaeangliae*) offshore of Saipan.

All species of marine mammal are protected by the Marine Mammal Protection Act, and some are also listed and protected under the Endangered Species Act. In addition to the whales and dolphins listed above, some marine mammals not listed under the Endangered Species Act include the common minke whale (*Balaenoptera acutorostrata*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), melon-headed whale (*Peponocephala electra*), bottlenose dolphin (*Tursiops truncatus*), pantropical spotted dolphin (*Stenella attenuata*), Blainville's beaked whale (*Mesoplodon densirostris*), and Cuvier's beaked whale (*Ziphius cavirostris*) (DON 2023b).

“Species of Greatest Conservation Need” are those animal species or groups of particular importance to the people of the CNMI for biological, cultural, or economic reasons. All species first have to meet the following preliminary criteria before further consideration as a Species of Greatest Conservation Need:

- Animal species or groups only (any species that is Kingdom Animalia)
- Native species only
- “Manageable” species only (potential actions that could reasonably be expected to produce measurable population-level benefits for the species can be identified)
- Breeding species only

Table 3.4-4 provides a list of marine special status species that have been known to occur around Tinian. The species listed in this table include all ESA-listed and CNMI-listed species that could occur in the marine environment surrounding Tinian. This table compiles species that could occur based on habitat suitability and available records from Tinian and the surrounding region. It does not indicate confirmed or likely presence for all species; species may be included even if they have not been documented in the Proposed Action area. Inclusion of a species in this table should not be interpreted as evidence of regular or expected presence within the project area.

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**Table 3.4-4 Federally Listed and CNMI-listed Marine Species that May Occur Around Tinian**

<i>Common Name</i>	<i>Habitat</i>	<i>Presence around Tinian</i>	<i>ESA Status</i>	<i>CNMI Status</i>
<b>Invertebrates</b>				
Smooth Giant Clam/ <i>Tridacna derasa</i>	Offshore coral reefs, preferring clear, oceanic waters in depths of 4-25 meters (Neo et al. 2017)	Has historical occurrence in the CNMI; due to reintroduction efforts, the USMC considers the species to be potentially present in the area (Rippe et al. 2024)	Proposed Endangered	Species of Greatest Conservation Need
True Giant Clam/ <i>Tridacna gigas</i>	Reefs, sand, rock, dead corals rubble, seagrass beds, macroalgae; inhabit depths of 2-20 meters (NMFS 2024a)	Has historical occurrence in the CNMI; due to reintroduction efforts, the USMC considers the species to be potentially present in the area (Rippe et al. 2024)	Proposed Endangered	Species of Greatest Conservation Need
Giant Horse’s Hoof Clam/ <i>Hippopus hippopus</i>	Seagrass habitats, sand flats, and atoll lagoonal reefs; occur in depths of 10 meters or less (Neo et al. 2017)	Expected to be extremely rare or absent around Tinian and the CNMI (Rippe et al. 2024)	Proposed Threatened	Species of Greatest Conservation Need
Triton’s trumpet shell/ <i>Charonia tritonis</i>	Temperate and tropical waters worldwide in coral rich habitats	Documented along the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017); presence possible but would be considered rare	None	Species of Greatest Conservation Need
Common spider conch/ <i>Lambis lambis</i>	Indo-West Pacific; reef flats and shallow water coral-rubble bottoms	Documented along the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017); presence possible but would be considered rare	None	Species of Greatest Conservation Need
Silver-mouthed turban snail/ <i>Turbo argyrostomus</i>	Tropical Indo-Pacific on hard substrate and coral reefs	Could occur in suitable reef habitats or along Tinian’s eastern coast; documented as “common” around the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need
Tapestry turban/ <i>Turbo spp.</i>	Tropical Indo-Pacific; intertidal and subtidal zones	Could occur along the west side of Tinian and southern tip, commonly observed in exposed areas of coral reefs; documented around the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need

<i>Common Name</i>	<i>Habitat</i>	<i>Presence around Tinian</i>	<i>ESA Status</i>	<i>CNMI Status</i>
Rough turban/ <i>Turbo spp.</i>	Tropical Indo-Pacific; exposed areas on coral reefs	Could occur along the west side of Tinian and southern tip, commonly observed in exposed areas of coral reefs; documented as “common” around the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need
Longlegged spiny lobster/ <i>Panulirus spp.</i>	Rocky and coral reefs, usually depths less than 18 m	Documented around the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need
Pronghorn spiny lobster/ <i>Panulirus spp.</i>	Rocky and coral reefs, usually depths less than 18 m; tropical Indo-Pacific	Documented around the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need
Painted spiny lobster/ <i>Panulirus spp.</i>	Rocky and coral reefs, usually depths less than 18 m; tropical Indo-Pacific	Documented around the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need
<b>Corals</b>				
Staghorn corals/ <i>Acropora globiceps</i>	Near reefs within depths of 20 m from ocean surface in clear, non-turbid environments (Maynard et al. 2015; NMFS 2023)	Present along west shoreline near Lamanibot Bay, south end, east shoreline until Masalok Beach Road, and Unai Chulu (Maynard et al. 2015)	Threatened	Species of Greatest Conservation Need
<b>Fishes</b>				
Bump head or Napoleon wrasse/ <i>Cheilinus undulatus</i>	Steep outer reef slopes; warm waters of Pacific and Indian oceans	Documented along the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017); presence possible, but would be considered rare	None	Species of Greatest Conservation Need
Steephead parrotfish/ <i>Chlorurus microrhinos</i>	Inshore reefs, ocean reef fronts between 2 to 50 m depth; Indo-Pacific region (Liske-Clark 2015)	Have been observed around Tinian (Liske-Clark 2015); occurrence possible	None	Species of Greatest Conservation Need
Gray reef shark/ <i>Carcharhinus amblyrhynchos</i>	Offshore banks and reefs, 30-100 m depth	Documented along the leeward coast of Tinian in 2017 (NAVFAC Pacific 2017); presence possible but in low abundance	None	Species of Greatest Conservation Need
Oceanic white tip shark/ <i>Carcharhinus longimanus</i>	Open ocean; tropical and subtropical waters worldwide; depths down to at least 152 m (Young et al. 2017)	Presence possible, particularly while transiting through deeper waters just north of Tinian (NMFS 2024b)	Threatened	None

<i>Common Name</i>	<i>Habitat</i>	<i>Presence around Tinian</i>	<i>ESA Status</i>	<i>CNMI Status</i>
Scalloped hammerhead shark/ <i>Sphyrna lewini</i>	Warm temperate and tropical waters worldwide between 46°N and 36°S (Miller et al. 2014)	Presence considered possible in offshore pelagic/shelf-edge waters near Tinian, due to their highly mobile and migratory behavior (Budd et al. 2021)	Indo-West Pacific DPS –Threatened	None
Giant manta ray/ <i>Manta birostris</i>	Found in coastal waters near shorelines and offshore waters; often near productive areas, seamounts, and shelf edges; tropical, subtropical, and temperate waters (NMFS 2020)	Presence considered possible, particularly through deeper waters just north of Tinian, due to their migratory behavior (Hearn et al. 2014)	Threatened	None
<b>Turtles</b>				
Leatherback sea turtle/ <i>Dermochelys coriacea</i>	Found in temperate and tropical waters worldwide; up to 250 m depth (NMFS 2020)	Rare; pelagic/offshore; may transit through regional waters; occasional sightings/strandings possible due to their migratory behavior (NMFS 2020)	Endangered	None
Green sea turtle/ <i>Chelonia mydas</i>	Found in subtropical and tropical waters of the Atlantic, and Pacific, and Indian Oceans and in the Mediterranean Sea (NMFS 2020; Gaos et al. 2024)	Present in many areas around Tinian, including around Tinian Harbor and Babui Beach (Gaos et al. 2024)	Central West Pacific Ocean DPS – Endangered East Indian-West Pacific Ocean DPS – Threatened	CNMI Endangered
Hawksbill turtle/ <i>Eretmochelys imbricata</i>	Found in tropical and subtropical waters of all of the world’s major oceans (NMFS 2020); inlets, bays, coastal lagoons (King 2011)	Present in many areas around Tinian, including Tinian Harbor and Fleming Point (Gaos et al. 2024)	Endangered	CNMI Endangered
Loggerhead turtle/ <i>Caretta caretta</i>	Found worldwide in subtropical and temperate regions of Atlantic, Pacific, and Indian oceans; 0-20 m depth (NMFS 2020)	Could occur in pelagic waters far from shore; presence considered possible due to their migratory behavior (Navy 2018)	North Pacific Ocean DPS – Endangered	None

<i>Common Name</i>	<i>Habitat</i>	<i>Presence around Tinian</i>	<i>ESA Status</i>	<i>CNMI Status</i>
Olive ridley turtle/ <i>Lepidochelys olivacea</i>	Found primarily in the open ocean; tropical regions of Atlantic, Pacific, and Indian oceans; up to 150 m depth (NMFS 2024c)	Could occur in pelagic waters far offshore on the west side of Tinian in the soft-bottom habitats; however, occurrence would be considered rare (Navy 2020)	Threatened	None
<b>Mammals</b>				
Blue whale/ <i>Balaenoptera musculus</i>	All oceans, although they seem to avoid tropical waters; found in coastal waters, but seem to prefer offshore (NMFS 2020)	Could migrate through deepwater areas along the west side of the island during winter months (NMFS 2020)	Endangered	None
Fin whale/ <i>Balaenoptera physalus</i>	Found in many of the world's oceans; deep, open ocean (NMFS 2020)	Presence considered rare within the Proposed Action area (Fulling et al. 2011)	Endangered	None
Humpback whale/ <i>Megaptera novaeangliae</i>	Live along the coasts of all oceans (Reeves et al. 2002)	Could migrate through waters around Tinian; more expected near reproductive areas around Saipan (Hill et al. 2020a)	Endangered-Western North Pacific Ocean DPS	None
Sei whale/ <i>Balaenoptera borealis</i>	Subtropical, temperate, subpolar waters of Atlantic, Pacific, and Indian oceans (NMFS 2020)	Sightings have occurred south of Saipan; presence around Tinian considered possible due to their close proximity and migratory behavior (Norris et al. 2012)	Endangered	None
Sperm whale/ <i>Physeter macrocephalus</i>	All world's oceans; distribution dependent on food sources and conditions (NMFS 2020)	Presence within the Proposed Action Area considered likely due to encounters within the CNMI (Hill et al. 2017, 2018)	Endangered	None
Spinner dolphin/ <i>Stenella longirostris</i>	Nearshore waters around oceanic islands in tropical Atlantic, Indian, and Pacific oceans	Documented near Tinian in 2017 (NAVFAC Pacific 2017)	None	Species of Greatest Conservation Need

*Legend:* 46°N and 36°S = circles of latitude between the 46<sup>th</sup> parallel north and 36<sup>th</sup> parallel south; CNMI = Commonwealth of the Northern Mariana Islands; DPS = Distinct Population Segment; ESA = Endangered Species Act; m = meters; NAVFAC = Naval Facilities Engineering Systems Command; NMFS = National Marine Fisheries Service; USMC = United States Marine Corps

*Source:* Budd et al. 2021; Gaos et al. 2024; Fulling et al. 2011; King 2011; Hearn et al. 2014; Hill et al. 2018, 2017; Lisle-Clarke 2015; Maynard et al. 2015; Miller et al. 2014; Navy 2018, 2020; NMFS 2020, 2023, 2024a, 2024b, 2024c; Norris et al. 2012; Reeves et al. 2002; Rippe et al. 2024.

### 3.4.5.2 Sea Turtles

Green and hawksbill sea turtles, with respect to nesting and their terrestrial occurrence, are discussed in Section 3.4.3. This section focuses on their occurrence in the marine environment. Green sea turtles are the predominant sea turtle species in the Mariana Islands, accounting for 85 percent of turtles captured in-water in Guam (Martin et al. 2016) and 93 percent of turtles captured in-water in the CNMI (Summers et al. 2018). Long-term data from Guam corroborates this abundance; fifty years of aerial surveys suggest that the numbers of both green and hawksbill sea turtles have increased by an order of magnitude since the 1960's (Martin et al. 2016).

Genetic research indicates that most green sea turtles foraging in the Mariana Islands originate from nesting beaches in the Republic of the Marshall Islands, with additional contributions from nesting areas in the Federated States of Micronesia and other locations (Michael Jensen, Personal Communication, March 15, 2021, as cited in Gaos et al. 2024). Hawksbill sea turtles in the region exhibit migratory connectivity among Micronesian islands; for example, Gaos et al. (2024) documented a hawksbill sea turtle that traveled from foraging grounds around Tinian to take up long-term residency, likely for foraging, in the Federated States of Micronesia.

Navy-funded in-water research conducted between 2013 and 2023 in the Mariana Islands tagged and tracked green and hawksbill sea turtles to characterize habitat use. Surveys around Tinian found that green and hawksbill sea turtles are most commonly associated with broad, relatively shallow substrates, such as seagrass flats or rocky and coral patch reefs, rather than steep cliffs or drop-offs. Green and hawksbill sea turtles were observed at most survey locations; however, green sea turtles were far more numerous, outnumbering hawksbills by an approximate ratio of 10:1 (Gaos et al. 2024).

### 3.4.5.3 Marine Invertebrates (Corals and Giant Clams)

In 2014, 15 Indo-Pacific corals were listed as threatened under the Endangered Species Act (79 FR 53852, September 10, 2014). The coral species, *A. globiceps*, has been documented within the waters around Tinian. Occurrence of this species around Tinian is primarily found in high-relief forereef habitats such as spur-and-groove and aggregate reef to 12 m of depth. The species is much less common or absent in other habitats like those dominated by rubble and pavement such as Tinian's reef flats, reef crests, and low-relief forereefs (National Marine Fisheries Service 2024d). In a 2017 survey, colonies of *A. globiceps* were noted in various locations, including Unai Babui, Puntan Diablo, Unai Chulu, Puntan Lamanibot, Atgidon, and Barcinas Bay (DON 2017).

On 25 July 2024, National Marine Fisheries Service proposed to classify five giant clam species as endangered under the Endangered Species Act, while five were proposed as threatened. No critical habitat has been proposed for the proposed giant clams that occur within U.S. jurisdiction, given that NMFS stated that critical habitat was not yet determinable. *H. porcellanus*, *T. mbalavuana*, *T. squamosina*, *T. derasa*, and *T. gigas* are proposed as endangered species based on their own extinction risk, while *H. hippopus* is proposed as a threatened species based on its own extinction risk. Of the six species proposed for ESA listing based on their own extinction risk, best available science indicates that *T. derasa*, *T. gigas*, and *H. hippopus* have been documented within the CNMI and are considered native. Their occurrence is consequently considered to be possible within the Proposed Action area. However, they are likely very rare in the CNMI or extirpated, likely due to overutilization (Wells 1997).

### 3.4.5.4 Essential Fish Habitat

The primary federal law that makes up the regulatory framework for Essential Fish Habitat is the Magnuson Stevens Fishery Conservation and Management Act or Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297). Essential Fish Habitat is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (Western Pacific Regional Fisheries Management Council 2005). Essential Fish Habitat for managed fishery resources is designated in the Fishery Management Plans prepared by the local regional fisheries management council, the Western Pacific Regional Fisheries Management Council, which manages the fisheries resources for Tinian and CNMI. To reduce the complexity and the number of Essential Fish Habitat identifications required for individual species and life stages, the Western Pacific Regional Fishery Management Council designated Essential Fish Habitat for bottomfish and pelagic Management Unit Species based on the ecological relationships among species and their preferred habitat. Habitat Areas of Particular Concern are subsets of essential fish habitat that exhibit one or more of the following traits: (1) rare, (2) stressed by development, (3) provide important ecological functions for federally managed species, or (4) are especially vulnerable to anthropogenic (human impact) degradation. Habitat areas of particular concern can cover a specific location such as a certain bank, ledge, or spawning ground, or they can cover habitat that is found in many locations (coral, nearshore nursery areas, or pupping grounds) (National Oceanic and Atmospheric Administration Fisheries 2025). Table 3.4-5 presents the Essential Fish Habitat and Habitat Areas of Particular Concern designations provided by the Western Pacific Regional Fishery Management Council.

**Table 3.4-5 Essential Fish Habitat and Habitat Areas of Particular Concern for Bottomfish and Pelagic Management Unit Systems**

<i>Fishery Ecosystem Plan (Fishery)</i>	<i>Stock or Complex</i>	<i>Life Stage(s)</i>	<i>Essential Fish Habitat Designation</i>	<i>Habitat Area of Pacific Concern</i>
Mariana Archipelago (Bottomfish)	Shallow- and deep-water complexes	Egg / larval	Water column extending from the shoreline to the outer limit of the exclusive economic zone, down to a depth of 400 m	All slopes and escarpments between 40 m and 280 m
Mariana Archipelago (Bottomfish)	Shallow- and deep-water	Juvenile / adult	Water column and all bottom habitat extending from the shoreline to a depth of 400 m	All slopes and escarpments between 40 m and 280 m
Pacific Pelagic (All Pelagic Fisheries)	Tropical and temperate	Egg / larval	Water column extending from the shoreline to the outer limit of the exclusive economic zone, down to a depth of 200 m	Water column down to a depth of 1,000 m above all seamounts and banks with summits shallower than 2,000 m within the exclusive economic zone
Pacific Pelagic (All Pelagic Fisheries)	Tropical and temperate	Juvenile / adult	Water column down to a depth of 1,000 m	Water column down to a depth of 1,000 m above all seamounts and banks with summits shallower than 2,000 m within the exclusive economic zone

Legend: m = meters.

Source: Western Pacific Region Fisheries Management Council 2009a, 2009b.

### 3.5 Cultural Resources

Cultural resources are the physical evidence of or places of past human activity. Several federal laws and regulations govern the identification and management of cultural resources. The term “cultural resource” applies broadly to a variety of resources subject to consideration under the National Historic Preservation Act and other similar laws. Included are historic properties, which are defined under the National Historic Preservation Act as a district, site, building, structure, or object that is eligible for or listed on the National Register of Historic Places. These also include National Historic Landmarks and traditional cultural places. Under NEPA, the consideration of cultural resources also includes other resources that are not eligible for the National Register of Historic Places, but are important to the community, such as shrines and memorials. In order to qualify for the National Register of Historic Places, a property must exhibit a quality of significance in American history, architecture, archaeology, engineering, and culture in addition to retaining integrity of location, design, setting, materials, workmanship, feeling, and association. Significance is based on the following associations:

1. Criterion A: Properties that are associated with events that have made a significant contribution to the broad pattern of our history; or
2. Criterion B: Properties that are associated with the lives of persons significant in the past; or
3. Criterion C: Properties that embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value or represent a significant and distinguishable entity whose components may lack individual distinction; or
4. Criterion D: Properties that have yielded, or may be likely to yield, information important in prehistory or history.

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their actions on historic properties before undertaking a project, and to afford the Advisory Council on Historic Preservation with a reasonable opportunity to comment. Federal regulation 36 C.F.R. Part 800, “Protection of Historic Properties,” defines specific procedures for federal agencies to follow in complying with Section 106. Additionally, Section 110(f) of the National Historic Preservation Act gives special consideration to National Historic Landmarks by requiring federal agencies, to the maximum extent possible, to undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking. The Advisory Council on Historic Preservation may, as part of the Section 106 process specific to National Historic Landmarks, request a report from the Secretary of the Interior pursuant to National Historic Preservation Act Section 213 detailing the significance of the affected National Historic Landmark, effects of the proposed undertaking, and recommendations to avoid, minimize, or mitigate adverse effects.

The NEPA analysis for the Proposed Action covers the National Historic Preservation Act’s Section 106 area of potential effects, defined for this undertaking as the Military Lease Area, improvement areas north of TNI, the Port of Tinian, roads from the Port of Tinian to the Military Lease Area, and the former USAGM property on Saipan (Figure 3.5-1).

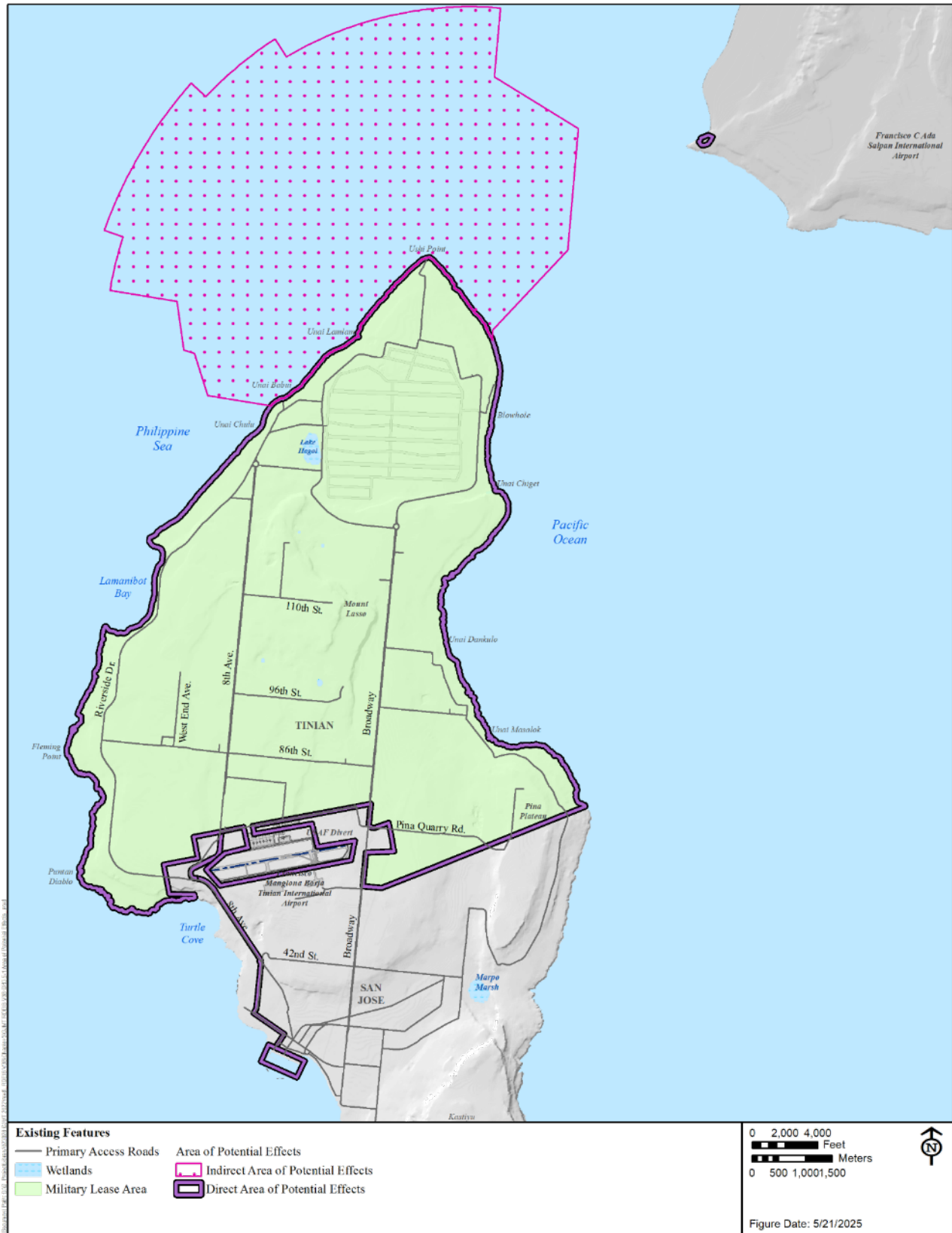


Figure 3.5-1 Area of Potential Effect

Section 106 regulations define the area of potential effects as “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 such properties exist” (36 C.F.R. section 800.16(d)). An indirect area of potential effect encompasses the surface danger zone in the waters northwest of Tinian. The former USAGM property on Saipan has been included in the area of potential effect, but as no new uses or construction is planned for this area, there are no activities that have the potential to cause effects on cultural resources and therefore no further impacts analysis is warranted for this portion of the area of potential effects.

Surveys conducted within and near the Military Lease Area account for approximately 98 percent survey coverage within the area of potential effects (Figure 3.5-2). These include archaeological assessments, Phase I surveys, Phase II testing, Phase III data recovery excavations, architectural surveys, underwater surveys, traditional cultural places studies, and a cultural landscape study. Nine investigations included testing and/or intensive excavation, and research of archives in the U.S., Japan, and Micronesia, including collections of historical maps and photographs and oral histories. Areas not surveyed in the Military Lease Area primarily are limited to small swaths of lands around the former USAGM property. In addition to the Military Lease Area, all of the area north of the TNI runways to the Military Lease Area boundary has been surveyed, and there have been 17 studies at the Port of Tinian and adjacent areas. The latter includes a 2008 architectural survey and archival study for all structures along the port’s wharf and quay (Thursby 2010 pp. 3-10). A list of cultural resources studies is presented in Appendix H. Surveys within the area of potential effect identified Pre-contact sites with *latte* stones and petroglyphs; Japanese Administration sites such as shrines, defensive caves, farmsteads, and internment camps; and other World War II-era sites. Cultural resources on Tinian consist of four types of resources: archaeological resources, architectural resources, traditional cultural places, and resources of cultural importance.

- **Archaeological Resources:** Those areas or locations (sites) where human activity measurably altered the earth or left deposits of physical remains, such as *latte* sites or pottery that are eligible for or listed in the National Register of Historic Places because of their association with an important historic context while retaining the integrity of features necessary to convey their significance.
- **Architectural or Built Properties:** Those standing buildings, dams, canals, bridges, and other structures which have historic, engineering, or aesthetic significance that are eligible for or listed on the National Register of Historic Places because of their association with an important historic context while retaining the integrity of features necessary to convey their significance.
- **Traditional Cultural Places:** A building, structure, object, site, or district that may be listed in (or determined eligible for listing in) the National Register of Historic Places for its significance to a living community rooted in the community’s history and that are important in maintaining the community’s cultural identity (National Park Service 2024).
- **Resources of Cultural Importance:** Include other resources that are important to the community such as shrines and memorials, even if they are not eligible for inclusion in the National Register of Historic Places.

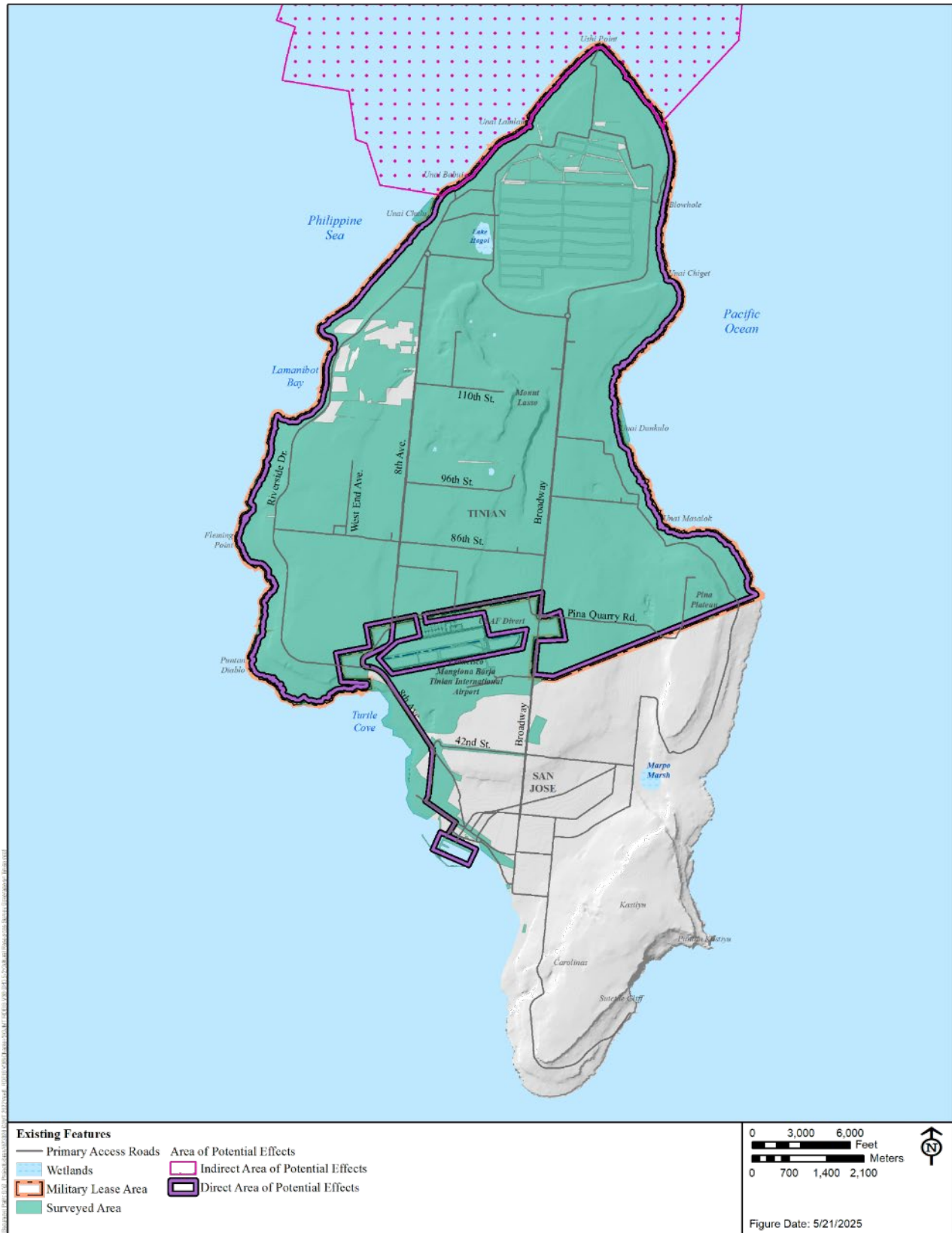


Figure 3.5-2 Cultural Resources Survey Coverage on Tinian

### 3.5.1 Historical Overview

The island of Tinian shows evidence of overlapping layers of historical periods. Appendix H and the *Tinian Integrated Cultural Resources Management Plan* (Joint Region Marianas 2015) provide an in-depth historical description of the island.

### 3.5.2 Previously Recorded Resources

#### 3.5.2.1 Historic Properties

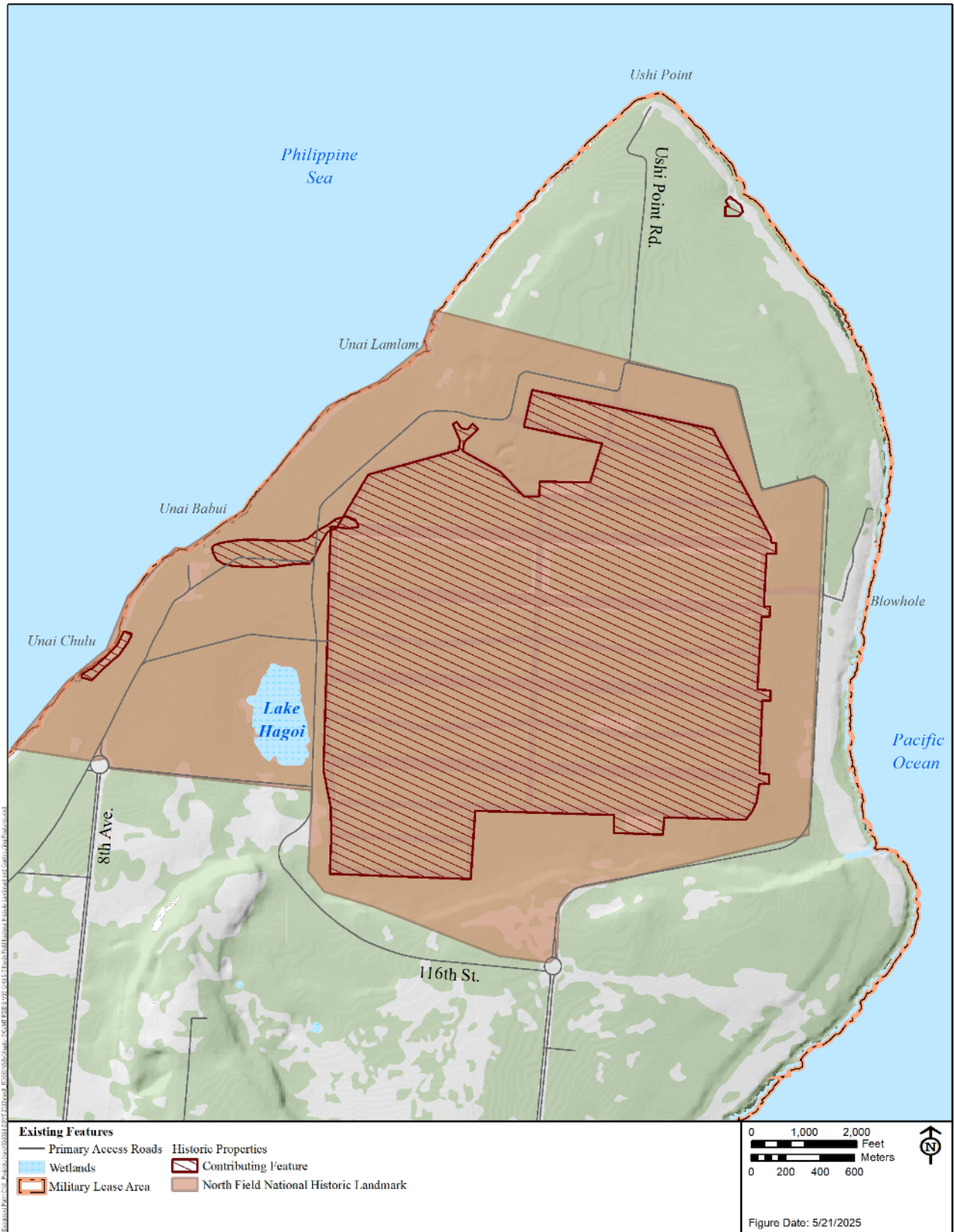
The area of potential effects contains 344 historic properties as well as a National Historic Landmark and three Traditional Cultural Places as detailed further below. Of the 344 historic properties, 343 have been recommended or determined to be National Register of Historic Places-eligible and one remains unevaluated but managed as National Register of Historic Places eligible. A table listing these properties is located in Appendix H, Table H-2. The majority of these properties are associated with pre-World War II Japanese farmsteads and World War II military activity. A lesser number of Pre-contact traditional Chamorro sites are also present.

Historic properties on Tinian span five historic contexts periods: Pre-contact, Spanish Administration, German Administration, Japanese Administration, and the American Administration. Pre-contact period historic properties include *latte* structures and ceramic scatters; Spanish Administration period sites contain evidence from this time-period while co-located with Pre-contact period sites; Pre-World War II Japanese Administrative period sites include farmsteads, shrines, cisterns, and other resources used by occupants of the island that predate the war; and World War II American Administrative period historic properties consist predominately of the remains of Japanese and later U.S. military development related to combat and post-invasion development of the island. There are no German Administration sites within the area of potential effects.

Previous surveys have assigned an archaeological site number to all historic properties regardless of type. The result has been that historic structures are listed generally as “archaeological” sites instead of differentiated as archeological or architectural property types. In addition, the archaeological methods used to identify sites have resulted in large site boundaries that vastly exceed the location of individually identified contributing features in the survey record.

The area of potential effects also contains the North Field National Historic Landmark, which is significant for its association with the American military capture of Tinian and use of the island as a crucial airbase that contributed to the end of World War II during the period 1944-1945. North Field was designated a National Historic Landmark in 1985 and includes the following contributing features (Figure 3.5-3):

- Landing Beaches Unai Babui and Unai Chulu
- Japanese Pillbox at Unai Chulu
- Japanese Ushi Point Field: service apron, air administration building, air operations building, and two air raid shelters
- American North Field: four B-29 runways, taxiways, and two service aprons



**Figure 3.5-3 North Field National Historic Landmark and Contributing Features**

In 2016, the National Park Service issued a Section 213 report on the previous iteration of the CJMT Proposed Action in which the agency recommended additional features as character-defining within the North Field National Historic Landmark, to include spatial organization and circulation patterns, construction materials, small scale features, landscape features and vegetation, topographic modifications, and viewsheds.

Three National Register of Historic Places-eligible traditional cultural places have been identified within the area of potential effect. These are Chamorro fishing areas within the Military Lease Area and include Unai Chulu, Unai Dankulo, and Puntan Masalok (also called Unai Masalok). These sites are considered significant for their association and contribution to the broad patterns of Chamorro history (Criterion A) – namely the historic and continued practices of *chenchulu* (Chamorro net fishing), *lulay* (hook-and-line pole fishing), and other traditional fishing techniques that are important to local subsistence, culturally important fiestas, and Chamorro cultural identity. Fishing in these areas is often a communal event involving all ages and is used to teach younger community members about traditions and values such as *respetu* (respect for elders and significant individuals and the environment and society where they live), and *inafa'maolek* (community cohesion).

**Unai Chulu.** Unai Chulu beach consists of a fringing reef accessible at low tide. This beach is an ideal location for the use of traditional fishing techniques because it is sheltered from prevailing trade winds, allowing for safe fishing of shallow lagoon fish and shellfish, and for communal gathering practices, such as the capture of seasonal rabbitfish prized for community fiestas. The back dune coconut grove provides shaded areas to clean and distribute the catch. The beach was specifically identified in oral history interviews as a location where traditional fishing has occurred since Chamorro people settled Tinian, and the beach is named for the Chamorro net fishing technique *chenchulu*. Archaeological evidence, such as nearby *latte* sets and the suitability of the beach for traditional fishing techniques, suggests that Chamorro have used the beach since before European contact.

**Unai Dankulo.** Unai Dankulo is an easily accessed beach with a well-developed fringing reef, relatively protected lagoon, and a back dune coconut grove. The setting is exposed to prevailing trade winds that make *lulay* fishing the preferred method of catching reef species such as parrotfish.

**Puntan Masalok.** Puntan Masalok is a small, sandy beach located along the east coast of the island. This beach is a favored location to carry out *lulay* fishing. Oral histories recorded use of the beach by the Chamorro community that resettled on Tinian in 1946 (DON 2015) but that the beach has been used by the Chamorro community since before European contact. This is supported by archaeological evidence, such as nearby *latte* sets and the suitability of the beach to traditional fishing techniques.

### 3.5.2.2 Other Resources of Cultural Importance

Other resources of cultural importance are available and accessible to the community on Tinian, both within and outside of the Military Lease Area. Some are tied to specific locations, such as the shrine on Mount Lasso and the cross and memorial located at Puntan Taddong (also known as Ushi Point) on the northern tip of the island, while others are more dispersed. Other cultural resources may also include resources of cultural importance such as cemeteries, memorials, places for growing and/or gathering of medicinal plants, and similar resources that hold special traditional, religious, or cultural significance. These resources may be related to cultural traditions

based on procurement of a product from different parts of the island and association with traditional activities and practices.

Important traditional activities and practices discussed during oral history interviews (DON 2015 pp. 5-1 to 5-7) include hunting, gathering, farming, medicinal, and fishing practices. These activities vary in the degree to which they are still practiced and the extent to which they are tied to specific locations on Tinian. Each of the activities can be considered a cultural tradition because they result in the procurement of a product that can be used for *chenchule*, a Chamorro word that once referred to many acts of reciprocation but is now often used to refer to the gift or act itself and is most commonly experienced as gifts of food, labor, or other contribution during the celebration of life's milestones. *Chenchule* is still strongly rooted within the Chamorro culture and is a mechanism that preserves and strengthens networks within the community, leading to stronger community cohesion. A detailed description of subsistence food and food culture is discussed in Section 3.3, Socioeconomics. The gathering of wild plants such as *Donni Sali*, also known as Pika or boonie peppers, breadfruit, and yams are also important to Chamorro traditions. A detailed description of medicinal plants is discussed in Section 3.4, Biological Resources. Beaches are also resources of cultural importance. For instance, *firowrow*, a traditional cultural practice for the Carolinian community, requires the use of beaches when a family member passes away (CNMI Bureau of Environmental and Coastal Quality 2015 pp. 87).

Separately, 67 archaeological sites have been determined not eligible for the National Register of Historic Places and, therefore, are not considered historic properties under Section 106, as defined in the National Historic Preservation Act [54 U.S.C. section 300308]. Though these archeological sites have been determined not individually eligible for the National Register of Historic Places, they are still protected under other federal statutes including the Archeological Resources Protection Act, (16 U.S.C. section 470aa(b), Antiquities Act (54 U.S.C. sections 320301et seq), Embezzlement and Theft (18 U.S.C. 641), Destruction of Government Property (18 U.S.C. 1361) and Trespassing (18 U.S.C. 1382).

### 3.6 Visual Resources

Visual resources on Tinian include natural features typical to the Pacific Islands region and human-built elements that, when viewed together as a landscape, result in a sense of place characterized by scenic views of tropical beaches and jungle areas. Natural views from coastal areas on Tinian include shorelines, seascapes, and cliffs. Inland, dominant natural features include vegetation, from dense jungle to sparser areas of shorter grasses, shrubs, and trees. Notable human-built and maintained features that contribute to the visual environment include cultural features, agricultural areas, parks and landscaping, and suburban-to-rural development. In the southern part of the island, south of the Military Lease Area, views are dominated by residential and commercial development, such as single-family homes and low-profile commercial and civic buildings.

The USAGM site on Saipan is composed of disturbed lands with five existing antenna towers and low buildings. Immediately west of the site is the Commonwealth Utilities Corporation Agingan wastewater treatment plant and Agingan Point. The area is relatively flat and slopes away to the ocean.

The selection of viewpoints for analyzing impacts to visual resources was based upon the consideration of activities while viewing the landscape, the importance of the scenic quality to these activities, the potential number of viewers, and the frequency and duration of views. Based

on these considerations, 17 viewpoints on Tinian were selected for initial review. Because no new training or construction is proposed on Saipan, no viewpoints on Saipan were considered. The selected viewpoints on Tinian represent views and scenic overlooks and well-known places and thoroughfares that people are accustomed to seeing as part of the Military Lease Area landscape. Field observations were then performed to document and describe the existing visual environment (Figure 3.6-1).

The north portion of the Military Lease Area on Tinian is primarily composed of previously developed and disturbed lands with a historic World War II-era airfield (North Field). The area is a relatively flat plateau that slopes down to the ocean on the north, east, and west sides of the island, with some variation in topography across the plateau. The southern side of the plateau is defined by a steep upward slope that connects to the Mount Lasso ridge line. Lake Hagoi is the lowest point within the North Lowland plateau, with a minimum elevation of approximately 10 feet above mean sea level.

The north and northeast coastlines are covered with low, windblown vegetation and generally provide open and expansive views of the island of Saipan, the Pacific Ocean, Philippine Sea, and horizon. The northwest coastline is better protected from wind, with denser vegetation than that of the windward side. The dominant features are the beaches in the North Field National Historic Landmark. With the exception of the cleared airfield and connecting roads, vegetation is generally overgrown and covers large swaths of land. Views are generally closed in and somewhat constrained due to the surrounding dense vegetation.

The west side topography of the Military Lease Area is broad and gently sloping, with noticeable vertical elevation changes occurring primarily along the western shoreline in the southern portion as it extends north from the Marpo Valley.

The central highlands are dominated by Mount Lasso, with a maximum elevation of 545 feet above mean sea level. The steep topography along the eastern edge of Mount Lasso consists of native limestone forest vegetation. The steep, rugged terrain is not conducive to farming, and the area was not cleared by the Japanese to support sugarcane production in the 1920s. The western coast consists of steep cliffs, starting south of Unai Chulu and accessed via Riverside Drive. A visually dominant feature is an antenna array at the USAGM site consisting of tall towers and curtain antennae in an area located west of 8th Avenue.



The east side of the Military Lease Area is characterized by a central layered limestone plateau, mostly blanketed by dense vegetation with some areas of fenced, semi-cleared agricultural lands. The shoreline areas consist of gently sloping topography to the sea and beach areas. Most of these areas are rocky and windier compared to their counterparts on the west side of Tinian.







Figure 3.6-1 Tinian Viewpoints and View Orientation



Table 3.6-1 includes descriptions of the 17 Tinian viewpoints, including the primary element within its viewshed, the quality and character of the surrounding landscape, and an associated photo. Additional information on the visual environment can be found in Appendix I.



**Table 3.6-1 Description of Existing Tinian Views**





<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>1: North Field National Historic Landmark, Looking South</p>	<p>Viewpoint 1 looks south at the Japanese Air Apron and includes pavement in the foreground and dense vegetation in the middle-ground and background. Tarmac, Japanese air raid shelters, and other World War II structures and monuments are observed from this viewpoint. The entire area was once open and clear to accommodate World War II air combat operations. The perimeter of the apron is now overgrown with vegetation, which makes the visual connection and relationship between airfield buildings and structures in the distance much harder to recognize. However, the aprons are preserved in a mostly paved and unvegetated state, so the visual connection and relationships between historic buildings and structures (including the air raid shelter visible in the photograph) are relatively intact in this area. The Japanese airfield surface is considered to be in “fair” condition, per the <i>Tinian North Field Cultural Landscape Report</i> (2010), and was verified to be in a similar condition during a site visit by the National Park Service in 2024. Damage to the paving visible in this photograph consists of character-defining bomb craters from World War II.</p> 
<p>2: North Field National Historic Landmark, Looking North-northeast from Boston Post Road</p>	<p>Viewpoint 2 looks north-northeast from Boston Post Road toward the proposed Multi-Purpose Maneuver Range (panorama photo). The foreground includes the degraded paved road, and the middle-ground and background are dominated by low-growing, dense shrubs, and trees.</p> 




<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>3: North Field National Historic Landmark, Looking North-northwest</p>	<p>Viewpoint 3 looks north/northwest from Broadway toward the proposed Multi-Purpose Maneuver Range and associated Landing Zone and ammunition holding areas. The foreground includes the degraded paved road, and the middle-ground and background are dominated by low-growing dense shrubs and trees.</p> 
<p>4: North Field National Historic Landmark, Looking North-northeast</p>	<p>Viewpoint 4 looks north-northeast toward the western edge of the proposed Multi-Purpose Maneuver Range from a portion of the Atomic Bomb Loading Apron. The foreground is dominated by the degraded tarmac. The middle-ground includes landscaped grass and coconut trees and a wall of dense vegetation. The background includes dense vegetation interspersed with taller trees.</p> 


<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>5: Unai Babui Looking Southwest</p>	<p>Viewpoint 5 looks southwest at Unai Babui—a beach located on the northwest coast that is part of the North Field National Historic Landmark. Unai Babui is smaller than Unai Chulu and is located about 0.65 miles north of Unai Chulu. It has rugged coral outcroppings along the shoreline edge and thick vegetation extending close to and upward from the shoreline’s edge. The shallow reef flat is easily seen from the coastline.</p> 
<p>6: Unai Chulu, Looking North- northeast</p>	<p>Viewpoint 6 looks north-northeast at Unai Chulu. Unai Chulu is one of only a few sandy beaches on this part of Tinian. It is a long, wide beach with open vegetated areas located between the beach and the densely vegetated area further inland to Riverside Drive. These nearshore areas are commonly used for picnics and social gatherings because they provide shade and views of the beach and the ocean.</p> 

<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>7: Ushi Point at the Road, Looking North</p>	<p>Viewpoint 7 looks north toward Ushi Point from the roadway. This view mostly consists of an unpaved road with low-cut vegetation at its shoulders, dense vegetation farther from each shoulder, and open views of the ocean and horizon straight ahead. A maritime navigational aid beacon and some coconut trees are in the middle-ground. A gently sloping open area and road can also be seen in the middle-ground. An unimpeded view of the ocean and horizon are in the background due to the flat terrain and maintained vegetation in the immediate vicinity of the roadway.</p> 
<p>8: Ushi Point at the Coast, Looking South</p>	<p>Viewpoint 8 looks south and facing away from the ocean. This view mostly consists of green, low-growing vegetated ground cover. A maritime navigational aid beacon and some coconut trees are in the foreground. A gently sloping open area and road can be seen in the middle-ground. A stand of coconut trees and thick forest is in the background.</p> 

<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>9 and 10:                      Runway Able,                      Looking South-                      southeast and                      West,                      respectively</p>	<p>Runway Able is one of four World War II-era airstrips situated in the boundary of the North Field National Historic Landmark over the former Japanese Ushi Point Airfield. Viewpoints 9 and 10 show the length of Runway Able. Viewpoint 9 looks south-southeast from the west end of the runway and Viewpoint 10 looks west from the east end. The aesthetic value of the North Field National Historic Landmark runways lies in both the existing visual landscape and their value as a part of Ushi Field–North Field Trail. The visual landscape of the airstrip consists of long linear runway of eroded tarmac infiltrated by vegetation and bordering the runway.</p> <p>Viewpoint 9 photo:</p>  <p>Viewpoint 10 photo:</p> 

<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>11, 12, and 13: Runway Baker, Looking West, South, and North, respectively</p>	<p>Runway Baker is one of four World War II-era airstrips constructed at North Field National Historic Landmark over the former Japanese Ushi Point Airfield. Viewpoint 11a looks west from the west end of the runway Baker toward the proposed surface radar site, Viewpoint 11b looks west from the center of runway Baker, Viewpoint 12 looks north from the south side of the runway Baker, and Viewpoint 13 looks south from the north side of runway Baker. The visual landscape consists of long linear runway, bordered by varying amounts of vegetation, depending on when vegetation clearing takes place.</p> <p>Viewpoint 11a photo:</p>  <p>Viewpoint 11b photo:</p>  <p>Viewpoint 12 photo:</p>  <p>Viewpoint 13 photo:</p> 

<i>Viewpoint</i>	<i>Description of Existing View</i>
<p>14: Mount Lasso Scenic Overlook, Looking East-northeast</p>	<p>Viewpoint 14 looks east-northeast from the Mount Lasso overlook, providing a panoramic view over the eastern portion of Tinian, with Saipan in the background to the north. Located south of the North Field National Historic Landmark, Mount Lasso is a scenic lookout point frequently visited by tourists. As Tinian’s second highest point, and due in part to its central location on the island, Mount Lasso was an important communications and visual reconnaissance center during World War II. Both Japanese and American radar systems were located on top of Mount Lasso, and concrete mountings for the facilities remain.</p> 
<p>15: TNI Terminal, Looking North-northwest</p>	<p>Viewpoint 15 looks north-northwest from the terminal at TNI. The airport is located south of the Military Lease Area and west of Broadway and is surrounded by dense vegetation. From the primary public viewpoint at the airport terminal, foreground views include the paved runway and taxiway, inclusive of the airplanes, vehicles, and other equipment in support of airport operations. Middle-ground and background views are dominated by the expanse of dense vegetation surrounding the airport.</p> 
<p>16: Unai Masalok, Looking North-northwest</p>	<p>Viewpoint 16 looks north-northwest from Unai Masalok, a beach approximately 154 feet in length located on the east coast of Tinian. It is protected by an offshore reef and has rugged coral outcroppings along the shoreline edge and thick vegetation extending close to and upward from the shoreline’s edge. The shallow reef flat is easily seen from the coastline.</p> 

<i>Viewpoint</i>	<i>Description of Existing View</i>
17: Unai Dankulo, Looking Southwest	<p>Unai Dankulo is accessible through the forested Unai Dankulo Trail that opens to an expansive beach extending north. Viewpoint 17 looks southwest from the end of Unai Dankulo Trail, facing away from the beach toward Landing Zone 5. The beach and flat nearshore environment allow direct vehicle access to picnic spots that are located within somewhat shaded coconut groves adjacent to the beach. Thick grasses, shrub vegetation, and trees dominate the viewshed along Unai Dankulo Trail that leads to Unai Dankulo. While more windswept than the leeward beaches, the wind is buffered by inland vegetation.</p> 

*Legend:* TNI = Francisco Manglona Borja / Tinian International Airport.

### 3.7 Transportation

This section discusses the existing ground, water, and air transportation systems on the island of Tinian. The existing transportation system on Tinian consists of paved and unpaved roads, the Port of Tinian, and TNI. The roadway transportation network providing access to the USAGM site on Saipan is also described.

#### 3.7.1 Ground Transportation

Tinian has approximately 68 miles of roads, most of which were constructed in 1944 to accommodate heavy truck traffic when the military population on Tinian was approximately 150,000. The CNMI is responsible for basic maintenance and repair of roads within the Military Lease Area, however, DoD may exercise U.S.-reserved rights to maintain, repair, or construct roads within the Military Lease Area. The Seabees repaired roads and constructed Marpo Heights Road on Tinian in 2022. Routine road maintenance within the former Lease Back Area is conducted by the CNMI Department of Public Works. The CNMI Department of Public Works owns and maintains all other roads on Tinian south of the Military Lease Area. Several roads are part of the CNMI Territorial Highway System and eligible for federal aid administered by the U.S. Department of Transportation Federal Highway Administration. There is no existing public transportation service on Tinian. Figure 3.7-1 shows the existing road network on Tinian.



Figure 3.7-1 Existing Roads in and Near the Military Lease Area on Tinian

Table 3.7-1 provides a description of key transportation routes in and near the Military Lease Area and provides traffic volumes documented in the *CNMI 20-Year Highway Master Plan* (CNMI Department of Public Works 2023). Broadway and Grand Avenue have the highest traffic volumes, with about 1,560 and 2,130 vehicles per day, respectively.

**Table 3.7-1 Primary Roads on Tinian Within and Outside the Military Lease Area**

<i>Road Name</i>	<i>Description and Volumes</i>
Broadway (Route 21)	<p>Within the Military Lease Area, Broadway is a two-lane, divided, paved road with 20-foot-wide lanes and a 32-foot-wide median between 72nd Street and 116th Street. Lack of maintenance has resulted in the southbound lane being moderately to severely overgrown by vegetation and unsuitable for use, resulting in motorists using the northbound side for travel in both directions. This segment carries about 130 vehicles per day.</p> <p>Outside of the Military Lease Area, Broadway is a two-lane, divided, paved road with 20-foot-wide lanes and a 32-foot-wide median. On the segment outside the Military Lease Area, Broadway carries about 1,560 vehicles per day south of 42nd Street and 300 vehicles per day north of 42nd Street.</p>
8th Avenue (Route 23)	<p>Within the Military Lease Area, 8th Avenue is a two-lane, divided, paved road with 18-foot-wide lanes and a 36-foot-wide median. Lack of maintenance has resulted in the southbound lane being moderately to severely overgrown by vegetation and unsuitable for use, resulting in motorists using the northbound side for travel in both directions. This segment carries up to 70 vehicles per day.</p> <p>Outside of the Military Lease Area, this road has two distinct segments:</p> <ul style="list-style-type: none"> <li>• From 42nd Street to TNI, 8th Avenue is a 24-foot-wide, two-lane, undivided, unpaved road in poor condition. This segment is located within a parcel formerly leased by the CNMI to the Alter City Group and had been marked as private property, with entry allowed only with the permission and consent of the Alter City Group. This segment carries about 140 vehicles per day. However, the CNMI Department of Public Lands terminated the public land lease for the Alter City project in August 2023 (De La Torre 2023), and thus public use of this road may resume in the future.</li> <li>• Near the Riverside Drive intersection, 8th Avenue is approximately 18- to 22-foot-wide, two-lane, undivided, paved/gravel road in poor condition. It carries approximately 180 vehicles per day on this segment.</li> </ul>
86th Street (Route 204)	86th Street is a two-lane, undivided, paved road within the Military Lease Area that runs from 8th Avenue to Broadway (north of TNI). This road is in poor condition. It carries approximately 75 vehicles per day.
Canal Street (Route 202)	Canal Street is a two-lane, undivided road outside of the Military Lease Area that has no median and connects the village of San Jose to Broadway and residential and recreational areas to the northeast. It carries approximately 1,150 vehicles per day.
Grand Avenue (Route 201)	Grand Avenue is a two-lane, undivided road outside of the Military Lease Area that has no median and connects the village of San Jose to Broadway and residential and recreational areas to the east. It carries approximately 2,130 vehicles per day
42nd Street (Route 24)	42nd Street is a two-lane, undivided road with no median that runs outside of the Military Lease Area from 8th Avenue to Broadway, north of the village of San Jose. It carries approximately 115 vehicles per day.

Legend: TNI = Francisco Manglona Borja / Tinian International Airport.

Source: CNMI Department of Public Works 2023.

Other roads not listed in the table typically have the following characteristics:

- Within the Military Lease Area: roads are generally unpaved and moderately to severely overgrown by vegetation with traffic volumes of less than 100 vehicles per day.
- Outside of the Military Lease Area: roads are generally two lanes wide (one for each direction of travel), paved and undivided with no median, and carry between 25 and 300 vehicles per day.

The U.S. Air Force is removing and replacing the existing deteriorated asphalt cap on approximately 2.5 miles of roadway from the Port of Tinian north to 8<sup>th</sup> Avenue, to its intersection with 42<sup>nd</sup> Street, and east along 42<sup>nd</sup> Street to its intersection with Broadway (U.S. Air Force 2020). Improvements related to the U.S. Air Force Divert project, including these roadway improvements, began in early 2022 and are anticipated to be completed in 2026 (U.S. Air Force 2020; NAVFAC Pacific 2022).

The level of service categorization (A through F, best to worst) provides a qualitative grade of roadway functionality, with an acceptable level of service at C or better. All roads on Tinian are operating below capacity, at a level of service A, as evidenced by free-flowing traffic and no traffic delays (CNMI Department of Public Works 2023).

The USAGM site on Saipan is located at the southwest area of Saipan and accessed from Lililok Lane, also known as Agingan Lane. Traffic along this lane is limited to workers accessing the wastewater treatment plant and visitors to Agingan Point.

### **3.7.2 Water Transportation**

#### **3.7.2.1 The Honorable Jose P. San Nicolas Commercial Port of Tinian**

The Honorable Jose P. San Nicolas Commercial Port of Tinian (Port of Tinian), near San Jose, is owned by the Commonwealth Ports Authority. The North Wharf serves as the commercial Port for the island, which includes a usable length of 1,400 feet in three contiguous berths (Berths 1-3). Berth 4 is under a long-term lease and not available for commercial use. The connecting pier adjacent Berth 1 includes a roll-on roll-off ramp used for landing and loading of construction equipment (Commonwealth Ports Authority 2018). The small boat dock, located just north of the North Wharf at the Tinian Harbor, has a marina with 18 small craft mooring slips and a concrete boat ramp for launching and recovering small craft.

The harbor's 525-foot-wide channel provides access between the ocean and the Port of Tinian for commercial barges, recreational boats, the U.S. Coast Guard, and military ships. There were an estimated 53 vessel calls for cargo delivery to the Port during 2015, and historical trends show an average of 3 to 5 vessel calls per month at the North Wharf. Smaller, non-commercial cargo and other vessels may use the marina and launch ramp, but these are not counted by the harbor master in the vessel call data. The largest vessels that call at the harbor include a fuel tanker and commercial and military cargo vessels. The Tinian Harbor capacity is adequate to handle current cargo handling needs and may even operate under capacity at times. However, larger vessels can experience capacity constraints. For example, a fuel tanker would take precedence over other cargo ships or Marine Corps landing vessels, even if that vessel is unloading supplies. In that situation, the cargo ship or Marine Corps landing vessel would need to stop offloading and move to an anchorage to complete its discharge later (U.S. Army Corps of Engineers 2018). A 2020 Tinian Construction Capacity Study indicated that Tinian Harbor would be able to continue to support its

existing shipping by tugboat for the island's day-to-day commodities without near-term repairs. However, without repairs, it has limited capacity to support any increased use (AS MD LLC 2020). Approximately 90 percent of all goods and materials imported to Tinian arrive through the harbor. Findings from a 2018 Interim Feasibility Report Tinian Harbor Modification Study indicate the protective breakwater at Tinian Harbor is in a state of disrepair, likely resulting in future disruptions to Port operations and risks to harbor navigation and infrastructure (U.S. Army Corps of Engineers 2018). In July 2023, the Commonwealth Ports Authority Board adopted a joint area development concept with the DoD for construction, repair, and maintenance activities at the Port of Tinian, including dredging the harbor to a depth of 28 feet (Commonwealth Ports Authority 2023).

Existing DoD usage of the Port consists of larger chartered cargo vessels and roll-on, roll-off integrated tug-barges, which use the North Wharf to unload materials and equipment due to their size; and military training events using smaller landing craft or boats for transporting people or equipment. Amphibious Assault and Amphibious Raid training events approved under the *2015 Mariana Islands Training and Testing EIS/OEIS* can use the concrete boat ramp and approved procedures for beach landings in the Military Lease Area (DON 2015; 2020).

### 3.7.3 Air Transportation

#### 3.7.3.1 Francisco Manglona Borja/Tinian International Airport

Francisco Manglona Borja/Tinian International Airport (TNI) is owned, managed, and operated by the Commonwealth Ports Authority. It is a commercial airport used primarily for inter-island travel between Tinian, Saipan, Rota, and Guam. The airport runway supports departures and arrivals in two directions: east (Runway 08) and west (Runway 26), based on weather conditions and wind direction. The paved runway is marked for precision approaches and equipped with a navigational light system. There are no additional navigational aids, Air Traffic Control facilities, or Air Traffic Control services provided below 3,500 feet mean sea level for pilots arriving at or departing from TNI. Use of the airport occurs on a first-come, first-served basis, with pilots notifying each other of their intentions via the common traffic advisory frequency. The airport closes overnight from 10 p.m. to 6 a.m., unless prior arrangements are made with the Commonwealth Ports Authority.

Because TNI improvements that are part of the U.S. Air Force Divert project will be completed prior to the Proposed Action, the existing environment includes the U.S. Air Force Divert project improvements. These improvements include a maintenance facility; a fire pump building, tanks, and wells; fuel tanks; a cargo pad; a parking apron; taxiways; an access road from Broadway; and the relocation of 8<sup>th</sup> Avenue near the western end of the runway. A fuel pipeline will also extend from the Port of Tinian to the TNI to provide fuel to the future bulk fuel storage tanks at the airport.

Three heliports are located on Tinian, all within 2.5 miles south of the airport, but they are not in use as no charter helicopter services have been provided since October 2016, following the permanent closure of the Tinian Dynasty Hotel and Casino.

Table 3.7-2 provides a summary of operations at TNI from 2013 to 2022, excluding the COVID years of 2019-2021. The existing airfield capacity of TNI is 164,000 annual operations (an operation is counted as each time an aircraft lands or departs a runway).

**Table 3.7-2 Existing Operations at TNI**

<i>Period<sup>1</sup></i>	<i>Based Aircraft Total</i>	<i>Annual Operations</i>					<i>Total Operations</i>
		<i>Air Carrier</i>	<i>Air Taxi<sup>2</sup></i>	<i>General Aviation: Local</i>	<i>General Aviation: Itinerant<sup>3</sup></i>	<i>U.S. Military: Itinerant<sup>3</sup></i>	
2013	13	58	46,206	1,922	454	476	49,116
2014	15	50	41,944	5,900	998	274	49,166
2015	17	0	35,282	3,146	2,731	229	41,388
2016 <sup>4</sup>	19	0	21,610	2,365	5,154	78	29,207
2017	19	0	21,610	2,365	5,154	78	29,207
2018	19	0	21,610	2,365	5,154	78	29,207
2022	19	0	21,610	2,365	5,154	78	29,207

*Legend:* Air Carrier = commercial airline; Air Taxi & Commuter = commercial flights that originate within the CNMI; General Aviation = private aircraft; U.S. Military = military aircraft; U.S. = United States.

*Notes:* <sup>1</sup> FAA Airport Master Records are not available for the period between 2019 to 2021.

<sup>2</sup> Air taxi flights are used as commuter flights between TNI and the Saipan International Airport.

<sup>3</sup> Itinerant operations are those aircraft not based at the airfield.

<sup>4</sup> A 29 percent decrease occurred between 2015 and 2016, which coincides with the closure of the Tinian Dynasty Hotel and Casino.

*Sources:* FAA 2013a, 2014a, 2015, 2016a, 2018, 2023.

In 2022, there were a total of 29,207 operations at TNI. Since 2016, the number of operations has remained stable (FAA 2013a, 2014a, 2016a, 2017, 2018, 2022). Based on this information, TNI is currently operating under capacity. Air taxi and commuter flights account for most aircraft operations, with Star Marianas Air providing daily scheduled passenger flights between Saipan and Tinian.

There are no regularly scheduled international flights into TNI. International travelers to Tinian are routed through Saipan International Airport for customs services and then use local air transport such as Star Marianas. Any flight of international origin intending to use TNI requires advance arrangements with the Chief of Immigration on Saipan.

The FAA publishes Area Notices that contain preferred Visual Flight Rule routings between Saipan and Tinian based on trade wind conditions (FAA 2023). No other published flight routes between Tinian and Saipan are available. Pilots transiting between Tinian and Saipan airports fly using the preferred Visual Flight Rule on flight routes similar to the notional ones depicted in Figure 3.7-2, although flight paths are often modified based on conditions. These flights use two primary visual reference points, the 8<sup>th</sup> Avenue Traffic Circle and the Broadway Traffic Circle, which route the flights directly over the Military Lease Area. There are two published flight routes within proximity to Tinian (A221 and W21).

The military uses TNI in accordance with the 1999 Lease Agreement and FAA grant assurances. These existing agreements and protocols require the military to coordinate and obtain approval by the Commonwealth Ports Authority and the FAA (DON 2013a). During military training events, helicopter operations within the Military Lease Area are required to maintain a minimum altitude of 1,000 feet above ground level when operating over Lake Hagoi and are prohibited from flying over the Mahalang and Bateha sites (DON 2013a). As a part of current training events on Tinian, temporary time slots for the exclusive use of the TNI by the military are prearranged.

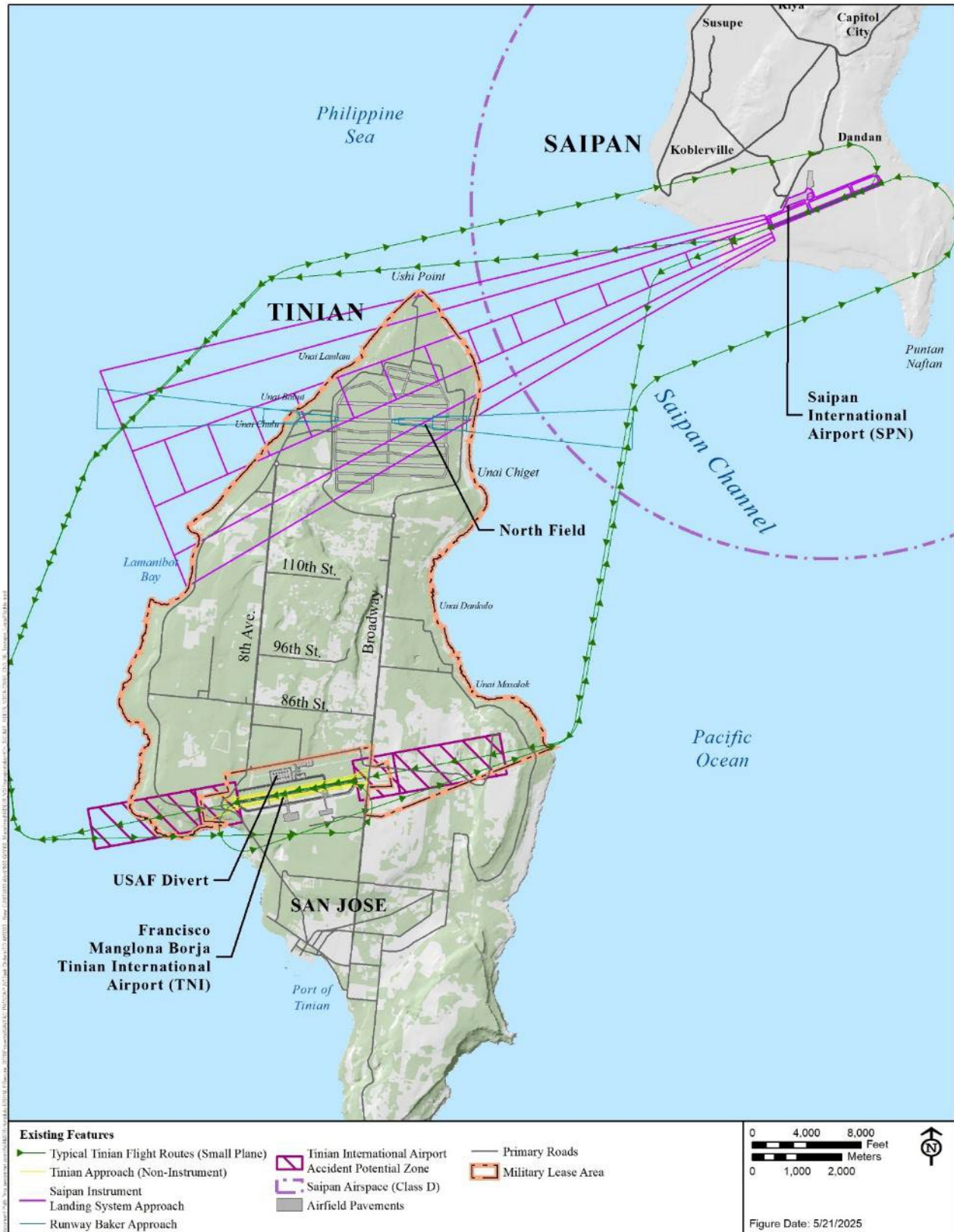


Figure 3.7-2 Local Flight Routes

### 3.7.3.2 North Field

North Field is a former World War II-era airfield. This airfield is the core of the North Field National Historic Landmark and is located in the northern portion of the Military Lease Area. There are no published approaches. This airfield is presently used for expeditionary airfield training events. The roads around North Field have been improved recently as part of an effort from the U.S. Air Force to clear and re-establish the runways, taxiways and surrounding roads.

### 3.7.3.3 Airspace

All airspace surrounding Tinian is within the FAA's Guam Combined Center/Radar Approach Control Flight Information Region. For Tinian and Saipan airports, Guam Combined Center/Radar Approach Control provides Air Traffic Control services at altitudes above 3,500 feet mean sea level. Saipan Air Traffic Control manages the local airspace between 2,000 and 3,500 feet mean sea level and international aircraft enroute to and from Saipan International Airport that is below 3,500 feet. Air Traffic Control services are not available below 2,000 feet mean sea level for aircraft flying in the local area or arriving at and departing from TNI.

Approaches, departures, and training events at North Field are all within Saipan International Airport's airspace, and military aircraft operating at North Field are required to maintain radio communication with Saipan Air Traffic Control and follow Air Traffic Control direction as needed to deconflict air traffic. The instrument landing systems approach for Saipan International Airport overlies North Field and the Multi-Purpose Maneuver Range.

## 3.8 Noise

An area's existing sound environment, referred to as an "ambient soundscape," includes everything that is normally audible, both natural (e.g., bird song, waves, wind in the trees) and human-made (e.g., vehicles on roads, aircraft, farm equipment). Tinian's ambient soundscape is typical to a small island in the Pacific, but with the addition of aircraft noise from TNI, and periodic military training events that use ground equipment and land aircraft at North Field. Thus, the ambient noise levels on Tinian vary by location, from very quiet, undeveloped natural areas with limited intrusions from human activity to moderately noisy or occasionally loud industrial noise environments where aircraft or heavy machinery operate regularly. The soundscape of the uninhabited inland area is dominated by natural sounds, such as wind rustling through the vegetation and trees, birds and wildlife, and livestock grazing. Areas near the island's coast are characterized by natural sounds of the waves, coastal winds, birds, and wildlife. Human-made noise in coastal areas is produced by people utilizing the beaches for gatherings and picnics. Recreational and commercial boating activity occurs at the Port of Tinian, located south of San Jose. Road noise is primarily generated by vehicles on Broadway and 8th Avenue that connect the residential areas of San Jose, Marpo Heights, and Carolinas Heights to the Military Lease Area north of TNI. Each roadway averages less than 2,220 trips per day (CNMI Department of Public Works 2022). Traffic volumes this low contribute very little to the noise environment.

Humans perceive sound based on its physical characteristics. The intensity of the sound is perceived as sound volume and is measured in decibels (written as the unit "dB"). Sound intensity varies widely, from a barely perceptible soft whisper to uncomfortable or painfully loud sounds. Human hearing ranges up to 120 decibels, at which point sound causes physical discomfort.

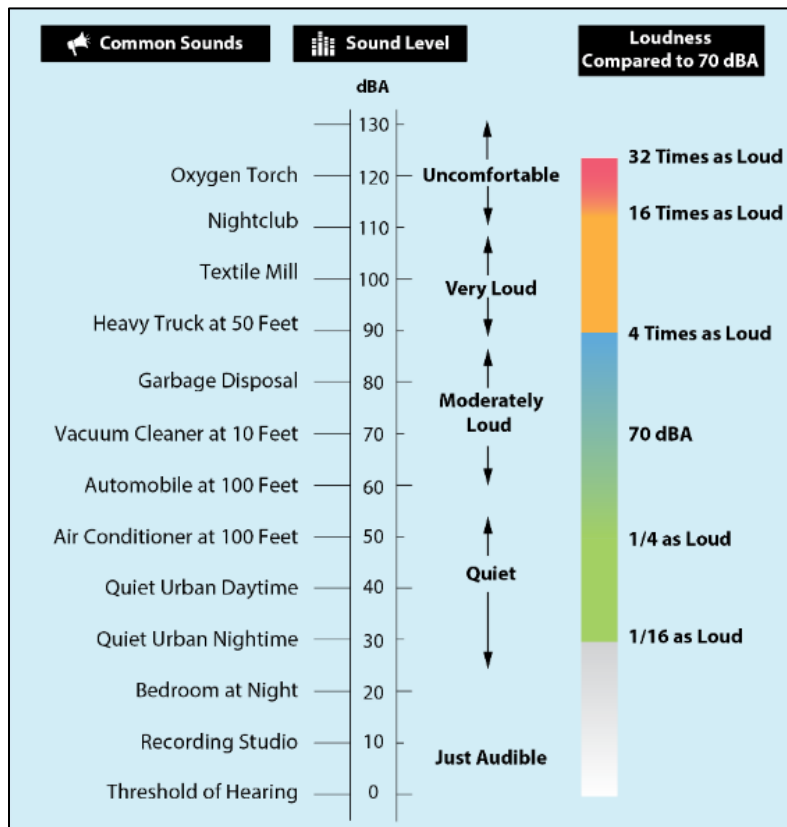
For context, Table 3.8-1 lists a range of typical outdoor ambient noise levels in decibels for different environments.

**Table 3.8-1 Typical Outdoor Ambient Noise Levels**

<i>Day-Night Average Sound Level (dB)</i>	<i>Location</i>
44	Field in a rural area
50	Residential area in a small town or quiet suburban area
55	Suburban residential area
60	Urban residential area
65	Noisy urban residential area
70	Very noisy urban residential area
80	3 <sup>rd</sup> floor apartment in a major city next to a freeway

Legend: dB = decibel.  
Source: U.S. EPA 1974.

The frequency of sound is perceived as a sound pitch. Low frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. The duration or length of time the sound is produced also affects our perception of the sound—it may be intermittent or impulsive, starting and stopping at regular or irregular intervals, or continuous and steady. A relatively long, steady noise, like a passing train “feels” different from a rapid, loud striking noise. Figure 3.8-1 provides a chart of sound levels from common noise sources.



Source: Derived from Harris (1979) and Federal Interagency Committee on Aviation Noise (1997).

**Figure 3.8-1 Sound Levels from Typical Sources**

Some noise sources like an air conditioner or vacuum cleaner, generate continuous sounds that maintain a constant sound level for some period of time. Other sources represent a maximum sound that occurs during an event that varies over time, such as a vehicle passing by. Sounds are also present in the background or ambient environment (urban daytime or nighttime) and represent averages taken over extended periods of time.

On Tinian, outdoor ambient noise levels in most parts of the island vary from below 40 to 55 decibels in the residential areas. Major sources of human-made noise on Tinian include aircraft operations at TNI and intermittent military training events that occur within the Military Lease Area. Noise levels at a particular location on the island may vary based on a number of factors including climate, topography, proximity to the coast, vegetation or housing density, and proximity to noise producing activities such as roadways or TNI.

The locations of sensitive noise receptors on Tinian are shown on Figure 3.8-2. The receptors were selected based on the potential impacts that noise could have on those who frequent or inhabit such locations, their wellbeing, and their natural, cultural, or historical value. The ambient noise environments in the vicinity of TNI and the Military Lease Area are described in more detail in the following sections. Baseline noise levels from aircraft operating at TNI were estimated using the models and metrics described in Appendix J. A “noise metric” is a method for measuring sounds so they can be compared with each other.

The primary noise metric utilized in this analysis for noise impacts is the “day-night average sound level” (sometimes written as “DNL”), which is A-weighted applicable for subsonic aircraft operations. The day-night average sound level is a cumulative metric that includes all noise events occurring in a 24-hour period with a nighttime noise weighting applied to events occurring after 10 p.m. and before 7 a.m. The daytime period is defined as 7 a.m. to 10 p.m. An adjustment (weighting) of 10 decibels is added to events occurring during the nighttime period to account for the added intrusiveness while people are most likely to be relaxing at home or sleeping. Note that “daytime” and “nighttime” in calculation of day-night average sound level are sometimes referred to as “acoustic day” and “acoustic night” and always correspond to the times given above. This is often different than the “day” and “night” used commonly in military aviation, which are directly related to the times of sunrise and sunset applicable for military training in dark conditions which may vary by location and change throughout the year based on the season. DoD Noise Program Policy (DoD Instruction 4715.13, 28 January 2020) requires the use of the day-night average sound level noise metric to describe aircraft noise exposure levels at airfields based on an annual average day averaged over 365 days for purpose of long-term compatible land use planning.

While a cumulative metric, such as day-night average sound level is appropriate to predict the overall noise environment at airfields, additional description of noise impacts to noise sensitive locations requires additional metrics. DoD expands upon day-night average sound level with the “sound exposure level” (sometimes written as “SEL”) as described in the DoD Noise Working Group guidelines (DoD Noise Working Group 2009a). The highest A-weighted sound level measured during a single event in which the sound changes with time is called the maximum A-weighted sound level (sometimes written as “ $L_{max}$ ”), which occurs over one-eighth of a second and denoted as “fast” response on a sound level meter (American National Standards Institute 1988).



Figure 3.8-2 Sensitive Noise Receptors on Tinian and Saipan

Although useful in determining when a noise event may interfere with conversation, TV or radio listening, or other common activities, the maximum A-weighted sound level does not fully describe the noise because it does not account for how long the sound is heard.

### 3.8.1 Francisco Manglona Borja / Tinian International Airport

The only commercial passenger aircraft at TNI are air taxi flights, which primarily operate during the daytime and evening hours. Aircraft activity at the airport rarely occurs during night hours of 10 p.m. to 7 a.m. (U.S. Air Force 2016). The TNI Airport Master Record lists a total of 27,670 civilian flight operations for the 12-month reporting period ending in March 2022. The majority of civilian operations were air taxi flights (21,610), followed by General Aviation: Itinerant (5,154), and General Aviation: Local (2,365). Currently military aircraft utilize TNI for conventional operations resulting in arrivals and departures to the TNI runways and primarily comprised of C-130 and KC-135, but also include such aircraft as C-5, C-12, C-17, C-35, C-40, F-18E/F, and F-35A/B/C. Counts of annual operations at civil airfields often under report the numbers of military aircraft because military aircraft may fly as a group with multiple aircraft landing or departing in quick succession and only one of the aircraft utilize their transponder, which provides one of the primary sources for annual airfield counts. Also, in some cases, military aircraft may be captured in operations data as their civilian counterparts. The FAA data source for TNI airfield operations reported the identical 78 military operations for each of the past five years. This indicates it may be an outdated source for military operations that does not capture all activity. Therefore, this EIS collected baseline military operations data from operators and prior analyses. Table 3.8-2 summarizes current estimated annual military operations and civilian operations at TNI.

Approximately 95 percent of operations at TNI are composed of civilian aircraft and 27 percent of civilian operations occur at night. Civilian air taxi operations account for 78 percent of civilian operations. The majority of military operations (47 percent) are associated with KC-135 aircraft and 67 percent of military nighttime operations are associated with this aircraft. Fighter aircraft operating at TNI account for 10 percent of military aircraft operations.

**Table 3.8-2 Baseline/No Action Alternative Flight Operations at TNI**

Category	Aircraft <sup>1</sup>	Departures			Arrivals			Totals		
		Day	Night	Total	Day	Night	Total	Day	Night	Total
Civil	GA/AT	10,133	3,702	13,835	10,133	3,702	13,835	20,266	7,404	27,670
Military	C-130	98	12	110	98	12	110	196	24	220
	KC-135	240	120	360	240	120	360	480	240	720
	C-5	33	15	48	31	17	48	66	30	96
	C-12	73	7	80	73	7	80	146	14	160
	C-17	32	16	48	32	16	48	64	32	96
	C-35	24	-	24	24	-	24	48	-	48
	C-40	24	-	24	24	-	24	48	-	48
	F-18	34	3	37	34	3	37	68	6	74
F-35	30	7	37	30	7	37	60	14	74	
<i>Military Total</i>		<i>588</i>	<i>180</i>	<i>768</i>	<i>586</i>	<i>182</i>	<i>768</i>	<i>1,176</i>	<i>360</i>	<i>1,536</i>
<b>Totals</b>		<b>10,721</b>	<b>3,882</b>	<b>14,603</b>	<b>10,719</b>	<b>3,884</b>	<b>14,603</b>	<b>21,442</b>	<b>7,764</b>	<b>29,207</b>

Legend: % = percent; GA/AT = General Aviation and Air Taxi.

Note: <sup>1</sup> GA/AT modeled as Single Engine Fixed Pitch aircraft; aircraft variants include the F-18E/F and F-35A/B/C.

Figure 3.8-3 presents the modeled noise contours for the baseline/No Action Alternative for TNI. Calculated with noise modeling software, existing civil and military aircraft operations at TNI results in baseline noise levels at noise sensitive points of interest that range from less than 35 decibels day-night average sound level at S2: San Antonio Residential Area on Saipan up to 57 decibels day-night average sound level at T18: Old West Field. Because the baseline average day-night sound level calculations do not include other sources of noise (i.e., street traffic, wind, and recreational or domestic activities) the actual baseline level may be substantially greater once these non-aircraft sources are included. According to the U.S. EPA, the typical outdoor ambient noise level at a field in a rural area is 44 decibels and a suburban residential area is 55 decibels day-night average sound level (U.S. EPA 1974). Additional baseline noise results provided in Chapter J.2 of Appendix J.

### 3.8.2 Military Training in the Military Lease Area

The Military Lease Area on Tinian currently supports varied levels of training, from small unit-level training up to large field exercises and expeditionary warfare training. North Field is an unimproved expeditionary World War II-era airfield with four refurbished runways, where only one, Baker, is currently used for vertical and short-field landings and helicopters as part of existing military training. Other training activities at North Field and the surrounding area include force-on-force airfield defense and offensive training, helicopter insertion and extraction, paratroops training, C-130 cargo drops, night vision goggle training, airfield seizure/defense, forward area refueling, camping, command and control, air traffic control, logistics, armament, rapid runway repair, and other airfield-related requirements. The activities at North Field create noise, but they are sporadic and occur only a few times each year over a short period (e.g., two to four weeks at a time). Additionally North Field is located far north on Tinian and away from the sensitive noise receptors concentrated in the southern portion of the island and approximately 5-miles away from the island of Saipan. Sensitive receptors in closer proximity to North Field are composed of cultural, historic, and natural resources that are visited on a sporadic and infrequent basis. Consequently, there has not previously been a need to assess potential noise impacts by developing airfield noise maps showing noise level boundaries as contour lines (DON 2010, 2015, 2020). No supersonic operations are conducted over Tinian or in overwater airspace adjacent to the island (DON 2020).

Low-level military training flights passing over the Military Lease Area result in periodically elevated noise levels throughout the day. In addition to average day-night sound level, different metrics can be used to describe noise sources in motion, where the sound level changes over time (i.e., sound increases as the source moves closer and decreases as it moves further away). In these cases, the maximum sound level (sometimes written as “ $L_{max}$ ”) of a particular noise event, like an aircraft flying overhead, is the loudest sound level experienced for a moment during that event. However, the maximum sound level does not account for the duration of a noise event. Sound exposure level (sometimes written as “SEL”) is a metric that represents both the intensity of a sound and its duration providing a measure of the net exposure of the entire acoustic event. During an aircraft flyover, the sound exposure level combines both the maximum sound level and the quieter sound levels produced during beginning and end of the overflight but does not directly represent the sound heard at any given time.



Figure 3.8-3 Baseline/No Action Alternative Modeled Noise Contours at TNI

Several TNI aircraft departure and arrival routes are proximate to the northern section of Tinian and contribute to noise levels over the northern portion of the island. There are nine single-engine and three multi-engine civilian aircraft based out of Saipan International Airport that contribute to the noise levels on the northern end of Tinian and, as with TNI, the majority of annual operations are inter-island air taxi flights (FAA 2024b). Under existing military training in the Military Lease Area, helicopters and tilt-rotor aircraft (MV-22, CH-53E, and AH-1/UH-1) operate at a variety of altitudes but generally below 2,000 feet and fixed-wing jet aircraft (F-35A/B/C variants, F-18E/F variants, and KC-130J) typically operate above 10,000 feet in the airspace around Tinian. However, to account for situations where lower flight activity by jet aircraft may occur, the sound exposure level and maximum sound level in decibels is provided at 5,000 and 2,000 feet. Table 3.8-3 presents single event noise levels experienced on the ground when different types of aircraft fly overhead at a certain speed and various altitudes to represent what the public would experience in the vicinity of North Field or elsewhere on Tinian while training is occurring under existing conditions. People would not be directly underneath an aircraft overflight for much of the time, so typical single event noise levels experienced are often substantially less than presented in the table. Sounds above 65 decibels to approximately 90 decibels would typically be considered moderately loud, very loud between 90 to 120 decibels, and begin to become uncomfortable above 120 decibels (refer to Figure 3.8-1).

**Table 3.8-3 Single Event Noise Levels (Sound Exposure Level and Maximum Noise Level) at Ground Level Underneath Common Military Aircraft Operations**

Altitude (ft AGL)	MV-22 at 80 kts		CH-53 at 80 kts		AH-1/UH-1 at 80 kts		F-35A/B/C at 220 kts		F-18E/F at 220 kts		KC-130 at 220 kts	
	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)
300	98	91	97	91	96	88						
500	95	86	95	87	93	84						
2,000	89	75	87	73	87	73	110	102	111	104	85	77
5,000							100	90	101	93	76	66
10,000							90	80	91	82	67	56

Legend: ft AGL = feet above ground level; kts = knots; dB = decibels; L<sub>max</sub> = maximum sound level; SEL = sound exposure level.

Note: Modeled at a constant speed and altitude.

As shown in Table 3.8-3, the MV-22 and CH-53E produce approximately the same maximum sound level of 91 decibels. This sound level would be experienced on the ground directly underneath the aircraft operating at 300 feet above. The AH-1/UH-1, which is smaller and lighter, produces a maximum sound level of 88 decibels under the same conditions. The sound exposure level would range from 96 to 98 decibels for all three aircraft. Both the F-35 and F-18 produce similar noise levels, with a maximum sound level of 80 to 82 decibels when operating at 10,000 feet. When operating at 2,000 feet, which would occur during operations that use North Field, they produce a maximum sound level ranging from 102 to 104 decibels. For these aircraft the sound exposure level would range from 90 to 111 decibels under these conditions. The KC-130J generates a maximum sound level ranging from 56 to 77 decibels and a sound exposure level from 67 to 85 decibels.

Ground-based military training events in the Military Lease Area consist of urban terrain-type training, vehicle land navigation, convoy training, camping and other field activities. A limited amount of small arms training occurs within the Military Lease Area using either simulated munitions or sniper firing of ammunition into steel bullet traps within existing structures in the North Field area (DON 2010, 2015). In general, the sound level is quieter the farther away from the source, but environmental and weather conditions (e.g., terrain, vegetation cover, wind, humidity, temperature) affect how far sound travels. Under changing weather conditions, it is possible that a sound source can be barely detectable one day, but very loud and annoying the next (DoD Defense Noise Working Group 2018). As with aviation training, ground training occurs sporadically and for short durations throughout the year. Given the dense vegetation and varied terrain in the Military Lease Area along with the prevailing easterly trade winds, sounds from ground training events in the Military Lease Area are predominately imperceptible to populations south of the Military Lease Area.

### 3.9 Air Quality

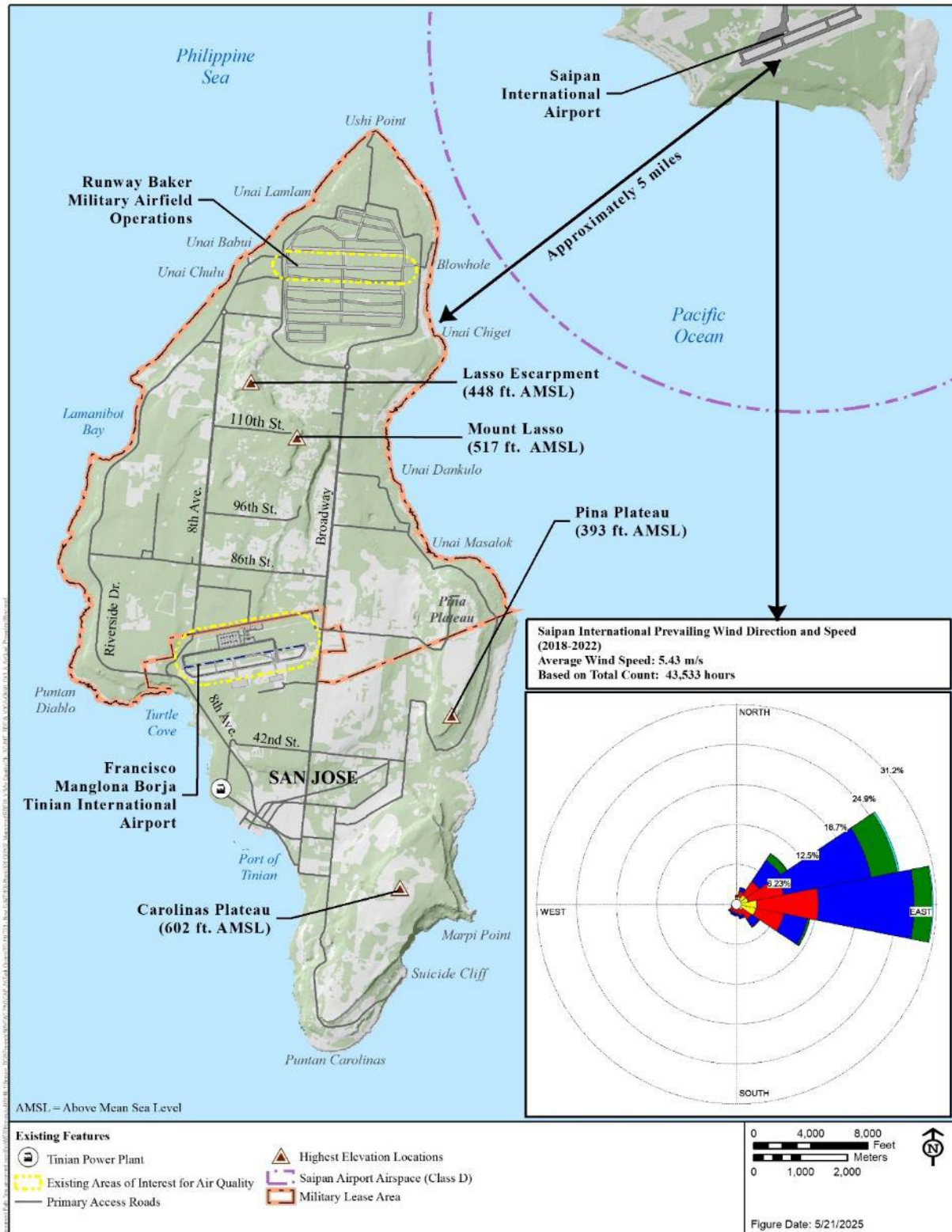
In general, air quality is influenced by many factors, including the type and amounts of pollutants emitted into the atmosphere and local meteorological conditions. Most air pollutants originate from human-made sources, including mobile sources (e.g., vehicles), stationary sources (e.g., concrete batch plants, quarries, and power plants), indoor sources (e.g., certain building materials and cleaning solvents), and area sources (e.g., ground disturbance from construction and agricultural activities). Air pollutants are also released from natural sources such as volcanic eruptions and wildfires.

The Clean Air Act designates six pollutants as “criteria pollutants,” for which the U.S. EPA has established National Ambient Air Quality Standards (Appendix E). These criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone, suspended particulate matter with a diameter less than or equal to 10 micrometers (PM<sub>10</sub>), fine particulate matter less than or equal to 2.5 micrometers (PM<sub>2.5</sub>), and lead (42 U.S.C. 7401, et seq.). The Northern Mariana Islands are classified as being in attainment of the National Ambient Air Quality Standards (40 C.F.R. 81.354), meaning the air quality complies with the standard for each criteria pollutant.

In addition to the “criteria pollutants,” national emission standards exist for hazardous air pollutants (40 C.F.R. 61). Hazardous air pollutants include substances known or suspected to cause cancer or other adverse health effects at or above certain exposure levels. Unlike criteria pollutants, ambient air quality standards have not been established for hazardous air pollutants.

Greenhouse gases primarily consist of carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), and other fluorine-containing compounds. Greenhouse gas emissions resulting from human activities trap heat in the atmosphere, which can have global effects. Scientific evidence indicates a trend of increasing global temperature over the past century due to increased greenhouse gas emissions.

Tinian meets all federal air quality standards under the Clean Air Act. With a population of approximately 2,000 people, several factors contribute to this compliance, including its isolated location in the Pacific Ocean, prevailing east-to-west winds (Figure 3.9-1), a rural development pattern, and the absence of heavy industry.



**Figure 3.9-1 Prevailing Wind Patterns for Tinian, based on the Wind Rose for Saipan International Airport**

In accordance with the General Conformity regulations (40 C.F.R. 93.153(c)(2)(xxii)), the air quality analysis in this Final EIS analyzes criteria and hazardous air pollutant emissions in the air above the island and the nearshore environment from the ground surface up to 3,000 feet above ground level. These emissions generated at elevations above 3,000 feet have a minimal effect on ground level pollutant concentrations (U.S. EPA 1992).

### **3.9.1 Sources of Air Emissions**

The CNMI Bureau of Environmental and Coastal Quality, Division of Environmental Quality (the Division going forward), does not monitor ambient air quality data for Tinian. The Division's Clean Air Program protects public health and the environment by enforcing local and federal environmental regulations that limit the release of air emissions. This includes issuing permits for sources of air pollution, conducting compliance inspections, responding to citizen complaints, and issuing notices of violations or administrative orders when necessary. Additionally, the Division conducts vehicle emission tests for diesel-powered motor vehicles (Bureau of Environmental and Coastal Quality 2023). Air emissions can come from stationary sources (e.g., power plants) or mobile sources (e.g., vehicles, aircraft). Stationary sources of air pollutants on Tinian include power generation units and distribution facilities that comprise the power system owned by the Commonwealth Utilities Corporation. This system consists of four 2.5-megawatt and two 5-megawatt diesel generators for a total of 20 megawatts of power generation (U.S. Energy Information Administration 2018). This facility is in San Jose about 1,000 feet west of the nearest residences. In addition to these stationary sources, various facilities including the Maui Well Number 2 and the U.S. Air Force Divert airfield facility use of fuel-burning backup generators that run intermittently.

The construction related to the U.S. Air Forces Divert facility at the TNI began in early 2022, and this activity represents a short-term, temporary source of air emissions on Tinian. Emissions from fuel-burning construction equipment and on-road vehicles are considered mobile sources of emissions.

The primary long-term source of mobile emissions on Tinian comes from vehicular traffic along major travel routes, such as Broadway, 8<sup>th</sup> Avenue, Grand Avenue, and Canal Street, which connect the village of San Jose to the Military Lease Area. Operations of aircraft at TNI and marine vessels at Tinian Harbor, including those used during current military training events on Tinian, also generate mobile source emissions.

Particulate matter emitted from non-point sources, such as unpaved or poorly paved surfaces, undeveloped land, or material storage piles – referred to as fugitive dust – comes from civilian and military vehicle travel and other activities that disturb the ground surface within the Military Lease Area. Existing agricultural activities that occur within the Military Lease Area and on public and private lands in the community south of the Military Lease Area also produce fugitive dust emissions through earth disturbance. Volcanic eruptions can also be a source of fugitive dust but the six Northern Mariana Islands that contain active volcanoes (Anatahan, Guguan, Pagan, Agrihan, Asuncion, and Uracus) are far enough away from Tinian that they are not a source of dust emissions in the project area.

### 3.9.2 Greenhouse Gas Emissions

Natural climate cycles and other factors, including human activities, influence temperatures and weather patterns at regional scales with major indicators of climate conditions include air temperature, sea level rise, and annual precipitation. Data observed at the Saipan International Airport show a trend of increasing air temperature during the day (90° Fahrenheit or warmer) and a decline in the annual number of cool nights (below 74° Fahrenheit) since 2006. Annual total rainfall data collected at the Saipan International Airport from 1989 to 2020 show little average change over the past 30 years. The sea level around the CNMI is rising, with Saipan’s tide gauge recording a long-term sea level rise of 0.07 inches per year since 1978 (Pacific Islands Regional Climate Assessment 2021).

The CNMI released a 2024 Priority Climate Action Plan, which outlines five priority measures, each targeting a specific aspect of emissions reduction: electricity generation, transportation, solid waste management, wastewater treatment, and carbon removal. This plan also includes a priority greenhouse gas inventory for the CNMI for the base year of 2023, as shown in Table 3.9-1.

**Table 3.9-1 CNMI 2023 Greenhouse Gas Emissions Inventory**

<i>Priority Sector for the CNMI Priority Climate Action Plan</i>	<i>Annual CO<sub>2</sub>e Emissions (Metric Tons)</i>
Electricity Generation (stationary combustion)	224,574
Transportation (mobile combustion from road vehicles, marine vessels, and aviation)	212,788
Wastewater Treatment	5,428
Solid Waste	377
<b>Subtotal of Gross Emissions of Priority Sectors for the Priority Climate Action Plan</b>	<b>443,167</b>
<i>Forestry Carbon Sequestration</i>	<i>-199,228</i>
<b>Net Emissions of Priority Sectors for Priority Climate Action Plan</b>	<b>243,939</b>

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; CO<sub>2</sub>e = carbon dioxide equivalent.

*Source:* CNMI Climate Policy and Planning Program 2024.

Energy generation accounts for approximately 51 percent of the CNMI’s priority greenhouse gas emissions, as the CNMI relies almost entirely on diesel fuel to generate electricity. Less than 1 percent of the CNMI’s power supply comes from solar net-metered systems (CNMI Climate Policy and Planning Program 2024).

On April 15, 2024, Governor Palacios signed the Blue Planet Climate Agreement, committing the CNMI to achieving 100 percent renewable energy by 2045.

### 3.10 Public Health and Safety

This section describes current public health and safety conditions on the island of Tinian for the following categories: ground training, aviation training and civilian aviation, radio frequency and microwave emission, unexploded ordnance and discarded military munitions, hazardous materials

and waste, natural hazards, wildfire, flood hazards, and protection of children from environmental health and safety risks.

The Proposed Action includes establishing a new lease for the USAGM property on Saipan and the repurpose of the existing facilities and communications towers. The use of the property would remain similar to the current use under this new lease to the DoD. The public is restricted from accessing the property by a perimeter fence. No military training occurs at this location. Due to the nature of the Proposed Action at the USAGM Saipan site, the existing environment is not described further in this section.

### **3.10.1 Ground Training**

Training activities currently occur on Tinian within the Military Lease Area as described in previous NEPA documents (DON 2010, 2015), and in recent years have included large and medium events (e.g., Valiant Shield and Cope North), as well as smaller events. Ground-based activities include surveillance and reconnaissance, military operations in urban terrain, evacuation operations, command and control, logistics, camping, land navigation, convoy training, non-combatant evacuation operations, operations at the Port of Tinian and other non-live-fire activities, and limited live-fire training (i.e., small arms into bullet traps within existing structures).

Military services employ a proactive and comprehensive program to ensure the safety and health of personnel and the general public. Service members training on Tinian are required to comply with all federal and local environmental laws and regulations, in addition to established range, aviation, and munitions safety directives and standard operating procedures. These include the *Marianas Training Manual*, *Joint Region Marianas Fire Management Plan* (Commander, U.S. Naval Forces Marianas Instructions 3500.4E and 3500.4C, respectively), and *Commonwealth of the Northern Mariana Islands Field Guide for United States and Visiting Forces Mariana Islands Range Complex*, among others as required to perform specific training objectives. Prior to a training activity occurring, an exercise or activity plan is coordinated with the CNMI Government and the Tinian Mayor's Office and any required regulatory agencies (e.g., CNMI Department of Public Works for road closure requests). Exercise planning includes coordination on biosecurity inspections, temporary public access restrictions, environmental compliance, and natural resources consultations. The planning considers other factors such as the ability to control access to an area; schedule (time of day, day of week); duration and intensity of activities; how required range safety procedures or other operational controls would be applied; and safety history. Potential users of an area are notified prior to the event, including where temporary access restrictions may occur. A qualified Range Safety Officer is always on duty during training events to ensure training areas are clear of non-participants during training events.

There are no residences within the Military Lease Area. The nearest residential area is Marpo Heights, located approximately 1 mile south of the Military Lease Area, east of Broadway. However, public access to the Military Lease Area by locals and visitors occurs on a daily basis for recreation, tourism, subsistence gathering purposes, and visiting cultural sites. The Military Lease Area is unfenced except for a formerly used unexploded ordnance area known as the Tinian Mortar Range, private cattle ranching operations, and the former USAGM facility.

### 3.10.2 Aviation Training and Civilian Aviation

The military currently uses North Field with expeditionary air traffic control. Other military activities at North Field include humanitarian assistance/disaster relief practice, off-loading of cargo, and helicopter night vision landings. Rotary-wing aircraft activities include takeoffs and landing, and troop insertion and extraction. All aircraft are required to maintain an altitude greater than 1,000 feet above ground level over wetlands (Lake Hagoi, Mahalang, Bateha) and limestone forest associated with Mount Lasso.

Military aircraft use of TNI accounts for less than 1 percent of the airport's operations (FAA 2023). Fixed-wing aircraft activities include arrested landings and expeditionary refueling at TNI. Both TNI and North Field allow aircraft loading and unloading in support of military training.

Civilian air taxi/commuter flights account for most aircraft operations at TNI. Two fatal civilian aircraft incidents have occurred in the last 20 years involving flights enroute either to or from TNI (National Transportation Safety Board 2014, 2015). The FAA also recorded three non-fatal safety-related incidents between 2010 and 2019 during taxi or take-off on Tinian (National Transportation Safety Board 2017, 2018, 2019). All resulted in aircraft damage, and two resulted in personal injury but no fatalities.

### 3.10.3 Radio Frequency and Microwave Emissions

Electromagnetic radiation: Radars, cell phones, radio transmitters, and other navigation, communications and electronic devices used by the military and available in the home produce electromagnetic radiation. These devices can also cause electrical interference with each other, including home entertainment equipment (e.g., television and radio) as well as civilian and military frequency-dependent systems such as aircraft control towers and cell phone towers. Exposure to the radio frequency electromagnetic spectrum (between 3 kilohertz and 300 gigahertz) can adversely affect people, munitions, and fuel (DON 2011).

In 2014, the Defense Information Systems Agency Joint Spectrum Center conducted an analysis identifying potential electrical interference between USMC communication systems and existing civilian and military systems on Tinian. Based on this analysis, it was recommended that the USMC avoid using frequencies close to those assigned to current systems and maintain minimum separation distances from these systems.

To assess the potential for exposure of military personnel and the public to electromagnetic radiation, the Naval Surface Warfare Center conducted two evaluations in 2013 and 2014. The only source of electromagnetic radiation above 3 kilohertz identified was the USAGM's Robert E. Kamosa Transmitting Station. Fencing around the facility protected military personnel and the public from exposure to this electromagnetic radiation. USAGM ceased operations at the transmitting station in August 2024.

### 3.10.4 Unexploded Ordnance and Discarded Military Munitions

Unexploded ordnance and discarded military munitions from World War II are present on Tinian. These include tank munitions, mortars, and bazookas used during ground assaults. After the initial battle, the U.S. military constructed airfield facilities on the northern part of the island, which involved grading and the use of fill material from other parts of the island. The 2010 *Final Historical Ordnance Assessment, Guam and CNMI Area, P-50*, identified shallow soil and this extensive construction of U.S. military facilities at North Field as mitigating factors that reduced

the potential presence of unexploded ordnance (DON 2010). In addition, unexploded ordnance was removed during the subsequent rebuilding of San Jose and the Port of Tinian. Unexploded ordnance may still be present on Tinian in undeveloped areas or at depths below previously disturbed areas (DON 2010). A 2015 Environmental Report for Tinian confirmed the presence of unexploded ordnance near caves along the cliffs below the east side of Mount Lasso (DON 2015). The northern third of Tinian is classified as a high probability area for the presence of unexploded ordnance, and the middle third of Tinian is classified as a medium probability area.

The single known source of unexploded ordnance after World War II is the Tinian Mortar Range (also known as the Chiget Mortar Range), located on the island's northeastern coast, which was used for military live-fire training events from 1945 through 1994 (GMP 1997). This former mortar range is now fenced and is being addressed under the Navy's Munitions Response Program (DON 2015). The U.S. military, the U.S. EPA, and the CNMI routinely advise the public not to handle or step on any suspicious items, and to report the presence of such items immediately. Qualified military explosive ordnance technicians investigate reports of suspicious items and if unexploded ordnance were to be identified, they would respond and remove it for offsite disposal or destroy it in place if deemed unsafe to move. All actions to address munitions of explosive concern would be in accordance with local and federal regulations or instructions.

### **3.10.5 Hazardous Materials and Waste**

In 1997, an Environmental Baseline Survey was conducted for lands leased by the U.S. on Tinian that identified sites of environmental concern caused by the historical use of hazardous materials during World War II and from more recent agricultural and commercial activities (GMP Associates, Inc. 1997). The 2015 Environmental Report for Tinian updated the 1997 Environmental Baseline Survey, re-evaluating 41 sites for existing conditions and identifying several new sites containing old building structures, scrap metal, container drums, and other conditions requiring further investigation and possible cleanup (DON 2015).

Military training events are conducted in compliance with standard operating procedures and federal and CNMI laws. Training is coordinated with Joint Region Marianas environmental staff who coordinate with federal and CNMI agencies regarding the handling of hazardous materials. As part of current military training exercises, portable aboveground bulk diesel storage containers have been temporarily staged and used at North Field (DON 2014a). The military ensures proper storage and handling of hazardous materials inside an impervious barrier and away from catch basins, storm drains, and waterways. The military also complies with the Tinian Spill Control Plan and has trained spill response teams available during training events (M. Cruz, Joint Region Marianas, Personal Communication, 2014). Outside of limited use during training events, the military does not routinely use any pesticides, herbicides, industrial or household cleaning products, paints, or solvents within the Military Lease Area.

The USAGM Tinian site uses minimal amounts of hazardous materials such as pesticides, herbicides, industrial or household cleaning products, paints, or solvents for interim maintenance since the closure of the facility began in August 2024. Additionally, the site has a standby power plant consisting of three diesel-fired generators, two free-standing aboveground storage tanks, and a fuel pump house. The aboveground storage tanks are surrounded by an earthen containment berm connected to an oil/water separator. No releases related to the fuel storage activities at the USAGM have been reported (DON 2013).

### 3.10.6 Natural Hazards

Potential natural hazards on Tinian that could affect public health and safety include wildfire and floods.

#### 3.10.6.1 Wildfire

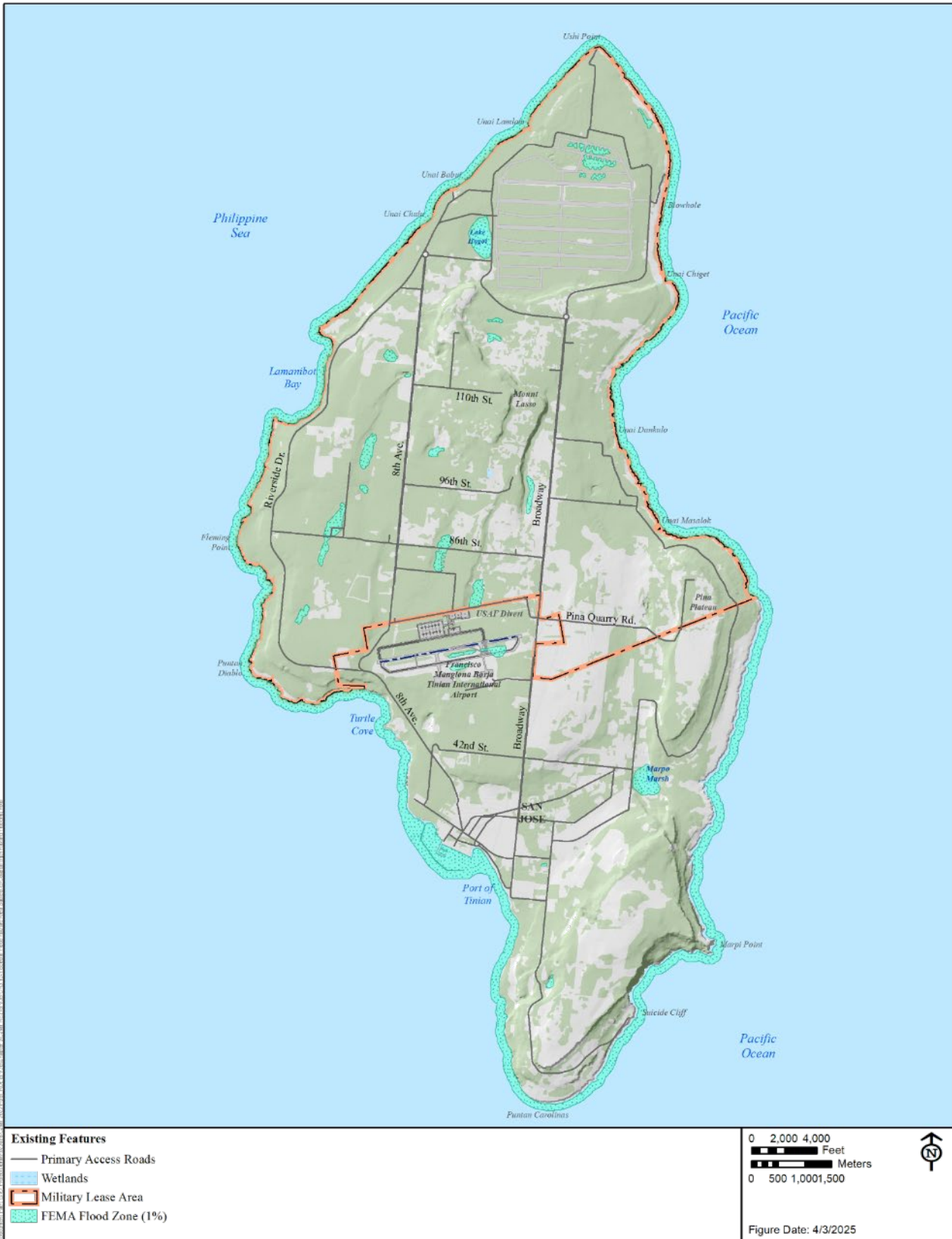
Wildfires have the potential to affect public safety on Tinian, particularly in areas where civilians may use the Military Lease Area, along with the potential to impact habitat supporting Endangered Species Act listed species (i.e., native limestone forest). The dry season (December to June) is characterized by lower rainfall, drying fuels, and northeast trade winds averaging 14 to 17 miles per hour. The highest fire danger peaks in January through March. Relative humidity rarely falls below 50 percent, but brief drops can support ignition in fine fuels. There are three general wildfire fuel environments on Tinian:

- Native forest (low fire-carrying ability due to shade, moisture, and low fine fuels)
- Mowed grasslands near developed areas or objectives (can carry low- to moderate-intensity fire)
- Tall, non-native grasslands (primary carrier of rapid-spread fire under extreme dry-season conditions)

Between 2016 and 2023 there were 136 fires on Tinian, with the majority occurring in the dry season (March to June) and affecting less than 10 acres per occurrence. Dominant fire sources on Tinian are human-caused and include pasture burning for cattle; burning associated with crab hunting; and accidental ignitions from vehicles, improper disposal of cigarettes and other wastes, or power lines. Natural ignitions (i.e., from lightning) are rare and military ignition sources (i.e., tracers, pyrotechnics, heat-producing devices) are not currently used. No wildland fires within the Military Lease Area have been documented as caused by military training, which is consistent with the limited level of training activity. Tinian currently does not have a DoD fire department and wildfire response is limited to local municipal resources, with constrained staffing, limited apparatus, and no specialized wildland firefighting capability (NAVFAC Pacific, Personal Communication, January 2026).

#### 3.10.6.2 Flood Hazard (Flood Zones)

The Federal Emergency Management Agency provides Flood Insurance Rate Maps that define flood zones and show the geographic areas with varying levels of flood risk: V, X, and A. On the Flood Insurance Rate Map of Tinian, the seaward coastline areas are designated as Flood Zone V, or “Special Flood Hazard Area subject to coastal high hazard flooding” (Figure 3.10-1) (FEMA 1998, 2006). Zone V areas may be designated with known wave-induced elevations. However, on Tinian, this area is designated as “without base flood elevation.” Most landward areas on Tinian, including those within the Military Lease Area, such as the former USAGM Tinian site, are designated as Zone X, areas of minimal flood hazard, and are for the most part outside of the 500-year floodplain areas. Nineteen distinct areas on Tinian are designated as Flood Zone A, a Special Flood Hazard Area that usually indicates a base flood elevation and may also indicate the type of flooding (e.g., sheet flow, ponding, shallow). These distinct areas are in locations that include Lake Hagoi, portions of North Field, TNI, and Marpo Marsh.



**Figure 3.10-1 Special Flood Hazard Area Subject to Coastal High Hazard Flooding**

### 3.10.7 Protection of Children

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks (April 21, 1997), requires federal agencies to identify and assess environmental risks and safety risks that may disproportionately affect children. On Tinian, most families with children reside south of the Military Lease Area in the villages of San Jose and Marpo Heights. The island’s schools, parks, and playgrounds are located within San Jose. No children reside, attend school, or otherwise congregate for long periods in the Military Lease Area.

### 3.11 Utilities

Utilities on Tinian include water supply (potable water, non-potable water, and groundwater), wastewater treatment, management of solid and hazardous waste, green waste, stormwater, electrical power systems, and communications systems.

#### 3.11.1 Potable, Non-Potable, and Groundwater Water Supply

##### 3.11.1.1 Commonwealth Utilities Corporation

The Commonwealth Utilities Corporation owns, operates, and maintains the public water system on Tinian, including sources, treatment, storage, testing, and distribution of potable water to approximately 800 metered connections outside the Military Lease Area (Commonwealth Utilities Corporation 2015). The distribution system does not extend into the Military Lease Area.

A single groundwater well, Maui Well Number 2, is the sole source of potable water for the island. Maui Well Number 2 has a total operational pumping capacity of approximately 1.5 million gallons per day (Commonwealth Utilities Corporation 2015; DON 2019). Maui Well Number 2 meets U.S. EPA Primary and Secondary Drinking Water Standards including for per- and poly-fluoroalkyl substances (Commonwealth Utilities Corporation 2024a). Figure 3.11-1 provides an overview of the Commonwealth Utilities Corporation public water system and its components. The system disinfects water using chlorine and no other water treatment is necessary.

Table 3.11-1 summarizes water production (i.e., extraction) quantities from Maui Well Number 2 as recorded by the Commonwealth Utilities Corporation at the well site for the last five years. Production includes water delivered into the distribution system, which is inclusive of water billed to customers, unmetered uses, leaks, losses, and overflows.

**Table 3.11-1 Commonwealth Utilities Corporation  
Water Production from Maui Well Number 2**

<i>Year</i>	<i>Total Annual (MG)</i>	<i>Average Daily (MGD)</i>
2019	313	0.86
2020	312	0.85
2021	307	0.84
2022	321	0.88
2023	306	0.84
<b>Average</b>		<b>0.85</b>

*Legend:* MG = million gallons; MGD = million gallons per day.

*Source:* Commonwealth Utilities Corporation 2024b.



Figure 3.11-1 Public Water System

Table 3.11-2 summarizes billing records for all the Commonwealth Utilities Corporation customers based on meter readings. All registered connections served by the Commonwealth Utilities Corporation are metered and read monthly.

**Table 3.11-2 Commonwealth Utilities Corporation Billed Water Demand**

<i>Year</i>	<i>Total Annual (MG)</i>	<i>Average Daily (MGD)</i>
2019	88	0.24
2020	77	0.21
2021	81	0.22
2022	84	0.23
2023	87	0.24
<b>Average</b>		<b>0.23</b>

*Legend:* MG = million gallons; MGD = million gallons per day.

*Source:* Commonwealth Utilities Corporation 2024c.

The average daily production from Maui Well Number 2 between 2019 and 2023 was 0.85 million gallons per day and the average billed water demand was 0.23 million gallons per day.

The Commonwealth Utilities Corporation water system includes a total of 1.25 million gallons of storage between three existing aboveground welded steel reservoirs.

- Marpo Tank has a capacity of 0.25 million gallons and is currently out of service.
- Carolinas Tank 1 has a capacity of 0.50 million gallons.
- Carolinas Tank 2 has a capacity of 0.50 million gallons and is in operation.

### **3.11.1.2 Francisco Manglona Borja / Tinian International Airport**

TNI is owned and operated by the Commonwealth Ports Authority. As a customer of the Commonwealth Utilities Corporation, it receives all potable water from Maui Well Number 2. Downstream of the Commonwealth Utilities Corporation water meter, the Commonwealth Ports Authority operates its own water system within the airport property.

### **3.11.1.3 United States Agency for Global Media**

The USAGM, formerly the International Broadcasting Bureau, operated a radio transmitting facility on Tinian. This facility is not connected to the Commonwealth Utilities Corporation system. Rainwater is captured from a portion of the roof and stored in two aboveground tanks with a total capacity of 8,500 gallons. All water used at the facility is non-potable, except for a point-of-use-reverse osmosis system which treats water for potable use in the kitchen. Most water comes from harvesting rainwater, except in dry months. Approximately 5,000 gallons per year are purchased from Commonwealth Utilities Corporation and trucked in bulk.

### **3.11.1.4 Tinian Mayor’s Office**

Groundwater is owned by the Tinian Mayor’s Office and a fee is charged for the quantity of water extracted. The Tinian Mayor’s Office owns and operates two non-potable water wells: M-21 and M-26. Neither well is connected to a pipeline network.

- Well M-21 is primarily used by the contractor for the U.S. Air Force’s Tinian Divert Infrastructure Improvements project at TNI. It has a water meter and a 40,000-gallon tank.

In 2024, it was permitted to extract up to 1.8 million gallons per month (J. Aldieri, NAVFAC Marianas, Personal Communication, September 10, 2024).

- Well M-26 is primarily used by cattle ranchers and is not metered.

### **3.11.2 Wastewater Treatment**

Tinian has no centralized municipal wastewater collection and treatment system. Public and private buildings rely on individual septic tanks and leach fields, or seepage pits for wastewater treatment and disposal. The Bureau of Environmental and Coastal Quality Wastewater, Earthmoving, and Erosion Control Program oversees residential septic systems design and permitting. It also conducts village-by-village household surveys to identify septic systems that require upgrades or need a pump-out to properly collect and treat wastewater (CNMI Bureau of Environmental and Coastal Quality 2020). The Commonwealth Utilities Corporation has initiated a feasibility study for a new wastewater treatment system with collection mains for Tinian (CNMI Bureau of Environmental and Coastal Quality, Personal Communication, September 12, 2024). Until such a system is funded and constructed, residents and visitors will continue to rely on private septic systems.

The USAGM operated an Individual Wastewater Disposal System, constructed in 1997, consisting of a packaged wastewater treatment system for aerobic digestion. Treated wastewater is disposed of in a leach field without a septic tank.

The DoD owns and operates an existing septic tank and leach field near Camp Tinian, which is located inside the Military Lease Area. The septic tank measures 25 by 20 by 5 feet and the leach field is 75 by 40 feet. The system is permitted for an average daily sewage flow of 6,640 gallons per day (Department of Environmental Quality 1999). This septic tank and leach field is not anticipated to be used for the Proposed Action.

### **3.11.3 Solid Waste and Hazardous Waste**

The CNMI Department of Public Works operates an unlined, open dump for municipal solid waste at Tinian Puntan Diablo disposal facility located adjacent to 8<sup>th</sup> Avenue near San Jose and the southwest coast. In 2010, the Bureau of Environmental and Coastal Quality issued an administrative order to the CNMI Department of Public Works documenting violations of the CNMI Solid Waste Management Regulations and imposing operational requirements. In response to the administrative order, the CNMI Department of Public Works planned to close the dump by February 2017 but has not done so, leaving the open dump as the only solid waste disposal option on Tinian (USMC Utilities Working Group Meeting April 2023). Because the existing Puntan Diablo disposal facility has limited remaining capacity, the CNMI is initiating permitting efforts for a new landfill at Atgidon site, located north of 86th Street and between Riverside Drive and 10th Avenue. The CNMI anticipates permitting of this new landfill would take 5 years to complete.

In 2020, the CNMI Department of Public Works completed construction of the Tinian Transfer Station and Recycling Center, and operations began in 2022 (CNMI Department of Public Works 2020, 2022). The facility currently collects source-separated recyclable materials such as cardboard/paper, plastic bottles, and aluminum cans. Recyclable materials are shipped off the island for processing and sale, and the costs of handling and transportation exceed the revenue generated by the sale of the recyclables.

Tinian has no public facilities for hazardous waste transport, storage, or disposal. Commercial hazardous waste generators use contractors to dispose of hazardous waste off the island (CNMI Office of the Governor 2023). Household hazardous waste in the municipal solid waste stream includes used batteries, electronics, appliances, cleaning agents, fertilizers, and pesticides. These items are currently disposed of in the same landfill as all other solid waste on Tinian.

Due to the lack of a permitted and compliant landfill or hazardous waste disposal facility on Tinian, the military currently removes all solid and hazardous waste generated during training exercises for off-island disposal in accordance with applicable laws and regulations. This includes expended brass deposited during training events (DON 2023).

The USAGM facility contains two 30,000-gallon diesel fuel storage tanks (International Broadcasting Bureau 2009). The facility generates universal wastes, such as fluorescent light bulbs and batteries, which are temporarily stored in the facility's hazardous waste storage area before transporting them off-island for proper disposal/recycling (DON 2013). Solid waste from the facility is managed within the local solid waste infrastructure. Residual waste, after recycling, is disposed of at the Puntan Diablo facility.

#### **3.11.4 Green Waste**

Green waste generated by residents on Tinian is managed at the Tinian Organics Processing Site operated by the Department of Public Works. It was permitted in June 2022 for green waste disaster debris and does not accept green waste from commercial generators. The site is equipped with a wheel loader and a chipper for processing and storing green waste. It receives approximately 660 cubic yards per year (CNMI Office of the Governor 2023).

#### **3.11.5 Stormwater Management**

Stormwater is managed within the public road infrastructure, at TNI, and the Port of Tinian. The CNMI Department of Public Works maintains the roadway stormwater infrastructure, primarily consisting of concrete gutters, curbs, and vegetated swales. The Commonwealth Ports Authority maintains the airport and port stormwater infrastructure. At the Port of Tinian, inlets and pipes direct runoff from paved areas into shallow retention basins. At TNI, paved surface areas are graded to direct runoff into large, shallow retention basins. Stormwater captured in swales, retention basins, and depressions infiltrates rapidly due to the high soil porosity throughout the island. During heavy rainfall, excess stormwater flows into the ocean.

The CNMI Division of Environmental Quality, Bureau of Environmental and Coastal Quality, and the U.S. EPA regulate stormwater under the National Pollutant Discharge Elimination System. The program regulates three pollutant sources: municipal separate storm sewer systems, construction activities, and industrial activities. Tinian is not regulated as a municipal separate storm sewer system because no municipal stormwater outfalls exist on Tinian. Construction and industrial activities must implement best management practices to minimize stormwater runoff from transporting pollutants to surface waters, nearshore waters, and groundwater.

In the Military Lease Area, stormwater flows mainly over unmaintained swales and shallow depressions constructed during World War II. Tinian's highly porous soils and karst geology enable rapid stormwater infiltration.

### 3.11.6 Electrical Power System

The Commonwealth Utilities Corporation operates a diesel-fueled power plant on Tinian consisting of six engines totaling 20 megawatts of rated capacity. There are 18.5 megawatts of this capacity held for reserves to support the island wide distribution covered in this study (Commonwealth Utilities Corporation 2021). The operating capacity of the power plant is currently 18.2 megawatts. In 2021, the Commonwealth Utilities Corporation reported an average peak load of 1.9 megawatts per day, lower than the pre-2019 average of 2.5 megawatts per day (Commonwealth Utilities Corporation 2021). Four feeder circuits consisting of overhead electrical lines convey power from the plant to the customers. Feeders 1, 2, and 3 supply power outside the Military Lease Area. Feeder 4 supplies power within the Military Lease Area to the former USAGM facility. Feeder 4 has a 5-megawatt capacity with the USAGM using 1.4 megawatts, leaving 3.6 megawatts available in the Military Lease Area. See Appendix M, Electrical System Analysis for detailed information on the existing electrical power system.

The Commonwealth Utilities Corporation also has several small solar photovoltaic projects installed at public facilities and schools and is planning a 3-megawatt solar photovoltaic plant (Energy Information Administration 2020). To meet the Comprehensive Sustainable Development Plan's clean affordable energy goal of meeting 20 percent of the peak electricity demand on each of the inhabited CNMI islands, the Commonwealth Utilities Corporation is developing a Comprehensive Energy Plan and planning installation of an integrated utility-scale photovoltaic system (CNMI Office of Planning and Development 2021). The corporation is collaborating with the U.S. Department of the Interior, Office of Insular Affairs and the U.S. Department of Energy to update a new Energy Master Plan (Commonwealth Utilities Corporation 2021).

In 2020, the Commonwealth Utilities Corporation received a \$36 million CNMI federal grant to repair and reinforce infrastructure damaged by recent typhoons. The funds will support powerplant upgrades, concrete power pole installation, and undergrounding of transmission lines to protect them from future storm damage (Energy Information Administration 2020). As of October 2021, CNMI had installed approximately 1,000 new concrete power poles on Tinian (Commonwealth Utilities Corporation 2021). Figure 3.11-2 provides an overview of power distribution on Tinian.



Figure 3.11-2 Tinian Power Distribution

### 3.11.7 Communications

Tinian's information technology and communications infrastructure includes telephone, internet, cable television, and satellite service. IT&E and Docomo Pacific provide commercial information technology and communications services. Both companies provide phone, internet, and cellular phone service through overhead distribution lines and towers in the southern part of Tinian. Marianas Cable Vision Broadband and Docomo Pacific provide cable television service through overhead distribution lines in the southern part of Tinian. The Military Lease Area has no commercial or military information technology and communications infrastructure.

Two undersea fiber optic cable links, one owned by IT&E and one owned by Docomo Pacific, connect Tinian and Saipan to the Trans-Pacific Cable hub on Guam, enabling phone, internet, cellular phone, and high-definition television services. A microwave system provides alternative connectivity if the cables fail. The USAGM Tinian site has thirteen towers, and the USAGM site on Saipan has four.

### 3.12 Topography, Geology, and Soils

Topography, geology, and soils describe surface and subsurface features of land. Topography is typically described with respect to the elevation, slope, and surface features found within a given area. Geology is characterized by the physical features of the earth and includes rock type, geologic structure (e.g., faults, folds, and tilting of rocks) and mineral deposits. Soil is the unconsolidated mineral or organic material on the top layer of the earth that serves as a natural medium for the growth of plants.

The USAGM Saipan site is not discussed further under the existing environment section for topography, geology, and soils. USMC would repurpose existing communication towers at the USAGM Saipan site, and no clearing or new construction would be required.

#### 3.12.1 Topography

Tinian is approximately 12 miles long and 6 miles wide. The island is composed of a series of limestone plateaus separated by steep slopes and cliffs (U.S. Department of Agriculture 1989). The northern portion of the Military Lease Area is generally level with elevations that range between 30 and 100 feet above mean sea level, except for Lake Hagoi, where the elevation is approximately at sea level. The southern portion of the Military Lease Area and TNI is a broad and gently sloping plateau. Within the northern part of this plateau is a highland with a maximum elevation of 545 feet above mean sea level at Mount Lasso. From Unai Dankulo and Unai Masalok in the southeastern portion of the Military Lease Area, a low, broad depression extends southward past Marpo Marsh and includes San Jose Village and the area around the Port of Tinian. This area has a maximum elevation of 150 feet above mean sea level. To the east of this broad depression are the Pina Plateau and Carolinas ridges that extend to the southern tip of Tinian and includes Kastiyu, the highest part of the island at 614 feet above mean sea level. It has steep slopes and cliffs as high as 500 feet above mean sea level. Wetland topographic features including Lake Hagoi and Marpo Marsh are discussed in Section 3.14.1 (Surface Water). Topographic contours are shown in Figure 3.12-1.

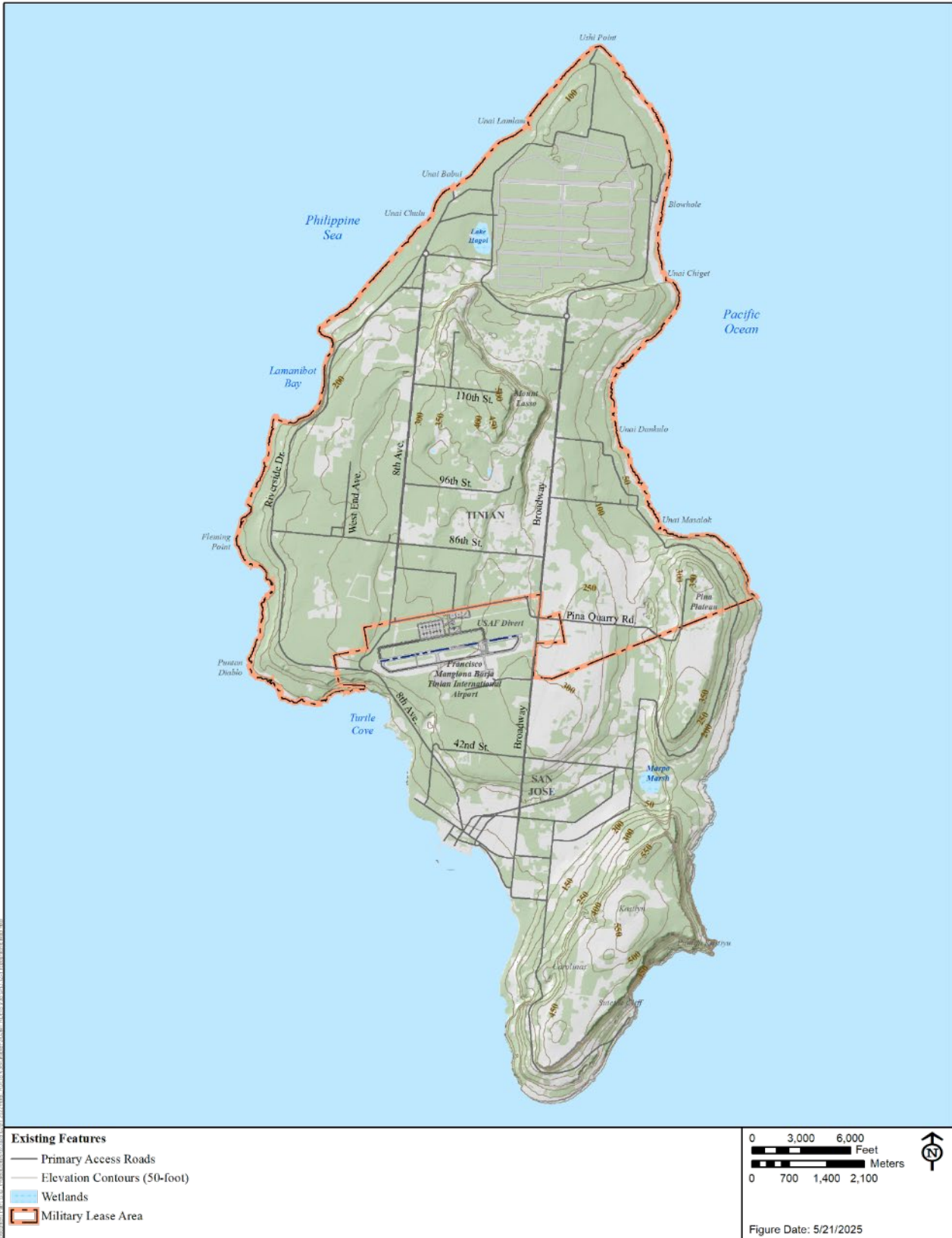


Figure 3.12-1 Tinian Topographic Map

### 3.12.2 Geology

Tinian is a volcanic arc island formed by the Pacific Plate subduction under the Philippine Plate, approximately 100 miles west of the Mariana Trench. The foundation of the island, predominantly below sea level, is composed of low-permeability volcanic rock. However, the dominant lithology above sea level overlying the volcanic material is high-permeability, coralline limestone from Plio-Pleistocene carbonate facies and raised Holocene beach and reef deposits. Tectonic uplift and high-angle, normal faulting impacted these sequences, as evidenced by fault transects observed throughout the island, creating complex dynamics in the permeability and structure of Tinian's rock units (USGS 2000 and Stafford, et al. 2005).

Four major geologic units make up the island; the Tinian Pyroclastic Rocks, the Tagpochau Limestone, the Mariana Limestone, and unconsolidated sediments consisting of beach deposits, alluvium, and colluvium. The porous nature of coral reefs, and the high susceptibility of limestone to solution weathering favor high hydraulic conductivities in the limestone units. In contrast, hydraulic conductivities of the pyroclastic rocks tend to be low due to poor sorting and the high susceptibility of some volcanic minerals to chemical weathering and alteration to clays. (Gingerich, 2002). Beach deposits are mostly medium-to-coarse grain calcareous sands, gravels, and rubble interspersed over exposed limestone.

Karst geology is present on Tinian in the Mariana and Tagpochau Limestone formations. Karst is a distinctive geologic formation created when surface or groundwater dissolves soluble rocks such as limestone. Karst features include large voids, such as sinkholes and caves. Sinkholes can act as catchments for surface water. Caves (i.e., banana holes, flank margin caves, and fracture caves) (Stafford et al. 2002) can form in limestone deposits in the zone of mixing of salt and freshwater. Epikarstis, defined as the upper layer of eroded rock, is characterized by rough surfaces, little soil, and small cavities.

On Tinian, sinkholes and collapsed surface features suggest the presence of channeled internal drainage and cavernous subgrade conditions (Doan et al. 1960). Subgrade conditions have not been mapped to assess the actual conditions including any potential effects to the stability of the limestone. Epikarst is present in all limestone rock formations on Tinian, and its characteristics vary based on proximity to the coast, appearing more jagged toward the coast as a result of physical and chemical interactions with the saltwater ocean and sea spray (Stafford et al. 2004). Caves, notches, cuts, and slumped materials (i.e., materials that have collapsed or fallen) are present along the Tinian coast. Figure 3.12-2 provides the locations of known karst features on Tinian. Although this figure depicts a specific recharge feature (i.e., Lasu recharge cave, as described in Stafford et al. 2002) south of Mount Lasso, groundwater recharge occurs throughout Tinian in areas of limestone formations.

### 3.12.3 Soils

Soil classes across Tinian are depicted in Figure 3.12-3. Soil descriptions and properties characterizing shrink/swell potential and erosion potential are provided in Table 3.12-1.



Figure 3.12-2 Tinian Karst Features



Figure 3.12-3 Tinian Soils

**Table 3.12-1 Tinian Soil Classifications and Properties**

<i>Soil Class</i>	<i>Soil Description</i>	<i>Shrink/ Swell Potential</i>	<i>Erodibility Factor (K)</i>	<i>Location</i>
Banaderu-Rock Outcrop	Shallow, well drained, nearly level to moderately steep soils and rock outcrop.	Moderate	0.20	Limestone Plateaus
Chacha	Shallow and deep, poorly drained, and found on steep slopes, plateaus, and hills.	High	0.15	Limestone Uplands
Chinen-Tagpochau	Very shallow and shallow, well drained, nearly level to strongly sloping soils, and found on plateaus and side slopes.	Moderate	0.10	Limestone Plateaus
Chinen-Urban Land	Shallow, well drained, nearly level soils and urban areas.	Moderate	0.15	Limestone Plateaus
Dandan-Chinen	Shallow and moderately deep, well drained, nearly level to strongly sloping soils.	Moderate	0.15	Limestone Plateaus
Inarajan	Very deep, poorly drained soils.	High	0.24	Valley Bottoms and Coastal Plains
Kagman-Saipan	Deep and very deep, well drained, nearly level to strongly sloping soils.	Moderate	0.15	Limestone Plateaus
Laolao-Akina	Moderately deep, well drained, strongly sloping to steep soils found on volcanic uplands.	Moderate	0.15	Uplands
Luta	Very shallow, well drained, nearly level to strongly sloping soils.	Low	0.10	Limestone Plateaus
Mesei Variant	Moderately deep, very poorly drained, level soils.	Low	0.05	Depressional Areas
Saipan-Dandan	Moderately deep and very deep, well drained, nearly level to gently sloping soils.	Moderate	0.15	Limestone Plateaus
Shioya	Very deep, excessively drained, level to nearly level soils, found on coastal strands.	Low	0.15	Coastal Limestone Sands
Tagpochau-Chinen-Rock Outcrop	Shallow, well drained, strongly sloping to extremely steep soils and rock outcrop, found on limestone escarpments and plateaus.	Moderate	0.10	Uplands
Tagpochau Variant-Shioya	Very shallow to very deep excessively drained, levels to gently sloping soils, found on coastal stands and plateaus.	Low	0.15	Lowlands

Source: U.S. Department of Agriculture 1989.

Soil erosion occurs naturally on the islands due to the effects of wind and water but can be accelerated by human and wildlife activities (U.S. Department of Agriculture 2004). Banaderu and Inarajan soil units in the Military Lease Area are characterized as having the greatest susceptibility for soil erosion. The higher the “K” value in the table, the more susceptible the soil is to erosion (U.S. Department of Agriculture 1989). In addition, soil units located in areas with slopes greater than 15 percent have higher susceptibility to erosion. Within the Military Lease Area, these steep areas tend to be in the vicinity of Mount Lasso and along the western edge of the island (Figure 3.12-3).

Soils that are best suited to producing sustained high yields of crops are identified as prime farmland (U.S. Department of Agriculture 1989). Prime farmland soils do not have to currently be used for cropland. Areas with these soils can be forest land, pastureland, cropland, or other land (Natural Resources Conservation Service 2012). Prime farmland soils on Tinian are shown in Figure 3.12-4. Within the Military Lease Area, prime farmland soils include Saipan-Dandan clays (0 to 5 percent slope) and Saipan clays (0 to 5 percent slope) and comprise approximately 71 percent (1,054 acres) of prime farmland soils on Tinian.

### **3.13 Groundwater and Hydrology**

This section describes Tinian groundwater and hydrology conditions, which is the occurrence, movement, and quality of water beneath the surface.

#### **3.13.1 Groundwater Availability**

Rainfall is the primary source of fresh groundwater on Tinian. This rainwater percolates downward into porous limestone rock (Doan et al. 1960) and recharges Tinian's freshwater aquifer. Fresh groundwater on Tinian is primarily classified as basal (a body of fresh groundwater that floats on saline groundwater). The portion of the basal freshwater lens that is usable for potable water (groundwater with chloride concentrations less than 250 parts per million) is thickest south and southwest of Mount Lasso and thins approaching the coastline (Figure 3.13-1). Tinian relies on groundwater for all of its water supply. The basal freshwater lens underlying Tinian meets the definition of an aquifer found in CNMI Title 65, Chapter 65-90-010 and is the principal source of drinking water for the island's residents.

The groundwater table on Tinian (the underground area where water fills the spaces between sediment layers), ranges from sea level around the perimeter of the island to over 3 feet above mean sea level in the central portions of the island. The U.S. Geological Survey estimates the average annual groundwater recharge for Tinian to be approximately 30 inches per year (Gingerich 2002). This translates into approximately 20 billion gallons per year of recharge. Groundwater flows outward from the North Central Highland and the Southeastern Ridge and generally seaward around the island (Appendix M). Figure 3.13-1 depicts groundwater table elevation contours and the general direction of groundwater flow. Most of the fresh groundwater slowly discharges naturally from springs around the perimeter of the island and submarine coastal springs.

Numerous wells have been installed on Tinian, beginning with potentially more than 100 wells installed by the Japanese from 1914 to 1944. Most of these wells were reportedly filled. Between 1944 and 1945, the U.S. installed approximately 40 wells, including Maui Well Number 1. The majority of these wells have been inactive since shortly after World War II, except Maui Well Number 1. Between 1993 and 1997, the U.S. Geological Survey installed 17 wells and rehabilitated 16 World War II-era wells for groundwater monitoring; all of which remain open.



Figure 3.12-4 Tinian Prime Farmland Soils

The Commonwealth Utilities Corporation operates the Tinian public potable water system. Until it was disconnected and abandoned, Maui Well Number 1 supplied potable water to Tinian. This Maui-style well, featuring a horizontal infiltration system, was constructed at Makpo Marsh by the U.S. military during World War II. It served as Tinian's primary potable water source until it was replaced by Maui Well Number 2 (Commonwealth Utilities Corporation 2022). Maui Well Number 2 is also located in the Makpo Marsh within the Makpo sub-watershed. Ranchers and farmers pump fresh water from agricultural wells M-21 and M-26 (Figure 3.13-1), which are not regulated for potable water use. Currently, the U.S. Air Force Divert Activities project is using well M-21 to supply construction water (DON 2023).

### 3.13.2 Groundwater Quality

The Commonwealth Utilities Corporation routinely tests Maui Well Number 2 for chemical constituents regulated under the Safe Drinking Water Act. All analyzed water samples were reported to be within primary and secondary drinking water standards including for per- and poly-fluoroalkyl substances (Commonwealth Utilities Corporation 2024a).

Tinian's groundwater quality is potentially vulnerable to increased nitrates and microbial contaminants, which can be associated with on-site wastewater systems and agricultural practices. Most residences, commercial buildings, and government facilities rely on septic systems. Annual monitoring reports for Maui Well Number 2 indicate water quality complies with total nitrogen limits, which includes nitrate and nitrite concentrations. Tinian has the potential for high chloride levels in groundwater due to saltwater intrusion into the freshwater lens. Chloride concentration is an important secondary standard for Maui Well Number 2 because it has the potential to indicate the quantity of freshwater available at that location. Annual monitoring reports for Maui Well Number 2 indicate water quality complies with total chloride limits. The Commonwealth Utilities Corporation conducts monthly water tests for signs of microbial contamination. The latest published results reported no microbial detection (Commonwealth Utilities Corporation 2024a). As an agricultural well, M-26 is not legally mandated to be monitored. However, it was sampled in 2015 as part of the *CNMI Aquifer Study*. The results showed that the water met primary and secondary drinking water standards (Appendix M).



Figure 3.13-1 Tinian Groundwater Wells, Elevation, and Flow Direction

### 3.14 Surface Waters and Wetlands

Surface waters on Tinian include lakes, ponds, and nearshore waters. Wetlands are defined “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” (33 C.F.R. Part 328.3). Figure 3.14-1 shows the five surface water features and wetlands on Tinian, four of which are in the Military Lease Area. Section 3.10 Public Health and Safety includes an analysis of flood zones. The flood zones are areas of the landscape that may be flooded following heavy rain events but are not considered surface waters or wetlands.

#### 3.14.1 Surface Waters

Surface waters are uncommon on Tinian and no permanent streams exist on the island because the porous limestone rock plateaus allow high amounts of rainfall to percolate from the surface to subsurface soils and groundwater. Surface waters typically occur in small (less than 3 acres) natural landscape depressions and craters in areas of impermeable clay that prevent infiltration of surface water or at perched water tables (temporary pockets of groundwater located above unsaturated soil or rock, not connected to the permanent groundwater table). The exception is Lake Hagoi (37 acres), which is a complex of intermittent surface water and wetlands and contains the largest area of surface water and wetlands in the Military Lease Area. The wetlands and surface waters on Tinian are all isolated, meaning they do not have a surface water connection to other wetlands or surface waters. As such, Tinian’s surface waters are entirely dependent on rainfall as a water source for sustaining productivity and habitat quality. On average, Tinian receives about 70 to 80 inches of rainfall per year with a distinct wet season from July through October consisting of high rainfall driven by tropical storms and typhoons. Tinian’s dry season from January through April has little rainfall, with transition periods in between wet and dry seasons (JRM 2020).

#### 3.14.2 Wetlands

Like surface water, wetlands on Tinian are uncommon due to the high permeability of soils and underlying rock. Wetlands in the Military Lease Area include Lake Hagoi, Mahalang, and Bateha. A full U.S. Army Corps of Engineers jurisdictional determination of wetlands has not been conducted on Tinian, and the status of wetlands are undetermined at this time. Typically, a request for a jurisdictional determination would not be made unless wetlands were proposed to be impacted and a permit application were being submitted to place fill in a wetland.

- **Lake Hagoi.** A 37-acre wetland located within the northwest portion of the Military Lease Area. It is unclear if Lake Hagoi is hydraulically connected to groundwater (Gingerich 2002) and appears to be dependent on rainfall as a water source, as the water level drops in periods of drought (DON 2010). Since 2010, a steady reduction of open surface water has been observed at Lake Hagoi (DON 2015), and, with sediment inflow and the expansion of shore club-rush (*Shoenoplectus subulatus*), the open water area has been slowly decreasing in extent.

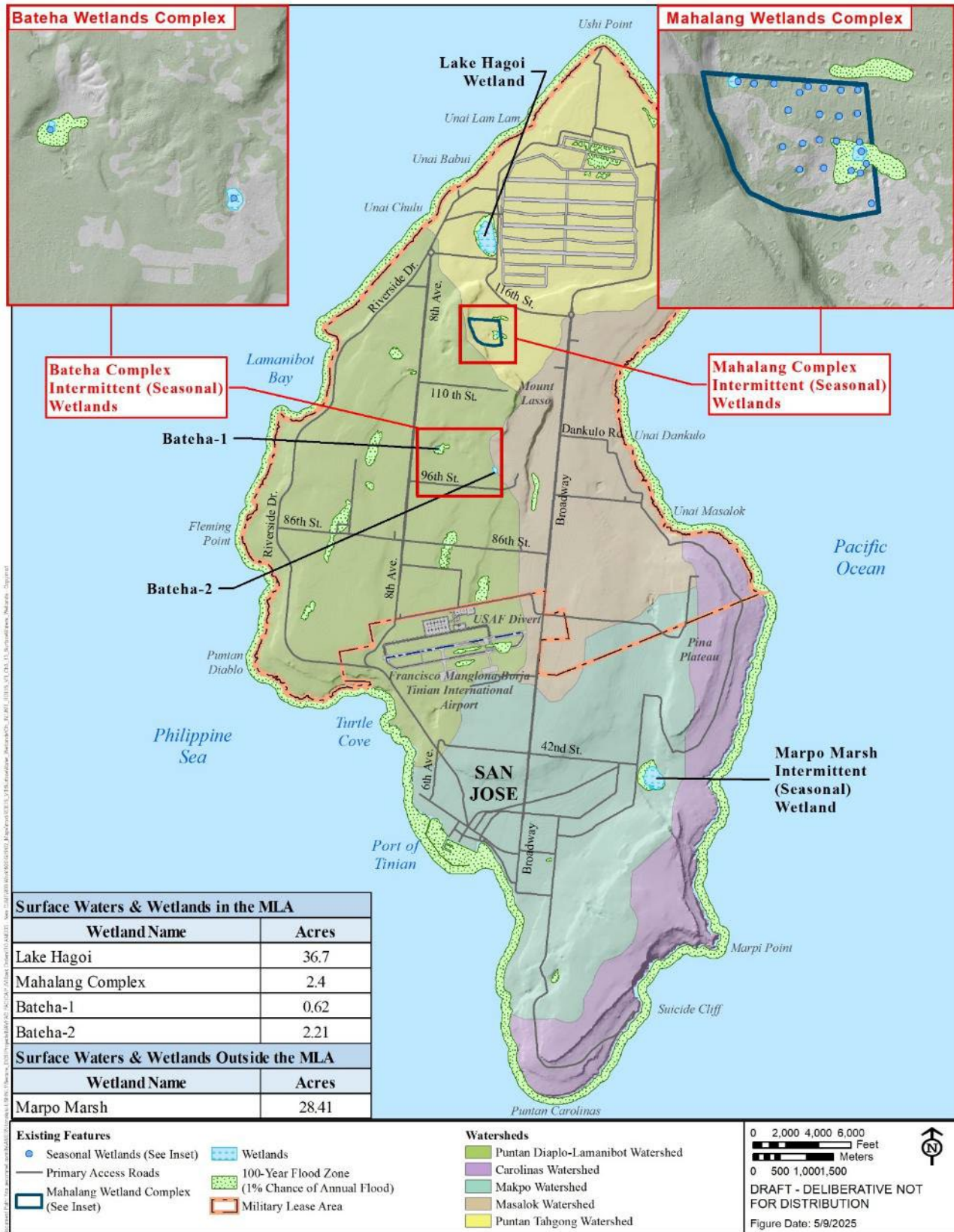


Figure 3.14-1 Tinian Surface Water and Wetland Features, Flood Zones, and Watersheds

- **Mahalang.** Located within the north central portion of the Military Lease Area, Mahalang wetland consists of 24 individual craters and depressions totaling approximately 2.4 acres, a subset of which retain water during the wet season. The two largest features combined are 0.9 acres. The complex is located on a plateau in an area of grasslands, tangan-tangan, and mixed secondary forest. Dominant vegetation within the craters consists of upland plant species, including introduced grass mixed with various weedy vines and herbaceous plants. Based on the 2014 wetland surveys of six ephemeral wetlands at the Mahalang Complex, one of the depressions (MD3) contained wetland vegetation, suitable hydrology, and hydric soils but had no connection and was not adjacent to navigable waters of the U.S. or tributaries to navigable waters of the U.S. Although four of the sites surveyed at Mahalang (MC1, MC2, M7, and M10) did have hydric soils and suitable hydrology, they did not support wetland vegetation and are considered ephemeral surface waters and not wetlands. Site M11 had suitable hydrology but lacked hydrophytic vegetation and hydric soils and is therefore not considered a wetland (DON 2015).
- **Bateha.** The Bateha site consists of two shallow depressions or “moats” of approximately 0.6 and 2.2 acres that contain water during wet periods (U.S. Fish and Wildlife Service 1996; NAVFAC Pacific 2013). They have evolved as eroded clay- and silt-filled depressions in limestone bedrock (DON 1997). Vegetation within and surrounding these features is dominated by introduced species. The 2014 wetland survey of the two Bateha sites documented suitable hydrology, hydrophytic vegetation, hydric soils, and lack of connection to surface drainage features or waters of the U.S. Both Bateha sites may be considered isolated wetlands (DON 2015).

### 3.14.3 Water Quality

CNMI water quality standards establish criteria designed to protect the designated uses for each classification of surface waters (i.e., coastal waters, fresh waters, and wetlands). Designated uses of fresh surface waters include aquatic life, fish consumption, recreation, aesthetic enjoyment, and potable water supply. The CNMI Bureau of Environmental and Coastal Quality maintains a monitoring program for water quality, which on Tinian is limited to coastal waters. Inland surface water quality has not yet been assessed, but the Division of Coastal Resources Management intends to establish a collaborative Bureau of Environmental and Coastal Quality Wetlands Program, which would involve an assessment of Tinian’s wetlands using the 2016 CNMI Wetland Rapid Assessment Method (Arriola et al., 2016).

Beginning in 2004, the quality of CNMI coastal waters has been assessed every 2 years (CNMI Bureau of Environmental and Coastal Quality 2022). As presented in Appendix I of CNMI Bureau of Environmental and Coastal Quality 2022 *Water Quality Assessment Report*, the coastal waters of the Masalok, Makpo, Makpo Harbor, Puntan Diaplo-Lamanibot, and Puntan Tahgong sub-watersheds, were listed as impaired by one or more pollutants during the reporting cycles from 2004 to 2022 (Table 3.14-1).

**Table 3.14-1 Impaired Coastal Waters on Tinian**

<i>Sub-watershed</i>	<i>Pollutant(s)</i>	<i>Source</i>	<i>Years Listed</i>
Masalok	Enterococci, Nitrate, Orthophosphate	Unknown	2022 2020 2018 2016 2014 2004
Makpo	Biocriteria, Dissolved oxygen, Enterococci, Low pH, Orthophosphate, Nitrate	Unknown, on-site treatment systems, urban runoff	2022 2020 2018 2016 2014 2012 2010 2006 2004
Makpo Harbor	Enterococci, Dissolved oxygen, Orthophosphate	Unknown	2022 2020 2018 2016
Puntan Diaplo-Lamanibot	Dissolved oxygen, Enterococci, Nitrate, Orthophosphate	Unknown	2022 2020 2018 2016 2014 2012 2004
Puntan Tahgong	Biocriteria, Dissolved oxygen, Enterococci, Nitrate, Orthophosphate	Unknown	2022 2020 2018 2016 2014 2006 2004

Sources: Yuknavage et al. 2022; Appendix VI: CNMI Coastal Water Bodies Reported by Assigned CALM Categories; Table VI-b Category 2: 2022 Coastal Waters Attaining Some Designated Uses, Insufficient Information about Remaining Designated Uses.

The Makpo sub-watershed has the greatest number of pollutants and includes both Tinian’s commercial harbor and its population center (San Jose). Existing concerns and sources of pollution for the Makpo sub-watershed include the absence of centralized wastewater collection and treatment systems, cesspools and septic systems, marina boat maintenance, animal holding management areas, livestock grazing in riparian/shoreline areas, waste from pets, illegal dumps and disposals, and undefined sources (Yuknavage et al. 2022).

## 4 ENVIRONMENTAL CONSEQUENCES

This chapter describes potential direct, indirect, and cumulative environmental consequences associated with the No Action, and Proposed Action Alternative 1 and Alternative 2. This chapter is divided into 14 resource areas as discussed in Chapter 3. Management measures are described as appropriate in each and how they serve to lessen impacts. Management measures include avoidance and minimization measures, best management practices, and standard operating procedures. Management measures would be incorporated into the Proposed Action and are common to all alternatives (refer to Appendix D).

### 4.1 Public Access

Public access to the Military Lease Area on Tinian has been identified as an economic issue of importance to the local community, as it supports subsistence activities, tourism, recreation, ranching, and cultural traditions. The Proposed Action would involve conducting training events in the Military Lease Area throughout the year that vary in size, frequency, and duration (Table 2.1-1) and that take place in different training areas (Figure 2.1-2). In general, small events would occur most frequently throughout the year and have a relatively short duration (approximately one to two weeks or less), medium events would occur less frequently (approximately once per quarter) and also last approximately one to two weeks, and large events would be the least frequent (approximately 2 to 4 times per year) but have a longer duration of approximately two to four weeks. Small, medium, and large training events may overlap, with up to 1,000 service members participating in training on Tinian at any one time. While training events would necessitate temporary and controlled access restrictions for public safety, these limitations would be intermittent, and efforts would be made to minimize disruptions. This chapter examines the potential impacts of the Proposed Action on public access and outlines measures designed to reduce disruptions while supporting military training objectives.

#### 4.1.1 Approach to Analysis

This analysis focuses on the effects of military training on public access within the Military Lease Area and offshore surface danger zones associated with training at the Multi-Purpose Maneuver Range. This analysis of public access considers the potential impacts of temporary access controls on fishing, boating, subsistence, tourism and recreation, ranching, and cultural activities given training frequency, duration, and geographic extent.

#### 4.1.2 No Action Alternative

Under the No Action Alternative, there would be no change to the type, frequency, or duration of ground and aviation training within the Military Lease Area. The public would be able to access the Military Lease Area with current restrictions, and training events would be conducted with the same advanced notice provided to the public as currently occurs. Subsistence activities, tourism, recreation, ranching, and cultural practices could continue to be conducted as needed with no change to the existing availability of the Military Lease Area for public access.

### 4.1.3 Alternative 1

#### 4.1.3.1 Training

Under Alternative 1, land-based training events would continue and would increase over the No Action Alternative by approximately 15 percent. This alternative would introduce temporary and controlled access restrictions to the training areas and live-fire ranges within the Military Lease Area to ensure public safety during military training events. Because training units need the ability to operate in darkness and low-light conditions, training events could extend over a 24-hour period. All controlled access restrictions would be temporary and intermittent, lasting only as long as required for the training activity taking place in that area.

As described in Chapter 2 of this Final EIS, the Military Lease Area would be divided into eight smaller training areas (Figure 2.1-2) to allow Range Control to designate selective closures to safely accommodate both training and public access. On any given day, the location and duration of controlled access could vary considerably with some training areas in the Military Lease Area remaining accessible to the public even while training is being conducted in others. For example, larger training events could result in controlled access to multiple and/or adjacent training areas at one time and/or for portions of multiple days. Medium and smaller events could require controlled access to one training area or even require no access restrictions. The duration of restrictions to access could range from hours within one day to multiple full days, depending on training requirements. The USMC anticipates that some non-live fire ground training could be safely accomplished without any restrictions within the Military Lease Area.

When live-fire training is scheduled at the Multi-Purpose Maneuver Range, the USMC would activate a surface danger zone that extends over both land and offshore waters at the northern tip of Tinian (Figure 4.1-1). These restrictions are necessary to protect public safety, particularly when live ammunition is in use. The surface danger zone in effect would depend on the type of ammunition used:

- 5.56 millimeter ammunition: surface danger zone extends about 1.1 miles offshore (used approximately 70 percent of the time)
- 7.62 millimeter ammunition: surface danger zone extends about 2.5 miles offshore (used approximately 20 percent of the time)
- 0.50 caliber ammunition: surface danger zone extends about 3.2 miles offshore (used approximately 10 percent of the time)

This tiered surface danger zone approach ensures that only the minimum necessary area is restricted during each event. A combination of radar feeds and/or spotters would be used during training events. Should spotters observe a non-participating boater, vehicle, or person approaching the surface danger zone, or an aircraft approaching in the overlying airspace, all live-fire training in the Multi-Purpose Maneuver Range would cease until the non-participant is out of the area. When the Multi-Purpose Maneuver Range is active, access restrictions would include:

- Access restrictions when the Multi-Purpose Maneuver Range is active include controlled entry into training area D and portions of training area C (Figure 2.1-2), with temporary limitations on hunting, foraging, and recreational use.
- Fishing and boating restrictions in the offshore surface danger zones would require vessels to reroute around the surface danger zone (Figure 4.1-1).



Figure 4.1-1 Surface Danger Zones

Similarly, when the Explosives Training Range is in use, the areas surrounding the surface danger zone would be closed to public access (Figure 4.1-1). In some of these cases, other areas of the Military Lease Area could be open to the public but would require a different access route to avoid the surface danger zone. When the Explosives Training Range is active, access restrictions could include:

- Temporary access restrictions on subsistence activities such as hunting and foraging in training areas B2 and A2.
- Controlled access to some tourism and recreational areas in training areas B2 and A2.

The ammunition holding areas are designated sites within the Military Lease Area where live ammunition and explosives are temporarily staged before being used in training exercises. Due to the potential hazards associated with staging live ordnance, explosive safety quantity distance arcs are established around the ammunition holding areas to protect the public. These restrictions would be temporary and localized to the explosive safety quantity distance arcs surrounding the holding areas. Staging live ammunition at the Base Camp ammunition holding area (AHA 2) would not result in additional public access restrictions because the explosive safety quantity distance arcs are fully within the boundary of the Base Camp. When live ammunition is staged at the ammunition holding area near the Multi-Purpose Maneuver Range (AHA 1), the areas encompassing the explosive safety quantity distance arc would be closed to public access (Figure 4.1-2). When live ammunition is staged at AHA 1, access restrictions could include:

- Controlled access within the explosive safety quantity distance arcs.
- Temporary restrictions on subsistence activities (e.g., hunting, foraging, and gathering of culturally significant plants) within the explosive safety quantity distance arcs.
- Temporary closures or detours of roads located within the explosive safety quantity distance arcs.

### **Fishing and Boating**

As discussed above, when live-fire training is occurring in the Multi-Purpose Maneuver Range, the military would activate one of three surface danger zones that extend over the ocean surface northwest of Tinian. This results in restrictions on fishing and boat traffic in that area for the duration of the training event (Figure 4.1-1). The temporary closure of offshore waters during live-fire events could result in rerouting vessel traffic by approximately 2 to 4 miles, potentially increasing fuel use, travel time, and exposure to rougher seas. However, local mariners often already avoid these nearshore areas due to natural hazards, including shallow reef structures and strong currents and around Puntan Taddong (also known as Ushi Point) at the northern tip of the island (Marianas Visitors Authority 2025; R. Dela Cruz Jr., Personal Communication, 2025; R. Sablan, Joint Region Marianas, Personal Communication, 2025). Many boats typically navigate at safe distances ranging from 500 feet to over a mile offshore, which often coincides with or exceeds the boundaries of the smallest surface danger zone used. To minimize these impacts, the USMC would provide a Notice to Mariners, published weekly by the U.S. Coast Guard, to identify when the danger zone would be active. Other forms of communication identified through public meeting input include multilingual notices, physical posting of schedule and other pertinent information at marinas, and use of social media or radio. In addition, USMC would collaborate with the CNMI and Tinian leadership to identify dates and locations for fishing tournaments or other events requiring use of the offshore areas surrounding the Military Lease Area.



**Figure 4.1-2 Explosive Safety Quantity-Distance Arcs**

### **Restored Public Access**

During operation of the USAGM facility on Tinian, shore fishing along Lamanibot Bay from Puntan Lamanibot Sanhilo (Sanhilo) to Puntan Lamanibot Papa was restricted due to hazards from electromagnetic radiation. With USAGM closing operations and USMC utilizing the site for Base Camp, access to fishing in these areas would no longer be restricted.

### **Subsistence**

Subsistence activities occur throughout the Military Lease Area and locations vary depending on seasons and weather. Access to hunting and foraging areas may be temporarily restricted when training events are active, which could temporarily affect the ability to gather coconut crabs, wild yams, medicinal plants, and other culturally significant resources, depending on the training area closed and the location of these natural resources. To minimize disruptions, access controls would be lifted as soon as possible after training concludes, and coordination with the local community would ensure training schedules align as much as possible with important subsistence activities. For more information about scheduling and temporary closures see section 2.1.8.3.

### **Tourism and Recreation**

Live-fire training at the Multi-Purpose Maneuver Range would not restrict public access to the historic Atomic Bomb Loading Pits and beach access areas would remain largely open, such as Tachogna beach, Unai Chulu, and Unai Chiget. However, there may be brief and infrequent disruptions during active training periods. The surface danger zones would not affect popular dive sites around the island. However, as described in the Fishing and Boating section above, the temporary closure of offshore waters during live-fire events may result in rerouting vessel traffic by approximately 2 to 4 miles further offshore to safely navigate around restricted areas, resulting in minor increases in travel time and fuel use.

Tourism events such as the Tinian Hot Pepper Festival in February, the San Jose Fiesta in May, the Chief Taga Festival in October, and World War II commemorative events may utilize the Military Lease Area for hunting and gathering of food leading up to the event or for specific activities in the Military Lease Area during the event. USMC would collaborate with the CNMI and Tinian leadership to identify dates and locations for significant events requiring use of the Military Lease Area.

### **Agriculture and Ranching Activities**

Current ranching activities would be minimally affected by training events. Ranchers would continue to have access to their cattle, and training operations would not alter or interfere with actively used agriculture areas. To minimize disruptions, the USMC would ensure that training activities do not interfere with grazing cattle and would provide clear detour information to affected ranchers during active training periods.

### **Access to Memorials, Sacred Sites, and Traditional Event Locations**

Access to memorials, sacred sites, and traditional event locations in the Military Lease Area that are used by the community may be temporarily restricted when training is underway, depending on the type of training being conducted and the need to safely separate civilian access. For example, during live-fire training at the Multi-Purpose Maneuver Range, the public would be unable to access the memorial at Puntan Taddong (also known as Ushi Point). Some access-

controls may alter travel routes to avoid locations of military training. To reduce public access impacts to memorials, sacred sites, and traditional event locations, the on-island Range Control staff would work with local leaders to schedule training around major cultural events and ensure that access is restored as quickly as possible. For additional information on impacts to Cultural Resources, please see Section 4.5.

### **Minimizing Impacts to Public Access**

The Proposed Action was developed by first identifying the training requirements necessary to support joint military operations. In coordination with the CNMI, the USMC then refined the training approach to minimize the effects of temporary and intermittent controlled access restrictions on civilian use of the Military Lease Area during training. Specifically:

- The Multi-Purpose Maneuver Range and the Explosives Training Range were sited within the Military Use Area such that public access would be allowed to the atomic bomb loading pits within the North Field National Historic Landmark. Public access to recreational beaches (e.g., Unai Chulu) within the Military Lease Area would be allowed when such access could be safely accommodated.
- The division of the Military Lease Area into eight separate range areas (Figure 2.1-2) would allow Range Control to schedule discreet areas of the Military Lease Area while allowing safe public access in all other areas where training activities would not be occurring.
- The establishment of an on-island Range Control would provide centralized management of the Military Lease Area. Range Control would be responsible for scheduling training, monitoring the conduct of training, and communicate the training schedule within the Military Lease Area to the community through various media. Public access to the specific training areas or zone within the Military Lease Area would be allowed and only restricted when access cannot be safely accommodated.
- During live-fire activities at the Multi-Purpose Maneuver Range, the surface danger zone activated would be based on the types of ammunition that would be used. It is anticipated that the smallest surface danger zone corresponding to 5.56 ammunition would be the most frequently activated because 5.56 ammunition is the most consistent training requirement. Should a non-participating boater, vehicle, or person approach the surface danger zone, or an aircraft approach in the overlying airspace, a combination of surface radar and spotters would notify the Officer in Charge to cease live-fire training until the non-participant is safely out of the surface danger zone.
- The USMC would employ an adaptive management approach—a structured and flexible decision-making process that allows for adjustments over time based on new information and changing conditions. This approach would be used to refine the scheduling of training within the Military Lease Area.

### **Summary**

In summary, under Alternative 1, training would continue and would increase over the No Action Alternative by approximately 15 percent. The size of a training event and the type of training to be conducted would be some of the factors that Range Control would use in determining the locations within the Military Lease Area that the public could safely access when training is actually occurring. Larger training events, which would occur only two to four times per year,

would require larger portions of the Military Training Area and would likely involve the most controlled access. Some training could be conducted without any access controls.

With advanced notification of where, when, and how long training would occur, the public would be aware of and could plan around any temporary access controls imposed in the Military Lease Area. In addition, the local government would be able to work with Range Control to identify holidays, festivals, or other important days for which public access is needed. Moreover, the use of adaptive management by Range Control in scheduling training would allow the military to efficiently and effectively balance safe public access with military training needs. The DoD would maintain paved and unpaved roadways used for training within the Military Lease Area to address any deterioration related to training, which would have a beneficial impact for the public who would also use these roadways.

The Proposed Action would not introduce new military training activities at the Saipan USAGM site. As this area is already subject to access restrictions due to its existing use and security requirements, no changes to current public access limitations are anticipated. The intended use of the site would remain similar, and the level of access restrictions would remain consistent with current conditions. In summary, there would be less than significant impacts to public access from training, with implementation of Alternative 1.

#### **4.1.3.2 Construction**

Construction under Alternative 1 would be completed in phases over approximately 10-15 years. Construction would be dispersed throughout the Military Lease Area with most work occurring at the ranges and the Base Camp. Construction activities would slightly increase vehicular delays on roadways and would include temporary detours and/or road closures within the Military Lease Area. These temporary detours and/or road closures would reduce or delay access to publicly used sites in the Military Lease Area. However, any delays would be temporary, intermittent, coordinated with the community, and notice provided in advance. It is anticipated the public would still have access to recreation and cultural sites, agricultural use areas within the Military Lease Area, and roads for hiking, biking, or vehicle use during the construction period. The clearing and improvement of roads in the Military Lease Area would provide additional access to all parts of the Military Lease Area and would enhance both visitor and local experiences driving, hiking, or biking in the Military Lease Area. No construction would be required at the USAGM site on Saipan. As such, Alternative 1 would result in less than significant impacts to public access during construction.

#### **4.1.4 Alternative 2**

##### **4.1.4.1 Training**

Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent and impacts to public access would be similar in type and nature to those described for Alternative 1. As Alternative 1 would have less than significant impacts to public access during training events, and Alternative 2 would have 10 percent fewer training events than Alternative 1, Alternative 2 would result in less than significant impacts to public access during training. Additionally, the minimization measures described for Alternative 1 such as would apply under Alternative 2, which would reduce potential impacts related to public access to the

Military Lease Area for tourism, recreation, and subsistence uses. Therefore, Alternative 2 would result in less than significant impacts to public access during training events.

#### **4.1.4.2 Construction**

Because there would be no difference in the proposed facilities between Alternative 1 and Alternative 2, construction impacts would be the same for Alternative 2 as described for Alternative 1.

### **4.2 Land Use and Recreation**

#### **4.2.1 Approach to Analysis**

The analysis of land use and recreation impacts focuses on the compatibility and consistency of the Proposed Action with existing land use plans and policies and recreational uses in and outside of the Military Lease Area.

Compatibility and consistency with existing land use plans, policies, and other agreements was analyzed by comparing land use and management under the Proposed Action to the requirements of: (1) *The Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America* (The Covenant), which was approved and became effective on March 24, 1976; (2) the *Technical Agreement Regarding Use of Land to Be Leased by the United States in the Northern Mariana Islands* (Technical Agreement) signed on February 15, 1975; (3) the 1983 Lease Agreement, subsequently amended in 1988, 1994, 1999, and 2023, (4) the 1999 Conservation Agreement in relation to Fish and Wildlife Service Biological Opinion 1-2-98-F-07 and signed in conjunction with the 1999 Lease Amendment, and (5) the 2019 Commonwealth Ports Authority Lease as amended in 2023. This analysis considered proposed land uses identified in the 2019 and 2021 CNMI Public Land Use Plan Update as the baseline for comparison. Analysis of impacts to recreation considered restrictions on public access to the Military Lease Area from training, along with potential disruptions from construction activities.

#### **4.2.2 No Action Alternative**

Under the No Action Alternative, impacts of training on land use would continue consistent with The Covenant, Technical Agreement, and leases. Public access for recreation would not change. As a result, there would be no impact on land use or recreation.

#### **4.2.3 Alternative 1**

##### **4.2.3.1 Compatibility and Consistency with Existing Land Use Plans and Policies**

###### **Training**

Under Alternative 1, training events would continue and would increase over the No Action Alternative by approximately 15 percent. Ground and aviation training events that would occur in the Military Lease Area would be the same or similar to those currently authorized for Tinian under prior environmental analyses. Alternative 1 would expand training infrastructure to include two live-fire ranges (Multi-Purpose Maneuver Range and an Explosives Training Range), improvements to North Field, 13 Landing Zones throughout the Military Lease Area, and the establishment of a Base Camp, surface radar towers, and other supporting infrastructure.

Non-live-fire training could occur throughout the Military Lease Area. Live-fire training would only occur in the Multi-Purpose Maneuver Range and the Explosives Training Range. No training

areas would include the former Tinian Mortar Range and designated areas to protect natural and cultural resources (Figure 4.2-1). Should the proposed Atgidon Landfill site be constructed and permitted, no training would be allowed in that area.

Proposed training in the Military Lease Area and creation of a Live-Virtual-Constructive training environment would be compatible and consistent with Sections 802 and 803 of the Covenant, the Technical Agreement, and the 1983 Lease Agreement, as amended. The Covenant and these agreements specifically provide that the Military Lease Area on Tinian is made available to the U.S. to enable it to carry out its defense responsibilities. In addition, the two proposed live-fire ranges would be located wholly within the Military Lease Area, remote from the residential and commercial land uses in the village of San Jose.

The use of 110 acres of cleared area within the former USAGM property for a Base Camp would be consistent with the authorized military use of the Military Lease Area. Training in the Military Lease Area under Alternative 1 would be compliant with existing agreements and would be consistent with the Comprehensive Public Land Use Plan Update (CNMI Department of Public Lands 2019, and 2021) which identifies this area as set aside for military use and not for public uses.

Some of the proposed Landing Zones and the Base Camp well fields were specifically sited to avoid existing agricultural uses. In addition, the closest training area to the southern Military Lease Area border, Landing Zone 1, is approximately 1.5 miles from private residential property and the potential future homesteads planned for the Kastiyu and Carolina neighborhoods.

Three project components would be located outside of the Military Lease Area: the aircraft shelter, the biosecurity site, and communication towers on Saipan. The aircraft shelter would be consistent with adjacent land uses of the U.S. Air Force Divert airfield facilities and TNI. The biosecurity site at the Port of Tinian would be in an area that is designated as Grant of Public Domain Land and would require a new lease or other agreement with the CNMI Commonwealth Ports Authority. The biosecurity site would function to prevent the spread of invasive pests from incoming vessels. Therefore, the biosecurity site would be compatible with other uses along the port frontage.

The USAGM site on Saipan already contains communications equipment and additional communication equipment at the site would be compatible with the existing land use. Once USAGM functions cease at the Saipan site, a new lease from the CNMI would be required for this location, which is designated as public land.

As described above, project components both inside and outside of the Military Lease Area would be compatible and consistent with existing land use plans, policies, and agreements and would not result in changes to land uses. As a result, training under Alternative 1 has no impact to land use plans and policies.



**Figure 4.2-1 Restricted (No Training) Areas Within the Military Lease Area**

## Construction

Construction of facilities and vegetation clearing under Alternative 1 would not occur within current agricultural areas in the Military Lease Area or near the future homestead areas planned in the Kastiyu and Carolina areas located outside of the Military Lease Area. Existing land use plans and policies allow for construction of military facilities within the Military Lease Area. Therefore, construction and vegetation clearing activities would be compatible and consistent with existing plans. Construction of the aircraft shelter would require negotiation of additional rights under the 2019 Commonwealth Ports Authority lease and amendment of the TNI Airport Layout Plan. The biosecurity site at the Port of Tinian would require negotiation of additional rights with the Commonwealth Ports Authority but would be located on land that has already been cleared, would be compatible with existing surrounding port uses, and would not impede use of the small boat ramp and marina. Placement of additional communication equipment at the former Saipan USAGM site would be consistent with the existing communications infrastructure at the site.

Proposed Landing Zones 2 and 6 (both 600 feet by 600 feet), a new access road to Landing Zone 6 (24 feet wide by 458 feet in length), and a new access road to the Explosives Training Range (24 feet wide by 2,800 feet in length) would be constructed within the 936-acre Natural Resources Conservation Area (Figure 4.2-2). Approximately 19 acres, or 2 percent of the conservation area land use would be affected by the Landing Zones and roads. This impact to the Natural Resources Conservation Area would be coordinated through consultation with the U.S. Fish and Wildlife Service. Habitat impacts are discussed in Section 4.4 Biological Resources.

With successful adoption of new leases and agreements, Alternative 1 construction would be compatible and consistent with existing land use plans and policies and would not result in changes to land use within or outside the Military Lease Area. Therefore, the impact to land use would be less than significant.

### 4.2.3.2 Recreation

#### Training

Under Alternative 1, training would continue and would increase over the No Action Alternative by approximately 15 percent, resulting in temporary restrictions on public access to portions of the Military Lease Area. These temporary restrictions could affect visitors' ability to participate in recreation activities within training areas that are temporarily closed for training events. For example, training events conducted on the Multi-Purpose Maneuver Range would result in the temporary closures of land and sea space within the surface danger zones. These closures could affect access to, and use of, recreation sites such as cultural sites, public coastal areas (in-water and shoreline areas), scenic viewpoints, and beaches located within those surface danger zones. During these temporary closures, visitors and boaters would still have access to other beaches, scenic viewpoints, cultural sites, and fishing locations for recreation use. Surface danger zones would not impact popular dive sites around the island (Figure 4.2-3). However, when the Multi-Purpose Maneuver Range is active, boaters may need to traverse around the surface danger zone.

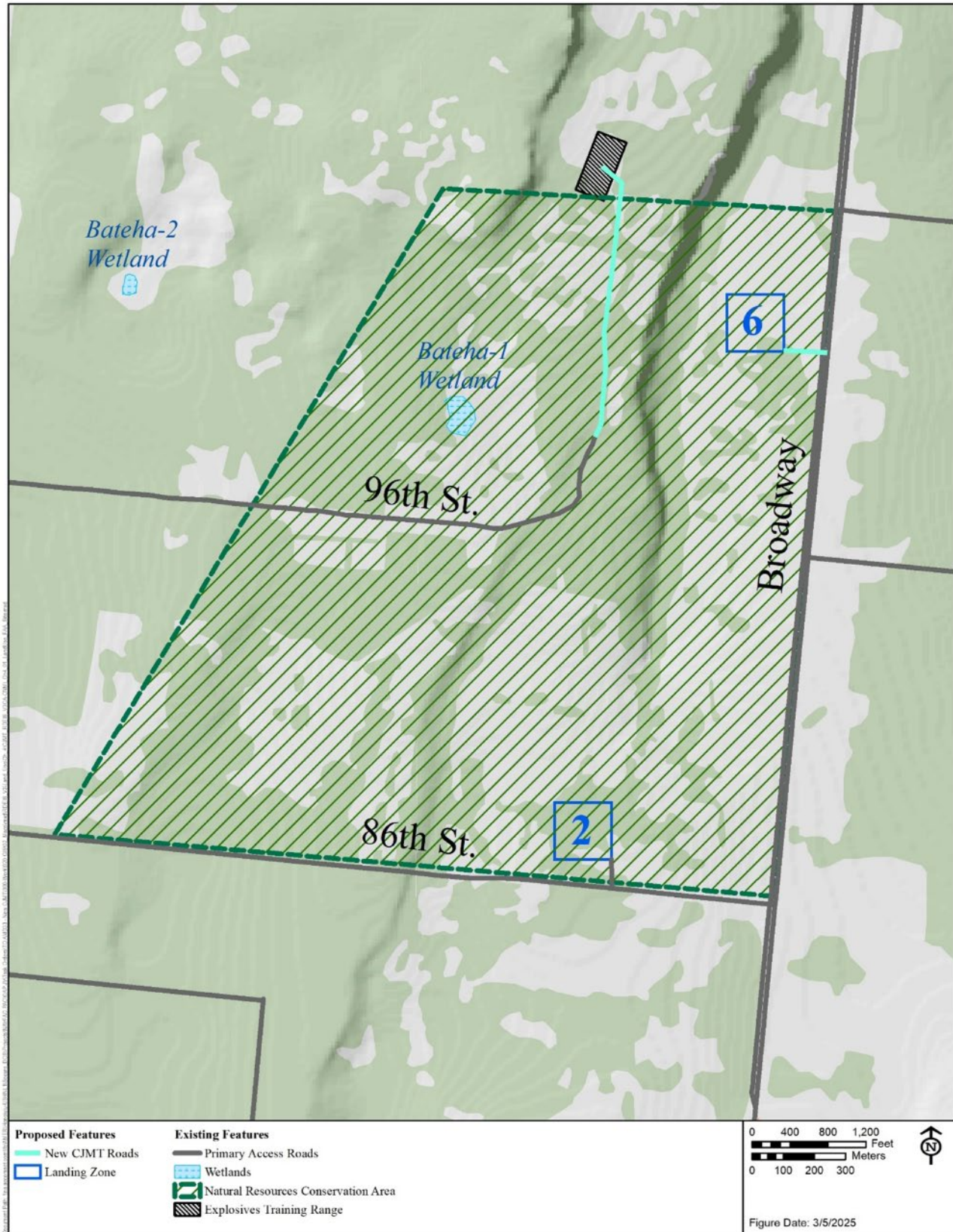


Figure 4.2-2 Proposed Action Features Within the Natural Resources Conservation Area



Figure 4.2-3 Proposed Action Features Near Tinian Dive Sites

Though recreation sites may be open and accessible during training events, the presence of training personnel or equipment may alter the experience for visitors at shrines and memorials, cultural sites, shoreline fishing areas, beaches, and scenic viewpoints. The presence of personnel and/or equipment near any one recreation site would be intermittent and would temporarily change the ability of visitors to participate in public recreation uses. However, there would be other recreation areas unrestricted to the public. As a result, training under Alternative 1 would result in less than significant impacts to recreation.

### **Construction**

Construction under Alternative 1 would not change public recreation uses. However, construction activities, particularly at the Multi-Purpose Maneuver Range, Explosives Training Range, and surface radar sites, may affect visitor experiences at recreational, cultural, or scenic sites where there is a natural and undeveloped recreational setting. These construction impacts under Alternative 1 would be intermittent and temporary, resulting in a less than significant impact on recreation.

#### **4.2.4 Alternative 2**

##### **4.2.4.1 Compatibility and Consistency with Existing Land Use Plans and Policies**

### **Training**

Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. Therefore, like Alternative 1 training, Alternative 2 training would also be compatible and consistent with existing land use plans, policies, and agreements and would not result in changes to land uses. Training under Alternative 2 would have no impact to land use plans and policies.

### **Construction**

There would be no difference in facilities construction between Alternative 1 and Alternative 2, so construction impacts would also be less than significant for Alternative 2. Alternative 2 construction impacts would be compatible and consistent with existing land use plans, policies, and agreements and would not result in changes to land use in the Military Lease Area.

#### **4.2.4.2 Recreation**

### **Training**

Alternative 2 training would continue and would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. This would result in the public experiencing a decrease in the frequency and duration of temporary access restrictions to areas within the Military Lease Area compared to Alternative 1. No other changes to training, including location and types of training, would result from Alternative 2. Alternative 2 would result in less than significant impacts to recreation during training events.

### **Construction**

There would be no difference in facilities construction between Alternative 1 and Alternative 2. Therefore, construction impacts to recreation would also be less than significant for Alternative 2.

### 4.3 Socioeconomics

#### 4.3.1 Approach to Analysis

The focus of this socioeconomic analysis is on potential changes to economic and social conditions on the island of Tinian with implementation of the Proposed Action. Both qualitative and quantitative techniques were used. Due to the need to maintain flexibility in scheduling proposed training throughout the year, the USMC is unable to estimate the number of days or specific locations of where temporary access controls would occur on an annual basis, and thus a quantitative analysis of specific economic impacts (e.g., potential gain or loss in revenue, amount of additional commuter flights to and from Tinian, number of hotel rooms) would be speculative. Specific information on future hiring or expenditures (e.g., job titles, salary, construction costs) is also not available at this stage of the planning process. Potential economic expenditures from the limited and distributed nature of the construction projects that are proposed to occur over a 10- to 15-year period would be similarly speculative and thus are addressed qualitatively. Where appropriate, the analysis also identifies where effects could extend more broadly to the CNMI region. The available published data was supplemented by interviews with CNMI government and local agencies.

Specifically, the analysis considers potential impacts to population and demographics; economic activities including shipping, tourism, commercial ranching, fishing, and agriculture; and subsistence activities. Population change alone is generally not viewed as either an adverse or a beneficial impact, but the underlying effect of population change is often noted for its influence on other aspects of socioeconomics. Thus, impacts on social cohesion and public services, namely healthcare and public safety, are also assessed. These economic and social elements were chosen for analysis due to their importance to the local economy and the social fabric on Tinian and within the CNMI at large.

Tourism and commercial ranching or agriculture are important economic activities on the island. Fishing continues to be a way of life and a source of subsistence and revenue for many residents of the CNMI (National Marine Fisheries Service 2018; Western Pacific Regional Fishery Management Council 2023), along with harvesting of land-based natural resources. Many of these resources are found within the Military Lease Area and off the coast of Tinian. Changes in the ability of residents to access the Military Lease Area and the nearshore as a result of the Proposed Action could result in socioeconomic impacts.

The potential impacts from training and construction-related noise to the human environment are discussed in Section 4.8 Noise. Impacts related to air quality are discussed in Section 4.9 and public health and safety impacts from training and construction activities are addressed in Section 4.10.

#### 4.3.2 No Action Alternative

Military training has a decades-long history in the Military Lease Area on Tinian. In recent years, training events have included large and medium events (e.g., Valiant Shield and Cope North) and smaller events. In addition to the service members, training and environmental monitors would arrive at the beginning of events and depart from Tinian when the events are completed.

Access restrictions are generally few and center around North Field, with closure of the taxiway between runways Able and Baker and the two ends of runway Baker. No one is permitted to enter

runway Baker during aviation operations and airdrops. Military camping is conducted on the existing concrete open area north of runway Able, called the North Ramp. The important features in the North Field National Historic Landmark remain open for tourism, including runway Able (M. Cruz, Joint Region Marianas, Personal Communication, 2024).

During training events under the No Action Alternative, the public would maintain the ability to access the Military Lease Area, and Tinian residents would be able continue to conduct commercial ranching activities and gather resources when access restrictions are not required for the safety of the public and the military. Activities in the nearshore area (e.g., fishing) would have no restrictions except in proximity to the two ends of runway Baker while aviation operations are occurring during training. Training events under the No Action Alternative would be conducted at the same tempos as evaluated in previous NEPA documents (DON 2010a, 2015b) and associated consultations and authorizations. With the closure of the USAGM transmitting station on Tinian, USAGM would remove its physical improvements and equipment and restore the site to its previous condition; thus, the site would revert to DoD control. Military training would occur within the 300-acre fenced area that was formerly a no training area, and public access in this area would be restored, including shore fishing along Lamanibot Bay from Puntan Lamanibot Sanhilo (Sanhilo) to Puntan Lamanibot Papa.

Construction associated with the U.S. Air Force Divert project (U.S. Air Force 2016, 2020) would continue until complete, estimated by 2026, with the associated short-term direct beneficial impacts to the local economy along with short-term impacts on housing and public services from the construction personnel. After that time, the new infrastructure and facilities at TNI would be used for military divert operations, humanitarian assistance staging, exercises, and other aircraft support activities, which would continue at a similar tempo to the existing training that occurs on Tinian.

Additionally, projects under the U.S. Air Force's Agile Combat Employment program would also continue, which would include the clearance of vegetation and restoration of the runway and other engineered surfaces at North Field. These projects are scheduled to receive funding through fiscal year 2025 and the North Field runways and surrounding area would have the appearance of a working airfield, allowing easier ground and aircraft access to better maintained surfaces with less dense jungle vegetation in and around the immediate runway areas. Improved access to cultural sites in the Military Lease Area, especially related to the North Field National Historic Landmark, would provide a modest benefit to tourism and local residents who would access the area for subsistence practices and enable social cohesion from these practices. Thus, there would be a modest benefit to tourism from improved roadway conditions and setting for those visiting the Military Lease Area, specifically the North Field Historic Landmark, under the No Action Alternative.

For the reasons described, there would be less than significant long-term impacts to socioeconomics under the No Action Alternative.

### 4.3.3 Alternative 1

#### 4.3.3.1 Training

##### **Population and Demographic Changes**

Under Alternative 1, small, medium, and large training events throughout the year would cause short-term and temporary population increases. The number of personnel participating would vary as shown in Table 2.1-1. Large events would be the least frequent on Tinian, occurring approximately 2 to 4 times per year for approximately 2 to 4 weeks at a time (e.g., Valiant Shield) with up to 1,000 service members involved in training on Tinian at any one time. Small and medium events would likely occur more frequently, could overlap, and involve up to 250 personnel.

In the long-term, the hiring of 30 to 50 personnel to manage training events and operate and maintain the facilities and infrastructure in the Military Lease Area (e.g., repair targets and maintain vegetation), could result in a less than significant increase in population, although the USMC intends to hire locally for these permanent positions, wherever possible, based on labor availability and contracting requirements. Hiring would be phased over the approximate 10 to 15-year period as construction projects are completed and the training infrastructure becomes operational, to include the Base Camp, communications system, live-fire ranges, and Landing Zones. Initially, however, approximately 2-5 positions may be filled on a rotating basis by Marine Corps Base Camp Blaz Range Control staff or other federal civilians.

It is anticipated there would be a locally available labor pool of approximately 28 people on Tinian that formerly would have supported the USAGM facilities on Tinian. The USAGM site on Saipan had a small number of full time staff as well, who could also potentially present a locally knowledgeable labor force to support the Range Control towers at the Saipan site. The local economy would experience a modest benefit from employment related to Range Control and maintenance operations, regardless of whether local or off-island labor is hired. Should local residents be hired, the implementation of CJMT training and the operation of the Base Camp are not expected to induce additional demand for housing or public services. If off-island labor is hired, it would occur gradually over time as the infrastructure in the Military Lease Area becomes operational. During larger or medium training events when additional staff are needed for a short period of time, additional staff could be provided on a temporary basis to support specific needs. Thus, potential long-term impacts to Tinian's housing supply or school enrollment would be less than significant due to the anticipated gradual or phased nature of the hiring.

##### **Effects on Economic Activities in the Military Lease Area**

Under Alternative 1, military training would continue to be conducted within the Military Lease Area on Tinian and training activity would increase over the No Action Alternative, by approximately 15 percent. Due to the need to maintain flexibility in scheduling proposed training throughout the year, any quantitative estimates on the number of days or specific locations of closures would be highly speculative in nature. The USMC is committed to ensuring the community can continue to access the Military Lease Area safely while allowing training requirements to be met, to the extent feasible. Depending on the type of training being conducted and the location where training is occurring within the Military Lease Area, residents and others could experience temporary access restrictions in the Military Lease Area and surrounding waters.

These temporary access restrictions could affect members of the community recreating within the Military Lease Area or individuals that depend on the resources available in the Military Lease Area for subsistence gathering and hunting to barter or trade (DON 2018). Under Alternative 1, restrictions on public access to the Military Lease Area would be instituted only when necessary to protect public safety (e.g., provide safe separation from aircraft, military vehicles, or specific hazardous training activities).

The total area affected, location, and duration of access restrictions on any given day would vary and be determined by the type of training scheduled. An important variable that would affect the amount, location, and duration of public access restrictions in the Military Lease Area under Alternative 1 would be the size of the training events. Larger training events could result in public access restrictions to multiple and adjacent smaller training areas at one time and multiple full days, while medium and smaller events could restrict access to one training area or may require no access restrictions. Timing of these access restrictions could range from hours within one day to multiple full days, depending on training requirement needs. It is possible that members of the public could expect to see service members moving through an area on foot, military vehicles parked on access paths, military aircraft flying overhead, or hear noise related to training (e.g., aircraft and weapons firing) when training events are scheduled in the Military Lease Area.

New live-fire training would only occur at the Multi-Purpose Maneuver Range and Explosives Training Range, in addition to the limited small arms training that currently occurs using steel bullet traps within existing structures. As described in Section 4.1.3, for safety purposes when these two ranges are being used for live-fire training, the public would be temporarily restricted from accessing land and ocean areas encompassed by the surface danger zones. Live-fire training events may occur during the daytime or at night. The activation of these surface danger zones would affect economic activities requiring access to the Military Lease Area or any area within a surface danger zone including tourism, shore fishing, commercial shipping, and boats fishing or transiting in the waters north of Tinian. The activation of surface danger zones over land at the Multi-Purpose Maneuver Range or the Explosives Training Range would not completely restrict access to Tinian's tourist areas in the North Field National Historic Landmark. Additionally, Range Control would coordinate with local officials regarding the flight schedules for the Tinian and Saipan airports to avoid firing and explosions at live-fire ranges during these times and thus would avoid impacts to commercial air travel during live-fire training.

The portion of the surface danger zone for the Multi-Purpose Maneuver Range that extends over the ocean waters to the northwest of Tinian would result in short-term, temporary restrictions on boat traffic and fishing in that area as long as live-fire training is occurring (Figure 4.1-1). As a result, boat transits from Saipan to the west side of Tinian may incur increased fuel use and travel time to avoid the surface danger zone, as described in Section 4.1.3.1. This restriction could result in fishers choosing to fish in less ideal locations during time of closure or boaters having to transit further north and west of Tinian.

To minimize the potential for adverse impacts on fishing and boating, the USMC has identified three surface danger zones based on the types of ammunition that would be used during live-fire training. It is anticipated that the smallest surface danger zone would be the one activated the most by the military. As described in Section 4.1.3 Public Access, the surface danger zones extend approximately 1 to 4 miles from the northern tip of Tinian. Fishers or boaters would be required

to shift by approximately 2 to 4 miles to avoid this area when the surface danger zone is activated, but potential impacts such as distances, travel times, and associated costs would vary depending on the typical routes and speeds used by a given vessel and the objective of the trip (e.g., recreational boating, transiting between islands, or fishing in a target location within the surface danger zones). A fisher or boater traveling from Saipan's Sugar Dock to the Port of Tinian's boat ramp may typically take approximately 1 hour to travel around 17 nautical miles at a speed of 15 knots when traveling close to the western coast of Tinian. When the largest surface danger zone is active, this trip could involve an additional distance of 10 miles and approximately 40 minutes to travel around the boundary of the surface danger zone, instead of straight through the area, to reach the same location at the same speed. However, when the smallest surface danger zone is activated, the travel distance and time remains fairly similar to existing conditions, requiring only 1 to 2 additional miles and a minimal difference in travel time. While Range Control would activate the smallest surface danger zone most frequently (refer to Section 4.1.3.1 Public Access) and the restrictions would only occur while live-fire training is occurring, the effects of the additional travel time or costs would be significant to fishers and boaters. To minimize these impacts, the USMC would provide a Notice to Mariners, published weekly by the U.S. Coast Guard, to identify when the danger zone would be active. Other forms of communication identified through public meeting input including multilingual notices, physical posting of schedule and other pertinent information at marinas, and use of social media or radio would be considered. Additionally, the DoD will work with CNMI to identify federal programs or funding sources needed to support the siting and installation of fish aggregating devices to offset the impacts for subsistence fishers.

The activation of surface danger zones would also affect commercial shipping vessels transiting in the waters north of Tinian. In comparison to daily fishing and boating, commercial vessels would be present less frequently, and include smaller commercial shippers and approximately four barge trips per month. In order to minimize impacts to shipping schedules, Range Control would coordinate with the Commonwealth Ports Authority to ensure scheduling of training events is understood and communication about shipping schedules is known and any temporary access restrictions would be discussed. The USMC would utilize adaptive management to ensure range safety and scheduling requirements are met, and would make adjustments as needed. Therefore, there would be a less than significant impact to commercial shipping as a result of training under Alternative 1.

Under Alternative 1 the military would not train in areas currently fenced and occupied by cattle. However, noise produced by aircraft approaching Landing Zones and detonations at the Explosives Training Range would occur intermittently during the year and would be audible in the areas where cattle have been known to graze (refer to Section 4.8.1 Approach to Analysis for a description of the noise modeling and metrics used for the impact analysis). Of these activities, explosives use at the Explosives Training Range is anticipated to produce the highest noise levels, generating single event peak sound levels of between 115 and 130 decibels that extend over areas where cattle may be present (refer to Section 4.8 Noise and Appendix J, *Noise Study*). Use of explosives would typically occur during large or medium training events and include approximately 20 charges of 1.25 pounds net explosive weight. When using the largest charge training would involve only one detonation per event, and this would occur 2 to 4 times per year.

As described in Appendix J, *Noise Study*, Attachment 1 (refer to Section 1.3.12.1 Domestic Animals), many studies have concluded that there is no evidence that aircraft overflights affect

feed intake, growth, or production rates in domestic animals, and that cattle are able to adjust their behavior to changes in ambient noise levels. Noises above 90 decibels may cause a startle response, freezing (i.e., becoming temporarily stationary), and fleeing from the sound source. However, exposures to sound levels above 90 decibels from impulsive noise would be brief, lasting only for a fraction of a second per charge.

Training in the Military Lease Area where ranching most often occurs would not change the amount of land currently available to ranchers. The USMC would provide access to water for active ranchers to provide water for ranching needs at tank dispensing sites. Allowing additional access to water in these locations would provide a benefit and may minimize the distance some ranchers may need to travel to obtain water, which would present a modest savings in time and money.

Other impacts from the proposed training may occur beyond access restrictions to the Military Lease Area, such as intermittent and temporary disturbance to subsistence activities. Noise from training events may cause hunted species to temporarily relocate but they would return once the noise has ceased (refer to potential impacts to Terrestrial Wildlife in Section 4.4.3.2 Biological Resources). This would be most likely to occur during medium or large events, which would occur less frequently throughout the year than small training events. As a result, the subsistence resources may be temporarily less available or more difficult to locate.

In summary, the size of a training event would largely dictate the amount, duration, and locations where public access may be restricted in the Military Lease Area under Alternative 1. Larger training events, which would occur only 2 to 4 times per year for 2 to 4 weeks at a time, would result in more access restrictions than medium or small events. Range Control would provide advanced notification of access restrictions related to training to the public and schedule training so that certain areas of the Military Lease Area can remain safely open for tourism, commercial ranching and agriculture, fishing, and subsistence activities while training is occurring. Safety and informational signage would also be posted in San Jose. In addition to communication efforts, the USMC would work with the Marianas Visitors Authority to promote travel opportunities to CNMI for service members living in Guam and Japan. Temporary activation of surface danger zones north of Tinian would significantly affect fishing and boating. The DoD will work with CNMI to identify federal programs or funding sources needed to support the siting and installation of fish aggregating devices to offset the impacts for subsistence fishers. All other socioeconomic impacts from Alternative 1 are anticipated to be less than significant.

### **Impacts on Other Economic Activities on Tinian**

New employment opportunities and the acquisition of supplies required to operate and maintain the Military Lease Area Range Complex would provide a modest benefit to Tinian's economy. Spending would likely include payments to the Commonwealth Utilities Corporation for electrical and communications infrastructure, the purchase of fuel from local distributors for non-tactical vehicles, and local purchase of goods and supplies for vegetative control and other facilities maintenance-type activities, where permissible under federal government contracting requirements. In addition, as service members and supporting personnel are arriving to or departing from the CNMI during training events, they would have the opportunity to recreate in San Jose and spend money in town at shops and restaurants. This spending would have an indirect beneficial

impact generated by training throughout the year, although it would, in turn, likely provide a benefit to the economy of Tinian and the supply chains throughout the CNMI.

In addition, there could be impacts to the availability of air transportation to the island and hotel rooms on Tinian during larger training events. During training, participating service members would arrive on the island by military transport and would camp within the Base Camp or in training areas for the duration of the event. However, there may be a limited number of personnel who arrive on-island to support certain training events (i.e., federal civilian employees, rotating Range Control personnel from Marine Corps Base Camp Blaz). These personnel may take commercial air taxi flights, which would increase the demand on the number of flights that travel to Tinian on those days they arrive and depart. These personnel would stay in local hotel accommodations during their visit, which would reduce the number of hotel rooms available to tourists when this occurs. However, training events would not be scheduled during the previously identified important local events to avoid undue pressure on hotel and car rental services. Thus, rental of local hotel rooms and vehicles would result in a beneficial impact to economic activity.

To minimize impacts to economic activities from training events, Range Control would provide notification to the public in advance of access restrictions related to training, and schedule training so that areas of the Military Lease Area can remain safely open to the public while training is occurring. Range Control would coordinate with the CNMI and Municipality of Tinian to ensure transparent scheduling of training events and ongoing communication with the public about temporary access restrictions. The USMC would utilize adaptive management to review how well the Range Control process is working, including the effectiveness of public notification methods, and would make adjustments as needed. Therefore, there would be a less than significant impact to economic activities as a result of training under Alternative 1.

### **Public Services**

The USMC would coordinate with the CNMI and Municipality of Tinian regarding fire, police, and emergency response services. Coordination could include mutual aid agreements or memoranda. Mutual aid agreements could also help coordinate increased security for both the military and Tinian residents. Once utilities are installed, water trucks and hydrants would be located at the Base Camp (and, when necessary, pre-staged in the Military Lease Area) and at the live-fire ranges to supply water to extinguish fires. The existing rainwater catchment system at the USAGM Tinian site would continue to be utilized for fire protection. In addition, a Range Wildland Fire Management Plan would be developed. The plan would incorporate fire access roads and a firebreaks around the edges of the ranges as wildfire management measures. Prior to any live-fire training taking place during the dry season an assessment of moisture content would occur, in accordance with the requirements to be established in the Range Wildland Fire Management Plan. Live-fire activities would only be conducted after the fire danger rating has been confirmed by Range Control.

Military personnel training on Tinian should have little to no impact on the capacity of Tinian public health services because training units would provide medical and first aid capabilities via medics for each training event, with serious medical emergencies evacuated off island for care. The training unit would coordinate response and communications as part of training event planning. The USMC would contact U.S. Coast Guard Forces Micronesia/Sector Guam joint rescue sub-center or the CNMI Emergency Operations Center in the event of an emergency.

There would be at most 30 to 50 new permanent staff required to support Range Control. As described previously, hiring would be phased over the 10 to 15-year period as construction projects are completed and initially approximately 2-5 positions may be filled on a rotating basis by Marine Corps Base Camp Blaz Range Control staff or other federal civilians. The USMC intends to hire locally to fill Range Control positions, wherever possible, based on labor availability and contracting requirements. With the phased increase in population, availability of medics that would be on-island to accompany each training unit, and evacuation plans for serious medical events, there would be less than significant impacts public health services under Alternative 1.

#### **4.3.3.2 Construction**

##### **Population and Demographic Changes**

Under Alternative 1, the reuse and modification of equipment and facilities at the USAGM site on Saipan would not require new construction or vegetation clearing and there would be less than significant impacts from construction at that location. On Tinian, construction of training ranges and support facilities would require an average of 50 workers per year beginning in 2026 and lasting for 10 to 15 years in phases. With this schedule, construction related to Alternative 1 would likely begin as the construction for the U.S. Air Force Divert Project is scheduled to conclude. The USMC may utilize troop labor for construction. If contractors are used, wherever possible, the USMC would prefer to hire locally for these temporary construction positions on the island. As a result, if contractors are used, it is estimated that 20-30 percent of construction employees would likely be Tinian residents, which is similar to the numbers seen with the U.S. Air Force Divert project. Construction contractors would be expected to utilize local workers to the maximum extent practicable; use of non-immigrant foreign labor is generally not authorized unless efforts to recruit locally and in the U.S. are unsuccessful. However, because Tinian is anticipated to continue having a limited construction workforce into the future, and because it is very difficult to attract workers from the U.S. mainland to the CNMI, it is likely that most of the remaining construction workforce would be foreign workers on nonimmigrant H-2B visas as long as statutory authority for such use remains available. The current authority for H-2B construction workers in the CNMI expires at the end of 2029. As mentioned above, the U.S. Air Force Divert Project is scheduled to be complete by 2026 and Alternative 1 would be implemented in a phased approach. So, there is a possibility that construction workers could transition to work on Alternative 1 construction after the U.S. Air Force Divert Project is complete.

As mentioned above, the closure of the USAGM site has likely increased the available local workforce by approximately 28 people on Tinian. Additionally, utilization of the former USAGM site for the Base Camp would create minimal construction impacts since it is already developed, has facilities and infrastructure that could be reused and modified versus requiring new construction, and would require no additional clearing of vegetation, which may limit the number of construction staff that would need to be hired from off-island to construct those project elements. Vegetation maintenance and other restoration projects at North Field by the U.S. Air Force Agile Combat Employment Program is also anticipated to be ongoing through at least 2025, but this program has relied on service member labor to complete the majority of the work in its initial phases and that would be anticipated to continue.

Ideally all construction workers would be local to the CNMI. However, based on the recent U.S. Air Force's Divert project, a portion of the workforce would likely be migrant workers that would

temporarily reside on Tinian when construction projects occur. Due to the intermittent and phased nature of construction under Alternative 1, up to 40 construction workers would reside in local hotels or longer-term rental lodging, such as the four dormitory-style accommodations (known as the “Triple J Dormitories”) that have been used by the U.S. Air Force Divert project’s construction personnel, instead of renting residential properties and relocating family members to the island during construction periods. The Triple J Dormitories can accommodate approximately 40 people (or around 10 people per dormitory building) with shared amenities, such as bathroom and laundry facilities, recreation, and food preparation areas (CNMI Bureau of Environmental and Coastal Quality 2023; Black Micro Corporation, Personal Communication, 2023). If this workforce-type rental housing is utilized, then the approximately 40 off-island workers needed for construction under Alternative 1 would result in less than significant impacts to housing availability on Tinian. With regard to the migrant workforce, it is anticipated that most of their income would be remitted outside the CNMI and would likely have limited activity in the local economy for food and daily support requirements. They would also have opportunities to spend time and money in town at shops and restaurants. As a result, the influx or continuation of available construction jobs and slight increase in activity on Tinian would provide a modest economic benefit to the CNMI.

### **Economic Activities**

While construction is underway, the demand for flights and port traffic from Saipan would increase temporarily to accommodate additional workers and construction equipment and supplies. The movement of goods through the Port of Tinian and TNI would create an economic benefit for Tinian during the construction period. Additionally, as described above, assuming the off-island construction workers are able to reside in the dormitory buildings instead of other local hotel accommodations typically used by tourists or other short-term visitors to Tinian, there would be a less than significant impact to the availability of hotel rooms on the island during the construction period.

Construction would result in an increase in noise, equipment and materials that may be visible to tourists or members of the public and increases in vehicles transporting construction workers from their lodging to work sites on roads outside of and within the Military Lease Area. Both these impacts would be temporary and would be concentrated within specific areas of the Military Lease Area based on the project (refer to Section 2.1.11 Construction Phasing). To address the increase in construction vehicles on deteriorating local roads, DoD would work to improve road conditions for key routes within the Military Lease Area. This effort would also subsequently improve travel conditions to and from tourism and commercial ranching sites. Construction workers may also increase the number of visitors to popular tourism sites and beaches over this same time period during off-work times. Over the 10 to 15-year construction period there would be temporary and localized impacts in specific locations throughout the Military Lease Area where construction projects would occur (i.e., the Multi-Purpose Maneuver Range and surface radar towers, Explosives Training Range, utilities interconnections outside the Base Camp).

For safety during construction, local residents and visitors may be restricted from accessing the immediate area where construction is occurring or may choose to avoid areas where construction activities may be heard or seen. Noise and visual disturbance from construction activities may be present near agricultural areas or areas where subsistence activities occur. However, these effects would be localized and would last only until the construction project is complete. Impacts to cattle

would be similar to those described for training. Namely, cattle and wildlife would be anticipated to adjust behavior to these temporary changes in their environment and return to the areas when construction is complete. As construction is anticipated to be limited to land-based work, there would be no impacts areas where commercial fishing or proposed aquaculture would occur. Therefore, there would be a less than significant impact to economic activities from construction under Alternative 1.

### **Public Services**

As described for training under Alternative 1, the USMC would coordinate with the CNMI and Municipality of Tinian regarding fire, police, and emergency response services. If this coordination results in mutual aid agreements between the military and local community that are established to support training, there may be a modest increase in availability of emergency services on Tinian. While the construction workers would rely on Tinian fire, police, and emergency services, the construction contractor would be required to have safety and emergency plans per guidelines set forth by the U.S. Occupational Safety and Health Administration (e.g., project-specific Health and Safety Plan and Accident Prevention Plan). These plans would specify where the contractor would take their staff if an injury occurred that could not be treated on Tinian. As the construction contractor would be required to plan for and potentially augment services with staff hired to support construction, impacts to public services are anticipated to be less than significant.

While new or continued construction worker populations on the island would slightly decrease Tinian's police response staff to population ratio (12 officers per 1,000 residents), the ratio on Tinian far exceeds the average in the U.S. (2 per 1,000 residents). The amount of construction workers would vary over the 10-year construction period, and the phasing of the construction projects would help lessen potential strain on emergency staff capacity. The relatively small number of construction workers that would be needed on island at one time would not exceed the capacity of available public services and would result in less than significant impacts to public services.

#### **4.3.4 Alternative 2**

Under Alternative 2, training would continue and increase over the No Action Alternative by 5 percent. Socioeconomic impacts under Alternative 2 would be similar to those described under Alternative 1. As described above, impacts to population and demographics and public services are not influenced by training tempo and thus would be the same as described for Alternative 1. Impacts to economic activity under Alternative 2 would be similar to Alternative 1, primarily resulting from temporary restrictions to public access within the Military Lease Area. However, throughout the year, public access would remain unrestricted in the Military Lease Area where it could safely occur concurrent with the type of training scheduled, as determined by Range Control. The impacts consider the number of training areas involved, the duration of time restrictions would be in place, and whether live-fire training is occurring that would affect access to the in-water area north of Tinian. The same measures would be in place as described under Alternative 1 to minimize these impacts on economic activity, and there would be a modest economic benefit to the CNMI from additional jobs resulting from both training and construction. Therefore, there would be less than significant impacts to socioeconomics under Alternative 2.

## 4.4 Biological Resources

### 4.4.1 Approach to Analysis

The focus of this biological resource analysis is on the impacts that proposed training events and construction may have on terrestrial and marine resources. Terrestrial resources includes terrestrial vegetation, wildlife, and special status species, and marine resources includes marine communities and marine special status species. Factors used to assess potential impacts to biological resources include: (1) the type of resource (i.e., legal, commercial, recreational, ecological, or scientific); (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration or ecological ramifications of the impact(s).

Impacts to biological resources would be significant if there would be: fragmentation or permanent loss of a terrestrial or marine community to a level that would alter the overall biological function of the community in the region; if there would be physical loss of or exclusion of a species from required habitat, a significant decrease in productivity of native wildlife populations, or a significant decrease in population size or distribution of regionally important native wildlife species; or if the Proposed Action were to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of habitat critical to the survival of the species.

The native species and habitats of Tinian are susceptible to the impacts of non-native, invasive species due to the island ecosystem and relatively small area of the island. Although certain highly invasive species such as the brown tree snake, coconut rhinoceros beetle, and little fire ant (*Wasmannia auropunctata*) have not been recorded on Tinian, these species have affected other islands in the region, such as Guam, and preventing the introduction of such species on Tinian is a high priority. As a result, the Proposed Action includes the construction of biosecurity facilities and implementing protocols to minimize the potential introduction of such invasive species, as described in Section 2.1.9.2 and further detailed in Appendix D.

### 4.4.2 No Action Alternative

Under the No Action Alternative, there would be no change to ground and aviation training. All existing best management practices and natural resources mitigations agreed to in previous consultations, including identified off-limits and limited training areas, forest enhancements, and Integrated Natural Resources Management Plan projects would continue. Because no change would occur under the No Action Alternative there would be no change to biological resources.

### 4.4.3 Alternative 1

#### 4.4.3.1 Terrestrial Plant Communities

Under Alternative 1, plant communities could be impacted directly by proposed construction, vegetation maintenance and training events, and indirectly through the potential increase in the spread of invasive plant species over time or increased risk of potential fire, both of which can lead to changes in habitat composition. The Proposed Action incorporates best management practices to reduce the spread of invasive species and wildland fire risk. The plant communities directly impacted are presented in Table 4.4-1, and locations of impacts are shown on Figure 4.4-1, Figure 4.4-2, and Figure 4.4-3.

Under Alternative 1, up to 343 acres of vegetation would be removed, and those surfaces would then be maintained (mowed/trimmed). Landing Zones 2 and 6 and a new access road to Landing Zone 6, would be within the Natural Resources Conservation Area (part of the wildlife conservation area set aside in 1999 for Tinian Monarch conservation). Approximately 19 acres (2 percent of the Natural Resources Conservation Area) would be cleared for construction of the Landing Zones and access road. Of the impacted vegetation, over 81 percent is attributed to two types of plant communities. The two types of plant communities that would be most impacted are *Leucaena* forest and secondary limestone forest. Direct loss of up to 229.7 acres of *Leucaena* forest would represent an approximate 2.8 percent decrease in the total 8,283 acres of *Leucaena* forest on Tinian. Direct loss of up to 50.9 acres of secondary limestone forest would represent an approximate 0.8 percent decrease in the 6,207 acres of secondary limestone forest currently on Tinian. Alternative 1 would not impact the three most sensitive terrestrial plant communities on Tinian: limestone coastal scrub, limestone native forest, and wetland. The USMC is consulting with the U.S. Fish and Wildlife Service related to the 50.9 acres of secondary limestone forest that would be directly impacted during construction, because it is considered habitat for the Mariana fruit bat. The consultation will be complete and incorporated, as appropriate, into the EIS Record of Decision.

As discussed in Section 2.1.9.2 Biosecurity Facilities and outlined in Appendix D, the USMC would continue to comply with all existing Joint Region Marianas biosecurity protocols applicable to the Proposed Action to reduce the spread of non-native vegetation species. Construction and training related activities by DoD Commands are ongoing on Tinian. Biosecurity protocols and facilities are currently being implemented and constructed to support DoD activities. The USMC is committed to complying with existing biosecurity protocols and expanding biosecurity facilities on Tinian to prevent the introduction and reduce the spread of invasive species, with emphasis on the brown tree snake. The USMC would coordinate with CNMI and federal agencies on pre-planning actions associated with biosecurity and would ensure adequate interdiction and early detection/rapid response resources and capabilities are available to support construction and training actions. In addition, the USMC proposes to construct a wash rack and brown tree snake barrier at Tinian Port to support interdiction of invasive species. As noted above, the USMC is consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act regarding impacts to listed species and their habitats, including potential impacts from invasive species. The consultation will be complete and incorporated, as appropriate, into the Record of Decision. Biosecurity protocols would be updated if required by the consultation.

The risk of wildfire would increase with the occurrence of training events related to the use of live-fire ranges, aircraft, and ground vehicles. Wildland fire has the potential to affect biological resources on Tinian through temporary habitat disturbance, vegetation loss, and short-term displacement of terrestrial wildlife. As described in Chapter 3, plant communities within the Military Lease Area consist primarily of grassland and disturbed grassland communities, secondary limestone forest, limestone native forest, freshwater wetlands, and limestone coastal scrub. Fire behavior modeling and historical fire patterns on Tinian indicate that wildfire occurrence is largely confined to grassland and disturbed grassland communities, particularly during the dry season. Notably, there are no records of wildfires on Tinian resulting from training events (NAVFAC Pacific 2014).

Grassland and disturbed grassland communities are the most fire-prone plant communities on Tinian and are typically dominated by nonnative or early-successional species adapted to periodic disturbance. Wildfire in these areas may result in short-term loss of aboveground vegetation; however, these communities typically recover rapidly through resprouting and recolonization. In contrast, limestone native forest, secondary limestone forest, and freshwater wetland plant communities are less susceptible to fire spread due to limited fine fuels, higher fuel moisture, and closed canopy conditions. Where fires reach forest edges, effects would be localized and temporary, with natural resprouting and canopy recovery expected following low-intensity burns. Repeated or large-scale fires that could result in long-term conversion of forested plant communities to grassland are considered unlikely.

Limestone native forest and freshwater wetlands represent particularly important biological resources on Tinian. Fire spread into freshwater wetlands is unlikely due to soil moisture and vegetation characteristics, and impacts to these habitats would be limited. Similarly, limestone forest interiors are not expected to carry fire, and any edge effects would be spatially limited. Implementation of firebreaks, vegetation management, and rapid suppression procedures would further reduce the likelihood of wildfire encroachment into habitats supporting federally listed and sensitive species.

The potential for wildfires would be reduced through vegetation removal during construction and continued vegetation management within the Military Lease Area at live-fire ranges, Landing Zones, and roadways. Under Alternative 1, and as part of the USMC's Conservation Program, a Range Wildland Fire Management Plan would be developed and implemented. The Range Wildland Fire Management Plan would identify a comprehensive approach to reduce the frequency of wildland fires and lay out specific guidance, procedures, and protocols for the prevention and suppression of wildland fires and minimize wildland fire frequency, severity, and size. Consistent with the fire stressor analysis presented in the Biological Assessment, wildfire-related biological resource impacts under Alternative 1 would be minimized through implementation of fire danger rating systems, training restrictions during high-risk conditions, vegetation management, and fuel breaks. These measures would substantially reduce ignition probability and limit fire size, preventing landscape-scale fires that could adversely affect biological resources.

If a wildfire were to occur, susceptible resources would primarily include grassland and disturbed grassland plant communities and associated terrestrial wildlife. Limestone native forest, freshwater wetlands, and habitats supporting federally listed and sensitive species are unlikely to sustain wildfire and would be expected to experience limited and temporary effects. With implementation of wildfire prevention, fuel management, and suppression measures under Alternative 1, landscape-scale fires would be unlikely. Therefore, Alternative 1 would result in less than significant impacts to biological resources from wildfire, consistent with the fire effects analysis and determinations presented in the Biological Assessment.



Figure 4.4-1 Plant Communities and Proposed Action Features (North)

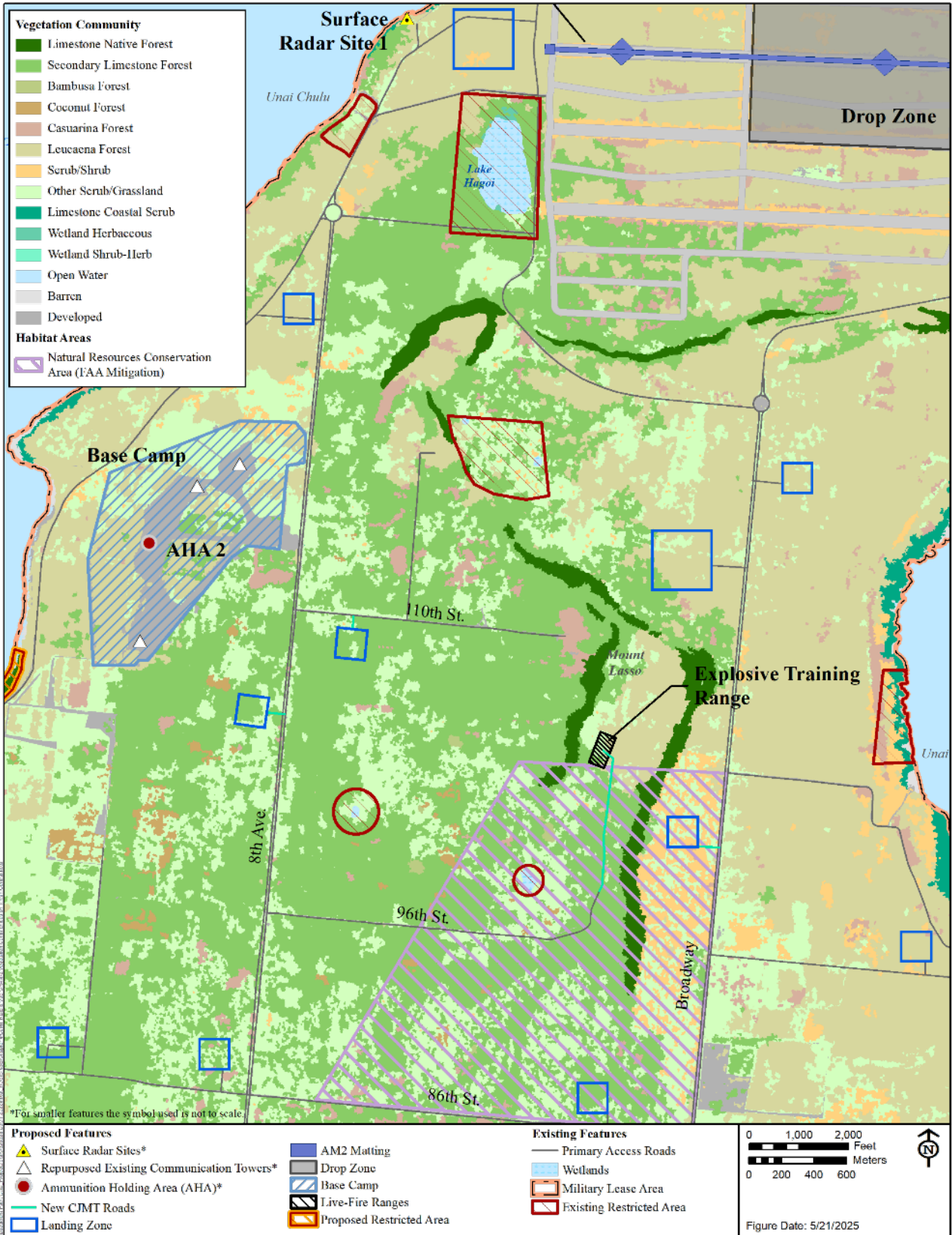
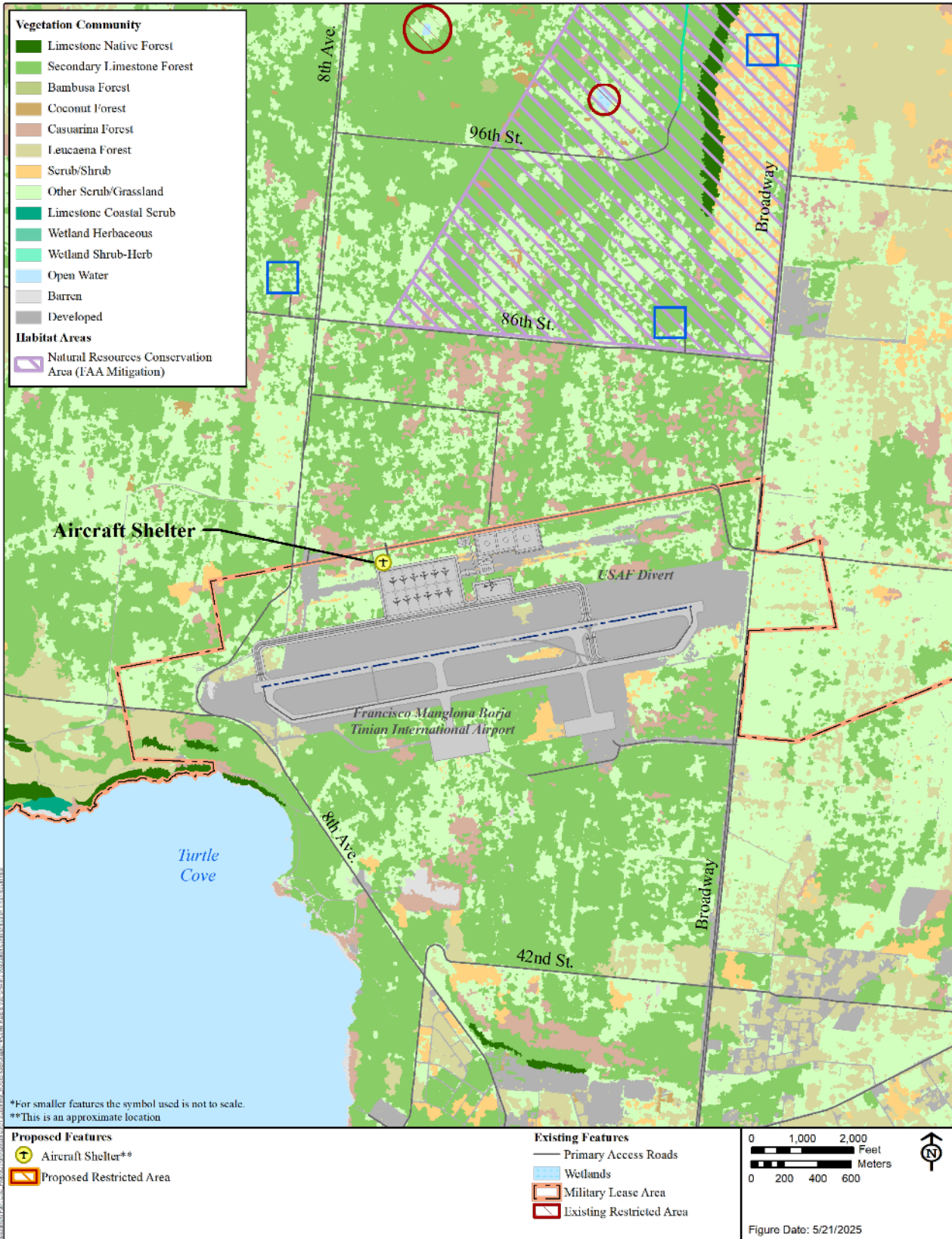


Figure 4.4-2 Plant Communities and Proposed Action Features (Central)



**Figure 4.4-3 Plant Communities and Proposed Action Features (South)**

**Table 4.4-1 Plant Community Impacts under the Proposed Action**

<i>Plant Community</i>	<i>Direct Impact Area (acres)<sup>1</sup></i>										
	<i>Landing Zones</i>	<i>Multi-Purpose Maneuver Range (all components)</i>	<i>Utility Alignments</i>	<i>Base Camp Security Fencing</i>	<i>Explosives Training Range</i>	<i>Drop Zone</i>	<i>Surface Radar Towers</i>	<i>Potable Water Well Field<sup>2</sup></i>		<i>New Roads</i>	<i>Total</i>
								<i>Option A</i>	<i>Option B</i>		
<i>Casuarina Forest</i>	0.7	0.02	1.0	0.1	-	2.2	0.1	0.5	0.2	-	<b>4.8</b>
<i>Coconut Forest</i>	-	-	0.02	-	-	-	-	-	-	-	<b>0.02</b>
<i>Leucaena Forest</i>	94.0	37.8	8.8	2.1	1.5	81.7	0.4	3.1	-	0.3	<b>229.7</b>
<i>Secondary Limestone Forest</i>	32.3	2.5	8.1	0.3	0.8	-	0.2	0.4	4.8	1.5	<b>50.9</b>
<i>Other Scrub/Grassland</i>	23.8	1.2	10.5	1.5	2.5	0.02	-	3.2	2.7	0.4	<b>45.8</b>
<i>Scrub/Shrub</i>	6.3	-	0.1	0.1	-	4.4	-	0.8	0.02	0.1	<b>11.8</b>
<b>Total</b>	<b>157.1</b>	<b>41.5</b>	<b>28.5</b>	<b>4.1</b>	<b>4.8</b>	<b>88.3</b>	<b>0.7</b>	<b>8.0</b>	<b>7.7</b>	<b>2.3</b>	<b>343.0</b>

Notes: <sup>1</sup> Impacts to “Developed” habitat and areas that have been previously cleared of vegetation are not included in this table, as no vegetation impacts would occur in those areas.

Construction and training activities may impact individual plants with cultural importance (refer to Section 3.4.1), as is described above for plant communities across Tinian. However, these species are common to Tinian and occur throughout the Military Lease Area. They would not be widely removed or destroyed, nor be subjected to long-term access restrictions. Impacts to any natural resources with cultural importance due to access restrictions during training would be intermittent, temporary, and mitigated by Range Control scheduling accommodation.

Considering the small percentage of impacted vegetation compared to existing vegetation, the absence of any impact to the three most sensitive terrestrial plant communities, the proposed forest enhancement to mitigate for secondary limestone forest impacts, and the invasive species and wildfire protocols, impacts to vegetation under Alternative 1 would be less than significant.

#### **4.4.3.2 Terrestrial Wildlife**

Under Alternative 1, wildlife could potentially be impacted by habitat removal or modification, direct strike, noise (from construction, aircraft, live-fire, and vehicular activity), human presence and/or habituation, introduction of invasive species, fire, night lighting, and radio frequency radiation. Under Alternative 1, training events would continue and would increase over the No Action Alternative by approximately 15 percent.

Under Alternative 1, plant communities that are largely dominated by native plant species (limestone coastal scrub, limestone native forest, wetland vegetation) would actively be avoided and would not be removed. The majority of vegetation removal during construction activities would occur in areas that are dominated by invasive species (Leucaena forest and secondary limestone forest). Certain species, such as the non-protected native bird species on Tinian are known to occupy Leucaena forest and secondary limestone forest, and often occur in higher densities than they do in limestone native forest (Spaulding et al. 2022). Native reptile species on Tinian are most likely to inhabit native forest habitats but may also occur in non-native habitats that would be impacted during construction. Although commonly occurring native wildlife species may occupy the non-native dominated habitats that would be impacted under Alternative 1, the loss of approximately 343 acres of predominantly non-native dominated vegetation would represent a total loss of 1.5 percent of the approximately 22,964 acres of vegetated habitat on Tinian. Because vegetation clearance would only occur in small amounts dispersed throughout the Military Lease Area, and because pre-construction surveys would be conducted prior to vegetation removal, the loss of habitat would not result in habitat fragmentation that would hinder the connectivity of any population of species or the ability for species to continue using those areas for dispersal across the island.

The majority of training events would occur in areas that are dominated by non-native and invasive species (Leucaena forest and secondary limestone forest). Non-protected native birds and native reptiles may occur in non-native habitats and may be impacted from disturbance to these habitats during training events. However, wildlife habitats that are dominated by native plant species, such as limestone native forests and wetland habitats, would not be impacted by training. Therefore, impacts to native wildlife species due to habitat modification from training events would be minimal.

Terrestrial wildlife may be impacted by direct strike related to construction equipment, military vehicles, aircraft, and stationary objects, but is determined to be less than significant based on the implementation of best management practices listed in Appendix D. While the two proposed live-

fire ranges would pose a minimal risk of direct strike to wildlife (primarily bird species) from gunfire and explosives, the ranges would operate in a controlled and cleared area virtually eliminating the likelihood of directly impacting wildlife, as habitat for wildlife species would be removed on the ranges.

Noise impacts from training events would primarily occur during active live-fire training, flight operations (including Landing Zone and drop zone use), and maneuver training (including increased human presence and foot traffic). The severity of these disturbances would be dependent not only on noise level but on frequency, regularity, and species sensitivity. Wildlife generally respond to noise from low-flying aircraft, although the ways in which they respond vary depending on life history, habitat, aircraft, and flight activities, and previous exposure to aircraft (Burger 1981). Physiological and/or behavioral responses can reduce an animal's fitness and ability to survive or increase its propensity to relocate. Low-altitude overflights can cause excessive stimulation, alertness, or stress. Tests on various terrestrial animals have shown that many species will undergo a "startle reaction" to noise in the range of 80 to 100 decibels or higher (Bowles 1995; UCSF 2024).

Under Alternative 1, aircraft overflights would continue to be restricted to altitudes of no less than 1,000 feet over habitats such as wetlands and limestone native forest, thereby reducing the likelihood of noise impacts on native species that inhabit these habitats. Almost all fixed wing overflights within the Military Lease Area would occur above 10,000 feet above ground level, producing peak sound levels between 56 and 82 decibels (refer to Section 4.8.1 Approach to Analysis for a description of the noise modeling and metrics used for the impact analysis). Some overflights as low as 2,000 feet above ground level may occur (particularly around North Field), but these would be unlikely to occur as part of regular activity. These events would produce peak sound levels up to 111 decibels directly below the flight path. Helicopters and tilt-rotor aircraft would fly between 300 and 2,000 feet above ground level and would be expected to produce peak sound levels between 73 and 91 decibels. Therefore, aircraft activity would likely induce startle responses and other behavioral changes in wildlife; but such impacts would be brief and intermittent.

Training events involving the use of explosives would generate single event peak sound levels of between 115 and 130 decibels that extend over an area of the ocean surface (refer to Section 4.8 Noise, Figure 4.8-2 through Figure 4.8-4, and Appendix J, Noise Study, Section J.3.3). Use of explosives would typically occur during large or medium training events and include approximately 20 charges of 1.25 pounds net explosive weight (Figure 4.8-2 and Figure 4.8-4). When using the largest charge (Figure 4.8-3) training would involve only one detonation per event (during daytime), and this would occur 2 to 4 times per year. Exposure to this impulsive noise would be brief, lasting only for a fraction of a second per charge. Wildlife in the vicinity, such as birds, may startle and move away from the noise into nearby adjacent habitat. In summary, impacts from aircraft overflights, training with explosives and live-fire in the Explosives Training Range and Multi-Purpose Maneuver Range would be brief and intermittent, and would not induce behavioral shifts in wildlife populations; therefore, the increase in impacts on wildlife due to noise and human presence during training under Alternative 1 would be less than significant.

Noise and human presence during construction may cause wildlife to temporarily avoid areas in the immediate vicinity of construction activities. Nesting or breeding adults of various wildlife

species can also be disturbed by noise and construction activities, including foot traffic, which may result in abandonment of young, increased susceptibility to depredation, and temporary displacement of wildlife from breeding habitat, resulting in reduced breeding success. Nesting bird surveys would be conducted prior to construction, and appropriate U.S. Fish and Wildlife Service-developed avoidance and minimization measures would be incorporated if nests were discovered. Due to the temporary and dispersed nature of these activities in combination with best management practices in place, noise and human presence from construction would not result in significant impacts to the population of any species on Tinian.

Non-native species may be inadvertently transported through the movement of cargo via aircraft and vessels to Tinian. The risk of introducing invasive species would increase with logistical transport associated with training events and construction on Tinian. Non-native species have potential to upset the fragile island ecosystem on Tinian because these species directly compete with native species for resources such as space, water, and food sources. Invasive species may also prey on, parasitize, or cause disease to native species. Training events and construction may increase the spread of invasive species. Biosecurity protocols (as discussed in Section 2.1.9.2 Biosecurity Facilities) and best management practices (Appendix D) would be implemented to avoid the potential spread or introduction of non-native species. The USMC would continue to comply with all existing biosecurity protocols applicable to the Proposed Action. Protocols for all administrative and other tactical and non-tactical movements are expected to include: (1) pre-departure biosecurity cleanliness inspections for plants/seeds, invertebrates (insects [including coconut rhinoceros beetles & little fire ants], spiders, snails, slugs, etc.), small vertebrates (frogs, lizards, rodents, shrews, etc.), and accumulated soil for all cargo transported to Tinian from Guam; (2) pre-departure and arrival brown tree snake canine inspections for all cargo, aircraft, and small vessels ( $\leq 100$ ft) departing Guam and arriving in Tinian; and (3) bio-sanitation standard operating procedures per the Armed Forces Pest Management Board Technical Guide No. 31.

Terrestrial wildlife and avian species present on Tinian may experience short-term behavioral disturbance or displacement during wildfire events. Mobile species are expected to move away from active fire areas and return once conditions stabilize. Temporary reductions in habitat suitability may occur within burned grassland and disturbed grassland communities; however, these areas typically regenerate quickly and may continue to provide foraging habitat. As previously described for vegetation, prior to any live-fire training on the Multi-Purpose Maneuver Range and Explosives Training Range, a Range Wildland Fire Management Plan would be developed and implemented to reduce the frequency, intensity, and size of wildland fires and lay out specific guidance, procedures, and protocols in the prevention and suppression of wildland fires.

Artificial lights associated with construction and training activities can pose a threat to wildlife species that may either be attracted to or dissuaded from areas where the artificial light originates. For instance, bat and bird species may alter flight/foraging patterns based on artificial lighting at night. In addition, artificial lighting can affect sea turtle species by disrupting their natural navigation system, causing nesting females to be drawn away from nesting sites and hatchlings to become disoriented, leading them away from the ocean upon hatching (Witherington et al. 2000). Whenever feasible, exterior night lighting would include wildlife-friendly design features such as shielded lights (to reduce ambient light), use of motion detectors and/or other automatic controls, long wavelength bulbs, lowest possible lumens, and lighting design that uses shields to prevent

light from shining upward into the sky. In addition, night lighting best management practices listed in Appendix D would be implemented that would greatly reduce the potential for night lighting to affect wildlife species on Tinian, both during construction and training activities.

The proposed use of the mobile radar systems and surface radar towers would introduce the possibility of exposing bats and birds to radio frequency radiation, which is capable of heating organic tissues if exposed to radiation beams for long periods of time (the Occupational Safety and Health Administration metric of the upper limit of safe exposure [IEEE Std. C95.1] is 10 watts per square meter over 30 minutes). Potential effects to dangerous levels of radiation include disturbance, stress from overheating, or bodily injury. However, these surveillance systems produce radiation at extremely high frequencies (well above 116 megahertz). Although frequent exposure to frequencies below 100 megahertz is known to negatively affect biological systems, there is no scientific evidence that infrequent exposure to radio frequencies above 100 megahertz has any adverse impacts on wildlife (Pophof et al. 2022). Also, the radar beam emissions are extremely narrow and thus very unlikely to intercept wildlife in flight. Should wildlife cross an active radar beam, exposure time would likely only be for fractions of a second due to the narrowness of the beam and because both the animal and the beam would be moving.

Alternative 1 incorporates best management practices, standard operating procedures, and other measures to avoid or minimize impacts to wildlife. These measures are discussed in detail in Appendix D, and include, but are not limited to, erosion control measures that would minimize ground disturbance and reduce erosion from training events and construction, a Stormwater Management Plan and Pollution Prevention Plan that would minimize impacts to water sources, pest control and biosecurity measures that aim to limit introduction of non-native species, and noise abatement measures that would reduce noise from construction. Therefore, impacts to wildlife under Alternative 1 would be less than significant.

#### **4.4.3.3 Terrestrial Special Status Species**

Known occurrences of federally listed and CNMI-listed species in the Proposed Action footprint are shown on Figure 4.4-4. Potential stressors to wildlife associated with the Proposed Action under Alternative 1 as described above also apply to the special status species analyzed in this section and are discussed as appropriate below. Preliminary effects determinations for federally listed species are presented in Table 4.4-2. Consultation with the U.S. Fish and Wildlife Service is ongoing under section 7 of the Endangered Species Act. The consultation will be complete and incorporated, as appropriate, into the Record of Decision. As introduction of invasive species would pose a threat to all species on Tinian, including special status species, biosecurity protocols (as discussed in Section 2.1.9.2 Biosecurity Facilities) and best management practices (Appendix D) would be implemented to avoid the potential spread or introduction of non-native species. As discussed in the preceding *Terrestrial Wildlife* section, these protocols and practices would reduce the likelihood of introduction and spread of non-native, invasive species.

### **Federally Listed and CNMI-listed Species**

*Mariana Common Moorhen.* Mariana common moorhens are present throughout the year at Lake Hagoi and at the seasonal Bateha and Mahalang ephemeral wetlands when water is present. No training events or construction would occur at these wetland locations and no moorhens have previously been observed in the areas proposed for training events. As a result, construction activities would have no effect on the Mariana common moorhen. Potential effects from training noise affecting moorhens on the aforementioned wetlands are analyzed here, as increases in average noise and/or intermittent loud noise events may cause moorhens to alter behavior that may then affect their distribution, reproduction, and overall fitness. Noise levels from munitions training and aircraft operations were modeled for Lake Hagoi, the Mahalang wetlands complex, and the Bateha wetlands to assess potential effects to Mariana common moorhens. The results of the noise modeling are presented in Table 4.4-3. Refer to Section 4.8 for descriptions of noise measurements.



Figure 4.4-4 Occurrences of Federally Listed Species and Proposed Restricted Areas on Tinian

**Table 4.4-2 Summary of Effects Determinations for Federally Listed Species on Tinian**

<i>Species</i>	<i>Potential Stressors</i>	<i>Effects Determination<sup>1</sup></i>
Mariana Common Moorhen	Noise	Not Likely to Adversely Affect
Micronesia Megapode	None	No Effect
Mariana Fruit Bat	Habitat Loss, Noise, Human Presence	Not Likely to Adversely Affect
Green Turtle	Noise and Human Presence	Not Likely to Adversely Affect
Hawksbill Turtle	None	No Effect
Humped Tree Snail	None	No Effect
<i>Heritiera longipetiolata</i>	Human Presence (low likelihood of foot traffic)	Not Likely to Adversely Affect
<i>Dendrobium guamense</i>	Human Presence (low likelihood of foot traffic)	Not Likely to Adversely Affect

Note: <sup>1</sup>Endangered Species Act section 7 determinations are pending. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.

**Table 4.4-3 Sound Exposure Levels at Mariana Common Moorhen Wetlands Under Alternative 1**

<i>Location</i>	<i>Small Arms</i>		<i>Explosive Detonations</i>		<i>Aircraft Activity<sup>1</sup></i>		
	<i>CDNL (dB)</i>	<i>PK15(met) (dBP)</i>	<i>CDNL (dB)</i>	<i>PK15(met) (2 to 4 events per year) (dBP)</i>	<i>DNL (dB)</i>	<i>Change from No Action Baseline DNL (dB)</i>	<i>L<sub>max</sub> (dB)</i>
Lake Hagoi	48	108	<35	106	69	+25	102
Mahalang Complex	45	104	52	115	59	+18	95
Bateha 1	46	98	65	148	49	+2	99
Bateha 2	41	99	43	138	49	+3	99

Legend: CDNL = C-weighted Day-Night Average Noise Level; dB = decibels; dBP = peak unweighted decibels; DNL = Day-Night Average Noise Level; L<sub>max</sub> = maximum sound level; PK15(met) = peak noise level expected to be exceeded by 15 percent of all events when adjusting for statistical variation due to weather.

Notes: Refer to Appendix J, *Noise Study*, for additional information about noise metrics and modeling.

<sup>1</sup> Includes cumulative noise level for an average year of training on Tinian, including landings and takeoffs at North Field, Landing Zones, low-level flights, and transport of materials, personnel, and equipment to support training through TNI.

Sound levels from live-fire training on Tinian may cause periodic startle responses or flushing of moorhens at Lake Hagoi, the Mahalang Complex wetlands, and the Bateha wetlands. At these locations, moorhens could exhibit short-term behavioral and/or physiological responses from exposure to noise during training activities under the Proposed Action, especially from explosives detonation which could reach up to 148 decibels (only 2 to 4 times per year) (Table 4.4-3). However, the wetlands where moorhens are known to occur on Tinian are surrounded by thick, forested habitat that would generally provide a buffer to any live-fire or explosives noise in those habitats. Aircraft overflights would be restricted to altitudes of no less than 1,000 feet over wetland habitats, so these activities are less likely to impact individuals. However, the Day-Night Average Noise Levels at Lake Hagoi and the Mahalang Complex wetlands from aircraft activity would be

approximately 25 decibels and 18 decibels higher than baseline, respectively, under Alternative 1. Although average noise at wetland habitats from aircraft activity would not reach levels that would mask moorhen calls, it would represent a noticeable change from the baseline conditions. Small arms and explosives may present blast noises that could temporarily alter moorhen behaviors and average noise levels at wetland habitats would increase from aircraft activity. However, these events would be sporadic and short-term, and No Training Areas would be implemented on wetland habitats where the species occurs. Based on the USMC Biological Assessment, the Proposed Action under Alternative 1 is not likely to adversely affect Mariana common moorhens and therefore, impacts to Mariana common moorhens would not be considered significant. The USMC is consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act regarding impacts to listed species and their habitats. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.

*Micronesian Megapode.* Historical observations of Micronesian megapodes in low numbers in the Mount Lasso area, south of Lake Hagoi, and a small area of forested habitat adjacent to Cross Island Road in the southern portion of the Tinian Military Retention Land for Wildlife Conservation (Figure 3.4-3) all occurred prior to 2014. Since then, megapodes have not been detected on Tinian (Joint Region Marianas 2023). No construction would occur in the vicinity of, or in any area where megapodes have historically been observed. Training events could occur adjacent to historical megapode locations. Given that the species has not been detected on the island since before 2014 and no resident breeding population of megapodes has ever been identified on Tinian (historical occurrences are all believed to be visiting individuals from neighboring islands), the Proposed Action under Alternative 1 would have no effect on the Micronesian megapode.

*Mariana Fruit Bat.* Ground training would not occur in the limestone native forest along the cliff line of Mount Lasso where the known fruit bat colony occurs, and training activities would generally occur in areas far removed from this location. Fruit bats typically roost during the day in colonies at sites to which they show a high level of fidelity (unless disturbed). In addition, a small proportion of fruit bats, usually males, roost alone or in small groups. While fruit bat colonies can be very easily disturbed by the sight, smell, or sound of humans (Mildenstein and Boland 2010), resting or foraging bats (not at a colony) have exhibited some tolerance for human disturbance and are approachable at relatively close distances. A 2012 study on Guam documented three encounters with Mariana fruit bats where the observers were able to get within 5 to 21 meters of roosting bats (two males, one male, and one female). During all three encounters, the Mariana fruit bats eventually departed their roost site but only after considerable time had passed (30 to 69 minutes) despite the presence of one or two observers (SWCA 2012b). During training events, individual bats could be exposed to noise and human disturbance. Although mostly active at night, fruit bats can be active during daylight hours and would potentially be exposed to noise and visual impacts from live-fire, use of blank ammunition, aircraft activity, and other training exercises. Mariana fruit bats do not echolocate, meaning they do not depend on a quiet soundscape to forage (Jones and Teeling 2006). However, fruit bats do rely on sound for vocalized communication with each other and excessive noise or any sort of stress from disturbance can lead to a variety of negative stress responses (Klose et al. 2006; Department of the Navy 2010). Hearing in *Pteropus* fruit bats is primarily used for communication or social activity and in detecting the approach of potential threats (e.g., predators) (Grinnell 1995). For those species of fruit bats that have been

tested for hearing sensitivity, their audiograms are very similar to those of humans, with similar upper and lower frequency limits and hearing threshold levels (Calford et al. 1985; Koay et al. 1998; Heffner et al. 2006; Tarnovsky et al. 2023). A sound level of 0 decibels is approximately the lower threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 decibels; sound levels above 120 decibels begin to be felt inside the human ear as discomfort, and sound levels ranging from 130 to 140 decibels are toward the upper threshold and are felt as pain (Berglund and Lindvall 1995). Therefore, it can be assumed that fruit bat species have similar thresholds.

Responses to military aircraft noise by Mariana fruit bats have been studied on Guam and Rota (SWCA 2012a). Results of this research indicated that fruit bats flushed at aircraft noise levels exceeding 90 A-weighted decibels (mid-range frequencies) and 106 C-weighted decibels (low and high frequencies). Fruit bats at a maternity colony on Rota flushed when a helicopter flew within 200 meters of the colony and when a military jet flew within 300 meters. This study also found that following aircraft overflights, Mariana fruit bat active thermoregulation increased by 32 percent, maintenance behaviors increased by 14 percent, locomotion increased by 74 percent, and alertness increased by 62 percent (SWCA 2012a).

Under Alternative 1, all construction would occur during daylight hours. No construction activities would occur in any limestone native forest or on Mount Lasso, and any bat colony location occurring in the limestone native forest of that region would be far enough removed from construction activities, and sheltered by the forested habitat, so as not to be impacted by noise from construction in other areas of the island. For example, at 50 feet away, construction equipment can produce maximum sound levels between 70 and 95 decibels, but that dissipates to around 65 decibels at a distance of 300 feet and less than 65 decibels at 1,000 feet. Under Alternative 1, the nearest construction to the known fruit bat colony would be over 3,000 feet away. Mariana fruit bats are largely nocturnal (resting/roosting during the day and most active at night). Loss of up to 50.9 acres of secondary limestone forest under Alternative 1 would initially represent a loss of potential roosting and foraging locations for Mariana fruit bats on Tinian. However, as described in Section 4.4.3.1, the USMC would mitigate impacts to secondary limestone forest through forest restoration/enhancement.

Based on known habitat use for this species, most noise generated as part of training events and construction to support training would be produced from much farther distances away from known observation points. Consistent with current measures to protect the Mariana fruit bat on Tinian, under the Proposed Action, any aircraft that must fly over limestone native forest during training exercises would fly at a minimum of 1,000 feet above ground level to minimize visual and noise disturbance to potentially occurring fruit bats. Although these disturbances would most likely be intermittent, infrequent, and temporary, fruit bats, especially those foraging or roosting away from the known colony or traversing in areas adjacent to training activities may still be subjected to peak sound levels at or above 90 decibels, which may induce startle responses or other temporary behavioral shifts. Results of noise modeling that show sound exposure levels at the Mariana fruit bat colony location on Tinian are presented in Table 4.4-4. Refer to Section 4.8 for descriptions of noise measurements.

**Table 4.4-4 Sound Exposure Levels at Mariana Fruit Bat Colony Location**

Location	Small Arms		Explosive Detonations		Aircraft Activity <sup>1</sup>	
	CDNL (dB)	PK15(met) (dBP)	CDNL (dB)	PK15(met) (2-4 events/year) (dBP)	DNL (Change from No Action Baseline) (dB)	L <sub>max</sub> (dB)
Bat Colony Location	45	104	<35	107	55 (+12)	104

*Legend:* CDNL = C-weighted Day-Night Average Noise Level; dB = decibels; dBP = peak unweighted decibels; DNL = Day-Night Average Noise Level; L<sub>max</sub> = maximum sound level; PK15(met) = peak noise level expected to be exceeded by 15 percent of all events when adjusting for statistical variation due to weather.

*Notes:* Refer to Appendix J, *Noise Study*, for additional information about noise metrics and modeling.

<sup>1</sup> Includes cumulative noise level for an average year of training on Tinian, including landings and takeoffs at North Field, Landing Zones, low-level flights, and transport of materials, personnel, and equipment to support training through TNI.

As shown in Table 4.4-4 and detailed in the Noise Study (Appendix J), the loudest single event noise impacts from the Explosives Training Range would occur from large detonations (cratering charges of up to 40 pounds net explosive weight). Such detonations would occur infrequently, up to 4 times per year. In addition, during the planning process for the Proposed Action, the USMC re-sited the location of the Explosives Training Range from an area further north on Tinian and closer to the bat colony, to the current location presented in this Final EIS, which would decrease the noise impacts on the species. However, the 107 decibel noise contour generated by the detonations would overlap the northern portions of the Mount Lasso region, likely reaching the known Mariana fruit bat colony. Therefore, these events may induce behavioral and/or physiological shifts in Mariana fruit bats on Tinian, but the effects would be infrequent and dispersed throughout the year, very brief in duration (fractions of a second), and would not rise to the level of inducing pain.

As fruit bats are largely active at night and use vision for foraging, night lighting has the potential to impact fruit bats. Measures discussed in Appendix D would be implemented to reduce the impact of any night lighting on wildlife, including fruit bats.

Noise from explosives training and intermittent disturbance from human presence (especially due to visual and noise disturbance from training activities) may induce startle responses or other temporary behavioral shifts. However, these events would be sporadic and short-term. Additionally, the implementation of a 1,000-foot altitude restriction for aircraft over limestone native forest would further serve to minimize impacts from noise. Based on the USMC Biological Opinion, the Proposed Action under Alternative 1 is not likely to adversely affect the Mariana fruit bat on Tinian and therefore, impacts to the Mariana fruit bat would not be considered significant. The USMC is consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act regarding impacts to listed species and their habitats. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.

*Green Turtle.* As discussed in Section 3.4.3.1, over 50 percent of recent green turtle nesting activity has occurred at Unai Dankulo, with other nesting activity occurring on scattered beaches across Tinian (Figure 3.4-3). Ground training events under Alternative 1 would occur on Unai Chulu, Unai Babui, Unai Lam Lam, Unai Masalok and Unai Dankulo, all of which are known nesting beaches for green turtles. Personnel accessing these beaches have the potential to disturb turtles

that may be on the beach and pose a risk of directly harming eggs if turtles are actively nesting on these beaches. Per the Joint Region Marianas Integrated Natural Resources Management Plan, regular monitoring of sea turtle nesting would continue at all potential beach nesting sites where training may occur under Alternative 1. If an active nest has been discovered, night training will not occur after 50 days of incubation until the nest has hatched or a buffer (9 meters [30 feet] wide) from the active nest to the water will be in place to avoid any potential impacts to sea turtle hatchlings trying to reach the ocean. Pre-event surveys for turtles would be conducted no more than six hours prior to training on any beaches that are suitable for turtle nesting. In addition, if a turtle is observed hauling out on a beach where training activities are occurring, the training activity would halt until the turtle has left the beach. These ongoing measures would largely eliminate potential disturbances to sea turtles.

Results of noise modeling for sound exposure levels at green turtle nesting beaches in the Military Lease Area are presented in Table 4.4-5. Refer to Section 4.8 for descriptions of noise measurements.

**Table 4.4-5 Sound Exposure Levels at Green Turtle Nesting Beaches in the Military Lease Area**

Location	Small Arms		Explosive Detonations		Aircraft Activity <sup>1</sup>	
	CDNL (dB)	PK15(met) (dBP)	CDNL (dB)	PK15(met) (2-4 events/year) (dBP)	DNL (Change from No Action Baseline) (dB)	L <sub>max</sub> (dB)
Unai Chulu	47	106	<35	104	75 (+32)	108
Unai Lam Lam	60	122	40	104	31 (+22)	99
Unai Chiget	49	109	36	123	64 (+24)	95
Unai Dankulo	43	102	40	137	50 (+3)	104
Unai Masalok	40	98	46	126	53 (+1)	99
Unai Babui	49	110	<35	104	76 (+36)	108

*Legend:* CDNL = C-weighted Day-Night Average Noise Level; dB = decibels; dBP = peak unweighted decibels; DNL = Day-Night Average Noise Level; L<sub>max</sub> = maximum sound level; PK15(met) = peak noise level expected to be exceeded by 15 percent of all events when adjusting for statistical variation due to weather.

*Notes:* Refer to Appendix J, *Noise Study*, of the Revised EIS.

<sup>1</sup> Includes cumulative noise level for an average year of training on Tinian, including landings and take-offs at North Field, Landing Zones, low-level flights, and transport of materials, personnel, and equipment to support training through TNI.

Results of noise modeling completed for the Revised EIS indicate that small-caliber weapons training on Tinian would expose nesting green turtles to less than 50 decibels C-weighted day-night average sound level at Unai Chiget, Unai Chulu, Unai Dankulo, and Unai Masalok, and 60 decibels C-weighted day-night average sound level at Unai Lam Lam. Small-caliber weapons fire would generate between 98 and 122 decibels Peak (PK<sub>15</sub>) at these same beaches. Noise generated by explosive detonations would potentially expose nesting green turtles to up to 46 decibels C-weighted day-night average sound level and a peak sound level 104 to 137 decibels (unweighted). All aircraft operations on Tinian could expose nesting green turtles to 95 to 108 decibels or 31 to 76 decibels day-night average sound level. See Appendix J for detailed noise metrics and modeling results.

Information regarding exact noise disturbance thresholds of turtles on land is limited (National Oceanic and Atmospheric Administration 2023). Morphological investigations have demonstrated that sea turtles have poor auditory receptors to airborne sound, with limited on land hearing for low frequencies (Bartol and Ketten 2006; Popper et al. 2014; Piniak et al. 2016). The National Oceanic and Atmospheric Administration (2023) currently uses Root Mean Square 175 decibels as the underwater “Onset of Behavioral Disturbance Acoustic Threshold for Sea Turtles.” No such threshold is known for land-based noise. As shown in Table 4.4-5, no sound levels would approach 175 decibels under the Proposed Action. Peak sound levels from explosive detonations and small arms may cause individual adult turtles to avoid beaches during periods of training. In addition, the Day-Night Average Sound Level from aircraft activity would increase on beaches such as Unai Chulu, Unai Lam Lam, Unai Chiget, and Unai Babui. Although the behavioral shifts that green turtles may exhibit based on such increases in land-based noise are not well understood, it is expected that nesting and hauled out individuals would be exposed to increases in noise exposure that may alter behavior.

No construction would occur on any of the beaches on Tinian. The nearest construction to any sea turtle nesting beach would be over 1,000 feet away. Morphological investigations demonstrated that sea turtles have poor auditory receptors to airborne sound, with limited on-land hearing for low frequencies typically produced by ground construction (Bartol and Ketten 2006; Popper et al. 2014; Piniak et al. 2016). Therefore, airborne noise is not anticipated to disturb green turtles as potentially loud noise levels would attenuate by the time sound would reach a green turtle on the beach and hearing sensitivity is limited on land. Although night lighting in the vicinity of beaches has the potential to impact sea turtles, floodlights that may be temporarily used for training events would not be used on beaches and would utilize light shielding best management practices, as described in Appendix D, which would eliminate the potential to impact nesting or hauled out turtles.

Land-based noise from explosive training, small arms, and aircraft activity may induce startle responses or other temporary behavioral shifts. However, these events would be sporadic and short-term, and with the implementation of ongoing measures to protect nesting/beached turtles on beaches in the Military Lease Area. Based on the USMC Biological Opinion, the Proposed Action under Alternative 1 is not likely to adversely affect the green turtle on Tinian and therefore, impacts to the green turtle would not be considered significant. The USMC is consulting with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act regarding impacts to listed species and their habitats. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.

*Humped Tree Snail.* Humped tree snails on Tinian are currently only known to occur at Lamanibot Bay. Under Alternative 1, no training events or construction would occur at Lamanibot Bay, and a restricted area would be established (Figure 4.4-4). Likewise, there would be no removal of potential limestone native forest tree snail habitat. Therefore, the Proposed Action under Alternative 1 would not impact the humped tree snail.

*Heritiera longipetiolata.* *H. longipetiolata* groves are well-documented on Tinian in limestone habitats near the coast (Figure 3.4-3). No construction would occur in areas where the species occurs. In addition, a restricted area would be established where the majority of *H. longipetiolata* occur (Figure 4.4-4). Although there is one known *H. longipetiolata* grove that occurs outside of

the proposed restricted area, which would make it susceptible to foot traffic during foot patrols and foot maneuver exercises, the grove occurs in such a difficult to access area of ragged, karst limestone coastal scrub, it is unlikely that troop foot traffic would ever occur there. In addition, there are no planned training activities in the vicinity of the *H. longipetiolata* grove that occurs outside of the proposed restricted area. Therefore, the Proposed Action may affect but is not likely to adversely affect *H. longipetiolata* and impacts to the species would be less than significant.

*Dendrobium guamense*. *D. guamense* individuals occur in limestone native forest habitat in the Mount Lasso region (Figure 3.4-3). No vegetation removal would occur on or around Mount Lasso and there would be no training activities involving live-fire or explosives on Mount Lasso. However, foot patrols and foot maneuvers may occur in limestone forest habitat on Mount Lasso in and around where *D. guamense* individuals are known to occur. Although an epiphytic species, there is still potential for *D. guamense* to be trampled, crushed, or otherwise disturbed during foot patrols and foot maneuver exercises. However, the likelihood of individuals being trampled or crushed is very low given the dispersed occurrence of individuals, typically in difficult to access karst terrain, and their general occurrence above ground level on branches or downed logs. In addition, any troop training on Mount Lasso would occur in areas that are open to the public and already experience intermittent foot traffic disturbance. Therefore, the Proposed Action is not likely to adversely affect *D. guamense* and impacts to the species would be less than significant.

### **Migratory Birds**

Impacts to migratory birds would be similar to those described for bird species in Section 4.4.3.2. Most migratory bird species that may occur on Tinian are shorebirds or pelagic species (e.g., black noddy, brown booby, brown noddy, gray-tailed tattler, Pacific reef heron, wandering tattler and white tern), that do not utilize the majority of inland habitats on Tinian. These birds would not be exposed to construction impacts and would generally be less exposed to training activity as Alternative 1 training occurs mainly inland and away from the shoreline. Training activities occurring on the beach may disturb foraging birds, but because these species are highly mobile, any effects would be temporary and minor.

The eight native species of Migratory Bird Treaty Act-protected land birds that occur on Tinian would experience nearly identical impacts as those described for native bird species in Section 4.4.3.2. In particular, the removal of up to 343 acres of vegetated habitat would result in the loss of nesting, foraging, and resting areas for these migratory bird species. This would represent a loss of 1.5 percent of the approximately 22,964 acres of vegetated habitat on Tinian. Training activity impacts to these three species would be as described in Section 4.4.3.2. All eight of these species are relatively common on Tinian, their populations have been increasing on Tinian since the 1980s, and they are able to utilize a variety of habitats on the island. Although Alternative 1 may disturb individuals of these species, such impacts would be minor and temporary, and as such would not affect the overall fitness of any population of these migratory species.

Although impacts to migratory birds are expected to be minimal, best management practices incorporated into the Proposed Action would further minimize impacts to migratory birds. Nesting bird surveys would be conducted prior to construction, and appropriate U.S. Fish and Wildlife Service-developed avoidance and minimization measures would be incorporated if Migratory Bird Treaty Act-protected bird nests were discovered. Other best management practices that would minimize impacts to migratory birds include pest control and biosecurity measures that aim to

limit introduction of non-native species, and noise abatement measures that would reduce noise from construction.

In summary, the Proposed Action under Alternative 1 is anticipated to result in less than significant impacts for all federally listed species, CNMI-listed species, and migratory birds. This NEPA conclusion is supported by the location of training and construction areas, minimal habitat loss, the abundance of other species, and the implementation of best management practices and standard operating procedures designed to reduce potential impacts. Sporadic and short-term noise from aviation and live-fire training, along with increased human presence, may induce startle responses or other temporary behavioral shifts in the Mariana common moorhen, Mariana fruit bat, and green turtle, but these impacts would be temporary and are not anticipated to jeopardize the continued existence of these species on Tinian. Endangered Species Act Section 7 determinations are pending as consultation with the U.S. Fish and Wildlife Service is occurring. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.

#### **4.4.3.4 Marine Communities**

##### **Training**

Under Alternative 1 all proposed training activities would be conducted entirely on land. However, portions of the designated surface danger zone associated with the Multi-Purpose Maneuver Range would extend over adjacent coastal waters. USMC ranges are intentionally designed to minimize the likelihood of projectiles leaving the primary target area. Data from operational assessments and range clearance programs consistently show that nearly all projectiles remain within the land-based portion of the target area. This high level of containment is the result of several safety and design measures: all weapons and ammunition used meet strict DoD standards for performance and accuracy; every operator is certified on their weapon; the firing positions and target locations are arranged to ensure rounds remain within the intended land area; and targets are constructed with materials that help reduce the chance of ricochets.

Other factors that would limit the probability of a projectile entering coastal waters would include the native vegetation surrounding the range which would act as a natural buffer, further slowing or stopping projectiles before they could reach coastal waters, and the undulating terrain of the range that would likely stop or slow down ricocheting projectiles. In the event of a ricochet, a projectile would rapidly lose speed due to air resistance, significantly reducing its potential to travel beyond the range boundary.

On rare occasions, a projectile from the Multi-Purpose Maneuver Range may travel outside the target area but still land within the surface danger zone. In the unlikely event that a projectile enters coastal waters, the risk to marine habitats would remain very low. Once a projectile enters the water, it would further lose energy and sink through the water column to settle on the sea floor. Marine mammal data confirm that marine mammal densities in the waters surrounding the CNMI are consistently low (DON 2013, 2018). Therefore, it is highly unlikely that projectiles entering coastal waters would result in impacts to marine species.

At the Explosives Training Range, all training activities would occur on land, and the associated surface danger zone is entirely land-based. All explosive materials would be consumed upon detonation and not be available in the environment for entrainment in surface runoff, providing additional protection to the marine environment. Since no in-water live-fire training occurs and

indirect impacts such as minor debris would not measurably degrade habitat or water quality, impacts to marine communities would be considered less than significant.

Because explosive detonations occur on land away from the coast, and the presence of vegetation further reduces noise transfer off the range, most of the sound energy reflects off the water's surface, and only a small portion enters the water column. This limits the transmission of airborne sound into the marine environment. Research shows that sea turtles and marine mammals have limited sensitivity to airborne noise (Bartol and Ketten 2006; Popper et al. 2014; Piniak et al. 2016), and any sound that does enter the water would be significantly reduced by the time it reaches nearshore areas. Additionally, marine species would need to be both close to the shoreline and at the surface at the exact moment of detonation to experience any notable exposure. However, marine mammal and sea turtle densities in nearshore waters around Tinian are low. Under the proposed plan, smaller explosive training events would occur about 20 times per year, with each event using a set of small charges weighing 1.25 pounds each. Larger explosive events would happen less often, only two to four times per year, and could involve up to 40 pounds of explosives in a single event. Based on this combination of sound dispersion characteristics, biological sensitivity, low animal presence, and limited training frequency, the potential for adverse impacts to marine mammals or sea turtles from airborne noise is considered highly unlikely and less than significant.

On rare occasions, potential fragments from lead bullets from small arms may enter waters of the surface danger zone. However, given the very occasional nature of ricochet or fragment escapement, it is not likely that hazardous waste or chemical contamination would impact a marine species or habitat. Any fragment would sink to the seafloor relatively quickly and would not likely be encountered by marine animals.

Proposed aviation training would involve fixed-wing, rotary, tilt-rotor, and drone aircraft. Any in-water or at-sea effects from aviation operations extending from Tinian's highwater mark towards the sea, including overflights around Tinian's coastal waters, are analyzed in and covered under the *Mariana Islands Testing and Training EIS/OEISs* (DON 2010a, 2015a, 2020) and associated consultations and authorizations. Portions of aviation training operations occurring offshore from Tinian would follow applicable operational requirements and procedures specified in the environmental or permitting documents referenced above, within the Mariana Islands Range Complex, and are not further analyzed in this Final EIS.

### **Construction**

There are no in-water construction activities proposed and no land-based construction activities that would directly impact the marine environment. The only construction activity identified as having the potential to impact marine species and habitat is the construction of two nearshore, surface radar towers to support training activities. Construction near Unai Babui would take place approximately 120 feet from the shoreline and at an elevation of 10 feet above sea level; while construction near Ushi Point would take place approximately 220 feet from the shoreline at an elevation of 36 feet above sea level.

Under Alternative 1, there would be the potential for short-term, indirect, negligible impacts to marine communities to occur from sedimentation, runoff, and potential spills during construction. Best management practices would be implemented to avoid and minimize risks to marine communities. These include erosion control measures during construction such as minimizing the

ground disturbance area and adoption of a Stormwater Pollution Prevention Plan and a Hazardous Materials Management Plan that would prevent pollution in water sources and other habitats and fueling of any equipment occurring at least 120 feet away from the water and preferably on an impervious surface. New surfaces resulting from construction under Alternative 1 would be designed to minimize surface water runoff through implementation of low-impact development and best management practices for stormwater management systems. These measures would be developed in accordance with all applicable CNMI regulations for stormwater management and water quality, including applying the principles from the *CNMI and Guam Stormwater Management Manual* (Horsley Witten Group, Inc. 2006). Refer to Appendix D for a list of all best management practices that would be implemented during the Proposed Action.

#### **4.4.3.5 Marine Special Status Species**

##### **Training and Construction**

Marine special status species (refer to Table 3.4-5) include marine mammals, sea turtles, fishes, corals, and invertebrates that may be present in the nearshore waters around Tinian. Marine mammal data confirm that marine mammal densities in the waters surrounding the CNMI are consistently low (DON 2013, 2018). Potential effects to species that primarily remain below the surface of the water, such as corals, invertebrates, and fishes including sharks and rays, would be the same as described above under Section 4.4.3.4. Given their documented occurrence within the area, green and hawksbill sea turtles presence is considered to be likely. From the MITT program's scientific field surveys and data, the Navy estimated the year-round density of green and hawksbill sea turtles, which was higher within nearshore waters around Tinian and lower in offshore waters. For marine mammals, scientific field surveys from the MITT program documented that most large whales and dolphins occur in deeper waters offshore. Humpback whales may be present at low densities during their breeding season only.

On rare occasions that a projectile may enter the coastal waters, the risk of ingestion to marine species including individual fish, mammals, or turtles that may be present in the area remains very low. Any fragment would sink to the seafloor relatively quickly, and would not likely be encountered by marine animals. This would make harm from ingestion to marine life highly unlikely in the rare event that a projectile could enter the water during training activities.

On rare occasions that a projectile may enter the coastal waters, the risk of a direct strike to marine species including individual fish, mammals, or turtles that may be present in the area remains very low. A projectile would travel only a few feet underwater before losing energy entirely and sinking to the bottom very quickly. In addition, considering the large geographic area over which a fragment may enter water, the low expected densities of marine mammals in the area, and the low likelihood of an animal being at the surface of the water at the very moment that the fragment strikes the water, strikes are extremely unlikely to occur and are thus discountable.

##### *Marine Protected Areas*

The only Marine Protected Area identified for Tinian is located along the southeast coast of the island, which is well outside of the Military Lease Area and remote from any proposed military training. Therefore, the proposed training and construction activities would not harm the natural or cultural resources that are protected within this Marine Protected Area.

### *Essential Fish Habitat*

Potential impacts to Essential Fish Habitat from both training and construction would be the same as described under Section 4.4.3.4 Marine Communities. Alternative 1 would incorporate best management practices, standard operating procedures, and other measures to avoid or minimize impacts to marine resources and its crucial components, such as Essential Fish Habitat. These measures include erosion control measures during construction such as minimizing the ground disturbance area and adoption of a Stormwater Pollution Prevention Plan and a Hazardous Materials Management Plan that would prevent pollution in water sources and other habitats and fueling of any equipment occurring at least 120 feet away from the water and preferably on an impervious surface. New surfaces resulting from construction under Alternative 1 would be designed to minimize surface water runoff through implementation of low-impact development and best management practices for stormwater management systems. These measures would be developed in accordance with all applicable CNMI regulations for stormwater management and water quality, including applying the principles from the *CNMI and Guam Stormwater Management Manual* (Horsley Witten Group, Inc. 2006). Refer to Appendix D for a list of all best management practices that would be implemented during the Proposed Action. Therefore, potential adverse impacts would be minimal and temporary on water column and substrate Bottomfish Essential Fish Habitat and water column Pelagic Essential Fish Habitat. Bottomfish and Pelagic Habitat Areas of Potential Concern are outside the Action Area and would thus not be impacted. The USMC is consulting with the National Marine Fisheries Services on potential impacts to essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act. The consultation will be complete and incorporated, as appropriate, into the Record of Decision.

#### **4.4.4 Alternative 2**

Under Alternative 2, impacts associated with construction would be very similar to those described under Alternative 1. Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent, compared to a 15 percent increase under Alternative 1. The types of impacts to both terrestrial and marine biological resources from training events would remain the same under Alternative 2. However, the decreased training tempo would reduce the frequency of temporary impacts (e.g., noise and visual impacts associated with human, vehicular, and aircraft presence) to both terrestrial and marine biological resources, specifically wildlife species or marine special status species. Therefore, impacts to biological resources from Alternative 2 would be less than significant.

### **4.5 Cultural Resources**

#### **4.5.1 Approach to Analysis**

This analysis considers the impacts of the Proposed Action to cultural resources. Cultural resources include historic properties that are eligible for the National Register of Historic Places and other cultural resources that are not eligible for the National Register of Historic Places but still hold traditional, religious, or cultural importance to the community, such as cemeteries, memorials, and places for growing and/or gathering medicinal plants as discussed in both the Socioeconomics and Biological Resources sections. NEPA incorporates the National Historic Preservation Act analysis

of potential effects on historic properties as part of the evaluation of environmental consequences while also addressing environmental impacts to other categories of cultural resources.

NEPA and the National Historic Preservation Act are separate statutes that evaluate and address impacts differently. For example, the effects of an undertaking on a historic property can be adverse under the National Historic Preservation Act's Section 106 without triggering a determination of significant impacts for a Proposed Action under NEPA. Under Section 106, adverse effects to historic properties must be resolved through measures that avoid, minimize, or mitigate effects. Under NEPA, potential impacts can also be mitigated through avoiding, minimizing, or reducing impacts.

Impacts to cultural resources can occur both directly and indirectly, and result in the loss of character-defining features and/or aspects of integrity that convey a resource's significance. If the impact comes from the action at the same time and place with no intervening cause, it is considered direct regardless of its specific type (e.g., whether it is visual, physical, auditory). Indirect impacts are those caused by the action that are later in time or farther removed in distance but are still reasonably foreseeable. The assessment of impacts to cultural resources is based on the following considerations:

- 1) physically altering, damaging, or destroying all or part of a resource;
- 2) altering characteristics of the surrounding environment that contribute to a resource's significance;
- 3) introducing visual or audible elements that are out of character with the resource or that alter its setting;
- 4) neglecting the resource to the extent that it deteriorates or is destroyed; or
- 5) limiting access to resources and sacred sites where such access is currently available and important.

Additionally, Section 110(f) of the National Historic Preservation Act gives special consideration to National Historic Landmarks by requiring federal agencies, to the maximum extent possible, to minimize harm to any National Historic Landmark that may be directly and adversely impacted by an action. The Tinian Landing Beaches, Ushi Point Field, and the Tinian Island National Historic Landmark (hereafter called North Field National Historic Landmark) is within the area of potential effect. In accordance with Section 110(f), the USMC is, to the maximum extent possible, minimizing harm to the North Field National Historic Landmark from the Proposed Action.

### **Section 106 Consultation**

Consistent with the National Historic Preservation Act, the USMC is conducting consultation on the Proposed Action with the CNMI Historic Preservation Officer, the National Park Service, the Municipality of Tinian, and the Advisory Council on Historic Preservation. The USMC initiated consultation in August 2023. The consultation included six in-person consultation meetings with the consulting parties through February 2025 to identify cultural resources, potential effects, and measures to avoid, minimize, and mitigate adverse effects to historic properties. Additionally, as part of this process, the USMC provided information and solicited input from the public in January 2024 to identify potentially affected cultural resources and again in tandem with the public comment period for this EIS in June 2025, which specifically requested feedback on the USMC's assessment of effects and proposed mitigation.

This consultation resulted in two documents that meet the USMC's Section 106 requirements. The first is an amendment to the 2022 Mariana Islands Testing and Training Programmatic Agreement that extends the coverage of ground training throughout the Military Lease Area and includes new live-fire training at the Multi-Purpose Maneuver Range and Explosives Training Range. The second is a programmatic agreement that covers the construction elements of the Proposed Action and includes alternate Section 106 procedures for those portions of the Proposed Action that could not be assessed for effects as well as those that may require modifications (Appendix H). Both programmatic agreements stipulate mitigations to avoid, minimize, or mitigate adverse effects. Minimization measures include limiting vehicle use to roadways, designating discrete training areas to allow for public access when compatible with training, and archaeological monitoring for ground disturbing activities. Additional minimization measures include cultural resources training for all personnel associated with training and construction activities, and painting of the surface radar towers and water tanks located south of the Multi-Purpose Maneuver Range to blend in with the surrounding landscape. Mitigation measures to resolve adverse effects include providing interpretive signage, a virtual tour focusing on the North Field National Historic Landmark and its contributing resources, an interpretive pamphlet on Chamorro history and culture, and a plan to develop an interpretive center on Tinian to display recovered artifacts. While the preference is to avoid and preserve in place, data recovery and recordation methods would be implemented when adverse effects to character-defining features are unavoidable.

#### **4.5.2 No Action Alternative**

Under the No Action Alternative, ground and aviation training would continue on lands in the Military Lease Area at the same tempos as evaluated in previous NEPA documents (DON 2010a, 2015b) and associated consultations. In addition, construction associated with the U.S. Air Force Divert project (U.S. Air Force 2016, 2020) would continue until complete, which is estimated to be by 2026. As part of a separate action, the U.S. Air Force would also conduct clearing of runways, aprons, and taxiways within the North Field National Historic Landmark. No other changes would occur under the No Action Alternative. Therefore, there would be no impact on cultural resources.

#### **4.5.3 Alternative 1**

##### **4.5.3.1 Training**

Alternative 1 includes potential impacts related to land-based training events (aviation and ground) and operations and maintenance (biosecurity activities, road transit, and vegetation clearing). Nearly all of the historic properties listed in Appendix H are situated where non-live-fire training would occur within the Military Lease Area. The USMC proposes to divide the Military Lease Area into eight smaller training areas that can be used individually or in groups, as required, to control public access and maintain a safe separation of the public from certain training activities. This dynamic training environment would allow for areas to remain safely open for public access while training is occurring. The USMC also plans to re-utilize runway Baker in a manner consistent with its historic nature while meeting the military need. This approach for the Proposed Action meets the Secretary of the Interior's Standards for Rehabilitation of historic properties as defined in 36 C.F.R. 68.3(b), "making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."

In addition, the number of activities proposed to occur within the North Field National Historic Landmark have been reduced significantly from the previous iteration of the Proposed Action, in part as a response to the recommendations of the 2016 National Park Service's Section 213 report. The USMC redeveloped the training concept in order to effectively minimize harm, as required by Section 110(f) of the National Historic Preservation Act. As a result, the Proposed Action evaluated in this EIS would result in less widespread limitations to public access across the Military Lease Area by proposing locations for the two live-fire ranges that minimize public access restrictions affecting the North Field National Historic Landmark, removing high hazard impact areas, eliminating new amphibious training, and reducing construction within the North Field National Historic Landmark, among other factors.

### **Non-Live-Fire Training**

Non-live-fire training, both ground and aviation, and associated ongoing operations (biosecurity, road transits, and vegetation clearing required to maintain the ranges and other training infrastructure in order to support continuing military training) currently occur within the Military Lease Area. The potential for impacts to cultural resources from non-live-fire ground training activities would be limited to air and surface activities, to include foot traffic and vehicle use. To minimize impacts to cultural resources, air and vehicular activities including biosecurity, and road transits, would be limited to established paved and unpaved roadways and airfield infrastructure (i.e., runways, aprons, and taxiways), with pedestrian training allowed in unimproved areas. Maintenance would include vegetation clearing along roads, live-fire ranges, Landing Zones, the North Field runways and a drop zone between runways Able and Charlie, and other components related to training, as needed. Vegetation clearing would not include discing or subsurface disturbance. Several proposed no training areas also prevent training impacts from occurring in these areas (refer to Figure 2.1-3). Alternative 1 would increase the tempo of existing ground and aviation training activities by approximately 15 percent above current levels, but would not change the type of training activities previously addressed by the 2022 *Mariana Islands Testing and Training Programmatic Agreement*. As described above, based on the nature of these training activities, less than significant impacts to cultural resources would result from implementation of Alternative 1. The potential for impacts would be further reduced through the application of avoidance measures included in the amendment to the 2022 training programmatic agreement.

### **Live-Fire Training**

Proposed Live-fire training at two new ranges, the Multi-Purpose Maneuver Range and Explosives Training Range, represent new activities that are part of this Proposed Action. A surface danger zone would become activated during live-fire training at either range and explosive safety quantity distance arcs would be activated when ammunition is temporarily staged at an ammunition holding area during training events (refer to Section 2.1.6 Live-Fire Range Safety Areas and Section 2.1.7 Ammunition Holding Areas). When activated, temporary access restrictions would apply within these designated areas to ensure safe separation from the public. The Multi-Purpose Maneuver Range is aligned so that the proposed surface danger zone would not overlay the North Field National Historic Landmark and its contributing features like the Atomic Bomb Loading Pits - thus these areas could be open to public access during live-fire training. Additionally, the overall size of the surface danger zone would vary based on the type of ammunition in use, so the smallest

surface danger zone corresponding to the ammunition could be activated to further minimize the area where temporary restrictions would apply during live-fire training events.

Even though the location and operational design of the Multi-Purpose Maneuver Range minimizes the area where temporary restrictions would apply, the surface danger zone does overlap other cultural resources. However, several factors would further minimize potential effects to the character-defining features of these cultural resources should projectiles miss their targets and/or ricochet outside the boundary of the Multi-Purpose Maneuver Range to fall within the surface danger zone. These include: limiting the amount of vegetation clearing and ground disturbance within the boundary of the Multi-Purpose Maneuver Range; using small-sized ammunition; and directing ammunition use towards the designated targets within specific objective areas. On rare occasions, a projectile from the Multi-Purpose Maneuver Range may travel outside the target area but still land within the surface danger zone. In the unlikely event that a projectile enters coastal waters, the risk to cultural resources would remain very low. Specifically, after ricocheting, a bullet is deformed and loses considerable amount of velocity through air resistance. Due to this loss of energy, a cultural resource would have to be at or near the point of projectile impact to cause a measurable effect. Once a projectile enters the water, it would further lose energy and sink through the water column to settle on the sea floor. Therefore, it is unlikely that projectiles entering coastal waters would result in impacts to cultural resources. In the case of the Explosives Training Range, construction of the range itself would result in the removal of several contributing features within the associated cultural resource (see Section 4.5.3.2 below), thereby eliminating any potential impacts to the associated cultural resources from the training within the range itself. The overall size of the Explosives Training Range (1 hectare [2.5 acres]), combined with the size of the ammunition and the distance from the range boundary, where the proposed detonations would occur, would result in a very low likelihood that ricocheted materials would reach the surface danger zone.

Operational changes associated with the Proposed Action may introduce temporary noise and vibrations with the potential to impact cultural resources. Yet given the type of cultural resources and noise measurements, as described in Section 4.8 and illustrated in Table 4.8.5, noise and vibrations are not expected to impact cultural resources. Broadly, very high noise and vibration levels can, in extreme cases, cause physical impact to certain resource types while less intense noise levels can also impact resources, such as traditional cultural places, by altering their setting. According to a 2010 study of noise and vibration impacts to historic structures, the peak decibels where impacts occur to glass and plaster is 134 peak decibels (Naval Surface Warfare Center 2010). At 175 peak decibels, structural damage to lightweight superstructures such as wood, light-gauge steel, or composites is experienced. The type of cultural resources on Tinian are predominantly constructed of metal or concrete and do not fall under the material categories where noise and vibrations up to 140 peak decibels cause damage (refer to Section 4.8.1 for a description of the noise modeling and metrics used for the impact analysis). Even the Atomic Bomb Loading Pits, which are enclosed in glass panels, would experience 124 peak decibels from the Multi-Purpose Maneuver Range and 119 peak decibels from the Explosives Training Range, both of which are under the 134 peak decibels where glass cracks in a worst-case scenario. The proposed Explosive Training Range is located approximately 2,150 meters (7,050 feet) south of the National Historic Landmark and approximately 1,765 meters (5,790 feet) from the closest traditional cultural place. As shown in the noise analysis within Section 4.8 (see Table 4.8-5 and Figures 4.8-

1 through 4.8-5), noise decibels at these locations would be temporary, occurring intermittently and lasting for a fraction of a second, and each of approximately 130 peak decibels, which is equivalent to or less than a balloon popping 3 feet away. Due to the physical distance from cultural resources, the Explosive Training Range will not cause physical, visual, or audible impacts to these sites. The type and size of ammunition or explosives proposed for live-fire training is not large enough to produce strong noise and vibrations to impact cultural resources. Therefore, there would be less than significant impacts to cultural resources from live-fire training.

### **Public Access**

Public access within the area of potential effects would be limited during some training events, as required to preserve public safety. The proposed range design has considered the importance of public access to cultural resources, including the North Field National Historic Landmark and three identified traditional cultural places. To minimize effects, several key range components were sited in areas to lessen access restrictions. For example, the Multi-Purpose Maneuver Range surface danger zone originally overlapped the North Field National Historic Landmark Atomic Bomb Loading Pits. The placement of the range was redesigned so the surface danger zone would not overlap this feature, thereby lessening access restrictions that would apply to the North Field National Historic Landmark when live-fire training occurs. Additionally, as described earlier in this section, the area of potential effects would be divided into eight distinct training areas that can be closed individually or in groups as required to preserve public safety from certain training activities. This allows for the remainder of the training areas to remain safely open to the public even while training activities may be occurring. An on-island Range Control office would actively engage with the CNMI and Municipality of Tinian to avoid scheduling training on holidays, festivals, or other important days when public access within the Military Lease Area is desired. Range Control would provide notification to the public in advance of training that requires temporary access controls to maintain safety. These notifications would include information on the dates, times, and locations of planned closures so the public can plan to access areas within the Military Lease Area accordingly. Thus, access limitations to cultural resources of community and public importance would be temporary and minimal, and the above measures would further minimize potential impacts from training. As a result of additional avoidance and minimization efforts described above, impacts to cultural resources would be less than significant under Alternative 1. The potential for impacts would be further reduced through interpretive mitigation measures included in the construction programmatic agreement, especially the virtual tour, which would provide the community and visitors with an additional way to learn and engage with the cultural resources.

#### **4.5.3.2 Construction**

To avoid impacting cultural resources, the USMC has sited construction components to avoid locations where cultural resources or contributing features are present. When impacts could not be avoided, locations were selected in areas containing the least amount of known cultural resources or contributing features in order to minimize impacts. The potential for direct impacts from construction activities may include ground disturbance (i.e., excavating, filling, grubbing), vegetation removal, vibrations from the use of construction equipment, or changes in setting through visual and audible intrusions to characteristics that are important to the significance of the cultural resources. There are aspects of the Proposed Action that would necessitate an assessment

of effects under alternate Section 106 procedures when designs are finalized. These alternate procedures are included in the construction programmatic agreement and the activities include collaborative and conservation efforts with the CNMI and Municipality of Tinian such as firefighting and security, and the installation of water wells to support the expeditionary Base Camp.

Other types of activities that would continue after the construction of the Proposed Action components are complete would include ongoing operations and maintenance needed to maintain the range complex and Proposed Action components to support continued training throughout the Military Lease Area. This includes activities related to biosecurity, road transits, and vegetation clearing. Transportation of military personnel and equipment prior to the start and at the conclusion of training events would use transportation routes from the points of entry at the Port of Tinian, TNI, or North Field, to reach training areas within the Military Lease Area. Transit would occur on existing or new roads established under the Proposed Action. No vehicle transit would occur off-road, either in association with or during training events. Maintenance vegetation clearing within the Military Lease Area would occur as needed to maintain access and the function of the training infrastructure (e.g., along paved and unpaved roads, Landing Zones, the North Field drop zone). Vegetation clearing would occur using hand or surface mechanical clearing only and would not include discing or subsurface disturbance. Vegetation clearing would visually restore the setting and feeling of cultural resources for which the character-defining features' related historic period is associated with widespread development and clearing. In other areas, vegetation would be left in place to screen construction activities. These types of operations and maintenance activities would not result in adverse physical, visual, or noise effects and would result in less than significant impacts to cultural resources.

Construction of the following Proposed Action components overlay one or more cultural resources but have been sited or would be designed to avoid impacts:

- The proposed location for the aircraft shelter is within an already disturbed portion of the U.S. Air Force's Divert lease area adjacent to TNI.
- The biosecurity facility at the Port of Tinian would be constructed on existing engineered surfaces, avoiding adjacent cultural resources.
- Facilities within the USAGM Tinian site would be reused to support Base Camp functions, including associated communication towers on both the USAGM Tinian and Saipan sites. New construction to install utilities, including a water storage tank, and to create the ammunition holding area within the USAGM Tinian site (AHA 2), would occur on previously disturbed land.
- Landing Zones 1 to 8 and 10 to 12 as well as the drop zone at North Field between runways Able and Charlie would require vegetation to be cleared and maintained.
- AM2 matting temporary airfield surface on Runway Baker at North Field National Historic Landmark would be placed over the runway and provides protection for the underlying surface—stakes to secure the matting would be placed within the associated engineered surface, but off the original runway surface, thereby not impacting this North Field National Historic Landmark contributing feature.

- Proposed water wells and tanks installed just south of the Multi-Purpose Maneuver Range in an area that is located within the most northeastern edge of the North Field National Historic Landmark boundary would be designed to have a low profile and mostly screened by existing vegetation as well as painted an inconspicuous color to blend in with the surrounding landscape.
- Utility lines (i.e., electrical, communication, and water) would be installed along either side of existing roadways in previously disturbed areas.

The construction of the Proposed Action components described above would not visually intrude on cultural resources given each project's small size relative to the existing expansive vegetation in the Military Lease Area and the lack of nearby character-defining features. Noise from construction equipment would be temporary and would not impact the setting and feeling or cause visual or physical damage to any of these resources from vibrations. Thus, impacts to cultural resources from the construction of these components would result in less than significant impacts to cultural resources under Alternative 1.

Construction of other training infrastructure would directly impact cultural resources. One cultural resource would be impacted by construction of the Multi-Purpose Maneuver Range, Landing Zone 13, and an ammunition holding area (AHA 1), the latter of which are located just south of the proposed range. The affected cultural resource is associated with the American Administration (World War II) period and includes remnant features such as concrete pads, ditches, and roads. Cultural surveys have identified many contributing features throughout the area covered by these three Proposed Action components. However, the overall impact from construction to the cultural resource would be less than significant as the area of disturbance would be minimal compared to the overall scale of the cultural resource. Only a small amount of vegetation would be cleared, representing approximately 13.5 percent of the total acreage within the Multi-Purpose Maneuver Range boundary. Across the disturbance area for the three components, only a small number of contributing features would be removed while many would be avoided.

Similarly, Landing Zone 9 overlays a small portion of a cultural resource associated with both American (World War II) and Japanese Administration (agriculture) periods. This cultural resource spans 163 hectares (403 acres) with over 250 contributing features, including large depressions, roads, earthen enclosures, berms, metal buildings, and a trench. There are 21 known contributing features within Landing Zone 9 that would be impacted by vegetation clearing and ground disturbance from the installation of temporary AM2 matting. However, the Landing Zone area comprises approximately 8 percent of the resource's total land area, and the removal of 21 features is relatively minor and would not diminish the resource's integrity or ability to convey its significance considering that it contains several hundred contributing features.

The Explosives Training Range is sited within one very large cultural resource that measures 170 hectares (420 acres) and is associated with the Japanese Administrative (agriculture) period. A cultural survey identified two cultural resource contributing features within the proposed range area—a concrete cistern and a dump with equipment and vehicle parts. Construction would result in the removal of these two features. The entire 1 hectare (2.5 acre) range footprint, however, comprises less than 1 percent of the expansive cultural resource site and would not adversely affect character-defining the features of the cultural resource.

Once construction is complete, the components described above (i.e., Multi-Purpose Maneuver Range, Landing Zones 9 and 13, ammunition holding area 1, and the Explosives Training Range) would have relatively low height profiles compared to adjacent vegetation, which would serve as a screen from most directions. Equipment used in the construction of these components would result in temporarily increased noise levels from the operation of machinery. However, there would be no visual or physical impacts to the setting and feeling or damage from vibrations to any cultural resources overlaid by the project components described above. Thus, despite the loss of some contributing features, the overall impact to these cultural resources would be less than significant. Impacts would be further reduced through the implementation of data recovery and recordation as stipulated within the construction programmatic agreement.

Surface radar tower 1 is situated within the southern edge of a cultural resource that measures 21 hectares (51 acres) and is associated with the Pre-contact period. Cultural surveys have recorded this area as disturbed, with surface scattered material and subsurface deposits identified closer to the middle of the cultural resource. The proposed location of surface radar tower 1 is also within the North Field National Historic Landmark, situated on the outskirts of the district's western boundary between Unai Babui and Unai Chulu. However, the proposed location for surface radar tower 1 does not overlap any known contributing features but would result in a visual adverse effect to the National Historic Landmark. Separately, the proposed location for surface radar tower 1 was also assessed for impacts to Unai Chulu, a traditional cultural place. The distance of the tower from the beach and presence of prevalent vegetation would negate any visual impact to the feeling or setting of this cultural resource, even though the tower would be located at a higher elevation than Unai Chulu. The presence of a new structure in this location, even when painted to blend in with the surroundings, would represent an adverse effect on the National Historic Landmark even though the overall impact to the cultural resource would remain less than significant for the reasons provided above.

The location of surface radar tower 2 is proposed within the boundary of a small cultural resource that measures 0.27 hectare (0.67 acre) at Puntan Taddong (also known as Ushi Point). The cultural resource is a remnant concrete pad associated with the American Administrative period. The proposed location is approximately 110 feet southwest of the Ushi Point Fisherman's Memorial and would be constructed on or near the remnant concrete pad. The tower would be set back from the northern tip of the point so it would not impede or affect the ocean view from the memorial. The reuse of the concrete pad is consistent with its historical use and the tower would be painted to blend in with the surrounding landscape. The presence of a new structure in this location would not visually affect cultural resources, but the physical construction on top of the American Administration cultural resource would cause adverse effects. The overall impact from the construction of surface radar tower 2 to the cultural resource, however, would remain less than significant because it is a historically consistent re-use and the tower would be painted to blend in with the surroundings. The interpretive measures stipulated in the construction programmatic agreement, like the virtual tour, would serve to further lessen these impacts in addition to the minimization and avoidance efforts already described in the siting and design of surface radar towers 1 and 2. Therefore, the construction of surface radar towers 1 and 2 would result in overall less than significant impacts to cultural resources.

Collectively, the proposed location and design of the Proposed Action components described above considered ways to avoid or minimize impacts to known cultural resources and their

contributing features (i.e., would be painted to blend in with the surrounding environment and/or concealed by existing vegetation). Further, mitigation stipulated in the construction programmatic agreement would seek to recover or record features that cannot be preserved in place to provide the community and public with interpretive tools that preserve the cultural importance of these resources. In total, construction efforts associated with the Proposed Action under Alternative 1 would result in less than significant impacts to cultural resources, and the implementation of avoidance, minimization, and mitigation measures, as referenced, would further ensure that impacts to cultural resources remain less than significant.

#### 4.5.4 Alternative 2

Under Alternative 2, training would continue and increase over the No Action Alternative by approximately 5 percent, but this would represent a reduced tempo, approximately 10 percent less, than proposed training increases considered under Alternative 1. Impacts to cultural resources from training would be similar to those described under Alternative 1, as the types of impacts to cultural resources, namely foot traffic, would remain the same under Alternative 2. This training would occur across the broad landscape of the Military Lease Area and, given the types of cultural resources present as described under Alternative 1, would not degrade or impact character-defining features. The 5 percent increase in the frequency of temporary impacts (e.g., noise and visual impacts associated with human, vehicle, and aircraft presence) to cultural resources and particularly from public access controls to maintain safe separation during certain training activities (e.g., live-fire training at the Multi-Purpose Maneuver Range and Explosives Training Range) would remain similar to but less than those described for Alternative 1, but would not change the type of training activities previously addressed by the 2022 *Mariana Islands Testing and Training Programmatic Agreement*. Construction for Alternative 2 would be the same as described for Alternative 1 and would result in the same overall less than significant impact on cultural resources. Implementation of avoidance, minimization, and mitigation measures, as referenced in the construction programmatic agreement, would further ensure that impacts to cultural resources would remain less than significant under Alternative 2.

## 4.6 Visual Resources

### 4.6.1 Approach to Analysis

The analysis of impacts to visual resources considers changes to the visual conditions such as visual quality and viewer experience that could occur because of the Proposed Action. The analysis of visual impacts is based on the methodologies described in the National Park Service's *Guide to Evaluating Visual Impact Assessments for Renewable Energy Projects* (National Park Service 2014) and *Documenting America's Scenic Treasures: The National Park Service Resource Inventory* (Sullivan and Meyer 2016).

Five specific key observation points on Tinian (Figure 4.6-1) were selected from the seventeen viewpoints identified in Section 3.6 as representative locations for the development of visual simulations.

The following procedures were followed in selecting the key observation points:

1. Conduct a viewshed analysis that considers elevation, topography, and vegetative cover to determine the potential visibility from nearby lands. The viewshed analysis identifies areas with potential views of the Proposed Action, including sensitive scenic and cultural

resources, and roads, trails, scenic overlooks, and beaches that may be visually impacted by the Proposed Action. This analysis resulted in the selection of specific viewpoints.

2. Establish and conduct field photography of selected viewpoints. The selected viewpoints represent specific well-known places, thoroughfares (e.g., Broadway), and views or scenic overlooks (e.g., beaches and Mount Lasso) that people are accustomed to seeing as part of the general landscape.
3. Assess the existing landscape from the viewpoints identified by evaluating form (i.e., mass or shape of an object), line (i.e., ridges, skylines, edges of waterbodies, change in vegetation type), color, and texture (i.e., light and shadow created by the variations in the surface of a landscape) of both natural and human-made elements. Other factors considered when assessing the existing landscape include scale, dominance, and extent of view (enclosed versus panoramic).
4. Prepare photo simulations of the primary elements of each action alternative from the selected viewpoints that show before-action and after-action views.

Construction activities, such as the operation of equipment and machinery, may contrast with the existing landscape and can draw the viewer's attention toward the construction location. Visual effects for short-term construction activities change frequently in terms of locations. Long-term visual effects are permanent changes to the visual characteristics of the site. In this context, those effects are addressed as operational impacts. The degree to which each proposed alternative permanently impacts views in terms of visual contrast was determined based on the definitions in Table 4.6-1.



Figure 4.6-1 Key Observation Points Selected for Visual Simulations

**Table 4.6-1 Degree of Visual Contrast and Corresponding Impact Defined**

<i>Degree of Visual Contrast</i>	<i>Corresponding Impact</i>	<i>Definition</i>
None	No Impact	The element contrast is not visible or perceived.
Weak	Less Than Significant	The element contrast can be seen but does not diminish the scenic quality of the landscape and is not substantially noticeable when viewed from sensitive viewpoints.
Minor	Less Than Significant	The element contrast can be seen, diminishes the scenic quality of the landscape to a minimal degree, and is potentially noticeable when viewed from sensitive viewpoints.
Moderate	Less Than Significant	The element contrast begins to attract attention, begins to dominate the characteristic landscape, begins to diminish the scenic quality of the landscape, and would easily be noticeable from sensitive viewpoints.
High	Significant	The element contrast begins to attract attention, begins to dominate the characteristic landscape, diminishes the scenic quality of the landscape, and would easily be noticeable from sensitive viewpoints. View importance may vary from high to low.
Strong	Significant	The element contrast demands attention, substantially alters the scenic value of the landscape, and dominates views from sensitive viewpoints.

Source: National Park Service 2014, 2016.

#### **4.6.2 No Action Alternative**

Under the No Action Alternative, there would be no change to ground and aviation training, which would be conducted at the same tempo as evaluated in previous NEPA documents (DON 2010a, 2015b) and associated consultations and authorizations. Construction associated with the U.S. Air Force Divert project (U.S. Air Force 2016, 2020) would continue until complete, estimated by 2026, when the new infrastructure and facilities at TNI would become operational. Additionally, projects under the U.S. Air Force’s Agile Combat Employment program would also continue, with the clearance of vegetation and restoration of the runway and other engineered surfaces at North Field. As a result, North Field would have the appearance of a working airfield, with better maintained surfaces and less dense jungle vegetation in and around the immediate runway areas. The No Action Alternative would not change the visual environment at most of the Key Observation Points selected for analysis. The clearing and re-establishment of runways and taxiways at North Field would be a beneficial impact at Key Observation Points near North Field.

#### **4.6.3 Alternative 1 and Alternative 2**

The analysis of visual resources is structured differently from other resources in Chapter 4 by considering training events and construction together. Alternative 1 and Alternative 2 training differ only in tempo, not visual perspective, and both alternatives share the same construction of facilities. Alternative 1 training would increase over the No Action Alternative by approximately 15 percent. Alternative 2 training would increase over the No Action Alternative by approximately

5 percent. As a result, both Alternative 1 and Alternative 2 rely on the same viewpoints identified in Section 3.6 Visual Resources (Figure 3.6-1) and would have the same effects.

As stated above, the selected viewpoints represent specific well-known places, thoroughfares, and views and scenic overlooks that people are accustomed to seeing as part of the general landscape. In selecting viewpoints where Proposed Action components would be located, this analysis considered the potential number of viewers, frequency and duration of views, activities in which the viewers are engaged while viewing the landscape, the importance of scenic quality to these activities, viewer familiarity with the landscape, and viewer concerns for the landscape.



Comparison of the aesthetic character of each selected viewpoint with and without implementation of the Proposed Action allows for analysis of the resulting visual change. Table 4.6-2 shows the Tinian existing conditions (“before” picture taken in April 2023) compared with future conditions (“after” simulated picture), and summarizes the potential visual impacts based on simulated conditions. Appendix I, *Visual Simulations*, provides the results of visual simulations for each of the selected Key Observation Points.

Training and support infrastructure would include night lighting at the following locations: Base Camp main gate; Base Camp approach from 8th Avenue to the guard shack and fence line; entry gates to water wells; and entry gates to surface radar sites. All lighting would be rated to limit light trespass in order minimize the potential for the new lighting to impair night sky viewing.


Regarding an aerial view of North Field, project components would be visible from passing aircraft. The Proposed Action would be consistent with North Field’s historical military use and its historical significance, which saw considerably more development and vegetation clearing, resulting in a less than significant impact.

The USAGM Saipan site would continue to be used as a tower site for communication. This site is excluded from the following analysis as the Proposed Action at USAGM Saipan involves only small upgrades to existing communication equipment on existing towers. No new training or major construction activities are planned for this location. Therefore, there would be no impact to visual resources at the USAGM Saipan site.

**Table 4.6-2 Evaluation of Proposed Action on Tinian Based on Visual Simulations**

<i>Selected Viewpoint</i>	<i>Potential Visual Impact</i>
<p>6: Unai Chulu, Looking North/Northeast</p>	<p><b>Training.</b> Training activities under Alternative 1 and 2 in this area would remain similar to existing training but would occur more frequently and include vehicle use of roadways and other improved surfaces with foot maneuver and pedestrian transits on unimproved surfaces with no ground disturbance. However, at this viewpoint the facilities would be blocked by foliage and not visible. Therefore, there would be less than significant impacts to visual resources.</p> <p><b>Construction.</b> Temporary construction activities and equipment, fencing, and cleared areas, and the construction of surface radar towers 1 and 2 would not be visible due to intervening dense vegetation. There would be no impact to visual resources.</p>  <p><b>Existing Conditions</b></p>  <p><b>Simulated Conditions</b></p>

<i>Selected Viewpoint</i>	<i>Potential Visual Impact</i>
<p>7: Ushi Point at the Road, Looking North</p>	<p><b>Training.</b> Training activities under Alternative 1 and 2 in this area would remain similar to existing training but would occur more frequently and include foot maneuver and pedestrian transits by small units, and surveillance activities from concealed observation points with no ground disturbance. Thus, there would be less than significant impacts to visual resources.</p> <p><b>Construction.</b> Temporary construction activities and equipment, and the construction of surface radar tower 2 located at the end of the roadway leading to Ushi Point would be visible. A lookout and navigational aids have historically been located at Ushi Point and smaller structures are present at this location. The new surface radar tower 2 would introduce a larger profile of vertical and horizontal lines, and new/contrasting colors into the middle-ground of the viewshed for visitors driving to Ushi Point, but it would not present a visual barrier blocking or otherwise obscuring the view. The cleared areas, new fencing and equipment shelter would also add new/contrasting colors to the landscape in the middle-ground that would be visible to visitors. The structures would not be predominantly visible to visitors at the Ushi Point Fisherman’s Memorial looking toward the ocean, but the existing scenic value of the landscape would be altered. Minimization measures such as painting the structure using a color palette consistent with existing landscape would serve to reduce these impacts. Therefore, there would be a less than significant impacts on visual resources.</p> <p>Existing and simulated conditions photos are shown on the following page.</p>

<i>Selected Viewpoint</i>	<i>Potential Visual Impact</i>
7: Ushi Point at the Road, Looking North (continued)	 <p>The top photograph, labeled 'Existing Conditions', shows a dirt road leading through a field of tall grass and brush towards a distant horizon under a blue sky with white clouds. A few palm trees are visible on the left side of the road.</p> <p>The bottom photograph, labeled 'Simulated Conditions', shows the same dirt road and field. In the background, a fenced-in area contains a green building and a tall, metal lattice tower, which are not present in the existing conditions photo.</p>

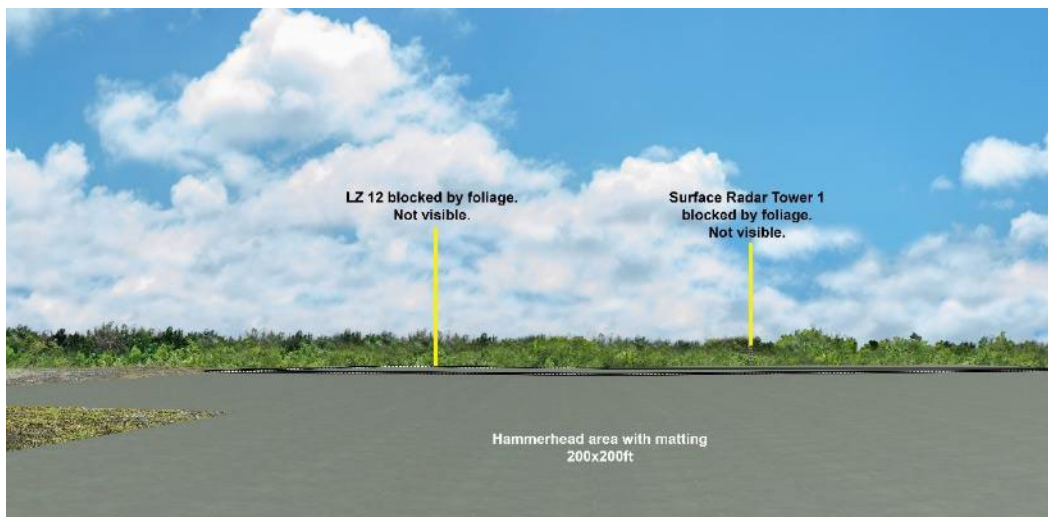
**Training.** Training activities under Alternative 1 and 2 in this area would remain similar to existing training but would occur more frequently and include vehicle use of roadways and other improved surfaces with foot maneuver and pedestrian transits on unimproved surfaces with no ground disturbance. Thus, there would be less than significant impacts to visual resources.

**Construction.** Temporary construction activities and equipment, and the construction of surface radar tower 1 and clearing for Landing Zone 12 would occur. However, from this viewpoint, neither element would be visible due to intervening vegetation, distance, and the elevation at which they would be constructed (about 2,800 feet away and at a lower elevation than runway Baker). Additionally, a deployable metal matting surface would be installed on runway Baker which would have a slatted or brickwork pattern and be coated with a neutral-colored non-skid epoxy. Vegetation in cleared zones would be maintained at a height between 7 and 14 inches, extending about 500 feet from either end of the runway. These alterations would be consistent with the setting and feeling of the runway while protecting the existing runway surface below the metal matting. Thus, construction of the runway Baker improvements would be a less than significant impact.



11a: End of Runway Baker, Looking West





Existing Conditions



Simulated Conditions

<i>Selected Viewpoint</i>	<i>Potential Visual Impact</i>
<p>11b: Center of Runway Baker, Looking West</p>	<p><b>Training.</b> During airfield training, the public would be restricted from accessing runway Baker. Therefore, there would be no impacts to public visual resources.</p> <p><b>Construction.</b> A deployable metal matting surface would be installed on runway Baker, including at the end of the runway termed a hammerhead. The matting is an aluminum plank surface, assembled by hand in a brickwork pattern to form runways, taxiways, or aircraft aprons, and typically coated with grey non-skid epoxy. Vegetation in clear zones would be maintained at a height between 7 and 14 inches, extending about 500 feet from either end of the runway. These alterations would be consistent with the setting and feeling of the runway while protecting the existing runway. Thus, construction of the runway Baker improvements would be a less than significant visual impact.</p>  <p><b>Existing Conditions</b></p>  <p><b>Simulated Conditions</b></p>

<i>Selected Viewpoint</i>	<i>Potential Visual Impact</i>
<p>14: Mount Lasso Scenic Overlook, Looking Northeast</p>	<p><b>Training.</b> Landing Zones would allow for the insertion or extraction of personnel and equipment from two to four aircraft, and also provide staging, field headquarters, camping, and gathering and rendezvous areas in support of distributed operations and logistics training. Because the Landing Zones can be seen, training activities are potentially noticeable when viewed from Mount Lasso. However, the views would be distant and partially obstructed by vegetation. Therefore, there would be a less than significant impact on visual resources.</p> <p><b>Construction.</b> Temporary construction activities and equipment, and Landing Zones 9 and 10 would be visible from Mount Lasso. Views of Landing Zone 9 would be partially obstructed by vegetation. The Landing Zones would appear to the viewers as squares largely denuded of vegetation. The Landing Zones would be apparent, diminishing the scenic quality of the landscape but only by a moderate degree, and be noticeable when viewed from Mount Lasso. Therefore, there would be a less than significant impact on visual resources.</p>  <p><b>Existing Conditions</b></p>  <p><b>Simulated Conditions</b></p>

Based on the findings from Table 4.6-2, visual impacts from training and construction under Alternative 1 and Alternative 2 would be less than significant.

## 4.7 Transportation

### 4.7.1 Approach to Analysis

The analysis described in this section considers the impacts to transportation networks on Tinian from training and construction activities. The ground transportation analysis uses the existing and proposed ground transportation volumes as part of the operational analysis of the roadways and intersections. The operational analysis requires inputs on the characteristics of the roadway such as the lane widths, speed limit, and signal timing to run its calculations. The analysis calculates performance measures, such as the delay, that are used when determining the level of service of

the roadways and intersections, which determines the impacts to the ground transportation network. The acceptable level of service for roadways and intersections is generally level of service D during the peak hour periods. Impacts are analyzed through changes in volumes or patterns of transportation caused by the addition of military vehicles, equipment, and supplies that would transit through TNI and the Port, and the ability of the existing ground, water, and air transportation infrastructure to support the Proposed Action.

#### **4.7.2 No Action Alternative**

Under the No Action Alternative, there would be no changes to ground and aviation training, which would be conducted at the same tempos as evaluated in previous NEPA documents (DON 2010a, 2015b) and associated consultations and authorizations. No construction is proposed under the No Action Alternative, although construction associated with the U.S. Air Force Divert project and the U.S. Air Force Agile Combat Employment program would continue. Therefore, there would be no impact to transportation under the No Action Alternative.

#### **4.7.3 Alternative 1**

##### **4.7.3.1 Training**

The training tempo under Alternative 1 would increase by approximately 15 percent over training already approved to occur on Tinian under the No Action Alternative.

##### **Ground Transportation**

This analysis conservatively assumes that all 30 to 50 personnel would be new to Tinian, adding 60 to 100 round trips per day once construction is complete. This additional traffic volume is a small percentage increase in traffic on the major roads that have daily traffic volumes greater than 1,000 vehicles per day, but is a larger percentage increase on the roads with a lower volume of daily traffic. During each training event, a training unit would bring its own vehicles and equipment. Vehicles such as High Mobility Multi-Purpose Wheeled Vehicles (Humvee), Joint Light Tactical Vehicles, and Medium Tactical Vehicle Replacement 7-ton trucks would support training. Other vehicles, including cars and light trucks, would support administrative and range functions. Equipment would include portable sensors and emitters, emergency generators and field safety equipment.

Periods of peak demand on roadways outside the Military Lease Area would occur immediately before and after each training event, as units arrive and depart with their required vehicles, equipment, and supplies. Personnel, vehicles, and equipment would arrive via TNI, North Field by military transport (e.g., KC-130 aircraft or similar), or by ship through the Port of Tinian. Personnel arriving at TNI would be transported by bus with a capacity of approximately 40 passengers to the Base Camp. If all 1,000 personnel arrive through TNI, this would result in approximately 25 round trips, or 50 individual bus trips, on local roadways between TNI and the Military Lease Area in the days immediately preceding and following a large training event.

Traffic may briefly increase near the Port and TNI during arrival and departure periods. However, all roadways on Tinian currently operate at level of service A, indicating free-flowing conditions with no significant delays or congestion. Any increase in traffic would be temporary and is not expected to reduce roadways below an acceptable level of service.

Once a training event begins, military vehicles and equipment would use both Broadway and 8<sup>th</sup> Avenue to access individual training areas and live-fire ranges as training occurs throughout the Military Lease Area. Within the Military Lease Area, Broadway carries approximately 130 vehicles per day and 8<sup>th</sup> Avenue carries approximately 70 vehicles per day, both operating at a level of service A. Military vehicles and equipment would be restricted to using existing roads or already disturbed areas in the Military Lease Area. Figure 4.7-1 shows the existing road network in relation to the Proposed Action elements such as Base Camp, ranges, and Landing Zones. The increase in people traveling within the Military Lease Area would be temporary and limited to the duration of the training event, with irregular travel patterns that would depend on the training events scheduled throughout the day. The proposed new road to the explosives training range would be constructed as a dead-end road only to serve as access to the range. The road would be restricted access for safety and security purposes for the general public and would not affect the level of service of other roads in the roadway network. Increased traffic during training events would be temporary, and all Tinian roadways would continue to operate at an acceptable level of service.

When roadway access would need to be restricted in a certain location during a training event, it would be coordinated through Range Control who would communicate temporary road closure locations and schedule in advance to the public. Road closures would also be temporary and the subdivision of the Military Lease Area into smaller training areas would help to reduce the number and duration of road closures.

It is estimated that training events would involve several different truck trips, adding vehicles to the roadways, and using approximately 1 million gallons of fuel per year. These additional trips would provide fuel for the base camp tanks that results in an average of 4 truck trips per week from Divert to the Base Camp, which could increase to 16 truck trips per week for large training events. The route between Divert and Base Camp is approximately 3.2 miles long. The other need for additional truck trips would be for the proposed biosecurity facility. The biosecurity facility would include a wash rack with an oil-water separator and water storage tanks. Water from the water storage tanks would be pumped out and disposed of in conformance with CNMI regulations. The oil/water separator would be periodically pumped out and disposed of in conformance with CNMI regulations for oily waste.

Any potential roadway deterioration from increased military road usage would be addressed through appropriate roadway maintenance in accordance with the *Administrative Amendment No.1 To The Lease Agreements Made Pursuant To The Covenant to Establish A Commonwealth Of The Northern Mariana Islands In Political Union*, dated February 2023.



Figure 4.7-1 Road Network in the Military Training Area

DoD improvements to roads, both within and outside of the Military Lease Area, and regular roadway maintenance would have a beneficial impact. Impacts to ground transportation from training would be less than significant during training events, with most of the on-road vehicle trips occurring outside of the Military Lease Area for limited time periods around the start and conclusion of the event.

No training activities would be conducted at the USAGM Saipan site. Military traffic would be limited to occasional inspection and maintenance of communication antennae. Worker access to the wastewater treatment plant and visitor access to Agingan Point would not be impacted. Consequently, there would be no noticeable impact to traffic on Saipan.

### **Water Transportation**

The Proposed Action does not include additional ships for training events. All water transit for training events would be covered under previous NEPA documents including the 2015 *Mariana Islands Testing and Training EIS/OEIS* and the 2020 *Mariana Islands Testing and Training Supplemental EIS/OEIS* (DON 2015b, 2020). Under Alternative 1, the arrival of ships bringing in and removing vehicles, equipment, and personnel for each training event would predominantly occur at the beginning and end of the training periods. All arrivals and departures would be scheduled with the harbor master in advance of any training event to deconflict with commercial Port traffic, including any ferries, and to ensure sufficient harbor support is available to offload and onboard military vessels. Given that the Port has adequate capacity to support existing training, and the Proposed Action does not include additional ships, Alternative 1 training activities would result in less than significant impacts to water transportation on Tinian. Impacts to travel time for boaters is addressed in Section 4.10, Public Health and Safety.

### **Air Transportation**

Proposed aviation training events would occur within the Military Lease Area, primarily at North Field and proposed Landing Zones. Training events would include takeoffs and landings by fixed-wing, rotary-wing and tilt-rotor aircrafts, and unmanned aircraft systems. The training could also include coordinated ground and aviation training such as parachute drops, aviation command and control, ground refueling, and electronic warfare training. Aviation operations would be scheduled and coordinated with Range Control. Air traffic control for aviation training would also coordinate with air traffic control for commercial airlines to TNI and Saipan and ensure there is no conflict. Military aviation training within the Military Lease Area would utilize its own air traffic control. Military aviation training operations at North Field would not affect commercial operations at TNI because air traffic control coordination between the military and commercial airlines would deconflict flights.

In addition, to prevent potential conflicts with civilian commercial aircraft using the Instrument Landing System at Saipan International Airport when live-fire training is underway at the Multi-Purpose Maneuver Range, Range Control would coordinate flight scheduling with Saipan International Airport to ensure that military training units are aware of these commercial flight operations. Radar and/or spotters would continuously monitor the airspace to detect approaching aircraft. If an aircraft is seen to be approaching, all live-fire training would be suspended until the aircraft safely passed.

**4.7.3.2 Construction**

Construction would be phased over approximately 10 to 15 years, and the materials and equipment would arrive in different phases using existing commercial transporters that import and export items through the Port. All commercial port activity would follow applicable CNMI biosecurity measures. The addition of construction workers, materials, and construction equipment would result in temporary increased use of port and airport facilities, with the primary delivery of construction equipment and materials to Tinian through the Port but some lighter materials and equipment could be brought in via air as needed. The additional ship and air cargo flights during the intermittent 10 to 15-year construction are within the capacity of the Port and TNI.

Impacts to ground transportation from construction activities under Alternative 1 would be less than those currently occurring with the development of the U.S. Air Force Divert project, which are less than significant. Divert, combined with the Divert supplemental pipeline project, requires a total of 225 workers (75 for the pipeline and 150 workers for the Divert field). The Divert pipeline project assumed 99 total trips by construction workers (14 trips per day for the pipeline and 85 trips for the Divert field). U.S. Air Force Divert construction activities are expected to be complete or near completion by the time Alternative 1 construction would begin in 2026.

The number of construction workers on-island would fluctuate over 10 to 15 years depending upon which facilities are constructed in any given year, with the largest number of construction workers anticipated at any one time being approximately 50. Due to the limited labor force available on Tinian, it is likely that up to 70 percent (35 people) would come from off-island. The remaining 15 construction workers are assumed to come from the local population. In addition to construction workers, construction activities would result in a temporary and intermittent increase in vehicular volumes on the roadway network due to delivery and hauling of materials from the Port and TNI. The fluctuation in the number of workers and whether the workers were from the local population or from off-island affects the number of vehicle trips needed to arrive and depart from the project site. A larger volume of workers would require more vehicle round trips in general.

Table 4.7-1 summarizes the assumptions for the construction-related trips along with the estimated number of round trips that would be added to the roadway network during construction. All trips would use local roadways, primarily Broadway and 8<sup>th</sup> Avenue, to reach construction sites within the Military Lease Area.

**Table 4.7-1 Construction Assumptions and Estimated Number of Trips**

<i>Type of Trips</i>	<i>Description</i>	<i>Round Trips per Day</i>
Personal Vehicles/Carpool or Passenger Van	Workers from the local population are assumed to carpool to the site. Assumes most would carpool with 3 to 4 people per vehicle, resulting in 10 round trips (5 trips in the morning and 5 in the afternoon). The remaining construction workers would stay in San Jose Village in local hotels or barracks style worker housing, such as those established to support the workers on the U.S. Air Force Divert project. Assumes passenger vans would be used to transport 8-12 people resulting in approximately 10 round trips (5 in the morning and 5 in the afternoon).	20

<i>Type of Trips</i>	<i>Description</i>	<i>Round Trips per Day</i>
Miscellaneous Trips	Includes site inspections, water trucks, and other materials to support construction. Estimated 1 round trip per 25 construction workers per day. Results in 4 additional trips per day (2 to the site and 2 from the site). Trips would be distributed throughout the day.	4
Construction Support Trips	Approximately 17,000 to 22,000 trips for clearing and construction and additional trips for concrete and debris hauling distributed over the course of a 10 to 15-year construction period. Assumes approximately 20 round trips per day for all activities. Trips would be distributed throughout the day.	20

Construction activities under Alternative 1 would add an additional 44 trips per day to the existing roadway network over the course of the intermittent 10-to-15-year construction phasing. The segment of Broadway south of the Military Lease Area carries about 1,560 vehicles per day south of 42<sup>nd</sup> Street and 300 vehicles per day north of 42<sup>nd</sup> Street, and 8<sup>th</sup> Avenue carries approximately 140-180 vehicles on the segment outside of the Military Lease Area. The trips transporting construction workers would be occurring during the morning and afternoon periods, which would add some congestion on the roadway network but would not affect the level of service of the roadways.

Construction truck movements may result in isolated impacts including damage to roads, congestion, slower speeds in construction zones, temporary roadway closures, temporary access restrictions to construction sites and short detours caused by equipment movement, delivery of construction materials, removal of construction debris, and roadway improvements. Other related construction trips would be distributed throughout the day and have minimal effect on roadway traffic as the roadways have adequate capacity to support these additional traffic volumes.

To reduce construction impacts, traffic control plans would be developed to provide guidance on how to direct traffic during the construction phase. Traffic control plans would describe lane configuration, appropriate signage, detour routes, and other strategies and equipment that would be needed to maintain vehicular access along roadways. Traffic control plans could be included with a traffic and work zone management plan that would provide potential contractors sufficient details and directions to use during construction.

Most construction activities under Alternative 1 would occur within the Military Lease Area. Traffic and work zone management plans would further minimize construction impacts on traffic circulation and access to areas around the construction sites. Even with some slight overlap of Divert construction traffic, all roadways would still operate at acceptable levels of service. The increase in traffic volumes related to the additional trips per day would not increase the level of service of the roadway such that it reaches an unacceptable level of service. In addition, construction would include clearing some existing roads and opening additional routes of transportation. The opening of additional routes of transportation would benefit traffic by providing more roads to disperse the traffic through. Impacts to transportation from construction activities under Alternative 1 would be less than significant.

No construction activities would be conducted at the USAGM site on Saipan. Military traffic would be limited to installation of communication equipment on existing towers and occasional inspection and maintenance of communication towers. Worker access to the wastewater treatment plant and visitor access to Agingan Point would not be impacted. Consequently, there would be no impact to traffic at the USAGM Saipan site.

#### **4.7.4 Alternative 2**

Under Alternative 2, training would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. The size of training events would remain the same, including the same number of people and equipment arriving and departing for each event. This would result in the same volume of activity at the Port and TNI for Alternative 2 and a small increase in traffic on Tinian for any given training event compared to the No Action Alternative. For ground transportation, a 5 percent training increase would not change the level of service for any roadways on Tinian. Improvements to roads would be a beneficial impact such as paving or re-paving of the roads to improve safety and the longevity of the road. Training associated with Alternative 2 would result in fewer impacts to transportation than Alternative 1, and impacts would be less than significant. Alternative 2 would include the same construction activities and impacts as Alternative 1 and would also be a less than significant impact.

### **4.8 Noise**

This section evaluates the potential noise effects on human populations. Effects on specific resources from noise are also presented in their respective sections in this Final EIS—potential effects to land uses from noise are discussed in Section 4.2, socioeconomic-related impacts on domesticated animals in Section 4.3, wildlife in Section 4.4, and cultural resources in Section 4.5. Additional background information on the basics of sound and the potential effects of noise can be found in “Discussion of Noise and Its Effects on the Environment,” which is provided as Attachment 1 to Appendix J, *Noise Study*. Specific topics include land use compatibility, noise-induced vibration effects, noise-induced hearing impairment and non-auditory health effects, noise effects on children, domestic animals, and wildlife.

#### **4.8.1 Approach to Analysis**

This noise impact analysis evaluates potential changes to the baseline noise environment with implementation of training and construction activities under the Proposed Action, considering both long-term changes to cumulative sound levels and short-term effects from a single event or peak noise level. The resulting noise exposure is evaluated at Tinian and the southern portion of Saipan. These include locations with noise-sensitive land uses such as residential, schools, places of worship, and natural and cultural resources, as identified in Section 3.8. The analysis also considers whether noise from the Proposed Action would exceed any applicable standards.

##### **4.8.1.1 Methodology**

The Proposed Action would result in sounds produced by military training and construction. Typical noise levels generated by construction equipment are used to evaluate potential impacts from construction activities within the Military Lease Area. Noise from military training activities would be principally generated from the use of small arms and explosives during ground training

activities, and helicopters, fixed-wing (propellor-driven or jet), and tilt-rotor aircraft during aviation training. The analysis examined these Proposed Action elements and relevant research to determine the appropriate noise modeling approach to accurately depict potential noise impacts, including the use of noise modeling software developed for these activities. Details on these noise modeling software programs are summarized in Table 4.8-1, and described in detail in Appendix J.

**Table 4.8-1 Noise Modeling Software**

<i>Type of Noise Modeled and Proposed Location</i>	<i>Software Name and Managing Agency</i>	<i>Modeling Notes</i>
<u>Live-Fire Training</u> Small Arms at Multi-Purpose Maneuver Range	Small Arms Range Noise Assessment Model (SARNAM): Developed by US Army and Approved for DoD use	Used to estimate noise levels from the use of small caliber munitions. For the Proposed Action, ammunition up to 0.50 caliber would be used. This includes different types of ammunition commonly used during training, such as 5.56 mm and 7.62 mm, at the Multi-Purpose Maneuver Range. The largest ammunition would be used less frequently.  Additional inputs include the location and configuration of the range (e.g., distances between firing points and targets), approximate number of days the range is utilized annually, weapons to be fired at each of the ranges, percent of night firing, and information on range physical features such as land and water data to account for greater sound reflection as sound propagates over water versus over land.
<u>Live-Fire Training</u> Ordnance at Multi-Purpose Maneuver Range and Explosives Training Range	Blast noise model (BNOISE): Developed by US Army and Approved for DoD use	Used to estimate blast noise from the use of ordnance and explosive equipment. For the Proposed Action, a maximum 40 pounds net explosive weight would be used infrequently, approximately 2 to 4 times per year, only at the Explosives Training Range. Smaller amounts of explosives would be used more regularly for training, including charges with a net explosive weight of approximately 1.25 pounds (Multi-Purpose Maneuver Range or Explosives Training Range) or 10 pounds (Explosives Training Range).
<u>Aviation Activities</u> Training at North Field, Landing Zones, and within the Military Lease Area and Cargo Transport Operations at TNI	Aircraft noise model (NOISEMAP, which includes NMAP, AAM, and MRNMAP): Developed and approved for DoD use	Used to analyze noise generated by military aircraft operations by developing estimated noise levels at identified sensitive receptors and noise contours around airfields and Landing Zones. For the Proposed Action, inputs include the types of aircraft, flight patterns, variations in altitude, power settings, number of operations, and hours of operation.
Graphical plotting tool for all types of noise modeling shown above	Noise contour plot program (NMPLOT)	Used to plot modeled noise levels on a grid and identify areas of equal noise levels - shown as contour lines - to help determine noise exposure in different geographical areas.

Legend: mm = millimeter; TNI = Francisco Manglona Borja / Tinian International Airport.

Due to more sporadic live-fire training and aircraft operations in the Military Lease Area and at North Field, annual activity assumptions were used to estimate a “busy month” scenario for the cumulative noise analysis. With more regular aircraft operations at TNI, the analysis for this activity utilized the average annual conditions for the cumulative noise analysis. Single event peak or maximum noise levels augment the cumulative noise analysis results, which applies to equipment and ordnance that would commonly be used at each live-fire range and typical aircraft for aircraft related training activities.

#### 4.8.1.2 Noise Metrics and Effects of Noise

Noise is generally described as unwanted sound, based on both objective effects (e.g., hearing loss or damage to structures) or subjective judgments (e.g., community annoyance). A noise analysis thus requires assessing a combination of physical measurements of sound, physical and physiological effects, plus psycho- and socio-acoustic effects. The response of different individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

As described in Section 3.8, with additional detail provided in Appendix J, noise and sound levels are expressed in logarithmic units measured by decibels, with the unit “dB” (refer to Table 3.8-1 and Figure 3.8-1). The A-weighting scale has been adopted by the Occupational Safety and Health Administration for its noise standards, as this measurement is thought to provide a rating of noise that predicts the injurious effects on human hearing (Occupational Safety and Health Administration 2022). A few example sound levels in A-weighted decibels are summarized below for reference (Berglund and Lindvall 1995):

- 0 decibels = approximate threshold of human hearing, which is barely audible under extremely quiet listening conditions
- 60 decibels = equates to normal speech at a distance of about 3 feet
- Greater than 120 decibels = sound begins to be felt inside the human ear as discomfort
- 130 to 140 decibels = sound levels felt as pain

The minimum change in sound level of an individual event that the average human ear can detect is about 3 decibels, while a 10 decibel increase in sound level will generally be perceived as a doubling (or halving with a decrease) of a sound’s loudness (DoD Noise Working Group 2009a).

Cumulative metrics are used to describe, assess, and predict long-term noise exposure and represent the sound level from all noise-generating activities conducted throughout the day, usually averaged over an extended period of time. Single event metrics are used to describe, assess, and predict annoyance associated with occasional loud impulsive events, when the sound is experienced for a brief period of time. Impulsive noise results from an instantaneous event that produces a sharp sound (like a crack or pop from small arms fire or explosive detonation).

In accordance with DoD guidelines and standard practice for environmental impact analysis documents, the appropriate noise metric depends upon the type of activity analyzed. The day-night average sound level (or “DNL”) represents an average of all noise activities conducted throughout the day, including periods of no activity, light training, and heavy training while accounting for periods at night when people are more sensitive to noise. Therefore, this metric does not describe

a noise level heard directly but instead represents a measure of intrusiveness or annoyance over the assessment period. The day-night average sound level and C-weighted day-night average sound level (or “CDNL,” which is a version of DNL applicable to live fire activity) are metrics to predict the noise environment at airfields, airspace, and ranges when considering compatible land use and assessment of noise impacts on noise-sensitive receptors. Noise from military training is also assessed in this Final EIS by considering the unweighted peak and maximum sound levels from single events (i.e., and aircraft flying overhead or impulsive noise such as small arms fire or explosions) to provide a description of the noise levels people may experience during a training event. The metrics used in this evaluation are described in Table 4.8-2.

**Table 4.8-2 Primary Metric for Significance Analysis and Additional Effects Metrics**

<i>Activity Type</i>	<i>Metric (Primary or Additional Effect) and Reference</i>	<i>Description</i>
<u>Live-Fire Training</u> Explosives Detonations	Primary: Peak sound level PK15(met) in dBP (USMC 2021)	<p>The PK15(met) metric is used to describe the maximum or peak sound level produced by a single impulsive noise event such as blast, which would be heard for a fraction of second. Blast noise may be loud enough to startle people or animals. The duration of the blast or explosion would last for only a few milliseconds but increases as the sound moves further from the point of origin, similar to thunder.</p> <p>This metric accounts for statistical variations from weather. Single event metrics are used to assess if a noise event would interfere with activities and produce annoyance, which is usually described in DoD planning guidelines correlated to a complaint risk. However, this metric does not capture how long sounds may be heard, which would affect how the noise may be experienced. For example, a series of small detonations that happen consecutively versus being spaced out over hours or days may result in different levels of annoyance.</p>
<u>Live-Fire Training</u> Small Arms	Primary: Peak sound level in dBP (USMC 2021)	<p>This metric is used to describe the maximum or peak sound level produced by a single impulsive noise event such as a small caliber gunshot, which would be heard for a fraction of a second.</p> <p>The DoD treats small arms noise differently from blast or aviation noise, because the single event metric provides a better predictor of annoyance. Additionally, it is more conservative than a cumulative metric like DNL/CDNL that may understate the intensity of impulsive events like small arms fire, which can be particularly annoying to residents or other noise-sensitive receptors.</p>
<u>Aviation Activities</u>	Primary: Day-night average sound level (DNL) in dBA (USMC 2021)	<p>This metric uses annual operations at an airfield or landing area to calculate the average sound level over the course of a year. A-weighting is used to better reflect the frequencies people actually hear.</p>

<i>Activity Type</i>	<i>Metric (Primary or Additional Effect) and Reference</i>	<i>Description</i>
		<p>The DNL contours are depicted on a map and used to evaluate land use compatibility and future planning, as described for the CDNL metric, above. Consistent with DoD and FAA guidance, 65 dB DNL is used to show areas with potential for annoyance in this analysis. However, aircraft noise does occur outside the 65 dB DNL contour.</p>
<u>Aviation Activities</u>	<p>Additional Effects: Maximum sound level (<math>L_{max}</math>) and sound exposure level (SEL) in dBA (USMC 2021)</p>	<p>The maximum sound level or <math>L_{max}</math> is measured during a single event where the sound level changes value with time (e.g., an aircraft overflight). The <math>L_{max}</math> is the maximum, instantaneous level of noise that a particular event produces, and it is most closely related to what an individual would hear. However, this metric does not describe how often that sound would occur (e.g., multiple aircraft flying after each other or helicopters hovering or maneuvering in a small pattern near land). This metric is used in the analysis of the effects of noise on speech interference, including speech in the classroom and potential effects on recreation.</p> <p>The sound exposure level or SEL is the most common measure of cumulative noise exposure for a single aircraft flyover. SEL does not directly represent the sound level heard at any given time but condenses the entire event, starting from the ambient or background noise level, rising to the maximum level as the aircraft flies closest to the observer, and returning to the background noise level as the aircraft moves further away into a 1-second period of time. During an aircraft flyover, SEL would include both the maximum sound level and the lower sound levels produced during onset and recess periods of the overflight to represent the entire sound exposure received. A-weighting is used to better reflect the frequencies people actually hear.</p>

*Legend:* dB = decibels; dBA = A-weighted decibels; dBC = C-weighted decibels; dBP = peak sound pressure level in unweighted decibels; CDNL = C-weighted day-night average sound level; DNL = day-night average sound level; DoD = Department of Defense; FAA = Federal Aviation Administration;  $L_{max}$  = maximum sound level in A-weighted decibels; SEL = sound exposure level in dBA.

#### 4.8.2 No Action Alternative

Under the No Action Alternative, training events including both ground maneuver and aviation activities would continue in the Military Lease Area at the same tempo as described in previous NEPA documentation (DON 2010a, 2015b). In addition, all actions related to the U.S. Air Force Divert project would be implemented including aircraft operations that are projected to occur annually at TNI.

Under this baseline condition, there would be no change to the current levels of ground and aviation training on Tinian. Activities that are the equivalent of a large training event, such as

Valiant Shield, and smaller events that utilize ground vehicles and equipment and fixed- and rotary-wing aircraft at North Field would continue to occur throughout the year within the Military Lease Area. The aircraft training activities center around North Field, with materials and supplies also arriving by air through TNI. TNI would additionally be used for military divert operations, humanitarian assistance staging, exercises, and other aircraft support activities. Noise levels at representative sensitive receptors would remain the same as the baseline levels shown in Table 3.8-3. Additionally, civilian jets would continue to periodically fly at low altitudes (approximately 2,200 to 2,600 feet) over runway Able at North Field on approach to the Saipan International Airport.

North Field runway Able is used for military fixed-wing and helicopter activities during training. North Field runway Baker is used for parachute drops and helicopter activities. These relatively low altitude activities may occur below flight paths used by large commercial jet aircraft on approach to Saipan. Therefore, since there would be no changes to existing noise levels, the No Action Alternative would remain the same and result in no new noise impacts.

### **4.8.3 Alternative 1**

#### **4.8.3.1 Training**

##### **Ground Training**

###### *Non-Live Fire*

Alternative 1 represents an approximate 15 percent increase in training activities from the No Action Alternative in terms of military vehicles and equipment traveling to conduct activities throughout the training areas in the Military Lease Area. There are no residences, schools, or churches located within the Military Lease Area, but there are cultural and natural resources present. In addition, members of the public conducting subsistence activities or agricultural users may visit the Military Lease Area throughout the day and evening. The sound level from ground vehicles experienced during a training event would vary depending on the distance away from the source—for example being very close to vehicles while operating (e.g., 25 to 50 feet) could produce sound levels in the 80 to 90 decibel range, which may sound like being within 50 feet of a heavy truck while it is running (refer to Figure 3.8-1 in Section 3.8 Noise). The sound levels generally decrease as the distance to the source increases, but environmental and weather conditions can either amplify or dampen the sound level experienced at any given time (e.g., effects of wind, humidity, topography, vegetation may cause variations in how loud the sound seems at the same location at different times). Noise from ground vehicles and equipment used for training would remain similar to the No Action Alternative, and would generally result in sound levels of 50 to 60 decibels at noise sensitive receptor locations. This sound level would be similar to standing 10 feet away from a vacuum cleaner or 100 feet away from an automobile or air conditioner while they are operating (refer to Figure 3.8-1 in Section 3.8 Noise). Therefore, non-live-fire ground-based training would result in less than significant noise impacts.

###### *Live-Fire Training*

Live-fire training would present new sources of noise concentrated in specific areas within the Military Lease Area, at the Multi-Purpose Maneuver Range and the Explosives Training Range. Noise-producing events would be intermittent over the course of any given year, and be interspersed with quieter times when less noise-producing activities or even no military training

would be audible. For all live-fire training events, Range Control would provide advance notification to the public of access restrictions required to preserve a safe separation for civilians not participating in training and information on what activities may be seen or heard (i.e., small arms or blast noise, as appropriate). As described in the previous section, the primary metric used to evaluate impacts from training activities at the two proposed live-fire ranges is the peak noise level, which is the most conservative method. Additionally, the noise study in Appendix J provides a cumulative analysis of the proposed explosives activity to ensure that the day-night average sound level would not present land use incompatibilities. Modeling assumptions and results are detailed in Appendix J, *Noise Study* (refer to Section J.3.3).

**Small Arms Firing at the Multi-Purpose Maneuver Range.** Small caliber rifles and machine guns create impulsive noise, characterized by brief bursts of sound pressure, typically lasting less than a second, but many impulsive sounds could occur in series for longer durations (e.g., multiple service members shooting rifles or a machine gun firing upward of 400 rounds per minute). This is why the DoD uses the peak sound level, and not a cumulative metric, to estimate land use compatibility near areas where small arms fire occurs. Therefore, peak sound levels in unweighted decibels, denoted as “dBP”, are used to convey the absolute “loudness” of each individual shot.

The DoD has established thresholds for evaluating the impact of small arms fire at different sound levels (MCO 3550.13, *Range Compatible Use Zones Program*). Impulsive sounds may create a startle effect if the noise occurs unexpectedly, like a clap of thunder. While responses to noise vary, in general, individuals exposed to peak sound levels less than 87 decibels would not be disturbed by the noise event. As the peak sound level increases, the risk of annoyance increases. To provide context to interpret modeled peak sound levels, Table 4.8-3 shows the percentage of people who are highly annoyed from small arms range noise at different peak sounds levels and Table 4.8-4 provides peak noise levels for a variety of common noise sources.

**Table 4.8-3 Percentage of Population Highly Annoyed by Small Arms Noise**

<i>Peak Sound Level (dBP)</i>	<i>Percentage Highly Annoyed (%)</i>
80	4
85	10
90	13
95	21
100	29
105	38

*Legend:* % = percent; dBP = unweighted decibels.

*Source:* Sorenson and Magnusson 1979, as cited in DoD Defense Noise Working Group 2018.

**Table 4.8-4 Peak Sound Levels for Common Noise Sources**

<i>Peak Sound Level (dBP)</i>	<i>Noise Source</i>
76	Safety whistle at approximately 50 feet
95-112	Thunderstorm at varying distances
105-145	Restaurant
117-137	Balloon pop at approximately 3 feet
<130	Movie theater
139	Average rock, pop, or rap concert
143-152	Cap gun at <1 foot
153	Pull-apart firecracker at approximately 0.5 feet
169	Airbag at driver’s ear

*Legend:* < = less than; dB = unweighted decibels.

*Source:* DoD Noise Working Group 2013.

Figure 4.8-1 shows the estimated peak sound levels for representative weapons and ammunition that would be used at the Multi-Purpose Maneuver Range. Range Control would provide advance notice to the community of the training schedule and types of noise that may be heard, and would restrict public access within the surface danger zone during live-fire training. The surface danger zone generally encompasses the land area around the Multi-Purpose Maneuver Range where the 104 decibel contour overlaps. Thus, members of the public would not be present in areas that would experience peak sound levels above 104 decibels. Peak sound levels between 87 and 104 decibels would reach as far as the southernmost runway at North Field and extend over the waters north and northwest of Tinian. At these levels, sound may cause a startle effect and would be considered moderately likely to produce annoyance especially for people who are not accustomed to hearing gunfire noise. Recreational and cultural sites in this area include T16: North Field National Historic Landmark, T20: Ushi Point, and T20: Unai Lam Lam. Areas located south of North Field on Tinian would hear peak sound levels of 87 decibels or less when small arms training occurs, which may sound like a series of bangs, pops, or lower rumbling sounds like a distant thunderstorm (i.e., would be audible but not as likely to cause disturbance or be perceived as annoying). Depending on the weather and other conditions that may affect sound propagation, small arms training may be audible across the Saipan Channel at certain times but would be at levels below 87 decibels and would similarly not be anticipated to cause disruptions or annoyance.

**Explosives Detonation at the Multi-Purpose Maneuver Range and Explosives Training Range.** Noise generated by ordnance or explosive detonations, referred to as “blast noise,” is modeled with the peak noise metric PK15(met) (refer to Table 4.8-2), which is different than the peak noise metric used for small arms. As with small arms, the resulting noise levels are presented in unweighted decibels and are intended to convey the “loudness” of each individual detonation, which lasts only a fraction of a second. The actual sound level a receptor experiences is dependent on highly variable factors such as weather (e.g., cloud cover, humidity, precipitation), wind, and temperature. The same explosive detonation occurring in the same location on the Explosives Training Range could result in different sound levels being heard at a single receptor location from day to day or even hour to hour, by as much as 40 decibels. In general, sound levels would be higher when the receiver is located downwind from a source, and prevailing winds on Tinian are southeast to northwest (i.e., would lessen the sound levels heard in areas of San Jose and Saipan).



**Figure 4.8-1 Peak Sound Levels (Unweighted Decibels) from Small Arms Firing at the Multi-Purpose Maneuver Range**

However, when a weather event like a temperature inversion occurs, distant sounds may sound much louder or be heard at further distances (DoD Noise Working Group 2018). A temperature inversion results when air near the ground cools more quickly than the air above it. The warm air sitting above the cooler air functions like a lid, and sound waves change direction when hitting the warmer air, refracting the sound differently than on a typical day (i.e., when air temperatures decrease with height). Temperature inversions are more likely to occur on clear days with light and variable winds (less than 3 miles per hour) when conditions are dry and in the vicinity of areas with low elevations where cool air can sink and collect (Midwestern Regional Climate Center 2025). These conditions could occur in the CNMI during the drier, less windy times of the year, which may result in differing sound levels from the same training activity. When using the PK15(met) metric, the noise modeling software accounts for environmental variation so the actual peak sound level experienced when the detonation occurs should be at or below the modeled peak sound level at least 85 percent of the time.

Threshold levels for single event blast noise are also defined differently from small arms. Peak sound levels at 115 decibels or less would be considered audible but are unlikely to produce annoyance; at peak sound levels between 115 and 130 decibels the risk of annoyance becomes moderate as events may be noticeable and distinct from other sounds; at peak sound levels of 130 decibels or greater the sound is very loud, may cause a startle effect, and the risk of annoyance becomes high. The peak sound level from blast noise is experienced for only a fraction of a second per detonation, and a number of detonations may occur throughout a day with quiet periods in between, which is why the cumulative C-weighted day-night average sound level is used to evaluate community compatibility with longer term exposure to the activity MCO 3550.13, *Range Compatible Use Zones Program*).

At the Multi-Purpose Maneuver Range, training would include the use of C-4 explosive with a net explosive weight of up to 1.25 pounds but could also include practice grenades, training rockets, and antipersonnel obstacle breaching charges. Ordnance use at the Explosives Training Range would involve higher net explosive weights and thus charges with varying net explosive weights were modeled to represent the variation that would occur. Detonations of the largest cratering charge (40 pounds net explosive weight) would occur infrequently, up to 4 times per year. The intermediate charge (10 pounds net explosive weight) and smaller breaching charge (1.25 pounds net explosive weight) would be more commonly used during training events, at a rate of approximately 12 and 15 charges per quarter, respectively. The full noise modeling results and noise contour maps for proposed live-fire training can be found in Appendix J, Section J.3.3.2 Noise Exposure.

As shown in Figure 4.8-2, similar to small arms, the 130 decibel peak sound level contour from explosives detonations would fall within the boundary of the surface danger zone, and thus public access would be restricted when this type of training would occur at the Multi-Purpose Maneuver Range. Peak sound levels between 115 and 130 decibels would reach to the southernmost runway at North Field and extend over the waters north, northwest, and northeast of Tinian. This would be similar to sound levels experienced when at a movie theater, music concert, or a loud restaurant (Table 4.8-4), and may create a startle response if the sound is not expected. Recreational and cultural sites in this area include T16: North Field National Historic Landmark, T20: Ushi Point, and T20: Unai Lam Lam.



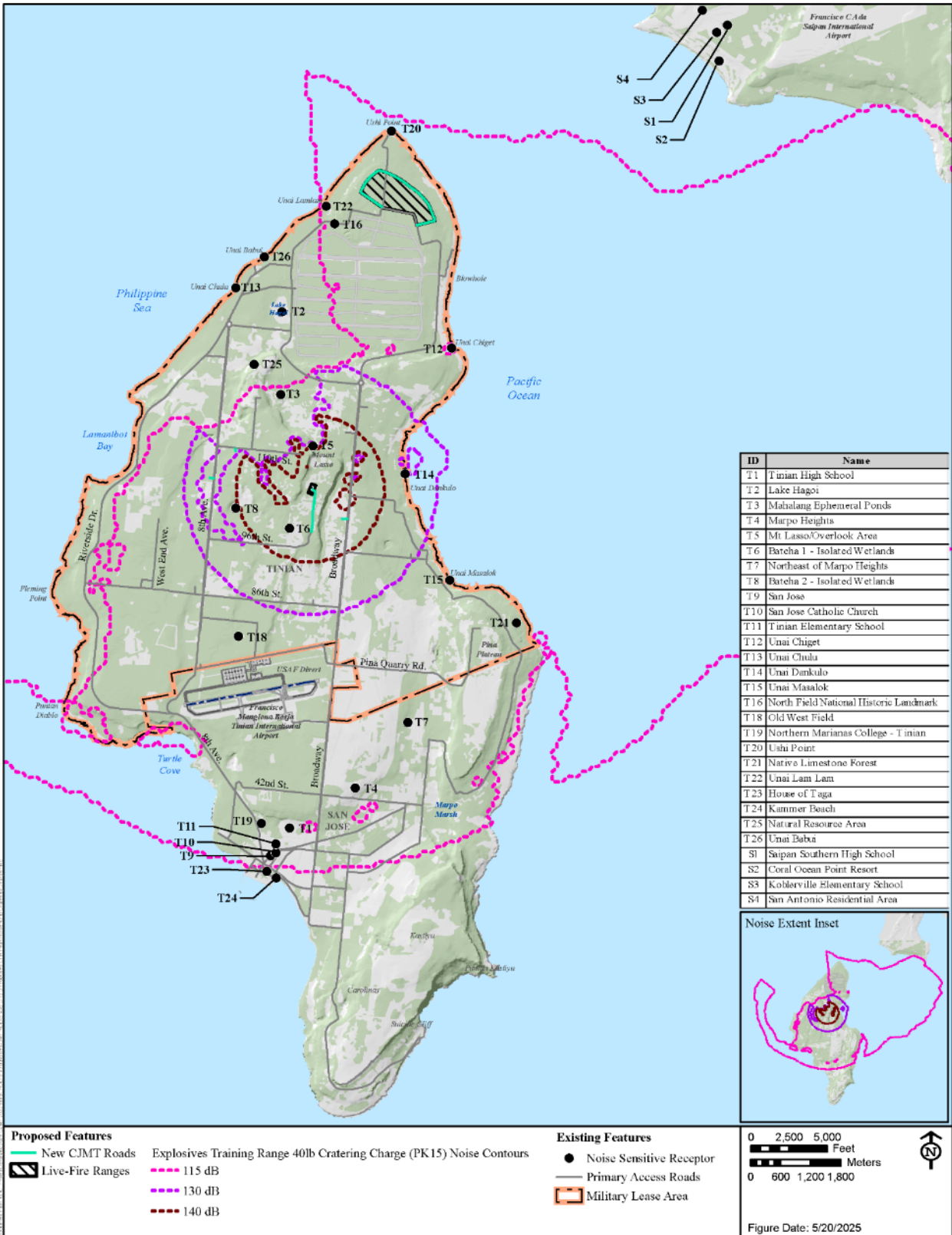
**Figure 4.8-2 Peak Sound Levels (Unweighted Decibels) from Typical Explosive Equipment Detonation at the Multi-Purpose Maneuver Range**

Areas south of North Field and across the channel at the southern tip of Saipan would hear peak sound levels of 115 decibels or less when training using explosives occurs at the Multi-Purpose Maneuver Range. Receptors in these areas, such as the residential and commercial zones in the southern portion of the island, could potentially hear these live-fire training events but the sound may be perceived similar to a balloon being popped 3 feet away or a nearby thunderstorm (refer to Table 4.8-4).

As depicted in Figure 4.8-3, the largest charge that would be used at the Explosives Training Range would generate peak sound levels of 140 decibels or greater that extend approximately 1 mile in all directions except for the area north of the 110th Street and west of Mount Lasso, where the sound level is reduced due to the terrain and elevation change. One area of wetlands located southwest of the Explosives Training Range (T6: Bateha 1 Isolated Wetlands) would experience a peak sound level of 140 decibels or greater. The area that would experience peak sound levels between 130 and 140 decibels extends approximately half a mile beyond the 140 decibel contour and covers the middle of the island, from just south of 86th Street to just north of the traffic circle at 116th Street and Broadway, and just west of 8th Avenue out over the ocean approximately 0.5 miles east of Unai Dankulo. Two points of interest are located in this zone—a wetland area located west of the Explosives Training Range (T8: Bateha 2 Isolated Wetlands) and T14: Unai Dankulo. Depending on the weather and other environmental factors, it is likely the detonation of the largest charge would be audible at a peak sound level between 115 and 130 decibels (i.e., likely to produce moderate annoyance) across the remainder of Tinian, with the exception of the northwestern section of the island shielded by the ridgeline southwest of Mount Lasso, across the channel to the southern tip of Saipan, and across a large area of open ocean, extending approximately 5 to 7 miles to the east and west of Tinian.

Figure 4.8-4 depicts peak sound levels for the intermediate charge. Sound levels would be similar in nature to those described for the largest charge, but the area encompassed by each contour shrinks slightly. Sensitive receptors that would potentially experience peak sound levels greater than 140 and between 130 and 140 decibels remain the same for the intermediate charge. The 140 decibel contour extends out approximately 0.8 miles from the center, and the 130 decibel contour still extends approximately 0.5 miles from the edge of the 140 decibel contour, with the exception of the northwestern section of the island where, due to the shielding provided by the ridgeline elevation, peak sound levels would generally remain at or below 115 decibels for all modeled net explosive weights. However, the area that would experience peak sound levels between 115 and 130 decibels is greatly reduced, extending from just south of TNI to just north of the runway Able at North Field, and from just east of Riverside Drive to out over the ocean approximately 2.5 miles beyond Unai Dankulo.

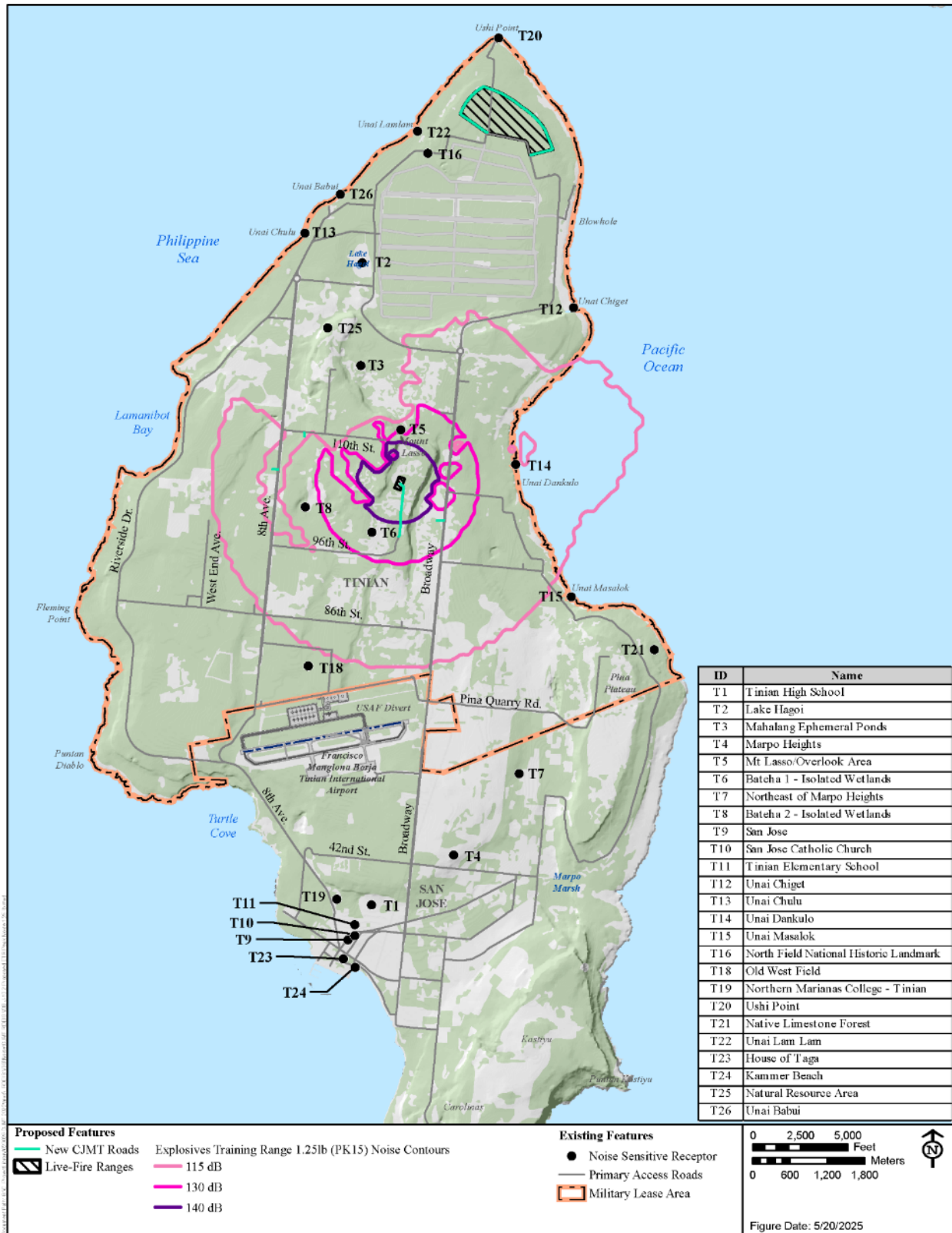
Except for the residential area just northeast of Marpo Heights, the southern third of Tinian where commercial and residential areas are concentrated would experience peak sound levels below 115 decibels (i.e., low potential for annoyance). The southern portion of Saipan across the channel would also experience similar sound levels. Peak noise at this level would likely cause low annoyance where it may blend in with the ambient noise environment and could sound like a distant thunderstorm or a moderately loud restaurant (refer to Table 4.8-4). As depicted in Figure 4.8-5, the smallest charge would affect an even smaller area than the intermediate charge, but the 115 decibel contour would extend approximately 2 miles in every direction from the Explosives Training Range and stay almost entirely within the Military Lease Area.



**Figure 4.8-3 Peak Sound Levels (Unweighted Decibels) from a 40 Pound Net Explosive Weight Detonation at the Explosives Training Range**



**Figure 4.8-4 Peak Sound Levels (Unweighted Decibels) from a 10 Pounds Net Explosive Weight Detonation at the Explosives Training Range**



**Figure 4.8-5 Peak Sound Levels (Unweighted Decibels) from a 1.25 Pounds Net Explosive Weight Detonation at the Explosives Training Range**

The limits of the 115 decibel contour are just north of TNI to the south, south of the North Field runway area, at West End Avenue to the west, and only extends approximately 0.5 miles over the water to the east of Unai Dankulo. Table 4.8-5 presents the peak sound levels in unweighted decibels that would occur at select sensitive receptors as a result of live-fire training at both the Multi-Purpose Maneuver Range and the Explosives Training Range.

**Table 4.8-5 Peak Noise Levels (Unweighted Decibels) at Points of Interest on Tinian and Saipan from Explosives Detonations at Proposed Live-Fire Ranges**

<i>ID</i>	<i>Description</i>	<i>Type</i>	<i>Multi-Purpose Maneuver Range<sup>1</sup> (dBP)</i>	<i>Explosives Training Range<sup>2</sup> (dBP)</i>
T1	Tinian High School	School	90	117
T4	Marpo Heights	Residential	93	118
T5	Mount Lasso Overlook Area	Natural Resource	102	126 <sup>3</sup>
T6	Bateha 1 – Isolated Wetlands	Natural Resource	98	148
T7	Northeast of Marpo Heights	Residential	94	120
T8	Bateha 2 – Isolated Wetlands	Natural Resource	99	138
T9	San Jose	Residential	92	116
T11	Tinian Elementary School	School	92	116
T12	Unai Chiget	Cultural Resource	109	123
T14	Unai Dankulo	Cultural Resource	102	137
T15	Unai Masalok	Cultural Resource	98	126
T16	North Field National Historic Landmark	Cultural Resource	124	119
T18	Old West Field	Cultural Resource	96	125
T19	Northern Marianas College – Tinian	School	92	117
T20	Puntan Taddong (Ushi Point)	Natural Resource	122 <sup>3</sup>	116
T22	Unai Lam Lam	Cultural Resource	122 <sup>3</sup>	104
T26	Unai Babui	Natural Resource	110	104
S2	San Antonio Residential Area	Residential	108	112
S4	Koblerville Elementary School	School	108	113

Legend: dBP = peak decibels.

Notes: Results presented here as exterior noise levels. Typical building construction results in a reduction of noise of level of 15 dB with windows open and 25 dB for windows closed (DoD Noise Working Group 2013).

Refer to Table 4.8-4 for typical peak noise levels for common sounds, such as the peak sound level from: thunderstorms at varying distances (95 to 112 decibels); restaurant (105-145); balloon popping around 3 feet away (117 to 137 decibels); average concert (139 decibels).

<sup>1</sup> Modeled charge size: 1.25 pounds net explosive weight.

<sup>2</sup> Modeled charge size: 40 pounds net explosive weight. This peak level would occur 2-4 times per year.

<sup>3</sup> Range Control would restrict public access to this area during live-fire training as it is located within the surface danger zone for the associated live-fire range.

For all live-fire training events, Range Control would provide advance notification to the public of access restrictions required to preserve safety according to the nature of the training scheduled to occur. The notifications would provide information on what activities may be seen or heard (i.e., small arms or blast noise, as appropriate). In addition to potential annoyance from hearing sounds from live-fire training, visitors and residents may experience inconvenience from having to adjust plans to visit alternate areas of the Military Lease Area if they are sensitive to noise at lower peak

levels, or fuel costs associated with driving to alternative recreation or cultural sites within the Military Lease Area where public access remains unrestricted. However, these impacts would be temporary and would occur intermittently over the course of any given year, and interspersed with quieter times where less noise-producing activities or even no military training would be audible. Additionally, with temporary access restrictions put in place by Range Control, the public visiting the Military Lease Area would not experience noise at levels that would present a risk for hearing loss. Therefore, ground training would result in less than significant impacts on human receptors from noise.

## Aviation Training

### *Cumulative (Annual Average) Noise Impacts*

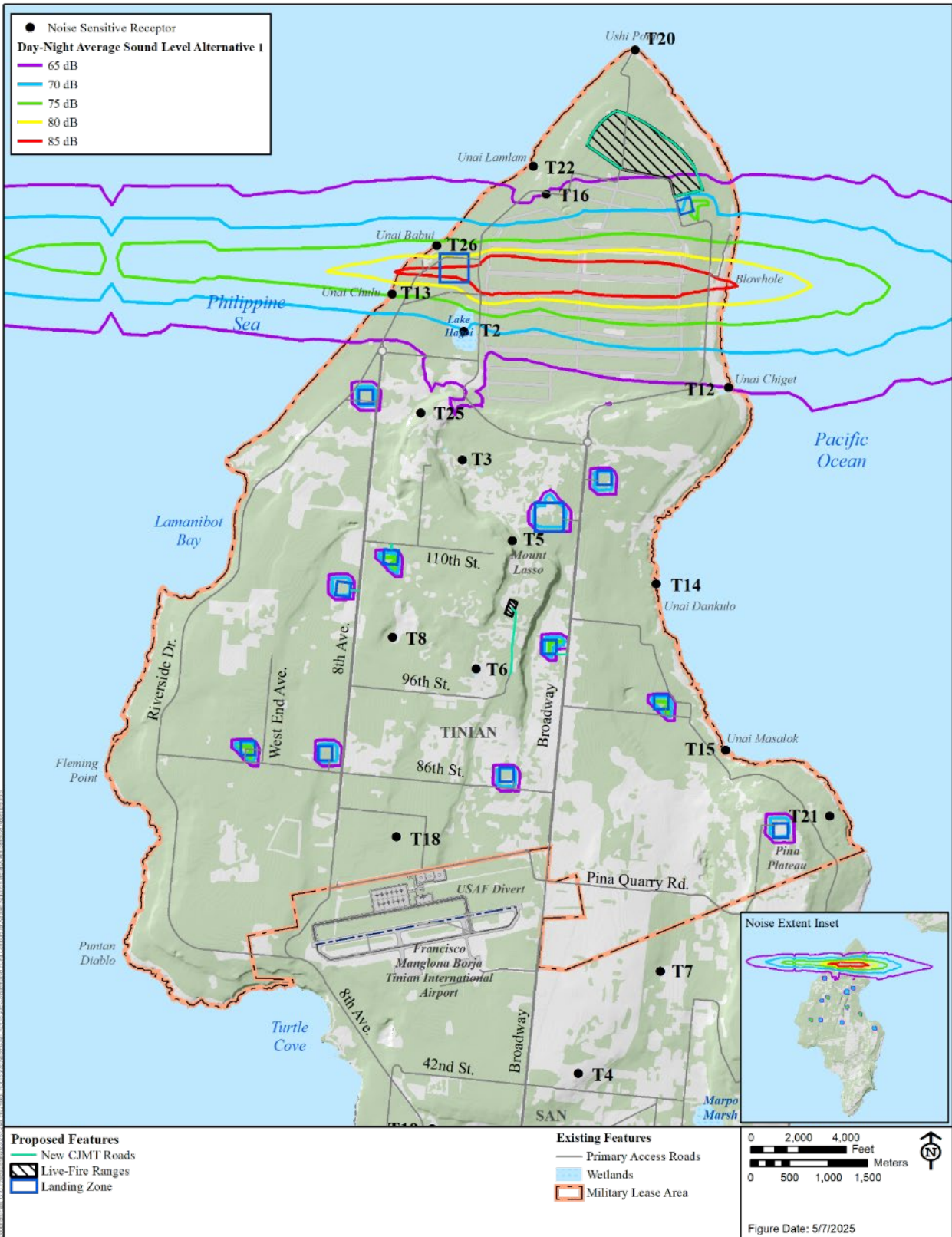
**TNI and Military Lease Area (North Field and Landing Zones).** Under Alternative 1, the existing KC-135, F-18E/F, and F-35A/B/C activity currently occurring at TNI would remain the same while other military aircraft operations would increase by 15 percent, related to transport of materials, equipment, and personnel to support training. Total airfield operations at TNI would increase less than 1 percent, from 29,207 to 29,308. As with the baseline condition, each landing or take-off is counted as an operation for noise modeling purposes and majority of operations would take place during the day (approximately 75 of operations occurring during the acoustic day, between 7 a.m. and 10 p.m.). No sensitive receptors would experience a day-night average sound level of 65 decibels or greater due to operations at TNI under Alternative 1 (Figure 4.8-6).

Under Alternative 1, military flight training in and around Tinian would also increase, as described in Chapter 2 and additional modeling details are presented in Appendix J. Approximately one half of the additional military flight time would occur within the Military Lease Area or within 1 mile from shore. Training within the Military Lease Area would involve helicopters or tilt-rotorcraft (such as CH-53, AH-1, UH-1, and MV-22) flying approaches, hovering, and landing at the proposed Landing Zones. Additionally, these helicopters and tilt-rotor aircraft, as well as fixed wing fighters (F-18E/F and F-35A/B/C) and tankers (KC-130) would fly approaches to and takeoffs from the runways in North Field.

Figure 4.8-7 depicts the day-night average sound level contours for the Military Lease Area under Alternative 1. Aviation training at North Field would result in noise contours that would extend both west and east from runway Baker primarily due to military aircraft operations. There are five locations within the 65 decibel day-night average sound level: T2: Lake Hagoi at 70 decibels; T12: Unai Chiget at 65 decibels, T13: Unai Chulu at 76 decibels, T16: North Field National Historic Landmark at 65 decibels, and T26: Unai Babui at 76 decibels. These locations are just beyond the western edge of the North Field runways, and outdoor recreational activities at these sound levels are generally still considered to be compatible. Under Alternative 1, the training activity proposed at Landing Zones would result in a day-night average sound level contour of 65 decibels or greater centered around each Landing Zone, but the boundary does not extend much beyond the footprint of each Landing Zone. This occurs because the lowest portion of each operation (less than 30 feet and down to the ground) only occurs within the Landing Zone boundary. Aircraft operations beyond the boundary of each Landing Zone would be at greater altitudes and be spread throughout the Military Lease Area.



**Figure 4.8-6 Day-Night Average Sound Level Contours (A-weighted Decibels) at TNI under Alternative 1**



**Figure 4.8-7 Day-Night Average Sound Level Contours (A-weighted Decibels) in Military Lease Area under Alternative 1**

Table 4.8-6 presents the noise levels at select sensitive receptors when considering the additional operations at TNI and aviation training proposed to occur at North Field and Landing Zones throughout the Military Lease Area. The cumulative day-night average sound levels presented in Table 4.8-6 and depicted in Figures 4.8-6 and 4.8-7 are meant to characterize long-term exposure to noise for the purpose of determining land use compatibility and identifying when indoor or outdoor noise level reduction measures may be appropriate to achieve compatibility for various types of uses. In general, all land uses are considered to be compatible with a day-night average sound level below 65 decibels and land uses that involve outdoor activities are not recommended in areas with sound levels above 80 decibels.

**Table 4.8-6 Alternative 1 Aviation Training - Modeled Day-Night Average Noise Levels at Sensitive Receptors on Tinian**

<i>ID</i>	<i>Description</i>	<i>Type</i>	<i>Alt 1 Noise Level – DNL (dB) / Change from Modeled Baseline<sup>1</sup></i>
T2	Lake Hagoi	Natural Resource	70 / +26
T3	Mahalang Ephemeral Ponds	Natural Resource	60 / +20
T5	Mount Lasso Overlook Area	Natural Resource	55 / +10
T6	Bateha 1 – Isolated Wetlands	Natural Resource	49 / +3
T8	Bateha 2 – Isolated Wetlands	Natural Resource	49 / +5
T12	Unai Chiget	Cultural Resource	65 / +27
T13	Unai Chulu	Cultural Resource	76 / +34
T14	Unai Dankulo	Cultural Resource	51 / +5
T16	North Field National Historic Landmark	Cultural Resource	65 / +25
T20	Puntan Taddong (Ushi Point)	Natural Resource	53 / +17
T22	Unai Lam Lam	Cultural Resource	62 / +24
T25	Natural Resource Area	Natural Resource	57 / +15
T26	Unai Babui	Natural Resource	76 / +38

*Legend:* dB = decibels; DNL = day-night average noise level; ID = identification.

*Notes:* <sup>1</sup>Noise levels calculated based on aircraft activity that occurs at TNI and military aviation training throughout the Military Lease Area, including use of North Field and landing zones (Appendix J, *Noise Study*). Results presented here as exterior noise levels. Typical building construction results in a reduction of noise of level of 15 dB with windows open and 25 dB for windows closed (DoD Noise Working Group 2013).

There would be no human populations regularly gathering at sensitive receptors that fall within the 65 decibel day-night average sound level contours shown in Figure 4.8-6 or 4.8-7. Additionally, no sensitive receptors would experience a day-night average sound level of greater than 80 decibels due to operations at TNI, North Field or Landing Zones under Alternative 1. The single event noise metrics presented further below in this section are used to evaluate noise impacts that may be experienced by people visiting natural or cultural resources within the Military Lease Area while aviation activities are occurring.

### Additional Noise Effects

#### *Single Event Noise from Aviation Training*

Table 4.8-7 presents single event noise levels from aircraft flying over the airspace to North Field or Landing Zones in the Military Lease Area. The sound exposure level and maximum sound level provide the noise level of a single aircraft event in A-weighted decibels. However, these metrics do not represent a continuous source of noise, as the flight activities are intermittent in nature.

**Table 4.8-7 Single Event Noise Levels (Sound Exposure Level and Maximum Sound Level) for Common Military Aircraft Operating Conditions**

Altitude (ft AGL)	MV-22 at 80 kts		CH-53 at 80 kts		AH-1/UH-1 at 80 kts		F-35A/B/C at 220 kts		F-18E/F at 220 kts		KC-130 at 220 kts	
	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)	SEL (dB)	L <sub>max</sub> (dB)
300	98	91	97	91	96	88						
500	95	86	95	87	93	84						
2,000	89	75	87	73	87	73	110	102	111	104	85	77
5,000							100	90	101	93	76	66
10,000							90	80	91	82	67	56

Legend: ft AGL = feet above ground level; kts = knots (speed); dB = decibels; L<sub>max</sub> = maximum sound level; SEL = sound exposure level.

Note: Modeled at a constant speed and altitude.

In terms of the magnitude of noise, helicopter or tilt-rotor overflights at 300 feet above ground level would produce a single event maximum sound level of 88 to 91 decibels, or a sound exposure level of 96 to 98 decibels. Similar sounds at that level would occur from a heavy truck driving by less than 50 feet away or a motorcycle at 25 feet, which can be annoying or cause discomfort for a brief period of time. Overflights at 500 feet would be quieter, more equivalent to the sound of an alarm clock or garbage disposal at 3 feet away. Although fixed-wing aircraft (i.e., F-18E/F and F-35A/B/C) would generate greater maximum sound levels of up to 102 to 104 decibels and a sound exposure level of up to 111 decibels, these sound levels would generally only occur within the vicinity of the runways at North Field during an approach or departure. Range Control would implement mandatory safety exclusion zones to restrict access for the general public when and where required to avoid exposure to sound levels that would be potentially harmful. Fixed-wing aircraft operate primarily at altitudes greater than 10,000 feet above ground level and pass through the lower altitudes in a matter of seconds to minutes, and therefore noise exposure would be of short duration. Table 4.8-8 presents the maximum A-weighted sound level from aircraft operations at select points of interest under Alternative 1.

**Table 4.8-8 Alternative 1 Aviation Training Maximum Noise Levels at Sensitive Receptors on Tinian and Saipan**

ID	Description	Type	L <sub>max</sub> (dB) <sup>1</sup>
T1	Tinian High School	School	104
T2	Lake Hagoi	Natural Resource	102
T4	Marpo Heights	Residential	107
T5	Mount Lasso Overlook Area	Natural Resource	100
T6	Bateha 1 – Isolated Wetlands	Natural Resource	99
T7	Northeast of Marpo Heights	Residential	97
T9	San Jose	Residential	93
T10	San Jose Catholic Church	Church	94
T11	Tinian Elementary School	School	96
T12	Unai Chiget	Cultural Resource	95
T13	Unai Chulu	Cultural Resource	108
T14	Unai Dankulo	Cultural Resource	104

<i>ID</i>	<i>Description</i>	<i>Type</i>	<i>L<sub>max</sub> (dB)<sup>1</sup></i>
T15	Unai Masalok	Cultural Resource	99
T16	North Field National Historic Landmark	Cultural Resource	100
T18	Old West Field	Cultural Resource	102
T19	Northern Marianas College – Tinian	School	103
T20	Puntan Taddong (Ushi Point)	Natural Resource	91
T21	Native Limestone Forest	Natural Resource	105
T22	Unai Lam Lam	Cultural Resource	99
T24	Jones (Kammer) Beach/Park	Natural Resource	98
T25	Natural Resource Area	Natural Resource	104
T26	Unai Babui	Natural Resource	108
S1	Saipan Southern High School	School	87
S2	Coral Ocean Resort/Golf Course	Resort	92

*Legend:* dB = decibels; ID = identification; L<sub>max</sub> = maximum sound level.

*Note:* <sup>1</sup> Results presented here as exterior noise levels. Typical building construction results in a reduction of noise of level of 15 dB with windows open and 25 dB for windows closed (DoD Noise Working Group 2013).

For aircraft noise, a maximum A-weighted sound level between 70 to 80 decibels corresponds to a low likelihood of annoyance, between 80 and 95 decibels produces a moderate likelihood of annoyance, and above 95 decibels there is a high likelihood of annoyance when the sounds in this range occur frequently (approximately 50-200 operations per day) (DoD Noise Working Group 2018). The aircraft operations at North Field and Landing Zones would not occur on a regular schedule, as with commercial aircraft activities at TNI. Aircraft activity would occur most frequently during large training events but would also occur periodically throughout the year during medium and small events. However, based on the single event noise levels presented in Table 4.8-7 and the distance of sensitive receptors such as residences and schools from the Military Lease Area, interruptions to conversations or indoor speech or classroom learning would be unlikely to occur. The screening criteria for classroom learning impacts begins at 60 decibels day-night average sound level, and no schools are located in areas that would experience a day-night average sound level exceeding 50 decibels.

Additionally, although aircraft operations at North Field and throughout the Military Lease Area would not directly create noise impacts on Saipan, aviation activity under Alternative 1 would result in increased numbers of aircraft (like F-35A/B/C) transiting through the general area north of Tinian, which may result in an increase in the number of military flights that could be heard from the southern portion of Saipan. Sleep disruption refers to noise events occurring during the nighttime that could interfere with people’s sleep. Under Alternative 1 the increase in nighttime flights at TNI would increase by less than 1 percent from baseline, nighttime training in the Military Lease Area at night would occur far from residential areas.

### Summary

Under Alternative 1, there would be live-fire and aviation activities that occur at the same time, especially during large training events. Live-fire and aviation activities would also occur during medium training events and less frequently during small training events. Overall, the proposed training in the Military Lease Area, live-fire and aviation training, would generate elevated noise levels compared to the No Action Alternative. Based on the cumulative and single event noise levels described above, there may be some temporary disturbance to recreational users or

individuals engaged in ranching and grazing in the Military Lease Area, but these effects would be limited in duration and scope. As described above, Range Control would restrict access to surface danger zones and other areas within the Military Lease Area as required to preserve safety. This would ensure the public would not be present in areas where sound levels would be potentially harmful to human hearing. Range Control would provide advance notice of training schedules to the public to make them aware of when and where noise from training may be heard. Therefore, training under Alternative 1 would result in less than significant impacts from ground and aviation training noise.

#### **4.8.3.2 Construction**

Short-term, moderate impacts on the noise environment would be anticipated from construction associated with Alternative 1, including vegetation trimming and clearing, grading and earthmoving, and construction of the Base Camp and other training infrastructure. New temporary sources of noise would be present at the different construction locations at varied periods throughout the entire construction phase, over a 10-to-15-year period. Projects would be constructed at different locations throughout the Military Lease Area. Construction would typically be limited to daytime hours (7 a.m. to 10 p.m.). This would result in a temporary increase in noise at the project site and surrounding area. For example, at 50 feet away, construction equipment can produce maximum sound levels between 70 and 95 decibels, but that dissipates to around 65 decibels at a distance of 300 feet and less than 65 decibels at 1,000 feet. There are no residences, schools, or churches located within the Military Lease Area that would be affected by construction noise; however, some cultural resources would experience temporary moderate impacts. As construction would be intermittent and temporary, occur only over small areas, only in the Military Lease Area, and would be managed by Range Control to minimize impacts to cultural resource sites, Alternative 1 construction would result in less than significant noise impacts.

### **4.8.4 Alternative 2**

#### **4.8.4.1 Training**

##### **Ground Training**

Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. All training would occur within the Military Lease Area and impacts would be similar to those described for Alternative 1. The increased training tempo may result in additional days when noise from ground training (vehicle movements, live-fire range operations) may occur, but it would not expose new or different receptors to noise levels that are different from what was described for Alternative 1.

##### **Aircraft Training**

###### *Cumulative (Annual Average) Noise Impacts*

**TNI and Military Lease Area (North Field and Landing Zones).** Under Alternative 2, no additional training flights are proposed to occur at TNI, and the baseline number of KC-135, F-18E/F, and F-35A/B/C at TNI would remain unchanged. There would be additional flights to TNI to deliver materials and equipment to support training, resulting in an increase of less than 1 percent of annual operations (from 29,207 to 29,238). The number of noise sensitive areas that

would experience a day-night average sound level of 65 decibels would remain at zero due to operations at TNI under Alternative 2. The change in Day-Night Average Sound Level solely related to the aircraft activity at TNI would be approximately 0.2 decibels relative to the No Action Alternative, which would be a less than significant noise impact.

While the tempo of training increases 5 percent over the No Action Alternative, the individual activities involving aircraft can have a range of aircraft types and flight times required to achieve the training objectives. Thus, military flight training in and around Tinian would increase for Alternative 2, as described in Chapter 2 and Appendix J. Similar to Alternative 1, approximately half of the annual flight time would occur at Landing Zones, North Field, within the airspace above the Military Lease Area or within 1 mile from shore. Training would involve the same aircraft types as Alternative 1: helicopters or tilt-rotorcraft (such as CH-53, AH-1, UH-1, and MV-22) flying approaches, hovering, and landing at the proposed Landing Zones, and helicopters, tilt-rotor aircraft, fixed wing fighters (F-18E/F and F-35A/B/C) and tankers (KC-130) flying approaches to and takeoffs from the runways in North Field. Table 4.8-9 presents the noise levels at key sensitive receptors, which accounts for the change in aviation training in the Military Lease Area and the activity related to materials, equipment, and personnel transport to support training at TNI.

**Table 4.8-9 Alternative 2 Aviation Training - Modeled Day-Night Average Noise Levels at Sensitive Receptors on Tinian**

<i>ID</i>	<i>Description</i>	<i>Type</i>	<i>Alt 2 Noise Level – DNL (dB) / Change from Modeled Baseline<sup>1</sup></i>
T2	Lake Hagoi	Natural Resource	67 / +23
T3	Mahalang Ephemeral Ponds	Natural Resource	57 / +17
T5	Mount Lasso Overlook Area	Natural Resource	52 / +7
T6	Bateha 1 – Isolated Wetlands	Natural Resource	48 / +2
T8	Bateha 2 – Isolated Wetlands	Natural Resource	47 / +3
T12	Unai Chiget	Cultural Resource	62 / +24
T13	Unai Chulu	Cultural Resource	73 / +31
T14	Unai Dankulo	Cultural Resource	49 / +3
T16	North Field National Historic Landmark	Cultural Resource	62 / +22
T20	Puntan Taddong (Ushi Point)	Natural Resource	59 / +15
T22	Unai Lam Lam	Cultural Resource	54 / +21
T25	Natural Resource Area	Natural Resource	54 / +12
T26	Unai Babui	Natural Resource	73 / +35

*Legend:* dB = decibels; DNL = day-night average noise level; ID = identification.

*Notes:* <sup>1</sup> Noise levels calculated based on aircraft activity that occurs at TNI and military aviation training throughout the Military Lease Area, including use of North Field and landing zones (Appendix J, *Noise Study*). Results presented here as exterior noise levels. Typical building construction results in a reduction of noise of level of 15 dB with windows open and 25 dB for windows closed (DoD Noise Working Group 2013).

Under Alternative 2 the training activity proposed at Landing Zones would result in similar impacts as described for Alternative 1, with the day-night average sound level contours of 65 decibels or greater centered at each location but generally limited to the boundary of the Landing Zone or the area immediately adjacent. The activity that would occur at North Field would result in noise contours that would extend both west and east along the heading of runway Baker primarily due to military jet operations that would perform arrival and departures. There are three

locations that would have a day-night average sound level above 65 decibels: T2: Lake Hagoi, T13: Unai Chulu, and T26: Unai Babui at 67, 73, and 73 decibels, respectively. These locations are just beyond the western edge of the North Field runways, and outdoor recreational activities at these day-night average sound level are generally still considered to be compatible. The remaining modeled operations that would be spread throughout the Military Lease Area and within 1 mile off-shore would produce day-night average sound levels between 40 to 55 decibels, which are considered compatible with all land uses. Therefore, changes to cumulative day-night average sound level would result in less than significant impacts to land use compatibility from aviation training noise under Alternative 2.

### **Single Event Noise Impacts**

Under Alternative 2, the single event noise impacts would be similar to those described for Alternative 1. The sound exposure level and maximum sound levels would be the same as shown in Table 4.8-8. The number of flights would be less than under Alternative 1, with the flight speeds, altitudes, and areas where flights would occur would remain the same as under Alternative 1. Thus, aircraft training under Alternative 2 would be likely to produce annoyance and not expected to result in interruptions to conversations or indoor speech, or classroom learning on Tinian or Saipan. Figures 4.8-8 and Figure 4.8-9 depict the day-night average sound level contours for TNI and the Military Lease Area under Alternative 2, respectively. The full noise modeling results for proposed live-fire training can be found in Appendix J, Sections J.3.1.2 and J.3.2.1 Noise Exposure. Therefore, the single event noise levels from training under Alternative 2 would result in less than significant impacts.

In summary, training under Alternative 2 would result in similar impacts to those described for Alternative 1, with the primary difference being less flight activities, which would result in fewer, and still infrequent, single event noise levels that may produce annoyance related to aviation training. Therefore, training under Alternative 2 would result in less than significant impacts from noise.

### **Additional Noise Effects**

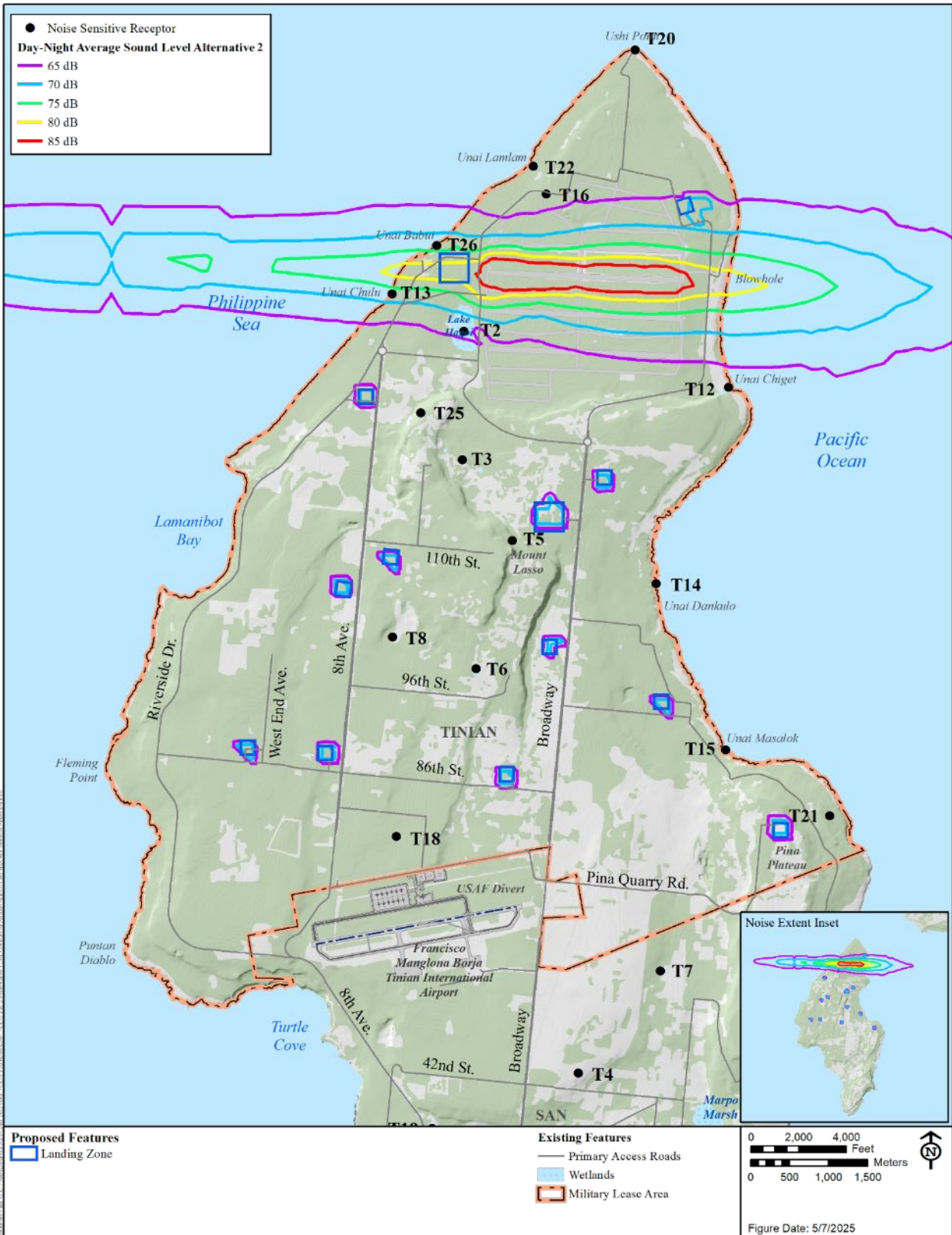
Additional noise effects from training under Alternative 2 would result in the same conclusions as Alternative 1. There would not be a potential for hearing loss, increase to classroom disturbance, or increase in sleep disturbance. The primary difference for Alternative 2 would be less flight activities than Alternative 1, which would result in fewer, and still infrequent, single event noise levels that may produce annoyance related to aviation training.

#### **4.8.4.2 Construction**

Construction under Alternative 2 would be identical to Alternative 1, and therefore impacts would be the same as described for Alternative 1. Therefore, construction under Alternative 2 would result in less than significant noise impacts.



**Figure 4.8-8 Day-Night Average Sound Level Contours (A-weighted Decibels) at TNI under Alternative 2**



**Figure 4.8-9 Day-Night Average Sound Level Contours (A-weighted Decibels) in Military Lease Area under Alternative 2**

## 4.9 Air Quality

This section evaluates potential impacts to air quality and the contribution of greenhouse gas emissions that could result from implementing the Proposed Action. A region's air quality depends on many factors, including the type and amount of pollutants and how they are emitted into the atmosphere, the size and topography of the air basin, and the local meteorological conditions.

### 4.9.1 Approach to Analysis

This analysis estimated emissions associated with the alternatives and assessed the potential impacts of increased pollutant concentrations. It examines long-term increases in criteria pollutant and selected hazardous air pollutant emissions in relation to public proximity to the emissions, including sensitive populations, and prevailing wind patterns. These emissions were evaluated based on the location of emission sources, the magnitude of emissions, the frequency of occurrence, the location of sensitive receptors, and how and where the emissions would disperse based on local meteorology. Emission sources associated with the construction and operations of the Proposed Action include the following:

- Use of diesel- and gas-powered construction equipment
- Movement of trucks containing construction materials or removal of debris
- Commuting of construction workers
- Dust emissions from earth disturbance and travel on-road surfaces
- Vehicles used to travel throughout the Military Lease Area during training events and ground equipment used for training
- Fixed-wing and rotary-wing aircraft
- New stationary sources (e.g., emergency electrical power generators at the Base Camp, and a small incinerator for solid waste management)<sup>1</sup>
- Live-fire training at Multi-Purpose Maneuver Range and Explosives Training Range (use of small caliber weapons and ordnance)

Appendix K describes in detail the emission estimation methodology used in this analysis. Emissions were evaluated based on whether they would occur on land or by aircraft over water, out to 3 nautical miles from shore within CNMI territorial seas, between 3 and 12 nautical miles from shore within U.S. territorial sea, and beyond 12 nautical miles from shore. Criteria pollutant and hazardous air pollutant emissions were limited to releases at or below 3,000 feet above ground level (U.S. EPA 1992). The 3,000-foot level serves as a common altitude cap for emissions that could impact ground level air quality, as emissions above this altitude are above the atmospheric inversion layer and have little interaction with the ground level. Greenhouse gas emissions were also estimated for aircraft operating above 3,000 feet.

The Proposed Action would involve live-fire from the Multi-Purpose Maneuver Range with 0.50 caliber ammunition and below, and from the Explosives Training Range, with a maximum of 40 pounds net explosive weight. Emissions from munitions and ordnance would be limited to the two

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<sup>1</sup> Details such as the size of emergency generators that would be installed or whether USMC would pursue using an incinerator to manage solid waste are notional at this time (refer to Section 4.11, Utilities, for a description of the options for solid waste management under the Proposed Action). The USMC would pursue any air permits required, including those for minor sources from the CNMI Bureau of Environmental Quality, based on the size and specifications of the equipment to be acquired, when known.

live-fire range areas and consist of hazardous air pollutants such as acrolein, benzene, toluene, and particulate matter. The Agency for Toxic Substances and Disease Registry evaluated air emissions and their dispersion associated with munition constituents at active DoD ranges and munitions treatment sites (Agency for Toxic Substances and Disease Registry 2003a). In this study, the dispersion of air contaminants associated with weapons and ordnance use was found to be primarily influenced by the prevailing wind direction, and the levels of various hazardous air pollutants measured were not at concentrations associated with adverse health effects. Additionally, measured particulate matter concentrations were significantly lower than applicable air quality standards (Agency for Toxic Substances and Disease Registry 2003b). Since the studies concluded there were no health hazards from weapons firing and ordnance use at active DoD ranges and the prevailing easterly trade winds transport emissions away from sensitive receptors on Tinian, a quantitative analysis of emissions associated with weapons firing and ordnance disposal was not conducted.

For construction, while emissions were quantified for CO, PM<sub>10</sub>, and PM<sub>2.5</sub>, a localized hot-spot analysis was not conducted as proposed construction-related activities that cause temporary increases in emissions would last 5 years or less at any individual site, per C.F.R. section 93.123(c)(5). As shown in Appendix K, while the proposed construction would last longer than 5 years, construction activities would not last longer than 5 years at any one location.

### **Emissions Calculations**

Air pollutant emissions released during construction and training are evaluated for each alternative. Emission calculation details appear in Appendix K.

Construction emissions are calculated for on-road and non-road construction equipment, fugitive dust, on-road vehicles for construction worker commuting, and construction phasing. Construction is assumed to take place in phases over 10 to 15 years, with no individual project exceeding 5 years to construct. Estimates of the emissions from construction equipment were developed based on the anticipated types of equipment and levels of use, including the estimated hours of equipment use and appropriate emission factors for each type of equipment.

Emission factors for criteria pollutants, hazardous air pollutants, and greenhouse gases from both construction equipment and vehicles were derived from the most recent U.S. EPA's Motor Vehicle Emission Simulator Version 4.0 emission factor model (U.S. EPA 2023c), which is associated with the national default model database for both non-road equipment and on-road vehicle engines. The quantity and type of equipment and vehicle travel miles necessary were calculated from construction estimates for each project component. Because the Motor Vehicle Emission Simulator model does not contain data for the CNMI, the database for the U.S. Virgin Islands was used, based on a recommendation from the U.S. EPA (D. Brzezinski, Personal Communication, 2013). This database was selected due to the similar remote nature of the U.S. Virgin Islands compared to the CNMI. Selecting model input parameters available for a similar remote island for Tinian is considered reasonable, as standard control measures or population data inputs are limited compared to most states.

Training event emissions include those from on-road and off-road vehicles, aircraft, and stationary combustion sources, such as generators. Mobile vehicles associated with the various proposed training operations would generate fugitive dust emissions within areas of exposed soil. As with construction, emission factors for criteria pollutants, hazardous air pollutants, and greenhouse

gases for mobile and non-road sources were derived from the U.S. EPA Motor Vehicle Emission Simulator Version 4.0 emission factor model. Particulate matter components in fugitive dust emissions from training vehicles maneuvering on unpaved roads were calculated using emission factors from the U.S. EPA guidance in AP-42, *Compilation of Air Pollutant Emissions Factors from Stationary Sources*. Stationary electrical generator emissions were calculated using factors from U.S. EPA AP-42. Aircraft emissions were calculated using emission factors from the 2015 *Mariana Islands Testing and Training EIS/OEIS* and the 2020 *Mariana Islands Testing and Training Supplemental EIS/OEIS* (DON 2015b, 2020).

#### **4.9.2 No Action Alternative**

##### **4.9.2.1 Criteria and Hazardous Air Pollutant Emissions**

Under the No Action Alternative, ground and aviation training events would continue in the Military Lease Area with the same type of activities and at the same tempo as described in previous NEPA documents (DON 2010a, 2015b). In addition, all actions related to the U.S. Air Force Divert project (U.S. Air Force 2016, 2020) would be implemented. No change would occur under the No Action Alternative; therefore, there would be no change in impact on air quality.

Training event criteria pollutant and hazardous air pollutant emissions associated with the No Action Alternative, which were calculated following the methodology described above, are outlined in Table 4.9-1. Only those emissions sources that would also be included within the alternatives were considered (i.e., existing marine surface vessels were excluded for comparison purposes).

**Table 4.9-1 No Action Alternative Criteria Pollutant and Hazardous Air Pollutant Emissions from Training Events**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
On-road Vehicles <sup>2</sup>	5.442	0.156	0.178	0.002	0.040	0.009	0.046
Nonroad Vehicles and Equipment <sup>2</sup>	2.429	10.148	0.825	0.029	0.517	0.502	0.332
Aircraft	194.572	226.016	27.525	16.270	60.151	54.148	7.848
Fugitive Road Dust	--	--	--	--	1,429.688	145.281	--
<b>Total</b>	<b>202.443</b>	<b>236.320</b>	<b>28.528</b>	<b>16.301</b>	<b>1,490.396</b>	<b>199.940</b>	<b>8.226</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	10.747	17.617	1.584	0.834	4.091	3.686	0.452
<b>Total</b>	<b>10.747</b>	<b>17.617</b>	<b>1.584</b>	<b>0.834</b>	<b>4.091</b>	<b>3.686</b>	<b>0.452</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	0.913	20.505	0.123	0.606	5.656	5.090	0.035
<b>Total</b>	<b>0.913</b>	<b>20.505</b>	<b>0.123</b>	<b>0.606</b>	<b>5.656</b>	<b>5.090</b>	<b>0.035</b>
<b>Combined No Action Alternative Total</b>	<b>214.103</b>	<b>274.441</b>	<b>30.235</b>	<b>17.741</b>	<b>1,500.143</b>	<b>208.716</b>	<b>8.713</b>

*Legend:* < = less than; > = greater than; CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

*Notes:* <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

<sup>2</sup> Mobile sources include a wide variety of vehicles, engines, and equipment. "On-road" or highway sources include vehicles used on roads for transportation of passengers or freight. "Nonroad" (also sometimes referred to as "off-road") sources include vehicles, engines, and equipment used for construction, military training, and many other purposes. Refer to Appendix K, *Air Quality Emissions Calculations*, for more information on the on-road and non-road sources.

### 4.9.2.2 Greenhouse Gas Emissions

The estimated greenhouse gas emissions under the No Action Alternative are presented in Table 4.9-2.

**Table 4.9-2 No Action Alternative Greenhouse Gas Annual Emissions**

<i>Location/Source</i>	<i>Annual Emissions (Metric Tons)</i>			
	<i>CO<sub>2</sub></i>	<i>CH<sub>4</sub></i>	<i>N<sub>2</sub>O</i>	<i>CO<sub>2e</sub></i>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>				
On-road Vehicles	433.360	0.019	0.007	435.970
Off-road Vehicles and Equipment	9,537.226	0.035	0.016	9,542.897
Aircraft	109,234.569	4.588	0.896	109,616.186
<b>Total</b>	<b>119,205.155</b>	<b>4.642</b>	<b>0.919</b>	<b>119,595.053</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>				
Aircraft	10,406.566	0.435	0.085	10,442.857
<b>Total</b>	<b>10,406.566</b>	<b>0.435</b>	<b>0.085</b>	<b>10,442.857</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>				
Aircraft	6,614.155	0.269	0.054	6,636.910
<b>Total</b>	<b>6,614.155</b>	<b>0.269</b>	<b>0.054</b>	<b>6,636.910</b>
<b>&gt; 3,000 ft Altitude</b>				
Aircraft	458,898.685	19.148	3.759	460,497.556
<b>Total</b>	<b>458,898.685</b>	<b>19.148</b>	<b>3.759</b>	<b>460,497.556</b>
<b>Combined No Action Alternative Total</b>	<b>595,124.561</b>	<b>24.494</b>	<b>4.817</b>	<b>597,172.376</b>

*Legend:* < = less than; > = greater than; CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; CO<sub>2e</sub> = carbon dioxide equivalent; ft = feet; N<sub>2</sub>O = nitrous oxide; nm = nautical miles; U.S. = United States.

### 4.9.3 Alternative 1

#### 4.9.3.1 Criteria and Hazardous Air Pollutant Emissions

Construction and training event air emissions for both criteria pollutants and hazardous air pollutants associated with Alternative 1 are presented in Table 4.9-3 through Table 4.9-6. Table 4.9-5 presents emissions that would be generated from stationary sources. While details such as the size of emergency generators that would be installed or whether USMC would pursue using an incinerator to manage solid waste are notional at this time, assumptions have been made in order to quantify the potential to emit for each piece of equipment for disclosure purposes. The potential use of a small diesel-powered solid waste incinerator at the Base Camp is an example of a permitted source. The emission limits (or caps) for this small incinerator are conservatively assumed in the emission analysis. Other minor stationary source equipment includes diesel-powered standby generators used only during power outages at the Base Camp, surface radar sites, and radio communications towers. Emissions from these generators would be intermittent; 500 operational hours per year are assumed for each generator. Once specifics are known for an individual piece of equipment (e.g., a diesel-powered emergency generator, a solid waste incinerator, which would only be considered to minimize waste volume if on- and off-island disposal facilities are not available), it would be evaluated and, if determined to not be an exempt source, the appropriate air permit approvals would be pursued prior to use. Table 4.9-6 presents the maximum annual emissions for each pollutant over any of the construction years, when

considering the maximum emissions from construction overlapping with training occurring in that year.

**Table 4.9-3 Alternative 1 Criteria Pollutant and Hazardous Air Pollutant Emissions from Training Events**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
On-road Vehicles <sup>2</sup>	6.400	0.184	0.210	0.003	0.047	0.011	0.054
Nonroad Vehicles and Equipment <sup>2</sup>	4.282	18.029	1.432	0.058	0.906	0.879	0.569
Aircraft	330.254	348.666	46.358	23.319	104.995	94.508	13.218
Fugitive Road Dust	--	--	--	--	3,145.767	316.889	--
<b>Total</b>	<b>340.937</b>	<b>366.880</b>	<b>48.000</b>	<b>23.379</b>	<b>3,251.715</b>	<b>412.286</b>	<b>13.841</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	33.595	39.735	5.075	1.931	12.843	11.563	0.885
<b>Total</b>	<b>33.595</b>	<b>39.735</b>	<b>5.075</b>	<b>1.931</b>	<b>12.843</b>	<b>11.563</b>	<b>0.885</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	2.248	51.008	0.277	1.353	14.725	13.253	0.042
<b>Total</b>	<b>2.248</b>	<b>51.008</b>	<b>0.277</b>	<b>1.353</b>	<b>14.725</b>	<b>13.253</b>	<b>0.042</b>
<b>Combined Alternative 1 Total</b>	<b>376.780</b>	<b>457.623</b>	<b>53.352</b>	<b>26.663</b>	<b>3,279.283</b>	<b>437.102</b>	<b>14.768</b>

Legend: CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

Notes: <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

<sup>2</sup> Mobile sources include a wide variety of vehicles, engines, and equipment. "On-road" or highway sources include vehicles used on roads for transportation of passengers or freight. "Nonroad" (also sometimes referred to as "off-road") sources include vehicles, engines, and equipment used for construction, military training, and many other purposes. Refer to Appendix K, *Air Quality Emissions Calculations*, for more information on the on-road and non-road sources.

**Table 4.9-4 Alternative 1 Criteria Pollutant and Hazardous Air Pollutant Emissions from Construction**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
2026	2.741	0.106	0.408	0.001	0.047	0.042	0.137
2027	2.741	0.106	0.408	0.001	0.047	0.042	0.137
2028	4.752	0.639	0.238	0.003	0.082	0.040	0.079
2030	2.873	0.470	0.404	0.001	0.064	0.057	0.138
2031	0.726	0.504	0.077	0.001	0.033	0.028	0.030
2033	0.475	0.385	0.031	0.001	3.093	0.321	0.013
2036	0.048	0.073	0.005	0.000	0.494	0.052	0.002
2038	0.028	0.014	0.004	0.000	3.077	0.309	0.001
2039	0.028	0.014	0.004	0.000	3.077	0.309	0.001
<b>Combined Alternative 1 Total</b>	<b>14.413</b>	<b>2.310</b>	<b>1.578</b>	<b>0.008</b>	<b>10.013</b>	<b>1.201</b>	<b>0.539</b>

Legend: < = less than; CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

Note: <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

**Table 4.9-5 Alternative 1 Criteria Pollutant and Hazardous Air Pollutant Emissions from Stationary Sources**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
Emergency Generators <sup>2</sup>	2.866	2.772	0.395	0.006	0.176	0.171	0.005
Solid Waste Incinerator (permitted thresholds) <sup>3</sup>	<1	<1	<1	<1	<1	<1	<0.1
<b>Combined Alternative 1 Total</b>	<b>&lt;3.866</b>	<b>&lt;3.772</b>	<b>&lt;1.395</b>	<b>&lt;1.006</b>	<b>&lt;1.176</b>	<b>&lt;1.171</b>	<b>&lt;0.105</b>

Legend: < = less than; CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

Notes: <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

<sup>2</sup> Assumptions on the types and numbers of emergency generators are notional at this time. For this analysis, six 200-kilowatt diesel-powered emergency generators and two 50-kilowatt diesel-powered emergency generators operating up to 500 hours per year were evaluated.

<sup>3</sup> Refer to Section 4.11, Utilities, for a description of the options for solid waste management under the Proposed Action. A solid waste incinerator would only be considered to minimize waste volume if on- and off-island disposal facilities are not available. For this analysis, the emission limits for a permitted stationary minor source per Northern Mariana Islands Administrative Code section 65-10, Air Pollution Control Regulations section 65-10-303(e)(1), are presented to represent the operation of the potential small solid waste incinerator.

**Table 4.9-6 Alternative 1 Criteria Pollutant and Hazardous Air Pollutant Annual Emissions (Maximum Construction Year and Training Events Occurring Concurrently)**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
On-road Vehicles <sup>2</sup>	6.400	0.184	0.210	0.003	0.047	0.011	0.054
Nonroad Vehicles and Equipment <sup>2</sup>	4.282	18.029	1.432	0.058	0.906	0.879	0.569
Aircraft	330.254	348.666	46.358	23.319	104.995	94.508	13.218
Fugitive Road Dust	--	--	--	--	3,145.77	316.89	--
Stationary Sources	3.866	3.772	1.395	1.006	1.176	1.171	0.105
Maximum Construction Year	4.752	0.639	0.408	0.003	3.093	0.321	0.138
<b>Total</b>	<b>349.555</b>	<b>371.290</b>	<b>49.802</b>	<b>24.388</b>	<b>3,255.985</b>	<b>413.778</b>	<b>14.085</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	33.595	39.735	5.075	1.931	12.843	11.563	0.885
<b>Total</b>	<b>33.595</b>	<b>39.735</b>	<b>5.075</b>	<b>1.931</b>	<b>12.843</b>	<b>11.563</b>	<b>0.885</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	2.248	51.008	0.277	1.353	14.725	13.253	0.042
<b>Total</b>	<b>2.248</b>	<b>51.008</b>	<b>0.277</b>	<b>1.353</b>	<b>14.725</b>	<b>13.253</b>	<b>0.042</b>
<b>Combined Alternative 1 + Construction Total</b>	<b>385.398</b>	<b>462.034</b>	<b>55.155</b>	<b>27.672</b>	<b>3,283.553</b>	<b>438.594</b>	<b>15.011</b>
<b>Increase from No Action Alternative</b>	<b>171.295</b>	<b>187.592</b>	<b>24.920</b>	<b>9.931</b>	<b>1,783.410</b>	<b>229.878</b>	<b>6.298</b>

Legend: CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

Notes: <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

<sup>2</sup> Mobile sources include a wide variety of vehicles, engines, and equipment. "On-road" or highway sources include vehicles used on roads for transportation of passengers or freight. "Nonroad" (also sometimes referred to as "off-road") sources include vehicles, engines, and equipment used for construction, military training, and many other purposes. Refer to Appendix K, *Air Quality Emissions Calculations*, for more information on the on-road and non-road sources.

Criteria air pollutant and hazardous air pollutant emissions from construction activities and training activities associated with Alternative 1 would have a less than significant impact on the air quality on Tinian due to the following:

- Construction emissions would be temporary, and fugitive dust control measures would be implemented where practical and in accordance with the Northern Mariana Islands Administrative Code, section 65-10-103, Fugitive dust.
- Emissions produced by construction, training, and operational activities would predominantly occur within the Military Lease Area and would not be in proximity to sensitive receptors (i.e., residences, schools). The closest sensitive receptor is the Marpo Heights residential area which is located at a distance of 2,000 feet from the Military Lease Area boundary.

- Operational emissions include permitted and exempt (minor activity) stationary source equipment used at the Base Camp or within the Military Lease Area training areas. The permitted stationary source equipment would be a diesel-powered solid waste incinerator, if that option is pursued, to manage training-generated solid waste. Exempt stationary source equipment would primarily be smaller equipment such as water heaters or standby emergency generators for the Base Camp, surface radar sites, and radio communications towers used only during power outages. All new permitted stationary sources would be evaluated and permitted as appropriate through the CNMI Bureau of Environmental and Coastal Quality. Stationary sources would be subject to emissions limits and control measures as applicable, per the Northern Mariana Islands Administrative Code, section 65-10, Air Pollution Control Regulations, and any specific conditions developed as part of the permitting process.
- Residents and visitors would be temporarily restricted from accessing areas immediately adjacent to or within a certain distance from where certain training activities occur within the Military Lease Area, such as aircraft activity or use of the live-fire ranges, which would minimize long-term exposure to operational emissions.
- Emissions from aircraft, which account for the majority of emissions during training events, excluding fugitive dust, would be released primarily at higher altitudes, increasing the dispersion of these emissions before they reach ground level, which decreases the concentration of criteria and hazardous air pollutants at any specific location.
- On-road emissions would be expected to occur primarily within the Military Lease Area. Outside the Military Lease Area, emissions would occur from transportation of service members and equipment or materials to be used during training from TNI or the Port of Tinian to training areas within the Military Lease Area. This would include a total of 50 individual bus trips on local roadways from TNI to and from the Military Lease Area in the days preceding and following a large-scale training event. The maximum daily traffic under Alternative 1, including existing traffic volume along the most heavily trafficked street on Tinian outside of the Military Lease Area, is about 2,500 vehicles per day. Because there are no monitoring stations on Tinian or in CNMI, average daily traffic counts around air monitoring stations in Honolulu, Kapolei and Pearl City, Hawaii, were used as a reference. Applying this methodology, even with an overly-conservative assumption that trips outside the Military Lease Area could occur on a daily basis, the total vehicle trips per day remain well below any actionable air levels.
- Hazardous air pollutant emissions per year are below the Clean Air Act major source thresholds of a combined total of 25 tons per year.

#### 4.9.3.2 Greenhouse Gas Emissions

Alternative 1 would generate an increase in greenhouse gas emissions during both construction and training events as compared to the No Action Alternative. These emissions, along with the net increase are presented in Table 4.9-7.

**Table 4.9-7 Alternative 1 Greenhouse Gas Annual Emissions (Maximum Construction Year and Training Events Occurring Concurrently)**

<i>Location/Source</i>	<i>Annual Emissions (Metric Tons)</i>			
	<i>CO<sub>2</sub></i>	<i>CH<sub>4</sub></i>	<i>N<sub>2</sub>O</i>	<i>CO<sub>2</sub>e</i>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>				
On-road Vehicles	509.674	0.022	0.008	512.743
Off-road Vehicles and Equipment	19,317.797	0.061	0.028	19,327.627
Aircraft	175,819.613	7.378	1.442	176,433.673
Stationary Sources	544.912	0.022	0.004	546.782
Maximum Construction Year	865.570	0.018	0.018	871.386
<b>Total</b>	<b>197,057.565</b>	<b>7.502</b>	<b>1.500</b>	<b>197,692.211</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>				
Aircraft	22,191.385	0.924	0.182	22,268.684
<b>Total</b>	<b>22,191.385</b>	<b>0.924</b>	<b>0.182</b>	<b>22,268.684</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>				
Aircraft	16,789.143	0.681	0.137	16,846.879
<b>Total</b>	<b>16,789.143</b>	<b>0.681</b>	<b>0.137</b>	<b>16,846.879</b>
<b>&gt; 3,000 ft Altitude</b>				
Aircraft	620,318.869	25.666	5.074	622,472.617
<b>Total</b>	<b>620,318.869</b>	<b>25.666</b>	<b>5.074</b>	<b>622,472.617</b>
<b>Combined Alternative 1 + Construction Total</b>	<b>856,356.963</b>	<b>34.774</b>	<b>6.893</b>	<b>859,280.390</b>
<b>Increase from No Action Alternative</b>	<b>261,232.402</b>	<b>10.280</b>	<b>2.076</b>	<b>262,108.014</b>

*Legend:* > = greater than; CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; CO<sub>2</sub>e = carbon dioxide equivalent; ft = feet; N<sub>2</sub>O = nitrous oxide; nm = nautical miles; U.S. = United States.

Greenhouse gas emissions generated from training and construction under Alternative 1 would contribute to the global atmosphere, regardless of their specific location of production. The net changes in greenhouse gas emissions resulting from Alternative 1, compared to the No Action Alternative, would increase CO<sub>2</sub>e emissions within both the CNMI and the U.S. territories by the percentages shown in Table 4.9-8, based on the most recent available greenhouse gas emissions inventories including the CNMI inventory from only partial sectors.

**Table 4.9-8 Net Increase in Greenhouse Gas Emissions from Proposed Action as Compared to CNMI and U.S. Territory Greenhouse Gas Emissions Inventories**

<i>2023 CNMI Priority Sector GHG Inventory (Metric Tons of CO<sub>2</sub>e)</i>	<i>2021 U.S. Territories<sup>1</sup> GHG Inventory (Metric Tons of CO<sub>2</sub>e)</i>	<i>Net Increase under Alternative 1</i>	<i>Net Increase under Alternative 2</i>
443,167	33,305,000	262,108	61,358
Percentage of 2023 CNMI Priority Sector Inventory		59.1	13.8
Percentage of 2021 U.S. Territories Inventory		0.8	0.2

*Notes:* <sup>1</sup> U.S. Territories (American Samoa, Guam, Hawaii, Northern Marianas Islands, U.S. Virgin Islands, and Puerto Rico) are included U.S. National Greenhouse Gas Inventory. The total land area of all U.S. Territories is 1.05 million hectares, representing 0.1 percent of the total land base for the U.S.

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; CO<sub>2</sub>e = carbon dioxide equivalent; GHG = greenhouse gas; U.S. = United States.

*Source:* CNMI Climate Planning and Policy Program 2024; U.S. EPA Agency 2024.

The net changes in greenhouse gas emissions resulting from Alternative 1 were also compared to equivalencies to help contextualize the emissions in more familiar terms, such as annual household emissions, average emissions from a certain number of vehicles on the road, or the quantity of fuel burned. Based on the difference between the greenhouse gas emission results of the No Action and Alternative 1 (Table 4.9-7), equivalency values (i.e., increases) were derived using U.S. EPA’s Greenhouse Gas Equivalencies Calculator (U.S. EPA 2024) and are summarized in Table 4.9-9.

**Table 4.9-9 Equivalency Examples for Maximum Net Annual Increases of Greenhouse Gas Emissions from Proposed Alternatives**

<i>Equivalent Source</i>	<i>Alternative 1</i>	<i>Alternative 2</i>
Barrels of crude oil consumed	606,835	142,057
Gasoline powered passenger vehicles driven for one year	61,138	14,312
Tanker truck’s-worth of gasoline	3,470	812
Natural gas-fired power plant in one year	0.686	0.16

Implementation of Alternative 1 would contribute directly to emissions of greenhouse gases from the combustion of fossil fuels during construction and training predominantly from mobile source combustion when training occurs. Compared to the No Action Alternative in future years, Alternative 1 would result in increased greenhouse gas emissions that could affect the CNMI’s efforts to achieve its long-term greenhouse gas emission reduction goals. However, the effect from change in greenhouse gas emissions should be evaluated on a global scale as all cumulative emissions contribute to the overall atmospheric greenhouse gas burden. Alternative 1 would only result in a small percentage of total greenhouse gas emissions in the U.S. Therefore, the greenhouse gas emissions from Alternative 1 should have a less than significant impact even though there is no single, universally accepted greenhouse gas emissions threshold for significance.

#### **4.9.4 Alternative 2**

##### **4.9.4.1 Criteria and Hazardous Air Pollutant Emissions**

Construction and training event criteria and hazardous air pollutant emissions associated with Alternative 2 are outlined in Table 4.9-10 and Table 4.9-11. The emissions from construction and stationary sources would be the same as shown for Alternative 1 (Tables 4.9-4 and 4.9-5). As with Alternative 1, the maximum construction year provided in Table 4.9-11 represents the maximum annual emissions for each pollutant over any of the construction years.

**Table 4.9-10 Alternative 2 Criteria Pollutant and Hazardous Air Pollutant Emissions from Training Events**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
On-road Vehicles <sup>2</sup>	6.400	0.184	0.210	0.003	0.047	0.011	0.054
Non-road Vehicles and Equipment <sup>2</sup>	2.907	12.239	0.976	0.039	0.617	0.598	0.388
Aircraft	231.904	262.771	32.528	18.377	73.632	66.281	9.275
Fugitive Road Dust	--	--	--	--	2,100.03	212.32	--
<b>Total</b>	<b>241.212</b>	<b>275.195</b>	<b>33.714</b>	<b>18.419</b>	<b>2,174.323</b>	<b>279.205</b>	<b>9.717</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	20.627	25.261	3.104	1.253	7.219	6.501	0.885
<b>Total</b>	<b>20.627</b>	<b>25.261</b>	<b>3.104</b>	<b>1.253</b>	<b>7.219</b>	<b>6.501</b>	<b>0.885</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	1.121	25.253	0.146	0.720	7.078	6.370	0.042
<b>Total</b>	<b>1.121</b>	<b>25.253</b>	<b>0.146</b>	<b>0.720</b>	<b>7.078</b>	<b>6.370</b>	<b>0.042</b>
<b>Combined Alternative 2 Total</b>	<b>262.959</b>	<b>325.709</b>	<b>36.964</b>	<b>20.391</b>	<b>2,188.620</b>	<b>292.076</b>	<b>10.644</b>

*Legend:* < = less than; > = greater than; CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

*Notes:* <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

<sup>2</sup> Mobile sources include a wide variety of vehicles, engines, and equipment. "On-road" or highway sources include vehicles used on roads for transportation of passengers or freight. "Nonroad" (also sometimes referred to as "off-road") sources include vehicles, engines, and equipment used for construction, military training, and many other purposes. Refer to Appendix K, *Air Quality Emissions Calculations*, for more information on the on-road and non-road sources. On-road vehicle emissions are assumed to be the same compared to Alternative 1 as the change in vehicle trips would be too small to be measurable.

**Table 4.9-11 Alternative 2 Criteria Pollutant and Hazardous Air Pollutant Annual Emissions (Maximum Construction Year and Training Events Occurring Concurrently)**

Location/Source	Annual Emissions (Tons)						
	CO	NO <sub>x</sub>	VOC	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Total HAPs <sup>1</sup>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>							
On-road Vehicles <sup>2</sup>	6.400	0.184	0.210	0.003	0.047	0.011	0.054
Nonroad Vehicles and Equipment <sup>2</sup>	2.907	12.239	0.976	0.039	0.617	0.598	0.388
Aircraft	231.904	262.771	32.528	18.377	73.632	66.281	9.275
Fugitive Road Dust	--	--	--	--	2,100.03	212.32	--
Stationary Sources	3.866	3.772	1.395	1.006	1.176	1.171	0.105
Maximum Construction Year	4.752	0.639	0.408	0.003	3.093	0.321	0.138
<b>Total</b>	<b>249.830</b>	<b>279.605</b>	<b>35.517</b>	<b>19.428</b>	<b>2,178.593</b>	<b>280.697</b>	<b>9.961</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	20.627	25.261	3.104	1.253	7.219	6.501	0.885
<b>Total</b>	<b>20.627</b>	<b>25.261</b>	<b>3.104</b>	<b>1.253</b>	<b>7.219</b>	<b>6.501</b>	<b>0.885</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>							
Aircraft	1.121	25.253	0.146	0.720	7.078	6.370	0.042
<b>Total</b>	<b>1.121</b>	<b>25.253</b>	<b>0.146</b>	<b>0.720</b>	<b>7.078</b>	<b>6.370</b>	<b>0.042</b>
<b>Combined Alternative 2 + Construction Total</b>	<b>271.577</b>	<b>330.119</b>	<b>38.767</b>	<b>21.401</b>	<b>2,192.889</b>	<b>293.568</b>	<b>10.887</b>
<b>Increase from No Action Alternative</b>	<b>57.474</b>	<b>55.678</b>	<b>8.532</b>	<b>3.660</b>	<b>692.746</b>	<b>84.852</b>	<b>2.174</b>

*Legend:* CO = carbon monoxide; ft = feet; HAP = hazardous air pollutant; nm = nautical miles; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particles with aerodynamic diameters less than or equal to a nominal 10 micrometers; PM<sub>2.5</sub> = particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers; SO<sub>x</sub> = sulfur oxides; U.S. = United States; VOC = volatile organic compound.

*Notes:* <sup>1</sup> HAPs include acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, isopropyl-benzene, methanol, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenol, propionaldehyde, styrene, toluene, xylene, and hexane.

<sup>2</sup> Mobile sources include a wide variety of vehicles, engines, and equipment. "On-road" or highway sources include vehicles used on roads for transportation of passengers or freight. "Nonroad" (also sometimes referred to as "off-road") sources include vehicles, engines, and equipment used for construction, military training, and many other purposes. Refer to Appendix K, *Air Quality Emissions Calculations*, for more information on the on-road and non-road sources. On-road vehicle emissions are assumed to be the same compared to Alternative 1 as the change in vehicle trips would be too small to be measurable.

Criteria air pollutant and hazardous air pollutant emissions from construction activities and training activities associated with Alternative 2 would have a less than significant impact on the air quality on Tinian for the same reasons as outlined for Alternative 1.

#### 4.9.4.2 Greenhouse Gas Emissions

Alternative 2 would also generate an increase in greenhouse gas emissions during both construction and training events as compared to the No Action Alternative. These emissions, along with the net increase are presented in Table 4.9-12. However, the increase in greenhouse gas emissions would be much less compared to Alternative 1, as presented in Table 4.9-7.

The net changes in greenhouse gas emissions from Alternative 2, compared to the No Action Alternative, would increase CO<sub>2</sub>e emissions within both the CNMI and the U.S. territories by the percentages shown in Table 4.9-10.

The net changes in greenhouse gas emissions resulting from Alternative 2 were also compared to equivalencies, such as annual household emissions, average emissions from a certain number of vehicles on the road, or the quantity of fuel burned that are summarized in Table 4.9-11. The changes in greenhouse gas emissions from Alternative 2 would only result in a small percentage of total greenhouse gas emissions in the U.S. Therefore, the greenhouse gas emissions from Alternative 2 should have a less than significant impact.

**Table 4.9-12 Alternative 2 Greenhouse Gas Annual Emissions (Maximum Construction Year and Training Events Occurring Concurrently)**

<i>Location/Source</i>	<i>Annual Emissions (Metric Tons)</i>			
	<i>CO<sub>2</sub></i>	<i>CH<sub>4</sub></i>	<i>N<sub>2</sub>O</i>	<i>CO<sub>2</sub>e</i>
<b>State (0-3 nm offshore) [&lt; 3,000 ft altitude]</b>				
On-road Vehicles	509.674	0.022	0.008	512.743
Off-road Vehicles and Equipment	13,047.661	0.042	0.019	13,054.355
Aircraft	128,374.929	5.390	1.053	128,823.380
Stationary Sources	544.912	0.022	0.004	546.782
Maximum Construction Year	865.570	0.018	0.018	871.386
<b>Total</b>	<b>143,342.746</b>	<b>5.495</b>	<b>1.102</b>	<b>143,808.646</b>
<b>Waters of U.S. (3-12 nm offshore) [&lt; 3,000 ft altitude]</b>				
Aircraft	14,919.438	0.623	0.122	14,971.456
<b>Total</b>	<b>14,919.438</b>	<b>0.623</b>	<b>0.122</b>	<b>14,971.456</b>
<b>High Seas (&gt;12 nm offshore) [&lt; 3,000 ft altitude]</b>				
Aircraft	8,203.306	0.333	0.067	8,231.524
<b>Total</b>	<b>8,203.306</b>	<b>0.333</b>	<b>0.067</b>	<b>8,231.524</b>
<b>&gt; 3,000 ft Altitude</b>				
Aircraft	489,813.914	20.393	4.011	491,519.058
<b>Total</b>	<b>489,813.914</b>	<b>20.393</b>	<b>4.011</b>	<b>491,519.058</b>
<b>Combined Alternative 2 + Construction Total</b>	<b>656,279.403</b>	<b>26.844</b>	<b>5.303</b>	<b>658,530.683</b>
<b>Increase from No Action Alternative</b>	<b>61,154.843</b>	<b>2.350</b>	<b>0.486</b>	<b>61,358.307</b>

*Legend:* < = less than; > = greater than; CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; CO<sub>2</sub>e = carbon dioxide equivalent; ft = feet; N<sub>2</sub>O = nitrous oxide; nm = nautical miles; U.S. = United States.

## 4.10 Public Health and Safety

### 4.10.1 Approach to Analysis

The analysis focuses on the Proposed Action’s potential impacts on Tinian to public health and safety from ground training, aviation training and civilian aviation, radio frequency and microwave emissions, natural hazards, construction, and protection of children from environmental health and safety risks. For each of these categories, the subsections below evaluate potential impacts relative to the existing conditions described in Section 3.10, taking into account regulatory standards, established safety protocols, and best management practices as applicable.

The Proposed Action also includes the establishment of a new lease and the reuse of existing facilities, including up to four communication towers at the former USAGM site on Saipan. However, no military training is proposed to occur on Saipan, and public access to the site would remain restricted. Therefore, no impacts to public health and safety are anticipated in association with the Saipan site.

#### **4.10.2 No Action Alternative**

Under the No Action Alternative, ground and aviation training events would continue on Tinian with the same or similar types of activities and tempo as described in previous NEPA documents (DON 2010, 2015). The existing environment also includes completed improvements associated with the U.S. Air Force Divert project (U.S. Air Force 2016, 2020). Additionally, projects under the Air Force's Agile Combat Employment program would proceed, including vegetation clearance and restoration of the runway and other engineered surfaces at North Field, which would improve roadways used for public access and benefit public health and safety. Military training within the Military Lease Area would continue under existing standard operating procedures that ensure public safety. Related to wildfires, no new ignition sources would be introduced by military training. Therefore, no changes or impacts to public health and safety would occur under the No Action Alternative.

#### **4.10.3 Alternative 1**

##### **4.10.3.1 Ground Training**

Under Alternative 1, the tempo of training would increase by approximately 15 percent over the No Action Alternative. As described in Section 3.10, the military employs a proactive and comprehensive program to ensure the safety and health of training personnel and the public who may frequent the Military Lease Area. Range Control would be responsible for ensuring training units follow all federal and local laws and regulations and military guidance, policies, and procedures. Environmental risks associated with live-fire training activities potentially include soil contamination from munitions residues and water contamination from hazardous materials. Lead is also the primary contaminant of concern for the Multi-Purpose Maneuver Range, along with the disposition of small amounts of munitions constituents from ordnance use at both live-fire ranges. Munitions constituents in partially or unexploded ordnance are contained within the munition itself, and thus release of munitions constituents due to corrosion of the casing may take a long time to occur, although salt spray and humidity may accelerate deterioration of the casing. However, lead has low mobility and extremely high soil affinity as the primary condition that would influence the movement or mobility of lead in an environment is the pH of the soil.

The geology of Tinian is predominantly karst, and the soils are derived from limestone bedrock with abundant carbonates and are naturally neutral (pH 6.5–7.0) to alkaline (greater than 7.0). At neutral pH, heavy metals, like lead, become relatively insoluble and the potential for lead to be transported to the groundwater or in surface water runoff would be very low (Weil and Brady 2017) with the soil further acting as a filter for particulate lead (DON 2016).

Therefore, the potential for significant contamination of groundwater is low, and impacts associated with munitions constituents in soil and water would be less than significant with implementation of standard range management practices and monitoring. Range Control would enforce range clearance procedures to ensure hazardous materials are removed and to ensure the long-term safety and sustainability of the live-fire ranges. At the conclusion of training, units are

In addition, Range Control and the training unit would coordinate to identify and address any low-order detonations. This includes post-training inspections to verify that all munitions functioned as intended and that no unexploded or partially detonated ordnance remains. Any suspect items would be reported and handled in accordance with explosive ordnance disposal (EOD) procedures to prevent long-term environmental exposure or migration into soils or groundwater.

The *Operational Range Clearance Program*, MCO 3550.12A, requires live-fire ranges (i.e., the Multi-Purpose Maneuver Range and Explosives Training Range) periodically undergo thorough clearances of any remaining ammunition, dunnage, and other debris resulting from military activities. The appropriate frequency of range clearance activities is determined for each live-fire range based on the recorded data on munitions expenditures along with visual assessments of the range. Further, measures to limit erosion and prevent stormwater from leaving live-fire ranges would be implemented, as described in Appendix D. The specific measures for each live-fire range would be determined during the design of the range to maximize effectiveness. Finally, the USMC would implement a Range Environmental Vulnerability Assessment, which would be conducted one year after the range begins operations and reassessed every five years. Mitigating environmental impacts from active ranges complies with the requirements outlined in DoD Instruction 4715.14, *Operational Range Assessments*.

### **Operational Range Assessment Program / Range Environmental Vulnerability Assessment Program**

DoD Instruction 4715.14, *Operational Range Assessments*, establishes policies and procedures to ensure the long-term sustainability of operational ranges while being protective of the environment (DoD 2018). In doing so, DoD Instruction 4715.14 provides instruction to aid in the determination of whether a release or substantial threat of a release of munitions constituents from an operational range to an off-range area creates an unacceptable risk to human health or the environment. For this Proposed Action, the “off range” area would be considered as the area outside the range footprint on land (i.e., the boundaries shown for the Multi-Purpose Maneuver Range and Explosives Training Range and their respective surface danger zones). Munitions constituents are any materials originating from unexploded ordnance or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 U.S.C. 2710(e)(4)) (DoD 2018).

Range Environmental Vulnerability Assessment Periodic Reviews are required for each eligible Marine Corps range. New ranges will be assessed as they become operational. After the initial assessment, the USMC would conduct periodic reviews in accordance with the Range Environmental Vulnerability Assessment Periodic Review Guidance Manual every 5 years or sooner, if changes in range use or conditions warrant. Throughout this process, if at any time it is determined a release of munitions constituents has occurred that potentially impacts human health and/or the environment, a notification will be made to the appropriate regulatory agency, as required by DoD Instruction 4715.14.

The primary purpose of a Range Environmental Vulnerability Assessment is determining whether there has been a release or substantial threat of release of munitions constituents from an operational range or range complex to off-range areas that creates an unacceptable risk to human health and the environment.

The Range Environmental Vulnerability Assessment program assesses potential migration of munitions constituents found on USMC ranges, which includes explosives constituents, ammonium and potassium perchlorate, and metals. Among the explosive munitions constituents, the Range Environmental Vulnerability Assessment program focuses on TNT, HMX, RDX, and their respective degradation and breakdown products.

Metals associated with ammunition commonly used at operational ranges include lead, antimony, copper, and zinc. The Range Environmental Vulnerability Assessment program focuses on lead as the munitions constituents indicator. Lead is primarily associated with small arms military munitions and is the most prevalent metal found in soils on operational ranges.

Best management practices to manage munitions constituent migration from operational ranges can include, but are not limited to, operational changes, vegetative solutions, stormwater management, geosynthetic materials, and soil amendments. Operational range clearance and lead recovery are effective best management practices because they reduce the source of munitions constituents from operational ranges.

### **Transportation**

Training under Alternative 1 would result in increased vehicle traffic on paved and unpaved roadways within the Military Lease Area during training events. Increased vehicular traffic on key transportation routes would occur at the beginning and end of training events, when materials and equipment may be transported from TNI or the Port of Tinian on local roadways, primarily 8<sup>th</sup> Avenue, but Broadway may also be used. Due to the limited traffic volumes on the primary roadways within the Military Lease Area (refer to Section 3.7, Transportation), this increased activity is unlikely to impact public health and safety related to potential collisions, road wear, and reduced visibility due to dust. Although the risks are minimal, they would be further reduced through Range Control's oversight and adherence to speed limits and road safety regulations. When warranted, traffic control measures would be employed, including signage, flaggers, or temporary access control points to ensure the public remains safely separated from military training activities. Range Control and training personnel would monitor military vehicle traffic to ensure compliance with safety guidelines, while coordination with local authorities would help manage traffic flow and minimize disruptions.

### **Public Access**

Range Control would manage access to the areas around live-fire ranges and areas where munitions are temporarily staged to maintain public safety while live-fire training is occurring. The proposed surface danger zones for the Multi-Purpose Maneuver Range and Explosives Training Range are shown in Figure 4.10-1 and the explosive safety quantity distance arcs for the ammunition holding areas are shown on Figure 4.10-2. The temporary staging of ammunition at the holding areas poses risks such as accidental detonation, fire, or unauthorized access, potentially resulting in injuries, property damage, or environmental contamination. To reduce these risks, the training units would ensure that staging areas are secured and monitored to prevent unauthorized access, and handling procedures comply with DoD safety regulations.



Figure 4.10-1 Surface Danger Zones



Figure 4.10-2 Ammunition Holding Area Explosive Safety Quantity-Distance Arcs

Range Control would implement measures to control access within the explosive safety quantity distance while live ammunition is present during training. This may include temporary restrictions along the segment of Boston Post Road that falls within the explosive safety quantity distance arc shown on Figure 4.10-2 during training. However, these restrictions would be temporary and limited to a small portion of this road and the public would be able to access alternate routes within the North Field National Historic Landmark during these time periods while live-ammunition is present.

Surface danger zones are established to protect personnel, equipment, and the public by restricting access to areas where projectiles, fragments, or ricochets from live-fire training may pose a hazard. For the Multi-Purpose Maneuver Range, the surface danger zone extends over land and offshore waters at the northern tip of Tinian (Puntan Taddong, also known as Ushi Point) and would only be activated during live-fire events. The Multi-Purpose Maneuver Range would also be certified for use of Class 3b and Class 4 lasers and firing positions for indirect weapons, such as mortars firing inert ammunition. All firing activities would be conducted in accordance with the established surface danger zones. When surface danger zones are activated, access to the affected area would be temporarily restricted. Range Control would issue advance public notices, including Notices to Mariners, identifying scheduled live-fire training and the specific surface danger zone affected. Real-time updates would also be provided using multiple communication channels to help mariners plan around temporary closures. These access restrictions would occur intermittently and only during scheduled live-fire training, allowing unrestricted access at other times. Nighttime impacts are expected to be minimal due to limited range use and reduced maritime activity. To further ensure boater safety, Range Control would actively monitor the area with surface radar and/or spotters. Efforts would be made to communicate with any vessel approaching an active surface danger zone.

To minimize impacts to boaters by ensuring the smallest area is restricted during each training event, the USMC would establish three separate surface danger zones for the Multi-Purpose Maneuver Range, one for each of the three types of ammunition proposed (Figure 4.10-1). When live-fire training occurs, the surface danger zone would be activated and vessels would be required to reroute around the area for period of time. These restrictions could add approximately 2 to 4 miles to travel distances, depending on which surface danger zone is active. Potential impacts would vary based on factors such as the sea state—the ocean waters off the northeastern coast of Tinian are subject to rough sea states from November through April due to cold temperatures, strong northeast trade winds, and swells (R. Dela Cruz, Jr, Personal Communication, 2025; R Sablan, Personal Communication, 2025). These strong currents, coupled with shallow water hazards, limit access to those areas during this period, resulting in lower levels of fishing and boating activity. Conversely, during the calmer season from May through October—especially from June through September—boaters are more likely to transit these areas, making temporary surface danger zone closures potentially more impactful during those months. However, the limited frequency, duration, and size of closures, and the relatively minor distances vessels would need to travel would result in less than significant impacts to boaters from live-fire training under Alternative 1.

As described in Section 2.1.6.3, the FAA would advise the USMC whether there is a need to establish a controlled firing area airspace designation over either or both proposed ranges. A controlled firing area is uncharted airspace designated by the FAA to contain activities that, if not conducted in a controlled environment, could be hazardous to non-participating aircraft (FAA Joint

Order 7400.2N, Chapter 27, June 17, 2021). The establishment of a controlled firing area would require the USMC to immediately suspend training events when a spotter identifies a non-participating aircraft approaching the area of operations. This is the procedure that the USMC proposes to follow regardless of whether an airspace designation is required by the FAA.

The Explosives Training Range presents additional potential risks for fragmentation hazards and exposure to hazardous materials. To reduce these risks, Range Control would ensure that clear signage marks range boundaries and restricted access, while road guards and barriers would be in place to prevent unauthorized entry during active live-fire training events. Range Control would enforce the surface danger zone and oversee safety protocols, ensuring all explosives are fully consumed upon detonation. Post-training inspections would be conducted to confirm no unexploded ordnance or hazardous materials remain.

#### **4.10.3.2 Aviation Training and Civilian Aviation**

The Proposed Action, which includes military aviation operations within the Military Lease Area and surrounding airspace, presents potential risks to public health and safety, particularly in shared airspace used by commercial, private, and military aircraft. Areas of concern include airspace conflicts, overflight of live-fire ranges, interference with Saipan International Airport's Instrument Landing System, and increased military aircraft operations resulting from improvements to North Field and the creation of Landing Zones throughout the Military Lease Area.

One of the primary risks is the overflight of live-fire ranges by commercial and private aircraft. To reduce this risk, Notice to Airmen (NOTAMs) would be issued to inform pilots of range activity. Range flags and red warning lights would be utilized to visually indicate when live-fire training is active. Additionally, radar systems and/or spotters would monitor the airspace for approaching aircraft. If aircraft enter the danger zone, all live-fire activities would be immediately suspended until the aircraft has safely departed the danger zone.

Another concern is interference between live-fire training at the Multi-Purpose Maneuver Range and commercial aircraft using Saipan's Instrument Landing System approach paths. To prevent conflicts, all live-fire training would be suspended whenever aircraft are utilizing the Instrument Landing System at Saipan International Airport. Range Control would coordinate flight scheduling with Saipan International Airport to ensure that military training units are aware of these commercial flight operations. Additionally, radar and/or spotters would continuously monitor the airspace to detect approaching aircraft, allowing for real-time adjustments to training activities to prevent disruptions.

Aviation operations at the Landing Zones and North Field have the potential to cause injury or damage to personal property for non-participating personnel in the vicinity of training activities. To reduce these risks, Range Control would identify activities that present hazards to the public, including takeoffs, landings, specialized insertion techniques such as fast-roping and rappelling, and parachute operations, and implement appropriate control measures to protect public safety. Prior to training exercises, training area closures would be announced to the public, ensuring awareness and preventing unintended entry into designated training areas. Additionally, access restrictions would be enforced through road guards and/or signage, clearly marking restricted areas to enhance public safety and minimize the risk of accidents.

Military aircraft operating in shared airspace with commercial and private aircraft also pose potential risks. To reduce these risks, Range Control would share military flight schedules to

Tinian and Saipan International Airports, ensuring coordination between military and civilian aviation operations. Military aircraft would operate under Visual Flight Rules using “see and avoid” procedures, allowing pilots to maintain visual separation from civilian aircraft and take necessary evasive actions if required.

Adherence to air traffic management protocols and proactive deconfliction measures would ensure that military training can be conducted safely without significant disruption to civilian aviation or public airspace use. With the implementation of airspace coordination, real-time monitoring, and controlled scheduling, the proposed aviation operations would have less than significant effects on public health and safety.

#### **4.10.3.3 Radio Frequency and Microwave Emissions**

Under Alternative 1, the USMC would reuse three of the existing communications towers at the Base Camp on Tinian and up to four towers at Saipan during training events. The operation of these communications towers would provide coverage for all training activities within the Military Lease Area. In addition, two surface radar towers on the northern and northwestern coasts of Tinian would be operated to survey the ocean surface. The surface radar towers and communication towers would be secured with fencing and intrusion detection systems to prevent unauthorized access and public exposure to electromagnetic radiation.

During aviation training activities at North Field, a mobile air surveillance radar system known as the Ground/Air Task Oriented Radar (G/ATOR) would be employed to detect virtual threats to the airfield. The system would be set up in the Military Lease Area and could be moved to different locations during an aviation training event. For safety, a minimum of two meters would be maintained between the G/ATOR and military and civilian personnel; 108 meters from the location of an ammunition holding area; and at least 20 meters from the nearest motor vehicle or aviation fueling location.

Coordination with local frequency managers and avoidance of interference with civilian communication and air traffic control systems would further ensure electromagnetic compatibility. With these safeguards and control measures in place, the potential for public exposure or interference with civilian systems would be low and impacts from electromagnetic radiation under Alternative 1 would be less than significant.

#### **4.10.3.4 Natural Hazards**

##### **Wildfire**

Under Alternative 1, there is a risk that wildfires could occur in association with live-fire range training and aviation operations at Landing Zones. Military training activities, particularly the use of tracers, pyrotechnics, and other heat-producing simulators, would introduce potential ignition sources that could increase wildfire risk, especially within grassland and disturbed grassland plant communities during the dry season. Potential impacts to biological resources are discussed in Section 4.4.3.

Under the Proposed Action, the USMC would implement a comprehensive wildland fire management strategy. A Range Wildland Fire Management Plan (currently being drafted) is being designed to reduce ignition likelihood and limit fire growth through procedural controls, operational restrictions, and site-specific fire prevention measures.

As applicable, the USMC would implement procedures to control wildfire risk. These could include:

- A fire danger rating system linked to daily weather, limiting munitions and training activities by risk level.
- Firebreaks around the Multi-Purpose Maneuver Range, Explosives Training Range, Landing Zones, and key roads.
- Vegetation management and fuel-reduction treatments that limit fire spread near range objectives and critical infrastructure.
- Integration of fire-prevention requirements into range standard operating procedures and mandatory user briefings, ensuring all training personnel understand restrictions, reporting procedures, and ignition-prevention measures.
- Routine maintenance of firebreaks and fuel-management areas to required dry-season standards, reducing fuel continuity and supporting rapid containment.

As described in Section 3.10.6.1, Tinian currently does not have a DoD fire department, and wildfire response is limited to local municipal resources with constrained staffing, limited apparatus, and no specialized wildland firefighting capability. These limitations may increase the potential for small fires within grassland and disturbed grassland communities to grow before suppression resources arrive.

Under Alternative 1, the USMC would implement fire risk management procedures, as described above. These measures would substantially limit ignition probability and provide resources for containment of small fires before they can grow into larger, more damaging events.

### **Flood Zones**

Training events conducted near the shore areas in the Military Lease Area may experience temporary episodic flooding during storms or high tides, but training events would not increase or exacerbate the impact of flooding in near shore areas. The northern border of the proposed North Field Drop Zone, between runway Able and Boston Post Road, is located adjacent to an area designated as a Federal Emergency Management Agency 100-year Flood Zone. Alternative 1 would not increase a flood zone or create additional flood risks.

#### **4.10.3.5 Construction**

Construction would periodically limit access to portions of the Military Lease Area to protect the public from construction traffic and activities. These closures would be coordinated with Range Control to ensure the public is notified. In the event of a natural disaster such as a tsunami or typhoon, the response plan would provide information and guidance for maintaining the safety of the construction site and personnel.

Construction best management practices for fire safety, such as fire risk evaluation and fire prevention training, would be implemented to reduce or eliminate the potential for construction-sparked fires. In addition, construction of training infrastructure would not occur in areas designated as Federal Emergency Management Agency flood zones and would not create additional flood areas. Construction would avoid known sinkholes, and fault lines. An engineering evaluation would be conducted before siting structures and construction would comply with

current United Facilities Criteria requirements including seismic standards and for withstanding high winds and rain.

Through the use of best management practices, monitoring, and coordination with Range Control, Alternative 1 would not increase public health and safety risks from construction.

#### **4.10.3.6 Protection of Children**

Construction and training events would take place in the Military Lease Area with infrequent transit of personnel and equipment on roads from the Port of Tinian or TNI. Children on Tinian reside in the village of San Jose, south of the Military Lease Area, where there is a concentration of housing, schools, parks, and playgrounds. All training events and construction would take place within the Military Lease Area. The closest training areas of the Base Camp and Landing Zone 1 are approximately 1.5 miles from the closest private property and approximately 3 miles from San Jose. Construction sites in the Military Lease Area would be secured with fencing or other barriers to prevent public access. As discussed above, all training events are managed through Range Control with appropriate notifications to the community. All sources of electromagnetic radiation, including radar and communication systems, would be operated in controlled areas and secured to prevent unauthorized access or incidental exposure, including to children. Given the distances of construction and training events away from populated areas, along with active controls at construction sites and during training events to protect the public, implementation of the Proposed Action would not result in health and safety risks that may disproportionately affect children.

#### **4.10.4 Alternative 2**

Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. All of the same precautions associated with Alternative 1, including that all scheduled training events would be coordinated and communicated through Range Control, would result in a less than significant impact to public health and safety from Alternative 2.

### **4.11 Utilities**

#### **4.11.1 Approach to Analysis**

The analysis of potential impacts to utilities focuses on water supply (potable water, non-potable water, and groundwater), wastewater treatment, solid waste, hazardous materials, green waste, stormwater management, electrical power, and communications.

This analysis uses quantitative and qualitative assessments of changes to utilities capacity to determine the potential for training events and construction of the Proposed Action to exceed existing utility capacity or to disrupt existing utilities' services. Factors used to assess the impacts of the Proposed Action on utilities include the following:

- The capacity of existing and planned utilities to accommodate the Proposed Action.
- The extent of utilities disruption, if any, from the Proposed Action.

The analysis is based on training and operational needs, such as fire protection, a vehicle wash facility, and the maximum number of personnel anticipated to be on island at one time: 1,000 training personnel, approximately 30 to 50 operational personnel, and approximately 50 off-island construction workers. Of the 30 to 50 operational personnel, 20 are assumed to be from off-island

and 30 are assumed to be current island residents. New or improved utilities would be designed to meet peak demand during training.

As part of this analysis a comprehensive hydrological study for the Proposed Action, called the Groundwater Modeling Technical Memorandum, was included in Appendix M (Utility Studies) of the Revised Draft EIS. The study considered groundwater demand, including current and projected demands for all uses (related to the Proposed Action, other DoD, and non-DoD water demands) to evaluate impacts from the Proposed Action.

#### **4.11.2 No Action Alternative**

Under the No Action Alternative, ground and aviation training events would continue in the Military Lease Area with the same activities and at the same tempo as described in previous NEPA documents (DON 2015). Additionally, all actions related to the U.S. Air Force Divert Activities project (U.S. Air Force 2016, 2020) would be implemented. Under the No Action Alternative, no changes would occur and there would be no impact on utilities.

#### **4.11.3 Alternative 1**

No military training is proposed to occur on Saipan, but the DoD would negotiate a lease or use an agreement for the USAGM Saipan site and utilize existing towers for communication capabilities. Additional communication equipment would be added to existing towers. Consequently, there would be no impacts to utilities on Saipan.

##### **4.11.3.1 Potable Water Supply**

###### **Training**

Alternative 1 includes two new water systems at two locations within the Military Lease Area: one south of the Base Camp at either Well Field Option “A” or Well Field Option “B,” and another at North Field south of the Multi-Purpose Maneuver Range (Figure 4.11-1). The Base Camp water system would comply with the Federal Safe Drinking Water Act, the CNMI Drinking Water Regulations, and policies for DoD-owned drinking water systems (Assistant Secretary of Defense Energy, Installations, and Environment 2024), as applicable. The North Field water system proposed for firefighting is not expected to comply with these regulations. No connection with the Commonwealth Utilities Corporation water system is proposed. No treatment of groundwater is anticipated to be needed, other than disinfection. Groundwater production from new wells would be metered and used according to terms of Bureau of Environmental and Coastal Quality issued permits. Excess capacity could be made available for agricultural or other uses approved by the USMC.

The Base Camp water system would consist of up to four new or rehabilitated groundwater wells, above ground storage of approximately 300,000 gallons, and a booster pump station. The system would be designed to convey a maximum of 241,376 gallons per day to supply both:

- Maximum estimated water use in a single day, which includes potable water for drinking, bathing, washing, cleaning, cooking for the maximum number of military trainees and operations staff on the island at one time, and the portable vehicle wash facility.
- Fire demands for firefighting and fire suppression in conformance with United Facilities Criteria 3-600-01, Fire Protection Engineering for Facilities and National Fire Protection Association 1, Fire Code.



Figure 4.11-1 Water Infrastructure Included in Proposed Action

The North Field water system is proposed to consist of up to two new or rehabilitated groundwater wells, each with approximately 100,000 gallons of aboveground storage, and a booster pump station. It would be designed to convey a maximum of 86,400 gallons per day to supply fire demands for firefighting and fire suppression. The system would not operate continuously and would only be used for firefighting purposes. Based on wildland firefighting recommendations, the estimated annual volume of non-potable water used would not exceed 800,000 gallons per year.

These new water systems are sized to meet all potable and non-potable water demands of Alternative 1 within the Military Lease Area. As discussed in Section 4.13 Groundwater and Hydrology, there would be sufficient groundwater and recharge to meet both the existing and projected potable and non-potable water demands by Commonwealth Utilities Corporation, the military, and other users. As a result, Alternative 1 would have a less than significant impact to the Tinian potable water supply. See Appendix M, Utility Studies, for additional information and calculations.

It is anticipated that the construction workers and permanent Range Management personnel would live outside the Military Lease Area in homes, apartments, or hotels. Table 4.11-1 summarizes the additional average daily domestic demands due to the Proposed Action under Alternative 1 that would be met by the Commonwealth Utilities Corporation.

**Table 4.11-1 Average Day Water Demand on Commonwealth Utilities Corporation Water System from Training Events Under Alternative 1**

<i>Personnel Type</i>	<i>Use Category<sup>1</sup></i>	<i>Unit Demand (gpcd)</i>	<i>Population</i>	<i>Demand (gpd)</i>
Construction Workers (24-hour)	Family Housing	125	50	6,250
Off-Island Range Management Personnel (24-hour) <sup>2</sup>	Family Housing	125	20	2,500
<b>Total</b>				<b>8,750</b>

Legend: gpcd = gallons per capita per day; gpd = gallons per day; UFC = Unified Facilities Criteria.

Notes: <sup>1</sup>Per UFC 3-230-03, Table 3-1.

<sup>2</sup>Only personnel relocating from off-island are included here.

The biosecurity facility at the Port of Tinian is proposed to include wash racks. Military vehicles would be washed there as required as part of the biosecurity screening process. The wash racks would be contained in a concrete facility where multiple vehicles could be washed simultaneously using cleaning equipment. Washing would be conducted using only water and no soaps or solvents are proposed to be used. Wash water would be contained in a holding tank and recycled through an oil/water separator. Once the wash cycles are complete, wash water would be pumped out and disposed of in conformance with CNMI regulations. The oil/water separator would be periodically pumped out and disposed of in conformance with CNMI regulations for oily waste. The water demand for the proposed wash facility at the Port of Tinian would be 924 gallons per day and the portable wash facility would be 945 gallons per day.

A summary of water demands on the Commonwealth Utilities Corporation is provided in Table 4.11-2.

**Table 4.11-2 Summary of Existing and Proposed Water Demands on Commonwealth Utilities Corporation Under Alternative 1**

<i>Category</i>	<i>Average Day Demand (MGD)</i>
Existing CUC Production <sup>1</sup>	0.85
Proposed Additional Domestic Demand	0.0088
Proposed Additional Industrial Demand <sup>2</sup>	0.0009
<b>Total Demand on CUC Water System</b>	<b>0.86</b>

*Legend:* CUC = Commonwealth Utilities Corporation; MGD = million gallons per day.

*Notes:* <sup>1</sup>Average of production at Maui Well Number 2 from 2019 to 2023.

<sup>2</sup>Biosecurity Wash Facility at the Port of Tinian.

The average daily production from Maui Well Number 2 between 2019 and 2023 was 0.85 million gallons per day. The Proposed Action under Alternative 1 is estimated to increase water production at Maui Well Number 2 by 1.14 percent. Because of this, Alternative 1 would have a less than significant impact to the Commonwealth Utilities Corporation water system.

### Construction

Industrial demands during construction would include mixing concrete, earthwork compaction, dust control, hydrostatic pressure testing, and cleaning. All water for construction could be purchased from the Tinian Mayor’s Office at Well M-21. The U.S. Air Force is currently constructing the Divert Activities project at TNI and Well M-21 is being used for construction of that project. Well M-21’s extraction capacity was 1.8 million gallons per month in 2024 (J. Aldieri, NAVFAC Marianas, Personal Communication, 2024), or 21.6 million gallons per year, and all of that water is used for construction.

Construction of the U.S. Air Force Divert Activities project would be completed prior to starting construction of the Proposed Action. It is anticipated that the contractors for the Proposed Action would make arrangements with the Tinian Mayor’s Office to use Well M-21 for construction water.

The Proposed Action is substantially smaller in size and scope than the U.S. Air Force Divert Activities project and would use much less water during construction. To be conservative, it is assumed that the same quantity of water, 21.6 million gallons per year, would be used in construction of the Proposed Action. The U.S. Air Force Divert Activities project use is within the capacity of the well. Therefore, Alternative 1 would have a less than significant impact to the Commonwealth Utilities Corporation water system during construction.

### 4.11.3.2 Wastewater Treatment

#### Training

Alternative 1 includes constructing new wastewater infrastructure to collect, convey, treat, and dispose of wastewater. This new wastewater infrastructure would be sized to meet the needs of maximum personnel during a large training event (Table 4.11-3).

**Table 4.11-3 Wastewater Demand on Proposed Wastewater Infrastructure Under Alternative 1**

<i>Personnel Type</i>	<i>Category</i>	<i>Unit Demand (gpcd)</i>	<i>Population</i>	<i>Average Day Demand (gpd)</i>
Military Personnel	Military Training Camps	50	1,000	50,000
Construction Workers (8-hour shift)	Nonresident Personnel and Civilian Employees (per 8-hour shift)	30	50	1,500
Permanent Support Personnel (8-hour shift)	Nonresident Personnel and Civilian Employees (per 8-hour shift)	30	50	1,500
<b>Total Wastewater Demand</b>				<b>53,000</b>

*Legend:* gpcd = gallons per capita per day; gpd = gallons per day.

*Source:* Appendix M, Utility Studies.

The Proposed Action includes construction of new wastewater infrastructure at the Base Camp, which would be operated and maintained by the USMC. The existing septic tank and leach field at Camp Tinian described in Section 3.11.2 would not be used for wastewater generated by the Proposed Action. The new wastewater infrastructure could include a sanitary sewer collection system, a sewer lift station, and one or more septic systems. Septic systems can accommodate the wide variation in wastewater flow anticipated between military training and non-training periods. Alternative 1 would have a less than significant impact on groundwater because the proposed Base Camp site does not appear to be within either a Class I or II Aquifer Recharge Area/Groundwater Protection Zone on Tinian (CNMI Bureau of Environmental and Coastal Quality 2025).

Wastewater service outside of the Base Camp would be provided using portable toilets. These portable toilets would be periodically emptied and disposed of at a septage disposal site approved by the CNMI Bureau of Environmental and Coastal Quality per section 65-120-1405 (CNMI Administrative Code). Sludge from the CNMI Joint Military Training septic tanks would also be disposed of at a septage disposal site approved by the CNMI Bureau of Environmental and Coastal Quality per section 65-120-1405 (CNMI Administrative Code). Septic sludge that contains free liquids cannot be disposed in the existing Puntan Diablo Landfill or at the planned Atgidon Landfill. All septage wastes would be disposed of off-island, as long as there is no approved septage disposal location on Tinian.

#### Construction

Wastewater service generated during construction could be provided using portable toilets. These portable toilets would be periodically emptied and disposed of at a septage disposal site approved by the CNMI Bureau of Environmental and Coastal Quality per section 65-120-1405 (CNMI Administrative Code). Therefore, Alternative 1 would have a less than significant impact on wastewater during construction.

### 4.11.3.3 Solid Waste

#### Training

Proposed training events would result in additional solid waste generation. Quantities of waste generated would vary depending on the frequency of training events, duration of training events, and the number of personnel participating in training. Using the maximum of 1,000 personnel participating in training at any one time, the projected waste quantities generated during ongoing training and maintenance under Alternative 1 are presented below.

Current DoD policy mandates minimum diversion from disposal (landfilling and non-waste-to-energy incineration) of 40 percent of non-hazardous solid waste (excluding construction and demolition waste). The USMC is unlikely to meet the 40 percent solid waste diversion goal due to the types of waste generated during expeditionary exercises—such as pre-packaged food containers—and its remote location, which has limited recycling services and no domestic consumption of diverted materials. In addition, unlike day-to-day operations at a traditional installation, expeditionary training does not regularly include activities that generate certain waste streams, which contain materials that are typically diverted (e.g., vehicle maintenance, kitchen/mess hall operations). Based on local available recycling infrastructure, the waste material types that are anticipated to be generated and the variable and transient population participating in training, a diversion rate of 12 percent is assumed.

As shown in Table 4.11-4, training activity under Alternative 1 would generate an estimated 562 tons/year. During periods when no training is taking place and only the permanent facility staff and construction workers are present, the weekly solid waste generated is estimated to be approximately 1.2 tons/ week (63 tons/year) with an average daily generation of 0.17 tons/day. During periods of training, the maximum solid waste generation is estimated to be 3.67 tons/day. The CNMI proposed new solid waste facilities would be sized to manage the maximum projected weekly solid waste generated on the island.

**Table 4.11-4 Solid Waste During Operations Under Alternative 1**

<i>Solid Waste</i>	<i>Alternative 1</i>
Estimated Annual Solid Waste Generated (tons)	562
Diversion Rate	12%
Diverted from Disposal (tons)	67
Landfill Disposal (tons)	495

Legend: % = percent.

Source: Appendix M, *Utility Studies*.

The CNMI Draft Comprehensive Integrated Solid Waste Management Plan was finalized and approved by the EPA in September 2025. The *Solid and Hazardous Waste Study* for CJMT (See Appendix M, *Utility Studies*, for this study) identifies solid and hazardous waste management options that align with the CNMI Integrated Solid Waste Management Plan and presents additional option(s) for further consideration by CNMI.

The Puntan Diablo disposal facility does not currently comply with the CNMI Administrative Code Chapter 65-80 Solid Waste Management Regulations or the Resource Conservation and Recovery Act Subtitle D regulations applicable to solid waste landfills (40 C.F.R. Part 258.1(f)(1)) and is unavailable for USMC waste. The CNMI intends to permit the facility by demonstrating

compliance with the small community exemption available in Resource Conservation and Recovery Act Subtitle D regulations. The anticipated timeline to complete the permitting process is 6 to 12 months. USMC, contingent upon receiving authorization from the CNMI, would utilize the Puntan Diablo disposal facility once it is permitted and compliant.

Because the existing Puntan Diablo disposal facility has limited remaining capacity, the CNMI is initiating permitting efforts for a new landfill at Atgidon site, located north of 86th Street and between Riverside Drive and 10th Avenue. The CNMI anticipates permitting of this new landfill would take 5 years to complete. Only non-hazardous waste would be allowed at both the to-be permitted Puntan Diablo disposal facility and the planned Atgidon landfill. Septic sludge that contains free liquids cannot be disposed of in these landfills and would be disposed of at the septic disposal site discussed in the wastewater section above.

The Tinian Transfer Station and Recycling Center is currently permitted to receive only source-separated recyclable materials such as cardboard/paper, plastic bottles, and aluminum cans. Recyclable materials are shipped off the island for processing and sale, and the costs of handling and transportation exceed the revenue generated by the sale of the recyclables. According to the *CNMI Comprehensive Integrated Solid Waste Management Plan 2025-2030*, the transfer station is funded by tipping fees, a beautification tax, and general funds. If approved by the CNMI, the Tinian Transfer Station and Recycling Center would be available for use by USMC (CNMI Office of Planning and Development 2024).

All potential disposal locations have sufficient capacity to accept the waste generated by Alternative 1. Because solid waste would be disposed of at a facility that is permitted and compliant under Resource Conservation and Recovery Act Subtitle D and the anticipated waste quantities would not be substantial relative to capacity of any of the identified landfills, the operation would result in a less than significant impact to solid waste utilities.

If the planned permitting of the Puntan Diablo disposal facility and the proposed Atgidon landfill are not completed and landfill disposal capacity is not available, the alternate management methods for solid waste generated by the Proposed Action under Alternative 1 would include: 1) transport solid waste to Marpi Landfill on Saipan; 2) transport the waste to one or more off-island facilities authorized to accept DoD waste or 3) on-site incineration of waste to reduce the volume prior to the transport of the residual non-hazardous ash to Marpi Landfill. The specifics of the incinerator are notional at this time, as the USMC would only consider its use to minimize waste volume if on- and off-island disposal facilities are not available. If pursued in the future, the incinerator would be a commercially available solid waste incineration unit that meets U.S. EPA emissions guidelines with a capacity sufficient to handle the Proposed Action-generated waste, and would require approval and permitting before use. Potential impacts to the Marpi Landfill operation itself (projected disposal tonnage) have been evaluated and presented in the Solid and Hazardous Waste Study (refer to Appendix M, *Utility Studies*), and there would be sufficient capacity for use by USMC.

### **Construction**

Current DoD Integrated Solid Waste Management policy sets a minimum diversion from landfilling or non-waste-to-energy incineration of 60 percent for construction and demolition waste (Office of the Assistant Secretary of Defense 2020). Given that the majority of construction and demolition waste to be generated is anticipated to be concrete and wood, the mandated

diversion rate of 60 percent would be achievable by mandatory diversion and reuse requirements which would be included as performance requirements in all construction contracts. Based on the anticipated project development phasing and the 60 percent diversion rate, Alternative 1 construction activities would result in the quantities of construction and demolition waste generation, diversion and disposal shown in Table 4.11-5.

**Table 4.11-5 Construction and Demolition Waste Generated During Alternative 1**

Year	Construction and Demolition Waste					
	Total Generated		Total Diverted/Recycled		Total Disposal	
	Annual (tons)	Daily Average (tons)	Annual (tons)	Daily Average (tons)	Annual (tons)	Daily Average (tons)
2026	0	0	0	0	0	0
2027	0	0	0	0	0	0
2028	49	0.13	29	0.08	20	0.05
2030	47	0.13	28	0.08	19	0.05
2031	17	0.05	10	0.03	7	0.02
2033	78	0.21	47	0.13	31	0.09
2036	57	0.16	34	0.09	23	0.06
2038	27	0.07	16	0.04	11	0.03
2039	8	0.02	5	0.01	3	0.01

Legend: SF = square feet.

Note: Construction and demolition waste generation estimated to be 4.34 pounds/square foot (U.S. EPA 2003) of developed impervious area associated with new structures/buildings. Construction and demolition waste generation estimated to be 1.09 pounds/square foot of developed impervious area associated with new concrete surfacing.

Source: U.S. EPA 2003.

Construction personnel would also generate a maximum of 31 additional tons per year of solid waste. See Appendix M, *Utility Studies*, for detailed solid waste calculations. With construction projected to commence in 2026 and the CNMI’s plans for landfill permitting and development, it is expected that on-island landfill capacity would be sufficient to manage the USMC solid waste generated through project construction.

If planned permitting of the Puntan Diablo disposal facility and the proposed Atgidon landfill are not completed and landfill disposal capacity is not available, the alternate management methods for construction-related solid waste would be the same as described for training, above.

#### 4.11.3.4 Hazardous Materials

##### Training

Training events are currently conducted in compliance with standard operating procedures and federal and CNMI laws governing management and disposal of hazardous materials. This would continue under the Proposed Action, and any required plans to respond to releases, leaks, or spills of hazardous substances (e.g., Spill Prevention, Control, and Countermeasures Plan per 40 CFR 112.3 and/or Facility Response Plan per 40 CFR 112.20) would be updated or created. All training is coordinated with Joint Region Marianas environmental staff, who work with federal and CNMI agencies as required. As part of current training, temporary portable aboveground bulk diesel storage containers have been staged and used at North Field (DON 2014a). The military ensures

proper storage and handling of hazardous materials inside areas equipped with impervious barriers and utilizes dual containment structures to further prevent spills or releases. Hazardous materials handling and storage areas are located away from catch basins, storm drains, and waterways. Spill response kits are located in close proximity to all areas where hazardous materials are handled. Personnel responsible for the handling and storage of hazardous materials receive regular training. The military also complies with the Tinian Spill Control Plan and has trained spill response teams available during training events (M. Cruz, Joint Region Marianas, Personal Communication, December 2014).

The aircraft shelter is designed for protection of aircraft and only emergency maintenance would be conducted. Excess or unusable hazardous material such as grease and oil from training events and paint and cleaning products from Base Camp would be transported off-island for characterization and reuse or disposal in accordance with applicable regulations. Any disposal would be at an Environmental Protection Agency-permitted hazardous waste disposal facility. Transportation of all hazardous material would be coordinated through Defense Logistics Agency Disposition Services in compliance with U.S. Department of Transportation regulations and C.F.R. Title 49. Because all generated hazardous material would be removed from the island and disposed of according to relevant laws and regulations, the proposed training events for Alternative 1 would have a less than significant impact to hazardous materials disposal on Tinian.

### **Construction**

Hazardous, industrial, universal wastes, and e-waste generated by construction on Tinian would be disposed of off-island in compliance with applicable U.S. Environmental Protection Agency regulations. Because all hazardous material generated would be removed from the island and disposed of according to relevant laws and regulations, the proposed construction activities for Alternative 1 would have a less than significant impact to hazardous materials disposal on Tinian.

#### **4.11.3.5 Green Waste**

##### **Training**

Regular cutting and/or mowing of cleared areas in the Military Lease Area Range Complex to prevent re-growth and re-establishment of bushes and trees would be the only source of green waste generated after construction projects are complete. Because cutting and/or mowing would be conducted regularly (typically weekly) the green waste generated would be minimal and left on the ground to naturally decompose, thereby eliminating the need to collect and manage the green waste. This practice to maintain landscaping has been used historically for the existing cleared areas within the proposed Base Camp when the site was formerly in use as the USAGM transmitting facility and would become the standard practice to maintain all newly cleared areas under Alternative 1. Training under Alternative 1 would result in no demand for or change in the green waste processing capacity at the Tinian Organics Processing Site, and therefore Alternative 1 would result in no impact associated with green waste processing or disposal.

##### **Construction**

Site development and construction would require clearing of trees, brush, and grasses, which would generate green waste. Green waste would be processed by the construction contractor through a grinder or chipper to size-reduce the material into a chipped product. USMC would

coordinate with CNMI to determine where the chipped green waste would be stockpiled. The material would be available for use by the contractor in the development of project facilities and/or could be made available to the residents of Tinian. This process is being successfully implemented in the U.S. Air Force Divert construction. See Appendix M, Utility Studies for a discussion of management methods for mulch product if the presence of the coconut rhinoceros beetle is confirmed.

The U.S. Air Force is clearing vegetation under a separate project along some of the runways, taxiways, and roadways within North Field and this would be completed prior to construction of Alternative 1. The proposed drop zone at North Field overlaps this same area and vegetation that would be removed by the U.S. Air Force is not included in this analysis. Vegetation clearing required for other North Field proposed improvements, including the surface radar tower sites and water infrastructure is analyzed. Table 4.11-6 summarizes the estimated tons of green waste generated during construction of all project elements.

**Table 4.11-6 Projected Green Waste Generation During Construction Under Alternative 1**

<i>Year</i>	<i>Volume (cubic yards)</i>	<i>Weight (tons)</i>
2026	82,478	20,619
2027	82,478	20,619
2028	125,906	31,477
2030	35,325	8,831
2031	0	0
2033	0	0
2036	0	0
2038	6,964	1,741
2039	3,913	978

With CNMI approved processing of green waste from construction, Alternative 1 would create a less than significant impact from the generation of green waste.

#### **4.11.3.6 Stormwater**

##### **Training**

Alternative 1 includes maintaining cleared land. Best management practices would be employed to reduce potential impacts to stormwater per the *CNMI and Guam Stormwater Management Manual* (Horsley Witten Group, Inc. 2006) during operation. Best management practices include bioretention basins, swales, porous pavement, and hydrodynamic separators. See Appendix M, Utility Studies, for additional stormwater information and calculations.

Stormwater runoff from the proposed Multi-Purpose Maneuver Range would discharge to a tributary system that flows to the ocean. Best management practices approved for operational ranges and control of munitions constituents, such as the collection of spent munitions and brass at the conclusion of training events by the USMC, would be implemented. Given the potential for stormwater discharge to reach Waters of the U.S., National Pollutant Discharge Elimination System permit coverage would need to be obtained unless infiltration proves fully feasible across all discharge areas.

Provided that best management practices are implemented and National Pollutant Discharge Elimination System permit coverage is obtained where required, Alternative 1 would employ best management practices during training events and would have a less than significant impact on stormwater quality.

### **Construction**

Alternative 1 would involve land clearing and the construction of impervious surfaces, including paved roads, parking areas, and buildings, which would increase stormwater runoff. To reduce potential stormwater-related impacts, temporary erosion and sediment control best management practices would be implemented during construction in accordance with the *CNMI and Guam Stormwater Management Manual* (Horsley Witten Group, Inc. 2006). Because the combined area of disturbance would exceed 1 acre, the project would obtain coverage under the EPA Region 9 Construction General Permit and prepare a project-wide Stormwater Pollution Prevention Plan. Best management practices during construction would include:

- Silt fences, sediment traps, and fiber rolls to prevent sediment from leaving the construction site.
- Temporary sediment basins to capture runoff and reduce turbidity in stormwater discharges.
- Stabilized construction entrances/exits to minimize sediment tracking onto paved roads.
- Watering and dust suppression to prevent airborne pollutant transport.
- Phased grading and revegetation to minimize exposed soil and erosion potential.

Additionally, post-construction stormwater best management practices, including bioretention basins, vegetated swales, porous pavement, and hydrodynamic separators, would be installed as part of the final site development to manage long-term stormwater runoff and water quality. These permanent best management practices are designed to mimic natural hydrology, reduce peak flows, and enhance infiltration.

The project would also adhere to the *Department of the Navy Low Impact Development (LID) Policy for Stormwater Management* (NAVFAC EXWC 2015), which establishes additional requirements to minimize post-construction stormwater impacts. Key low impact development strategies guiding the project include:

- Managing stormwater at its source through decentralized, small-scale controls.
- Integrating stormwater management features into site design for dual functionality and aesthetics.
- Utilizing structural stormwater controls, such as bioretention basins and infiltration basins, where appropriate.

By implementing temporary best management practices during construction and permanent Low Impact Development policy post-construction, Alternative 1 would effectively reduce stormwater impacts, ensuring compliance with regulatory requirements and minimizing potential water quality effects. As a result, stormwater quality impacts are expected to be less than significant.

### 4.11.3.7 Electrical Power System

#### Training

The proposed training operations would add an estimated 0.146 megawatts of peak electricity demand to operate facilities and supporting infrastructure and equipment. This increase in peak demand would represent 1.15 percent of the total system capacity. Table 4.11-7 provides a summary of existing and proposed electrical demands relative to the existing electrical system capacity. With this added electrical demand, the system would maintain a 9.55-megawatt capacity reserve, which is 75.2 percent of the total system capacity. As a result, the existing island-wide power generation facility is sufficient to meet the increased power demand during proposed operations. Therefore, Alternative 1 would have a less than significant impact to electrical utilities.

**Table 4.11-7 Annual Electrical Power System Peak Demand and Capacity Under Alternative 1**

<i>Item</i>	<i>MW of Electricity</i>	<i>% of System Capacity</i>
Tinian Power Plant Effective Design Capacity	12.70	100
Peak Electrical Demand from Existing Customers	3.00	23.5
Additional Peak Electrical Demand from Proposed Action	0.146	1.15
Total Electrical Demand with Proposed Action	3.146	24.8
Remaining Electrical Generating Capacity with Alternative 1	9.51	75.2

*Legend:* % = percent; MW = megawatt.

*Source:* Appendix M, Utility Studies.

Replacement of existing high-powered shortwave transmission station tower with lower powered Radio Frequency antennas would either offset or result in a net increase in the existing electrical distribution capacity. It is anticipated that no modifications on the existing electrical distribution are required since construction activities would not increase load on the electrical system's capacity.

#### Construction

When a project includes construction of new on-site electrical infrastructure to support facilities, connecting this new infrastructure to the existing supply system requires a localized and temporary interruption of power to existing customers. These supply interruptions would be anticipated for not longer than 6-hour durations, scheduled to allow for advance notification to users, and timed to be least disruptive. This would minimize impacts to existing Commonwealth Utilities Corporation customers and result in less than significant impacts.

New underground, concrete-encased (3000 PSI) duct banks would be installed to support the 13.8/7.9 kilovolt electrical distribution. The existing Feeder 4 overhead line point of connection, north of the TNI to the existing USAGM would be maintained. The underground line to the existing medium voltage switchgear is anticipated to be used to support the proposed Base Camp facilities and existing Communications towers #1, #12, and #16. These Communications towers would be repurposed, provided with new equipment to support the new communications needs. Evaluation of the existing switchgear bus bar condition would be required; repair or replacement may be necessary for re-use. Existing overhead lines along 8<sup>th</sup> Ave to the former USAGM site would remain as overhead distribution. Emergency power to the Base Camp would be provided from the existing 1.2 megavolt-amperes generator that is currently used to support the USAGM Communications facilities. The use of the existing generator may require the installation of a new

load bank to provide operational efficiency and reliability during loss of power or during maintenance. The Base Camp loads along with the communication towers and supporting facilities are anticipated to offset the demobilization of the former USAGM site.

The new underground infrastructure would be extended along 8<sup>th</sup> Avenue. The current USAGM Feeder 4 would be tapped, and a riser provided for the extension and lateral duct banks to distribute power to the support facilities including surface radar sites (1 and 2), wells located south of the Multi-Purpose Maneuver Range and AHA 1 Pad (Figure 4.11-2). Existing communications towers would require 200 kilovolt-amperes generators be installed to provide back-up power in the event of power failure. A new underground duct bank would be constructed from the existing overhead line Feeder 4 at power pole, located at the corner of 8<sup>th</sup> Ave. and 86<sup>th</sup> St. This underground duct bank would be installed along 86<sup>th</sup> Street due east to support Base Camp Well Field - Option A or due west towards Base Camp Well Field – Option B, the preferred option. A new underground duct bank would be constructed from the existing overhead line Feeder 3 to support the Port Biosecurity facilities. A newly installed extension of Feeder 4 located north of the TNI, as part of the Tinian Divert Infrastructure Project, would be tapped and routed underground to feed the proposed aircraft shelter which is located just south of the Feeder 4 extension. The overhead line would be intercepted at the nearest power pole and riser down for transition to underground distribution. It is anticipated that an additional peak demand of 0.146 megawatts would be supported by the island electrical system for the aircraft shelter. The exact point of transformation for usable power would be coordinated with the aircraft shelter contractor. Site lighting is required and would use LED fixtures where applicable. Lighting levels would conform to UFC 3-530-01. Lighting loads would have minimal impacts on the electrical distribution system. Additional coordination regarding local wildlife and environmental conditions may be required when providing site lighting.

#### **Alternative Energy Sources for the Base Camp or Supporting Infrastructure**

The USMC is proposing to connect to the existing Commonwealth Utilities Corporation system as a rate payer and has verified that there is sufficient capacity for the estimated demand. The Commonwealth Utilities Corporation has plans to increase the amount of energy available from renewable generation over time, which would be supported by the fees paid into the system by the DoD. Diesel generators for this project are only proposed for emergency backup power.

As part of the construction design process, the USMC would consider situations where renewable energy options could be feasible. Future alternative energy sources such as photovoltaics for both the Base Camp structures would be explored. Remote radar sites may be powered by temporary generators. Using photovoltaic energy, with diesel generators designated as backup, would also increase energy security and enhance the military mission.

Due to their low profiles, solar photovoltaics systems typically represent little risk of interfering with radar transmissions (National Renewable Energy Laboratory 2017). Site lighting would be required and would use LED fixtures where applicable. Lighting levels would conform to UFC 3-530-01.



Figure 4.11-2 Electrical Power Distribution for Proposed Action

#### 4.11.3.8 Communications

##### Training

The proposed training operations under Alternative 1 would include installation of underground telecommunications infrastructure to support government communications systems (e.g., communication towers, surface radar towers, government telephone, government data, security, and closed-circuit television) and connection to commercial utility services, including commercial telephone and internet. Where required for proposed facilities, commercial telephone and internet services would be delivered through infrastructure provided by commercial utility providers. Small, short-term service interruptions may be necessary to facilitate new connections to the existing systems. Impacts associated with the installation and connection of telecommunications infrastructure to support Alternative 1 would be less than significant to utility systems on Tinian.

Military use of the existing information technology infrastructure would be limited to a leased line or a satellite connection to Guam. Because the existing systems have adequate capacity and because connection to the fiber optics system would be a dedicated line lease, the capacity of the existing civilian portion of that cable would not be reduced, and information technology and communication requirements would have no impact on existing utility systems.

##### Construction

Alternative 1 would include the construction of two new 45-foot-tall surface radar towers and repurposing three communication towers (towers #1, #12, and #16) at the USAGM site. New underground, concrete-encased duct banks would be installed to support the communications distribution. The new underground communications infrastructure would be extended along 8<sup>th</sup> Avenue. Conduit risers would be provided at the existing overhead lines for the extension and lateral duct banks to distribute the fiber optic system to the support facilities including CJMT wells and communication towers. Existing overhead communication lines to the Base Camp would remain as overhead distribution. The poles currently supporting the overhead lines to the USAGM site would be used to also support the new fiber optic system.

New underground communication lines would run along existing roads to support the North Field water wells and AHA 1.

#### 4.11.4 Alternative 2

The training tempo under Alternative 2 would increase by approximately 5 percent over training already approved to occur on Tinian, which is approximately 10 percent less than Alternative 1. Construction activities under Alternative 1 would also apply to Alternative 2. Therefore, the decrease in tempo would be a less than significant decrease and impacts to utilities under Alternative 2 would be the same as those described for Alternative 1.

## **4.12 Topography, Geology, and Soils**

### **4.12.1 Approach to Analysis**

The impact analysis for topography, geology, and soils focuses on the surface and subsurface features of land. Aviation training would not affect topography, geology, and soils so analysis of this resource focuses on ground training and construction. For topography, changes to the physical features of an area could potentially result in slope instability that could cause slumping or landslides. The analysis of geology assesses the effects of any large-scale soil or rock removal and the effect on geological functions such as the ability to filter and transmit groundwater. For soils, the analysis focuses on the disturbance of soils and the potential for erosion as a result of training events and construction. Increased soil erosion may also indirectly impact water quality (Sections 4.13 Groundwater and Hydrology and 4.14 Surface Water and Wetlands) and terrestrial biological resources (Section 4.4 Biological Resources).

Prime farmland soils exist within the Military Lease Area. The intent of the Farmland Protection Policy Act (7 U.S.C. section 4201, et seq.) is to minimize the unnecessary and irreversible conversion of farmland (including prime farmland) to nonagricultural uses by federal actions. In accordance with 7 CFR 658.3(b), acquisition or use of farmland by a federal agency for national defense purposes during a national emergency is exempted from compliance with Prime Farmland regulations. Nevertheless, this analysis considers whether prime farmland soils would be irreversibly converted to nonagricultural use under the Proposed Action.

The Proposed Action includes the establishment of a new lease and the reuse of the existing facilities including up to four of the communications towers at the former USAGM site on Saipan. No military training is proposed to occur on Saipan, but ongoing vegetation maintenance would occur at the USAGM site on Saipan. Thus, there would be no impacts to topography, geology, and soils related to the Saipan site.

### **4.12.2 No Action Alternative**

Under the No Action Alternative, training events would continue in the Military Lease Area with the same type of activities and at the same tempo as described in previous NEPA documents (DON 2015). The No Action Alternative includes the U.S. Air Force Divert project improvements (U.S. Air Force 2016, 2020) which were evaluated in previous NEPA documents and are currently under construction and expected to be completed prior to the Proposed Action. No change would occur under the No Action Alternative; therefore, there would be no additional impact on topography, geology or soils.

### **4.12.3 Alternative 1**

#### **4.12.3.1 Training**

##### **Topography**

Maneuver training on foot would occur in the Military Lease Area. Although repetitive pedestrian movement in the same areas could result in the creation of pathways, changes to the physical features are not expected and this impact is not likely to result in slope instability that could cause slumping or landslides. Ground training operations using vehicles would not result in additional slope instability because this training would be conducted on new or existing roads, around Landing Zones/cleared areas, and previously disturbed areas in the Military Lease Area.

The use of explosives in the Explosives Training Range would cause localized disturbance to the ground, resulting in a crater up to approximately 5 to 7 feet deep and 6 to 8 feet in diameter (i.e., for explosives with a maximum net explosive weight of 40 pounds). Following any detonation resulting in cratering, the area would be refilled by training units. The use of explosives is not expected to initiate landslides because the Explosives Training Range is located in a relatively level area and nearby slopes are composed of limestone.

Other training activities could include road repair and paving; runway repair; installation of AM2 matting on Runway Baker; and simple temporary structures such as tents and temporary fueling bladders. The AM2 matting would be periodically removed, inspected, and replaced to meet maintenance and training requirements. These activities would comply with management measures (Appendix D) to maintain the existing topography, be confined to previously developed areas, and be of intermittent and short duration. Therefore, there would be less than significant impacts to topography associated with training under Alternative 1.

### **Geology**

Neither foot maneuver nor vehicle maneuver training would result in impacts to geology because these activities would not cause any large-scale soil or rock removal or would have minor effect on geological functions such as the ability to filter and transmit groundwater. For any areas that undergo compaction from training (e.g., foot paths or roads) surface runoff and recharge would occur in areas immediately adjacent, resulting in negligible impacts to recharge. The use of explosives in the Explosives Training Range is expected to impact the ground to approximately 5 to 7 feet deep, resulting in disturbance to the underlying bedrock, which is estimated to be at a depth of 1.7 to 3.3 feet in this area (U.S. Department of Agriculture 1989). However, this would impact a relatively small area, resulting in negligible impacts to recharge. Therefore, there would be less than significant impacts to geology associated with training events under Alternative 1.

### **Soils**

As discussed under topography, foot traffic would be dispersed throughout the Military Lease Area and is therefore not expected to generate repeated disturbance in any specific area on a regular basis within the Military Lease Area. Vehicle maneuver training would utilize only new or existing roadways or would occur within Landing Zones/cleared areas and previously disturbed areas. The use of explosives in the Explosives Training Range is expected to recurrently impact soils within a designated cleared area at the Explosives Training Range. Following any detonation resulting in cratering, the area would be refilled by training units. The periodic removal, inspection, and replacement of AM2 matting would occur on the existing paved Runway Baker. As a result, training events would result in less than significant impacts to soils.

Periodic vegetation clearing and thinning and/or maintenance would occur within established training and support areas and the Base Camp within the Military Lease Area. Table 4.12-1 provided areas that would require ongoing vegetation maintenance. There would be minimal direct disturbance of soils during this vegetation maintenance because clearing would be by hand or mechanical devices and not discing, resulting in preserving remaining vegetation, which would protect soils from erosion. Therefore, there would be less than significant impacts to soils associated with training under Alternative 1.

**Table 4.12-1 Vegetation Maintenance Under Alternative 1**

<i>Facility</i>	<i>Approximate Area (Acres)</i>	<i>Level of Maintenance</i>
Explosives Training Range	2.5	Requires clearing and thinning of vegetation
Drop Zone	89	Requires clearing and thinning of vegetation between runways Able and Charlie
Landing Zones	157	Requires clearing and maintaining of vegetation to 6-8 inches
Multi-Purpose Maneuver Range	34.7	Requires clearing and thinning of vegetation
New Roads	12	Requires clearing of vegetation
Base Camp	110	Requires continued maintenance mowing of vegetation in existing USAGM cleared areas

**4.12.3.2 Construction**

**Topography**

Alternative 1 would involve the construction of two live-fire ranges, an aircraft shelter, Landing Zones, ammunition holding areas, surface radar facilities, new paved and unpaved roads, and utilities. This construction would require earthwork including excavation, fill, transport, and compaction. To minimize the amount of earthwork required, the design of facilities including the radar towers and ammunition holding areas would seek to utilize existing on-site soils and balance the required quantities of excavation and fill. Each facility would be designed to balance cut and fill needs onsite. This eliminates the need for trucking of material and allows for efficient grading. Development of the Base Camp would primarily use the existing USAGM buildings. Other previously disturbed, cleared areas within the USAGM site would accommodate other proposed Base Camp new construction needs, resulting in negligible impacts to topography. Therefore, there would be less than significant impacts to topography associated with construction under Alternative 1.

**Geology**

Project design and construction would minimize impacts to karst geology by avoiding identified locations of sinkholes, caves, and other karst features. Nearly all proposed infrastructure is located in areas with no known karst features, including the project footprint for the Base Camp (Figure 4.12-1) (Doan et al. 1960). However, the Base Camp Well Field Option B, the proposed water lines, and the aircraft shelter would occur in areas with identified collapsed surface features (Figure 4.12-1). Impacts from development of the Base Camp Well Field Option B and the proposed water lines in areas with identified collapsed surface features are expected to be negligible because the infrastructure associated with these features (i.e., buried pipeline and small equipment buildings) are not expected in land subsident in these areas. The aircraft shelter would be constructed on an area that has already been leveled and stabilized under the U.S. Air Force Divert project improvements, so impacts related to the collapsed surface features are expected to be negligible. For these reasons, and with implementation of design and the management measures listed in Appendix D, there would be less than significant impacts to geology associated with construction under Alternative 1.

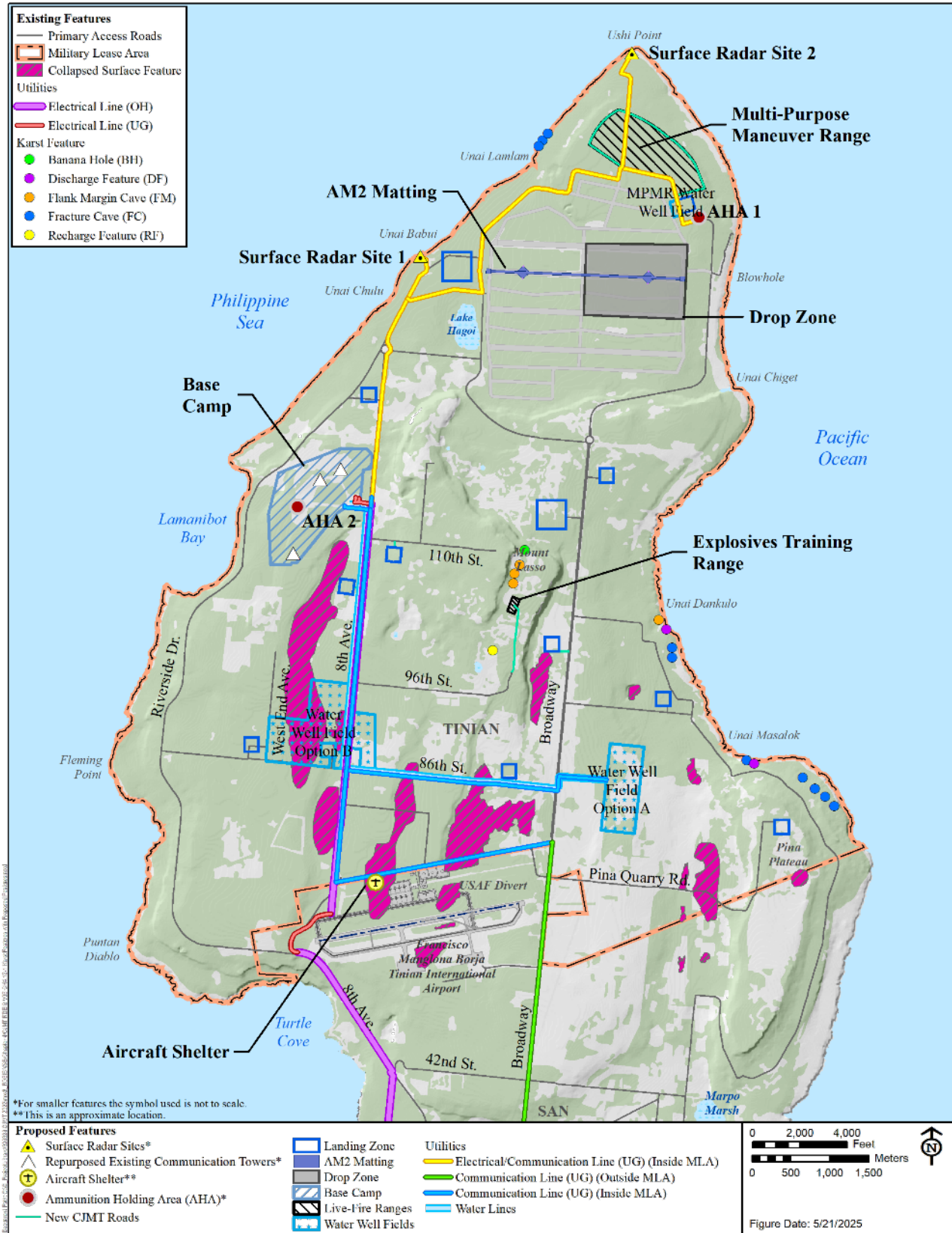


Figure 4.12-1 Karst Features in the Vicinity of the Project Area

## Soils

Construction would result in vegetation clearance and direct ground disturbance from cut and fill and grading. Construction activities on Tinian would not occur in areas with highly erodible soils (Figure 4.12-2). As discussed in Section 4.4.3 Biological Resources and presented in Table 4.4-1, approximately 343 acres of vegetation (or 2.3 percent of vegetation in the Military Lease Area) would be permanently cleared to develop the Landing Zones, Multi-Purpose Maneuver Range (i.e., objective/target areas, fire access road around the range), utility alignments, Base Camp (i.e., area around security fencing), Explosives Training Range, drop zone, surface radar towers, potable water well fields (Options A or B), and new roads. Within these areas, direct ground disturbance during construction are shown in Table 4.12-2. A perimeter road would be constructed around the Multi-Purpose Maneuver Range and a new access road would be constructed to the Explosives Training Range and three of the Landing Zones (Table 4.12-2). Improvements to existing paved and unpaved roads would primarily include clearance of overgrown vegetation.

Vegetation clearance and direct ground disturbance during construction activities could lead to increased erosion and sediment loads in stormwater runoff. In compliance with the National Pollutant Discharge Elimination System Construction General Permit, a Stormwater Pollution Prevention Plan and construction-specific stormwater management practices such as retention ponds, swales, silt fences, fiber rolls, gravel bag berms, mulch, and erosion control blankets would be implemented to provide erosion and sediment control during construction (Appendix D). These on-site measures would reduce the flow and velocity of stormwater and minimize the transport of soils and sediment off site. This management measure would also include inspection and water sampling performed throughout the construction phase.

**Table 4.12-2 Construction Disturbance Under Alternative 1**

<i>Facility</i>	<i>Approximate Area of Direct Ground Disturbance (Acres)</i>
Aircraft Shelter	1.29
Ammunition Holding Area 1	0.62
Base Camp (Security Fencing)	4.15
Port Biosecurity/Wash Rack	0.60
Potable Water Well Field and Water Line from Well Field Option A <sup>1</sup>	11.64
Potable Water Well Field and Water Line from Well Field Option B <sup>1</sup>	9.70
Electrical and Communication Line inside the Military Lease Area <sup>2</sup>	5.48
Communication Line outside the Military Lease Area <sup>2</sup>	0.45
Landing Zones 6, 7 and 8 Access Roads	0.62
Multi-Purpose Maneuver Range Perimeter Road	8.93
Explosives Training Range and Access Road	1.55
Surface Radar Tower 1	0.05
Surface Radar Tower 2	0.05

Notes: <sup>1</sup> This analysis assumes a 10-foot wide trench for water lines.

<sup>2</sup> This analysis assumes a 3-foot wide trench for electrical and communication lines.



Figure 4.12-2 Highly Erodible Soils and Prime Farmland Soils in the Project Area

The Proposed Action would largely avoid disturbance of prime farmland soils in the Military Lease Area, with the exception of a small corner of Landing Zone 8 proposed at a site south of 110th Street at 8th Avenue; portions of Base Camp; the southernmost communications tower; and proposed water line (Figure 4.12-2). The Landing Zone would only require vegetation maintenance and would not involve digging in the soil or the placement of a permanent structure. The Base Camp would utilize existing USAGM infrastructure, including the existing communications tower #16, and require minimal additional soil disturbance in areas of prime farmland soils. The proposed water line alignment north of West End Avenue and connecting to the Base Camp would result in minimal, short-term disturbance of prime farmland soils from trenching during installation. Therefore, there would be less than significant impacts to prime farmland or erodible soils on Tinian under Alternative 1.

#### **4.12.4 Alternative 2**

Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. This would result in less than significant impacts similar to those described under Alternative 1.

Construction for Alternative 2 would be the same as described for Alternative 1. With implementation of management measures, there would be short-term and less than significant impacts to topography, geology, and soils associated with Alternative 2.

### **4.13 Groundwater and Hydrology**

#### **4.13.1 Approach to Analysis**

The analysis of potential impacts to groundwater and hydrology focuses on groundwater quantity and quality. Factors used to assess the impacts of the Proposed Action to groundwater and hydrology include: (1) the availability of groundwater to supply the potable water for both the Proposed Action and civilian populations; and (2) the potential for the Proposed Action to impact groundwater quality. As part of this analysis a comprehensive hydrological study for the Proposed Action, called the Groundwater Modeling Technical Memorandum, was included in Appendix M (Utility Studies) of the Revised Draft EIS. The study considered groundwater demand, including current and projected demands for all uses (related to the Proposed Action, other DoD, and non-DoD water demands) to evaluate impacts from the Proposed Action.

#### **4.13.2 No Action Alternative**

Under the No Action Alternative, ground and aviation training events would continue in the Military Lease Area with the same type of activities and at the same tempo as described in previous NEPA documents (DON 2015). In addition, all actions related to the U.S. Air Force Divert Activities project (U.S. Air Force 2016, 2020) would be implemented. No change would occur under the No Action Alternative, therefore, there would be no impact to groundwater or hydrology.

#### **4.13.3 Alternative 1**

##### **4.13.3.1 Training**

##### **Groundwater Availability**

The Proposed Action includes addition of new water infrastructure to support the Base Camp, which would not be connected to the Commonwealth Utilities Corporation water system. This new

water infrastructure is proposed to consist of up to four new or rehabilitated groundwater wells, aboveground storage, and a booster pump station. Table 4.13-1 provides the average annual water demand for the new water infrastructure.

**Table 4.13-1 Average Annual Water Demands at the Base Camp Under Alternative 1**

<i>Description</i>	<i>Demand</i>	<i>Cycles Per Year</i>	<i>Persons × Day</i>	<i>Unit Water Demand (gpcd)</i>	<i>Demand (gallons/year)</i>
Large Training Group	1,000 persons × 30 days	4	120,000	50	6,000,000
Medium Training Group	250 persons × 14 days	4	14,000	50	700,000
Small Training Group	100 persons × 14 days	10	14,000	50	700,000
Permanent Support Personnel (8-hour shift)	50 persons × 365 days	1	18,250	30	547,500
Portable Vehicle Wash Facility					23,940
<b>Total</b>					<b>7,971,440</b>

Legend: gpcd = gallons per capita per day.

Other uses of potable and non-potable water on Tinian include new wells at North Field (part of the Proposed Action), new wells for the U.S. Air Force, existing agricultural wells operated by the Tinian Mayor’s Office, and the potable water supply for the Commonwealth Utilities Corporation. Table 4.13-2 summarizes these demands.

**Table 4.13-2 Summary of Average Annual Water Demands on Tinian**

<i>Owner</i>	<i>Facility</i>	<i>Type</i>	<i>Average Annual Water Demand<sup>2</sup> (gallons per year)</i>
Military	CJMT Base Camp	Potable	7,971,440
Military	CJMT North Field	Non-Potable	800,000
Military	U.S. Air Force North Field Rehabilitation	Non-Potable	4,380,000
Military	Tinian Divert Infrastructure Improvements	Potable	800,000
Commonwealth Utilities Corporation	Maui Well No. 2 <sup>1</sup>	Potable	314,727,702
Tinian Mayor’s Office	Well M-21 (CJMT Construction)	Non-Potable	21,600,000
Tinian Mayor’s Office	Well M-26 (Existing Agriculture)	Non-Potable	21,600,000

Legend: CJMT = Commonwealth of the Northern Mariana Islands Joint Military Training; No. = number; ; U.S. = United States.

Notes: <sup>1</sup> Average of production at Maui Well No. 2 from 2019 to 2023 and proposed CJMT demands on the Commonwealth Utilities Corporation water system.

<sup>2</sup> Total demand for all the wells.

The total potable and non-potable water demand from existing and proposed uses is approximately 372 million gallons per year. This total water demand has been estimated at 7 to 9 percent of the sustainable yield of the groundwater aquifer, which is approximately 4 to 5 billion gallons per year. As described in Section 3.13, the average annual recharge of Tinian’s aquifers is estimated at 20 billion gallons per year. Of this amount, 20 to 25 percent may be sustainably extracted with a broadly distributed network of wells across the island (i.e., 4 to 5 billion gallons per year).

Because the demand from Alternative 1 combined with the current and projected future civilian demand is well below the estimated annual sustainable yield of 4 to 5 billion gallons per year, Alternative 1 would result in a less than significant impact to groundwater availability.

No changes to water usage are proposed for the USAGM site on Saipan. Thus, there are no impacts to groundwater availability on Saipan.

### **Groundwater Quality**

Alternative 1 would result in an increase in the quantity of groundwater extracted to meet water demands during training events. Increased groundwater pumping could potentially lead to saltwater intrusion into the freshwater aquifer, causing chloride concentrations to increase. The Commonwealth Utilities Corporation water system reports that existing chloride concentrations in Tinian's groundwater supply ranged from 145 and 213 milligrams per liter between 2012 and 2023 (Commonwealth Utility Corporation 2013, 2014c, 2015a, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 and 2024a). This remains below the secondary maximum contaminant level for chloride of 250 milligrams per liter adopted by the CNMI Bureau of Environmental and Coastal Quality for contaminants that are not considered a risk to public health (CNMI Drinking Water Regulations, Chapter 65-20).

To evaluate impacts to chloride concentration in Tinian's groundwater supply from Alternative 1, a groundwater model was prepared evaluating current conditions and four future scenarios, including drought and normal precipitation years. The model assumed an extraction of 21,777 gallons per day of groundwater from the CJMT wellfield A or B (plus Maui Well Number 2 [civilian demand], M-21 [CJMT construction demand], M-26 [agricultural demand], two CJMT North Field wells, the U.S. Air Force Divert well near TNI, and U.S. Air Force North Field well) (Appendix M). The CJMT wellfield demand is based on average demands (including the low, medium and high-intensity training outlined in Table 4.13-1) combined with operational staff and construction personnel. Other assumptions used in the model were that well screens would be set no deeper than 15 feet below mean sea level and pumped at no more than 60 gallons per minute per well. The results of the modeled scenarios predict that chloride concentrations in groundwater at Maui Well Number 2 and either the CJMT wellfield A or B would only negligibly increase due to groundwater withdrawals under Alternative 1.

Construction and operation of each new and existing groundwater well is subject to an annual permit from the CNMI Bureau of Environmental and Coastal Quality. The CNMI Bureau of Environmental and Coastal Quality determines extraction limitations based on the results of pump tests, aquifer recovery tests, and water quality testing. The extraction limitations are subject to change each year based on test results to protect groundwater quality.

The modeled scenarios also evaluated the impact of USMC groundwater withdrawals on the existing Commonwealth Utilities Corporation Maui Well Number 2. The results of the groundwater model demonstrate that the use of the proposed new water system to support construction and training events within the Military Lease Area would have less than significant impacts on water quality at existing Commonwealth Utilities Corporation Maui Well Number 2. Additional detail on the groundwater model is included in Appendix M.

No changes to water usage are proposed for the USAGM on Saipan. Thus, there are no impacts to groundwater availability on Saipan.

#### 4.13.3.2 Construction

Industrial demands during construction would include mixing concrete, earthwork compaction, dust control, hydrostatic pressure testing, and cleaning. The U.S. Air Force is currently constructing the Tinian Divert Infrastructure Improvements at TNI. The contractor purchases all water for that construction from the Tinian Mayor's Office at Well M-21. The CNMI Bureau of Coastal Quality requires annual well testing and sets extraction limits to protect groundwater quality. Well M-21 has a permitted extraction capacity of 1.8 million gallons per month in 2024 (J. Aldieri, NAVFAC Marianas, Personal Communication, 2024), or 21.6 million gallons per year. All water from this well is used exclusively for construction purposes.

The construction contractors are responsible for obtaining non-potable water used in construction. Construction of the Tinian Divert Infrastructure Improvements would be completed prior to starting construction of the Proposed Action. It is anticipated that the contractors for the Proposed Action would make arrangements with the Tinian Mayor's Office to use Well M-21 for construction water if sufficient water is unavailable closer to the construction site.

The Proposed Action is substantially smaller in size and scope than the Tinian Divert Infrastructure Improvements and would use less water during construction. To be conservative, it is assumed that the same quantity of water, 21.6 million gallons (81.8 million liters) per year, would be used in construction of the Proposed Action. The groundwater model included this demand at Well M-21 in the analysis and there was no impact. Groundwater extraction limits are also set annually based on field testing to protect groundwater quality; therefore, there would be no impacts to groundwater quality from construction.

#### 4.13.4 Alternative 2

The training tempo under Alternative 2 would increase by approximately 5 percent over training already approved to occur on Tinian, which is approximately 10 percent less than Alternative 1, resulting in a proportional decrease in water use by 10 percent. As a result, the average annual water demand under Alternative 2 would be 7,174,296 gallons per year. This would be a less than significant impact to groundwater availability. Impacts to groundwater quality would also be lower than Alternative 1 and would remain less than significant.

### 4.14 Surface Waters and Wetlands

#### 4.14.1 Approach to Analysis

This analysis considers Proposed Action impacts to the quality and quantity of surface waters and wetlands within the Military Lease Area as compared to existing conditions. Conditions that may directly affect the quality of surface waters and wetlands include increased pollutant or sediment loads from training and construction. Quantity, defined as the volume of water stored in wetlands, is affected by changes to surface water area, or other physical changes from excavation, adding fill, or expanding impervious surfaces. These changes may result in different drainage patterns or flood susceptibility or effects to hydrology, soils, or vegetation that support a wetland. Note that because there is no proposed training or construction at the former USAGM Saipan site, the site is not included in the analysis.

This analysis assumes that the required National Pollutant Discharge Elimination System Construction General Permit would be obtained before construction activities commence. The National Pollutant Discharge Elimination System Construction General Permit is a key regulatory

framework designed to manage stormwater discharges associated with construction activities. Under the Clean Water Act, this permit is mandatory for construction sites that disturb one or more acres of land, requiring operators to implement a Stormwater Pollution Prevention Plan.

#### **4.14.2 No Action Alternative**

Under the No Action Alternative, training events would continue in the Military Lease Area with the same or similar type of activities and at the same tempo as described in previous NEPA documents (DON 2010a, 2015b). In addition, because TNI improvements that are part of the U.S. Air Force Divert project would be completed prior to the Proposed Action, the existing environment includes the U.S. Air Force Divert project improvements (U.S. Air Force 2016, 2020). It should be noted that the wetlands, including Lake Hagoi, are currently identified as no training areas under the No Action Alternative. No change would occur under the No Action Alternative; therefore, there would be no impact to surface waters and wetlands.

#### **4.14.3 Alternative 1**

##### **4.14.3.1 Training**

In total, the training tempo under Alternative 1 would increase by approximately 15 percent over training already approved to occur on Tinian under the No Action Alternative. Under Alternative 1, training involving people physically training on foot or in vehicles would avoid the four surface waters and wetlands areas in the Military Lease Area (Figure 4.14-1). Live-fire training operations at the Multi-purpose Maneuver Range and the Explosives Training Range would have the potential to impact surface waters or wetlands by introducing residual heavy metals such as lead into the environment. However, the potential impact is small due to several factors including the relatively large distances between the live-fire ranges and surface waters and wetlands as shown in Table 4.14-1; the generally flat and rolling terrain; and general absence of surface waters and wetlands on Tinian (Figure 4.14-1). USMC ranges are designed with strict safety measures, including surface danger zones that limit projectile escape to a 1 in 1,000,000 chance. Most projectiles remain near targets due to range design, weapon accuracy standards, and operator qualifications. Even in rare cases where a projectile might leave the immediate target area, natural barriers like vegetation and uneven terrain, along with loss of energy through ricochets and water resistance, substantially reduce the chance of bullets reaching the ocean. As a result, the risk of lead entering ocean waters and affecting water quality is considered extremely low.

To further reduce the risk of introducing heavy metals into surface water or wetland features, upon the conclusion of a training event, units are required to remove all trash, debris, and ammunition dunnage (including bullet casings, packaging, etc.), restoring the land to its original state to the maximum extent practicable. Range Control is responsible for ensuring unit compliance for cleanup of the ranges and training areas. The USMC would be responsible for cleaning up after its own activities to the maximum extent practicable, but not for remediating legacy issues in the Military Lease Area, such as World War II-era munitions.

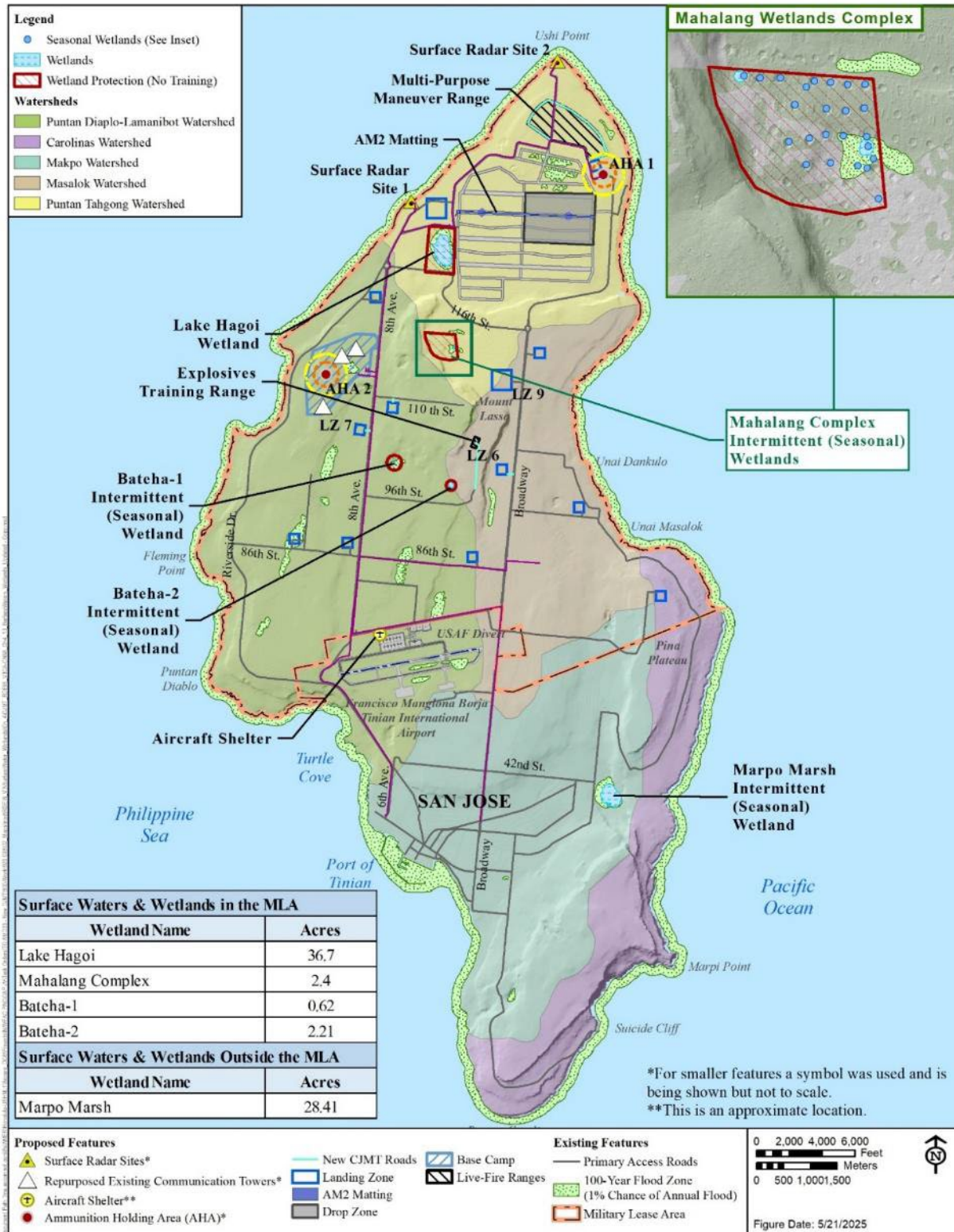


Figure 4.14-1 Tinian Surface Water and Wetland Features, Flood Zones, and Watersheds

For long-term sustainability of the ranges and training areas, Range Control implements the Operational Range Clearance Program. This program periodically conducts thorough clearances of any remaining ammunition, casings, projectiles, dunnage, and other debris resulting from military activities. Responsibilities and policies regarding the Marine Corps Operational Range Clearance Program must adhere to MCO 3550.12A. Additionally, a Range Environmental Vulnerability Assessment would be conducted one year after the range begins operations and reassessed every five years. This program serves as a proactive and comprehensive approach to ensure the environmental sustainability of USMC operational ranges. It aims to mitigate environmental impacts from active ranges and complies with the requirements outlined in DoD Instruction 4715.14, *Operational Range Assessments* (see Section 4.10.3.1 for additional information on Operational Range Assessments). The application of best management practices would further minimize the possible release of contaminants.

The primary condition that would influence the movement or mobility of lead in an environment is the pH of the soil. The geology of Tinian is predominantly karst, and the soils are derived from limestone bedrock with abundant carbonates and are naturally neutral (pH 6.5–7.0) to alkaline (greater than 7.0). At neutral pH, heavy metals, like lead, become relatively insoluble and the potential for lead to be transported to the ground water or in surface water runoff would be very low (Weil and Brady 2017). Because of the relative scarcity of surface waters on Tinian, best management practices, stormwater management systems, and the natural adsorption of Tinian's soils, training events under Alternative 1 would have less than significant impacts to surface waters and wetlands.

As discussed in Section 4.12 Topography, Geology, Soils, disturbance of soils from training events has the potential to result in increased soil erosion, which may indirectly impact water quality from sediment deposition. Such impacts would be partially minimized by ensuring that all vehicle traffic occur only on new, existing and previously disturbed areas. Additionally, no training is allowed to occur in or near wetlands or Lake Hagoi, as described in Section 4.4 Biological Resources.

While the use of military vehicles and equipment throughout the Military Lease Area would slightly increase the risk for an accidental release of pollutants, as discussed above, training would not take place near any surface waters or wetlands. In addition, were a spill to occur, it would be cleaned up immediately in accordance with the Stormwater Pollution Prevention Plan. As there are no permanent streams on Tinian and the geology is principally karst (i.e., slightly alkaline), should a release occur, the possibility of pollutants traveling more than a few feet overland from the release site is low.

Lastly, best management practices, such as using a sediment basin and/or diversion swales, would be employed to mitigate potential stormwater impacts to surface and nearshore waters and wetlands per the CNMI and Guam Stormwater Management Manual (Horsley Witten Group, Inc. 2006). Through a combination of the unique environment on Tinian (i.e., karst geology) and best management practices, the risk of water quality becoming degraded from training events is less than significant.

**Table 4.14-1 Nearest Distances from Surface Waters and Wetlands to Proposed Infrastructure and Training Facilities**

<i>From</i>	<i>To</i>	<i>Nearest Distance (feet)<sup>1</sup></i>
Bateha-1 Intermittent (Seasonal) Wetland	Landing Zone 7	2,700
	Explosives Training Range	4,400
Bateha-2 Intermittent (Seasonal) Wetland	Explosives Training Range	2,400
	New Road to Explosives Training Range	1,300
Mahalang Complex Intermittent (Seasonal) Wetland	Explosives Training Range	4,900
	Landing Zone 9	2,300
	Base Camp Inhabited Building Perimeter	2,900
Lake Hagoi Intermittent (Seasonal) Wetland	Runway Baker	1,600
	Landing Zone 12	1,000
	Multi-purpose Maneuver Range	10,000
Marpo Marsh Wetland	Landing Zone 1	11,000

Note: <sup>1</sup> Nearest distance measured from closest edge to closest edge in a Geographic Information System and rounded to nearest 100 feet.

**4.14.3.2 Construction**

Under Alternative 1, impervious surface in the Military Lease Area would increase by approximately 12 acres from the construction of new facilities and other impervious surfaces such as concrete pads or roads resulting in increased precipitation run-off. These new surfaces would be designed to minimize surface water runoff through implementation of low-impact development and best management practices for stormwater management systems as described in Appendix D. In addition, a metal matting surface would be used on North Field to create an 8,000 by 96-foot-wide airfield surface on runway Baker. The AM2 matting would also include 200-foot by 200-foot stakes at each end of the runway to secure the matting. Metal matting would also be installed in an approximately 500 by 500-foot area at Landing Zone 9. This matting is pervious and thus would not increase the area of impervious surfaces.

Under Alternative 1, there would be no placement of fill or excavation of surface waters or wetlands, and construction would occur more than 1,000 feet away from any surface water, wetland, or nearshore waters (Figure 4.14-1 and Table 4.14-1). In addition, use of the already developed USAGM site for Base Camp would reduce the amount of new impervious surfaces required to develop the Base Camp, which would limit additional stormwater runoff from development in that area.

The disturbance of soils during construction activities could lead to erosion and increased sediment in stormwater that could affect surface waters, wetlands, and nearshore waters. The proposed construction activities would minimize runoff through implementation of best management practices for construction, such as silt fences and other stormwater management systems described in Appendix D. In addition, the already disturbed areas within the USAGM site would not introduce new flows that could impact surface waters or wetlands, and stormwater flow in this area is toward the ocean and away from the lake and wetlands. Therefore, given the distance from construction areas to surface waters, implementation of construction best management practices and stormwater management systems, and compliance with the Stormwater Pollution Prevention

Plan and conditions in the National Pollutant Discharge Elimination System Construction General Permit, impacts to surface and nearshore water quality would be less than significant.

#### 4.14.4 Alternative 2

Alternative 2 training would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. The training events under Alternative 2 would continue to be located the same distance away from surface waters and wetlands, training would remain restricted away from wetland areas (Figure 4.14-1), and Range Control actions would be the same as Alternative 1. Training under Alternative 2 would not result in any change from Alternative 1 impacts to surface water and wetlands and would be less than significant.

Because there would be no difference in the proposed facilities between Alternative 1 and Alternative 2, construction impacts would be the same for Alternative 2 as described for Alternative 1.

#### 4.15 Cumulative Impacts

Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. It is the combination of these effects that is the focus of cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time.

This analysis looks at the cumulative impacts from ongoing and future projects on Tinian and in the CNMI. A future action is considered reasonably foreseeable in this EIS if it is (1) included in a federal, state, or local planning document; (2) likely (or reasonably certain) to occur based on the recommendations of federal, state, or local planning agencies; (3) an existing permit application; or (4) a fiscal appropriation that is likely (or reasonably certain) to occur.

There are a number of planning documents that have been developed by CNMI agencies or are under development, where there is not sufficient detail available related to the implementation plan or timeline for the projects to be considered reasonably foreseeable, such as:

- Comprehensive Integrated Solid Waste Management Plan for the CNMI (2025): Future projects to include Development of Atgidon Landfill (development timeline still in planning stages, with a goal to begin operations within 10 years of 2023, to coincide with the closure of the Puntan Diablo Small Community Exempt Landfill); Hardfill Site for Construction and Demolition waste (new planned facility); Recycle Center / Loose Waste Transfer; Recycle Center Expansion; Organics Processing Site – Emergency Green Debris Staging Area.
- Roadway Improvement Plans from CNMI 20-Year Highway Master Plan Final Report (2023): Future projects to include general roadway improvements; near-term recover conditions improvements; long-term (2040) improvements.
- Tinian Harbor Master Plan (2018): 20-year planning period for full build out with the goal to create a flexible terminal layout that can be used for both military and commercial vessel calls. The plan defines projects that could occur in three phases throughout the planning period but the timeline for each phase and individual projects have not been fully defined or funded. In July 2023, the Commonwealth Ports Authority Board adopted a Resolution and Letter of Intent for a construction, repair, and maintenance project by the U.S. DoD at

the Port of Tinian. The Letter of Intent is meant to aid the DoD in securing congressional defense authorization funding for the project in the future, and projects that would be anticipated to occur within the next five years are described in Table 4.15-1.

- Ferry Feasibility Study and Transportation Master Plan (under development): Commonwealth Office of Transit Authority was awarded a grant in 2022 to develop a 20-Year Sustainable Transportation Master Plan and conduct an independent ferry feasibility study for the CNMI. Plans would provide/create multi-modal and intra/inter-island transportation options.
- Roadway, grading, and infrastructure improvement projects to be implemented by U.S. Naval Mobile Construction Battalion Detail Tinian (referred to as the Seabees): Since 2020 with the creation of expeditionary Camp Tinian by the Seabees, numerous roadway, grading and infrastructure projects have been conducted in the Military Lease Area. Projects in the community are also implemented when possible, such as the Marpo Heights Road project completed by the Seabees and USMC 7th Engineer Support Battalion in 2022. Future projects and their implementation schedules are in development as practicable.
- Hinemlu Forest Project, DoD Readiness and Environmental Protection Integration Program: The Tinian Mayor's Office is leading a project to rehabilitate a coastal strand and limestone forest trail used for recreation, traditional harvesting, and educational tours. The team will enhance important limestone habitat by removing invasive plants, planting native species, and maintaining fuel breaks in areas prone to wildland fires that destroy forest edges. The trail and habitat enhancement area is adjacent to turtle nesting areas and contains habitat important to many threatened and endangered species.
- Future modifications to the CNMI lease and U.S. Air Force Fighter operations in the CNMI: At a stakeholders meeting held on Saipan in December 2025, Joint Region Marianas representatives requested the CNMI government identify a team to work with DoD representatives to modify military leases in support of current and near-term missions in the region. Additionally, the U.S. Air Force has plans forthcoming for military construction in Rota, including potential improvements to the Rota International Airport to include an apron expansion, aviation fuels facility, and fire protection facilities. An environmental baseline survey was completed for these projects and environmental assessments are ongoing (Joint Region Marianas 2025).

Specific projects that are currently being implemented or have enough detail to be considered reasonably foreseeable are included in Table 4.15-1. Additionally, the analysis for each resource considers only the present and future actions that could result in potential impacts due to a temporal or geographic overlap with potential effects of the Proposed Action.

**Table 4.15-1 Present and Reasonably Foreseeable Future Actions**

<i>Reasonably Foreseeable Future Action</i>	<i>Time Frame and Status</i>
<p>USAGM Closure Actions for Facilities on Tinian and Saipan USAGM would be responsible for the demolition and disposal of communications towers and other infrastructure from the Tinian and Saipan properties. This would include infrastructure not proposed for reuse by the USMC for the Proposed Action described in this Final EIS.</p>	<p>Current. Ongoing.</p>
<p>U.S. Air Force Agile Combat Employment (ACE) projects at North Field and in the Military Lease Area:</p> <ul style="list-style-type: none"> <li>• Vegetation clearing and pavement improvements to runways at North Field.</li> <li>• Road improvements as needed.</li> </ul>	<p>Current. Vegetation clearance at North Field runway Baker began in late 2023<sup>5</sup>.</p>
<p>U.S. Air Force Divert Activities and Exercises</p> <ul style="list-style-type: none"> <li>• Divert would conduct up to 720 operations (360 landings and 360 take-offs) during up to 8 weeks of the year with up to 265 temporary personnel. These activities would be included in the large training events that are included in the Proposed Action described in this Final EIS.</li> <li>• Construction underway for an underground fuel pipeline from the Tinian seaport to the Tinian International Airport and construct and operate support infrastructure at the seaport including, if needed, transfer of fuel via tanker truck. Construction anticipated to conclude in 2026.</li> </ul>	<p>Current. Record of Decision for Final Supplemental EIS/OEIS signed in December 2022.</p>
<p>Mariana Islands Training and Testing Activities – Ongoing (through 2027) and Future (beyond 2027)</p> <ul style="list-style-type: none"> <li>• At-sea training and testing activities would continue to occur in the Mariana Islands Training and Testing Study Area as described through 2027.</li> </ul>	<p>Current. Ongoing. Supplemental EIS being prepared.</p>
<p>Joint Region Marianas Integrated Natural Resources Management Plan (2024)</p> <ul style="list-style-type: none"> <li>• This plan addresses natural resources management of Navy and former U.S. Air Force holdings and leased lands on Guam, Tinian, and Farallon de Medinilla. Naval Facilities Engineering Systems Command, Marianas is responsible for the management of natural resources covered under this plan.</li> <li>• Reviews for operation and effect are required every 5 years per the Sikes Act, as amended.</li> <li>• The Plan includes a priority list of strategies and projects for natural resources management for a 5-year period.</li> </ul>	<p>Current. Plan signed in January 2025.</p>
<p>Projects in the process of being implemented from the Comprehensive Integrated Solid Waste Management Plan for the CNMI<sup>1</sup></p> <ul style="list-style-type: none"> <li>• Conversion of Puntan Diablo current open dump site to a Small Community Exempt Landfill that is permitted to accept municipal solid waste. The project is anticipated to take approximately 5 years to complete. Conversion may include closure of some acreage currently part of the open dump. Once permitted, the Puntan Diablo landfill would be anticipated to operate for no more than 10 years.</li> </ul>	<p>Current and Future. Plan Approved by U.S. EPA September 2025.</p>

<i>Reasonably Foreseeable Future Action</i>	<i>Time Frame and Status</i>
<p>Tinian Route 205 Extension Road Improvements<sup>6</sup></p> <ul style="list-style-type: none"> <li>• Major siting permit issued by the CNMI Bureau of Environmental and Coastal Quality, Division of Coastal Resources Management in June 2024.</li> <li>• Project area is located at the southside of Tinian, just east of the former Tinian Dynasty Hotel and Casino.</li> <li>• Total length: 0.7 mi, includes paving the existing gravel road from the intersection with Route 206 intersection to Route 27 intersection.</li> <li>• Includes improvements to the drainage system and conveyance to ponding basin, and utility adjustments.</li> </ul>	<p>Current. Department of Public Works issued an invitation to bid for this project in February 2025.</p>
<p>Harbor Improvement Projects being Implemented from the Tinian Harbor Master Plan<sup>7</sup></p> <ul style="list-style-type: none"> <li>• The Navy’s underwater construction teams have been conducting improvements related to these projects on the harbor since 2020. In September 2020, the CNMI Bureau of Environmental and Coastal Quality posted the Consistency Determination and received comments from the Division of Coastal Resources Management Marine Monitoring Team, and Division of Environmental Quality Water Quality Branch. These comments were incorporated into conditions for concurrence of the Consistency Determination.</li> <li>• In 2023, a project involved welding zinc anodes on the port’s north quay wall to provide cathodic protection and extend the lifespan of the strategic divert port, which is the only port for both military and commercial craft to access the island.</li> <li>• Additional near-term (e.g., within 5 years) DoD improvement projects in the near term would include additional work on the quay wall, berths 1 and 2, and the roll-on roll-off ramp.</li> <li>• Tinian Breakwater; Removing Finger Pier and Dredging, Wharf Improvements.</li> </ul>	<p>Current. Upcoming DoD improvement projects anticipated to begin in fiscal year 2027 or 2028.</p>

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; DoD = Department of Defense; EIS = Environmental Impact Statement; OEIS = Overseas Environmental Impact Statement; Port of Tinian = Honorable Jose Pangelinan San Nicolas Commercial Port of Tinian; U.S. = United States; U.S. Agency for Global Media.

*Sources:* <sup>1</sup> Office of Planning and Development 2023; <sup>2</sup> Marianas Variety 2023z; <sup>3</sup> Marianas Variety 2023y; <sup>4</sup> Marianas Variety 2022; CNN 2023; <sup>6</sup> Marianas Variety 2022 <sup>7</sup> NAVFAC Marianas 2020, Joint Region Marianas 2023, Saipan Tribune 2023.

#### 4.15.1 Public Access

Both Alternative 1 and Alternative 2 would result in less than significant impacts to public access due to temporary access controls implemented to preserve safety during training events. Development projects such as the improvements to existing roadways around the island of Tinian, and the U.S. Air Force Agile Combat Employment projects at North Field included in the reasonably foreseeable future actions would provide an overall benefit to public access within the Military Lease Area by improving roadway conditions and making the North Field National Historic Landmark more desirable to visit. As a result, the aggregate impacts of reasonably foreseeable future actions along with either alternative would not result in significant cumulative impacts to public access.

#### **4.15.2 Land Use and Recreation**

Proposed training and construction under Alternative 1 and Alternative 2 would have a less than significant impact on land use with successful adoption of new leases and agreements, as these activities would be compatible and consistent with existing land use plans and policies and would not result in changes to land use within or outside the Military Lease Area. Development projects such as the improvements to existing roadways around the island of Tinian (Route 205 by the Tinian Department of Public Works and projects implemented by the U.S. Navy Seabees), and the U.S. Air Force Agile Combat Employment projects at North Field would be consistent with the CNMI Comprehensive Land Use Plan. Additionally, the planned future development of the CNMI's small community exempt landfill at the Atgidon site within the Military Lease Area included in the CNMI Integrated Solid Waste Management Plan would be compatible with proposed military training. Thus, as a result, the aggregate impacts of reasonably foreseeable future actions along with either alternative would not result in significant cumulative impacts on land use.

Both Alternative 1 and Alternative 2 would result in less than significant impacts to recreation due to temporary restrictions during training events. As described for public access above, the development projects included in the reasonably foreseeable future actions listed in Table 4.15-1 draw additional visitors to Tinian and/or improve access to Tinian, which could result in additional visitors to the Military Lease Area. As a result, there may be additional recreational visitors affected by temporary public access restrictions during training events. However, such restrictions would be temporary and access for recreational activities within the Military Lease Area training areas would be maintained where it would be safe to do so while training is occurring. As a result, the aggregate impacts of reasonably foreseeable future actions along with either alternative would not result in significant cumulative impacts on recreation.

#### **4.15.3 Socioeconomics**

Temporary activation of surface danger zones in waters north of Tinian during live-fire training at the Multi-Purpose Maneuver Range would significantly affect fishing and boating under the Proposed Action. Military activities that temporarily limit access to popular fishing, recreational, or cultural sites as part of the Proposed Action would be communicated to the public in advance of events to allow time for alternate plans to be made, and Range Control would continue to work with the CNMI and Tinian Municipality to avoid and minimize impacts related to public access within the Military Lease Area, consistent with safety protocols. None of the reasonably foreseeable future actions listed in Table 4.15-1 would have the potential to incrementally increase or exacerbate these potential impacts. If multiple construction projects were to occur simultaneously, a temporary shortage of hotel rooms for workers could occur. Current and reasonably foreseeable projects would have slight impacts on public services due to the associated population increases. Population increases would increase demand for public services such as medical, law enforcement, and firefighting services. These services, particularly medical care, may not be able to manage additional demand adequately during periods of simultaneous project construction. Thus, the aggregate impacts of reasonably foreseeable future actions have the potential to result in minor cumulative impacts on certain socioeconomic resources and accessibility by residents, businesses, and tourists.

Some of the projects listed in Table 4.15-1 would be anticipated to contribute positively to socioeconomic conditions on Tinian, such as the improvements to the Port of Tinian and improved maintenance of the runways and roadways at the North Field National Historic Landmark that would encourage tourism. Indirect beneficial impacts would also likely result from secondary spending from construction workers and military personnel on Tinian as a result of Alternative 1 or Alternative 2. Thus, a cumulative minor to moderate beneficial economic impact would result.

#### **4.15.4 Biological Resources**

The Proposed Action includes vegetation clearing, construction, and periodic training activities that could affect terrestrial and marine biological resources, including habitat loss, noise disturbance, and temporary access restrictions. However, with the implementation of best management practices, avoidance and minimization measures, and continued coordination with regulatory agencies under the Endangered Species Act and Marine Mammal Protection Act, these effects would be less than significant. The reasonably foreseeable actions in Table 4.15-1 that involve construction or development, such as the U.S. Air Force's Agile Combat Employment projects at North Field, other roadway improvements that would occur on Tinian are unlikely to impact terrestrial biological resources important to the function of ecosystems, of special public importance, or protected under federal or state law, as they are focused around already disturbed areas such as roadways and the North Field runways. The development and use of the Puntan Diablo site as a permitted Small Community Exempt Landfill and its eventual closure over the next 10 years, would also be unlikely to have a negative impact on terrestrial biological resources, as the open dump currently exists and would be subject to management under the future permitting conditions.

Activities related to the Joint Region Marianas Integrated Natural Resource Management Plan projects and measures as well as current and future training related to the *Mariana Islands Testing and Training EIS/OEIS* have been ongoing in the region and would continue to be implemented in consultation with local stakeholders and regulatory agencies. These processes ensure monitoring and adaptive management would be applied for both terrestrial and marine biological resources on Tinian and in the surrounding waters. Therefore, the aggregate impacts of reasonably foreseeable future actions and either alternative would not result in cumulative impacts on biological resources.

#### **4.15.5 Cultural Resources**

The Proposed Action components that would affect the historic runways within the North Field National Historic Landmark include the installation of a temporary airfield surface called AM2 matting, use of mobile aircraft arresting gear, clearing of vegetation to create the proposed drop zone between runways Able and Charlie, and the construction of water wells and tanks along the district's northeast boundary, just south of the Multi-Purpose Maneuver Range. The reuse of the airfield is viewed as consistent with its historical use and the proposed water infrastructure would be designed to have a low profile that would allow it to be screened by existing vegetation and would be painted an inconspicuous color to further blend in with the surrounding landscape. Co-use of the airfield by the U.S. Air Force and the USMC via the activities described above would not result in adverse cumulative effects to the North Field National Historic Landmark or other adjacent cultural resources and their character-defining features. Range Control would continue to coordinate with the CNMI and Municipality of Tinian to schedule training events in designated

training areas within the Military Lease Area, and would provide advance notice of any temporary periods when access controls would be required to preserve a safe separation from the public.

The associated actions with the potential to impact cultural resources are the U.S. Air Force's Divert activities and exercises and the U.S. Air Force Agile Combat Employment projects at North Field and in the Military Lease Area. The U.S. Air Force executed a Programmatic Agreement in 2016 for its Divert Activities, which occurred at and around TNI, resulting in adverse effects to TN-6-0030, West Field. Training and construction under the Proposed Action would not result in impacts to TN-6-0030.

The U.S. Air Force undertaking to conduct projects within North Field and the Military Lease Area, including vegetation clearing and the rehabilitation of runways is undergoing concurrent Section 106 consultation. The U.S. Air Force is proposing to restore the runways to their historical appearance using similar materials, construction techniques, and designs. Thus, the reasonably foreseeable actions described in Table 4.15-1 would not cause additional impacts to cultural resources on Tinian.

The aggregate impacts of reasonably foreseeable future actions along with either alternative would not result in adverse physical, visual, or noise effects and would result in less than significant cumulative impacts to cultural resources.

#### **4.15.6 Visual Resources**

The Proposed Action would result in less than significant short-term impacts to visual resources during construction of training infrastructure. Long-term visual impacts from project components such as surface radar towers, live-fire ranges, and Landing Zones are anticipated to be less than significant due to design considerations, minimization measures, and natural screening by vegetation and topography. The U.S. Air Force's Agile Combat Employment projects at North Field is anticipated to provide a cumulative beneficial visual impact by clearing overgrown runways and roadways in and around the North Field National Historic Landmark which would restore the setting to an operational airfield. The other reasonably foreseeable projects described in Table 4.15-1 would occur in already developed areas or on previously disturbed land and roadways that are located outside of the Military Lease Area. Therefore, the aggregate impacts of reasonably foreseeable future actions would result in moderate cumulative impacts on visual resources.

#### **4.15.7 Transportation**

The reasonably foreseeable actions in Table 4.15-1 that involve maintenance to roadways would result in a long-term benefit to transportation by improving roadway quality and access to or within the Military Lease Area, such as the Route 205 project and the U.S. Air Force's Agile Combat Employment projects at North Field. With the exception of the projects that would occur at North Field, the majority of the trips would be distributed on the roadway network in the southern portion of Tinian, outside of the Military Lease Area. The training events that would occur under the Proposed Action may overlap and add additional short-term traffic impacts as service members arrive and leave through TNI and North Field, and the additional trips that would be added during the construction of training infrastructure. There is sufficient capacity on the local roadways to accommodate these short-term increases. As all roads would continue to operate at an acceptable

level of service, the aggregate impacts of reasonably foreseeable future actions would not result in cumulative impacts on transportation.

#### **4.15.8 Noise**

The aircraft and live-fire noise impact analysis included a quantitative analysis of potential cumulative impacts from existing operations (baseline) plus each alternative. The results of the modeling include noise contours which depict on a map the different noise levels associated with training-related activities under the Proposed Action (refer to the impact analysis in Section 4.8.3 Noise). Noise from current and ongoing training under the *Mariana Islands Testing and Training EIS/OEIS* would remain similar to existing training that occurs in the CNMI. In the future, when large or medium training under the Proposed Action would occur on Tinian, it may coincide with a larger regional training exercise such as those that have occurred in the past (i.e., Cope North or Valiant Shield), and aircraft would follow applicable course rules for using the Mariana Islands Range Complex that dictate where aircraft activity would occur to minimize or avoid impacts to human noise-sensitive receptors on Tinian and Saipan. Construction activities in the southern portion of Tinian south of the Military Lease Area, such as roadway improvements and the U.S. Air Force Agile Combat Employment projects at North Field and in the Military Lease Area comprise the majority of the reasonably foreseeable actions with the potential to contribute to Tinian's noise environment. For the Proposed Action, all activities take place in the Military Lease Area, and, with the exception of infrequent explosives training at the Multi-Purpose Maneuver Range and Explosives Training Range, the Proposed Action would result in a less than significant effect on noise outside the Military Lease Area. Range Control and the USMC would continue to work with the CNMI and Tinian Municipality to avoid and minimize impacts related to training and construction noise. The reasonably foreseeable actions, when considered with the Proposed Action, would not noticeably increase noise levels experienced by sensitive receptors from construction (short-term) or training (long-term) occurring in the Military Lease Area.

#### **4.15.9 Air Quality**

The reasonably foreseeable actions in Table 4.15-1 that involve construction or development, such as the U.S. Air Force's Agile Combat Employment projects at North Field, and Route 205 and other roadway improvements that would occur on Tinian have the potential to result in short-term, less than significant cumulative impacts to air quality and greenhouse gas emissions if the emissions were to occur at the same time as a training or any of the associated construction of range infrastructure. Additionally, periodic but also less than significant cumulative impacts to local and regional air quality would be anticipated to result from operational activities, including other military training events included in the *Mariana Islands Testing and Training EIS/OEIS* offshore study area. The Proposed Action would result in temporary, localized emissions of criteria air pollutants and greenhouse gases from construction equipment and vehicle use during range development and Base Camp construction, as well as from generators and vehicle use during training activities. These emissions are expected to be intermittent and dispersed. Because of the prevailing winds, phased construction scheduled over 10 years, intermittent training events, and distance of the Military Lease Area from populated areas, the contribution of the Proposed Action to cumulative air quality impacts would be minor and less than significant.

The greenhouse gases resulting on a local level contribute cumulatively to global greenhouse gas concentrations that could affect climate. However, these local emission sources make no meaningful contribution to the global atmospheric concentration of greenhouse gases.

#### **4.15.10 Public Health and Safety**

Under the Proposed Action, the public would continue to be notified regarding which areas of the Military Lease Area that are temporarily closed to avoid health and safety risks from training, and the areas where public access is compatible with military training. In addition, the safety zones for the live-fire ranges would be established to separate the public from any potential hazardous effects from training. The reasonably foreseeable projects in Table 4.15-1 have the potential to beneficially impact public health and safety, including the planned roadway maintenance projects, the U.S. Air Force's Agile Combat Employment projects to clear runways and roadways in and around North Field, and the project to convert the current unregulated open dump at Puntan Diablo into a permitted Small Community Exempt Landfill. Therefore, the aggregate impacts of reasonably foreseeable future actions would not result in cumulative impacts to public health and safety or a cumulative impact to the protection of children from environmental health risks or safety risks.

#### **4.15.11 Utilities**

The impact analysis for the Proposed Action summarized in Section 4.11 included considerations related to the cumulative activities that would occur on Tinian, which included projects listed in Table 4.15-1. Appendix M, *Utilities Studies*, details the assumptions related to the cumulative projects listed above and how they were incorporated into the analysis. The Proposed Action would install its own potable water wells, and the demand would not create a significant impact on groundwater availability or quality. The development and use of the Puntan Diablo Small Community Exempt Landfill would help to ensure there is sufficient capacity to accept increased levels of municipal solid waste on Tinian. Additionally, the potential management measures developed to minimize potential impacts anticipated from the Proposed Action related to utilities are provided in Table 4.15-2.

**Table 4.15-2 Potential Management Measures Related to Utilities**

<i>Resource Area</i>	<i>Potential Management Measure</i>
Utilities (Solid Waste)	The DoD would develop a solid waste management plan for military operations on Tinian within the Military Lease Area Range Complex and only dispose of waste from military operations in permitted and compliant landfills authorized to accept DoD waste.
Groundwater (Water Quality), Public Health and Safety	The DoD would install up to four (4) groundwater monitoring wells at each of the two live-fire ranges, establish a water monitoring plan, and include one year of baseline monitoring before ranges would become operational. The location of wells would be determined in collaboration with CNMI Bureau of Environmental and Coastal Quality.
Utilities (Potable Water), Groundwater (Water Availability and Water Quality)	The DoD would fund a one-time hydrogeological study to establish baseline data that could be used to support monitoring of Tinian’s aquifer. This study would consist of groundwater sampling at existing well locations and laboratory testing of water samples.
Utilities (Potable Water), Socioeconomics	The DoD would provide access to water for ranching needs at its tank dispensing sites.

*Legend:* CNMI = Commonwealth of the Northern Mariana Islands; DoD = Department of Defense; USMC = U.S. Marine Corps

Therefore, the aggregate impacts of reasonably foreseeable future actions would not result in cumulative impacts on utilities.

**4.15.12 Topography, Geology, and Soils**

The reasonably foreseeable actions in Table 4.15-1 are unlikely to impact topography, geology, and soils as they primarily involve construction and maintenance in disturbed areas outside of the Military Lease Area. Impacts associated with geological resources have the tendency to be site-specific and do not usually accumulate, other than erosion and sediment deposit. The training infrastructure projects related to the Proposed Action are physically distant from the other reasonably foreseeable projects that involve soil and ground disturbance, and thus, impacts would not be anticipated to overlap. Therefore, the aggregate impacts of reasonably foreseeable future actions would not result in cumulative impacts to topography, geology, and soils.

**4.15.13 Groundwater and Hydrology**

The Proposed Action would not impact groundwater quantity and quality. The Proposed Action would install its own potable water wells to support personnel during training events, for ongoing operations and maintenance needs, and for firefighting. The analysis in Section 4.13 demonstrated the demand associated with the proposed wells would have less than significant impact on water quality at existing Commonwealth Utilities Corporation Maui Well Number 2. Based on the data collected on historical demand and the resulting analysis from the groundwater study (refer to Appendix M, Utilities Studies), there would be sufficient capacity in the Commonwealth Utilities Corporation to support the reasonably foreseeable projects described in Table 4.15-1. Additionally, the conversion of the Puntan Diablo site into a Small Community Exempt Landfill would have a beneficial impact to protecting groundwater quality compared to existing conditions. The facility would be required to follow applicable permit conditions to retain its status, which may include groundwater monitoring requirements, which are not in place for the current open dump. Therefore, the aggregate impacts of reasonably foreseeable future actions would not result in cumulative impacts to groundwater and hydrology.

#### **4.15.14 Surface Waters and Wetlands**

Many of the reasonably foreseeable projects listed in Table 4.15-1 would occur outside of drainage basins where ground disturbance by the Proposed Action would occur. Thus, due to the lack of surface water connectivity between the Proposed Action and the reasonably foreseeable projects, there would be a less than significant potential for cumulative impacts related to surface waters and wetlands.

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## 5 ADDITIONAL CONSIDERATIONS

This section describes applicable federal and CNMI plans, policies, and controls; irreversible or irretrievable commitments of resources; and the relationship between short-term use of the environment and long-term productivity.

### 5.1 Consistency with Other Laws

Analysis of environmental consequences shall include a discussion of conflicts between the Proposed Action and the objectives of federal, regional, state, tribal, and local land use plans, policies, and controls. The Proposed Action would be implemented in accordance with all applicable plans, policies, and regulations.

#### 5.1.1 Coastal Zone Management Act Compliance

The Coastal Zone Management Act of 1972 (16 U.S.C. section 1451, et seq.) encourages coastal states to be proactive in managing coastal zone uses and resources. Under the act, federal actions that have an effect on a coastal use or resource are required to be consistent, to the maximum extent practicable, with the enforceable policies of federally approved Coastal Management Plans.

The USMC submitted a consistency determination to the CNMI Division of Coastal Resources Management addressing proposed military training activities that may have a direct or an indirect effect on the CNMI's coastal uses or resources (Appendix N).

#### 5.1.2 Commonwealth of the Northern Mariana Islands Requirements

Land use planning guidance for the CNMI is documented in The Covenant to establish a United States Commonwealth of the Northern Mariana Islands in a Political Union with the United States of America (1976), lease agreements, and the 2019 and 2021 CNMI Public Land Use Plan. While new agreements or updates to existing leases may be required, the Proposed Action is consistent and compatible with the CNMI Public Land Use Plan, which recognizes the Military Lease Area as used by the military and not publicly available for use, and military training events at the Port of Tinian and TNI. The sections below evaluate consistency and compatibility with local land use plans and leases.

- **1976 Covenant and Technical Agreement.** The Technical Agreement made property available to the U.S. by lease to enable it to carry out its defense responsibilities. As part of the agreements, all shoreline areas in and around the northern two-thirds of Tinian would remain open to anglers at all possible times except for those limited areas that must be closed to comply with safety, security, and hazardous risk requirements from either military activities or commercial activities. In addition, the Covenant assured CNMI residents the same access to beach areas that military personnel and dependents would have, limited only by access restrictions for public safety during times of active military training. During some training events, the public use of certain beaches or areas of the beach would be restricted. The Proposed Action is both consistent and compatible with The Covenant and Technical Agreement.
- **1983 Lease.** The lease agreement is for use of property to carry out DoD defense responsibilities on Tinian. The term of the lease agreement is 50 years, with an option to renew at the sole discretion of the U.S. for an additional 50 years. Under the lease provisions, the

federal government shall have the right to construct, place, erect, or install such buildings, structures, equipment, and facilities as may be necessary. The Proposed Action would construct new structures and would be consistent and compatible with the 1983 Lease.

- **1988 Leaseback Agreement.** The U.S. leased approximately 709 acres for TNI and expansion land north of the airport back to the Commonwealth Ports Authority for use as a public airport. The 1988 leaseback agreement allowed for future military use, future joint use, and modification or termination of the leaseback agreement as necessary to support defense operations. The 1988 Leaseback Agreement was terminated by the 1999 Lease Amendment.
- **1994 Lease Amendment.** The U.S. declared approximately 1,245 acres of lease property south of TNI, including the area surrounding the Port of Tinian, as surplus and moved to dispose of the property. Within the 1994 disposal area, the federal government reserved rights related to the use of San Jose Harbor, the temporary use of surplus land for military training exercises, and the operation of fuel and utility lines between San Jose Harbor and the remaining leased areas. The 1994 lease amendment also expanded the Exclusive Military Use Area by approximately 3,312 acres through the redesignation of Lease Back Area lands north of Dankulo Beach Road. Under the 1994 Lease Amendment (Article 1, Section G), “permanent improvements may be permitted on the Premises with the prior written consent of the U.S.” The Proposed Action would continue to use the property for military purposes and is consistent and compatible with the 1994 Lease Amendment.
- **1999 Lease Agreement.** The U.S. terminated the 1988 lease agreement with the Commonwealth Ports Authority and conveyed 709 acres comprising the TNI property and expansion land north of the airport to the CNMI. The 1999 lease agreement also conveyed approximately 645 acres north of TNI, known as the West Tinian Airport Expansion Land, to the CNMI. In addition, the 1999 lease agreement released leasehold interest in 10 acres at Masalok Beach and lands along public rights-of-way within the 1994 Lease Back Area and disposal area. The Proposed Action does not change the conveyance or use of these lands and is consistent and compatible with the 1999 Lease Agreement.
- **1999 Conservation Agreement.** Concurrent with the 1999 lease agreement, the U.S. and the CNMI agreed to preserve approximately 970 acres of Lease Back Area lands for wildlife conservation for the Tinian monarch. In accordance with the Conservation Agreement, and as stated in the U.S. Fish and Wildlife Service Biological Opinion 1-2-98-F-07, the military retains the right to use the Natural Resource Conservation Area for low impact, non-habitat-destructive military training. The Proposed Action includes an access road to the Explosives Training Range, two Landing Zones, and associated access roads within the Conservation Agreement land. The USMC will coordinate with the U.S. Fish and Wildlife Service on this use. The Biological Opinion will ensure the Proposed Action is consistent and compatible with the 1999 Conservation Agreement or will require a new agreement.
- **2019 Lease Agreement.** The U.S. and the Commonwealth Ports Authority entered into an agreement for the lease of real property at and adjacent to TNI and at the Port of Tinian. This agreement supports implementation of the Pacific Air Forces Divert project. Although this lease includes areas covered by previous lease agreements, this lease does not change, amend, or otherwise alter the 1983 Lease or its amendments. It includes non-exclusive use of taxiways

at TNI and easement areas for construction and utilities. This lease was amended in 2023 to correct mutual mistakes in delineation of utility and access easements. The Proposed Action would continue to use TNI for military purposes and is consistent and compatible with the 2019 Lease Agreement.

- **2019 and 2021 CNMI Public Land Use Plan.** The Plan provides guidance for the efficient and effective services in the management, use, disposition, and development of lands outside the Military Lease Area for the economic and social betterment of the CNMI. The Plan is organized in a format that describes the existing conditions of the CNMI, provides a socioeconomic forecast with recommendations for the future and updated Geographic Information Systems map. Because the Proposed Action would occur only on military leased lands that are outside the scope of the CNMI Public Land Use Plan, and would provide an economic benefit for Tinian, the Proposed Action is consistent and compatible with the 2019 and 2021 CNMI Public Land Use Plan.
- **2023 Lease Amendment.** The U.S. and the CNMI signed an administrative amendment to the 1983 agreement. The administrative amendment clarified that the U.S. retains, “the right to the reasonable use of roadways as well as the right to improve, construct, maintain and repair roads and utilities owned by the Commonwealth including all supporting facilities and structures.” Under the amendment, the CNMI government, “reserves the right to construct improvements including additional roads and utility lines and pipelines and to grant additional non-exclusive easements and rights-of-way on, in, under, across, through and over the easement areas as it shall determine to be in the public interest, provided that the Commonwealth shall consult with the U.S. prior to granting any such easements and obtain written concurrence of the U.S. that any such additional grants are not inconsistent with the use of the affected easement area by the U.S.” The Proposed Action would provide a benefit to Tinian through improvement of roads and expansion of utilities. Improvements or easements and rights-of-way in areas designated for military use would be coordinated with the USMC. With this provision, the Proposed Action is consistent and compatible with the 2023 Lease Amendment.

CNMI regulations for protection of human health and the environment are listed in Appendix E and include provisions for threatened and endangered species, historic preservation, air quality, drinking water, solid waste, and wastewater. The Proposed Action would comply with all applicable Commonwealth requirements and is consistent with continued military use in the Military Lease Area.

## 5.2 Irreversible or Irretrievable Commitments of Resources

NEPA requires that environmental analysis include identification of “any irreversible and irretrievable commitments of federal resources which would be involved in the Proposed Action should it be implemented” (42 U.S.C. section 4332). A commitment of resources is irreversible when the effects of proposed activities result in limiting the future options for resource development or effects of proposed activities involve a loss, generally of a non-renewable resource. Irretrievable is a term that applies to the loss of production, harvest, or use of natural resources. For example, if farmland is used for a non-agricultural event, some or all of the agricultural production from an area of farmland is lost irretrievably while the area is temporarily used for another purpose. The production lost is irretrievable, but the action is not irreversible.

Under the No Action Alternative, current military training events would continue. Under Alternative 1, training would continue and would increase over the No Action Alternative by approximately 15 percent. Under Alternative 2, training would continue and would increase over the No Action Alternative by approximately 5 percent, which is approximately 10 percent less than Alternative 1. Implementation of Alternative 1 or Alternative 2 would involve construction activity that would involve clearing and grading impacting natural resources and the expenditure of labor and the consumption of fuel, oil, and lubricants. Consumption of fossil fuels, for construction and training, along with funds used for construction and training are irreversible and irretrievable. The clearing and maintenance of vegetation, use of training areas, and construction of new roads and buildings are neither irreversible nor irretrievable.

### **5.3 Relationship Between Short-Term Use of the Environment and Long-Term Productivity**

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects these impacts may have on long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one alternative reduces future flexibility in pursuing other options, or that designating a parcel of land or other resource for a certain use eliminates the possibility of other uses being performed at the site.

Short-term uses of the environment associated with the Proposed Action include changes to the physical environment and energy and utility use during construction associated with Alternative 1 or Alternative 2. Construction activities would involve short-term increases in fugitive emissions and construction generated noise and would increase the use of fossil fuels to provide power to equipment. Construction would result in temporary disturbance to terrestrial wildlife, including federally listed species. Construction would also result in temporary disturbance of cultural resources, including the North Field National Historic Landmark. The short-term use of resources would not be expected to affect long-term productivity. Public access would also be controlled to some areas while training events are taking place. However, the Proposed Action includes eight subdivided training areas to minimize restrictions and avoids agricultural grazing uses.

Long-term changes would include alteration to topography and soils from construction. Permanent effects may include removal of terrestrial habitat and construction of new structures within or adjacent to cultural resource sites. Long-term changes would also include continued maintenance of vegetation for training events at North Field, live-fire ranges, radar towers, Landing Zones, and the Base Camp. However, these long-term impacts are not expected to affect long-term biological productivity or the listing or eligibility of historic resources.

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### 6.5.16 Chapter 5

No references cited.

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## 8 DISTRIBUTION LIST

Chapter 8 provides a list of parties who were directly notified about a Notice of Availability of the Revised Draft Environmental Impact Statement. The Notice of Availability indicates when the Revised Draft EIS was issued, where copies could be obtained or reviewed, the duration of the comment period, where comments were to be sent, and the location, date and time of public meetings. Private citizens may receive a Notice of Availability, but their names are not included in the list. Also included is a list of libraries receiving an electronic copy on compact disk or hard copy of the Revised Draft EIS.

### 8.1 Parties Receiving Notice of Availability of the Revised Draft and Final Environmental Impact Statement

#### 8.1.1 Elected Officials – CNMI

Office of the Governor of the CNMI, The Honorable Governor David M. Apatang  
Office of the Lt. Governor of the CNMI, The Honorable Lt. Governor Dennis C. Mendiola  
U.S. House of Representatives, The Honorable Representative Kimberly King-Hinds  
Mayor of Tinian and Aguiguan, The Honorable Mayor Edwin P. Aldan  
Mayor of the Northern Islands, The Honorable Mayor Valentino Taisacan  
Mayor of Saipan, The Honorable Mayor Ramon “RB” Jose Blas Camacho  
Mayor of Rota, The Honorable Mayor Aubry Manglona Hocog  
CNMI Senate  
CNMI House of Representatives

#### 8.1.2 Federal Agencies

Advisory Council on Historic Preservation  
Department of the Air Force  
Department of the Army  
Department of Army, U.S. Army Engineer District, Honolulu, Regulatory Branch  
Federal Aviation Administration  
Naval Facilities Engineering Systems Command, Headquarters  
Naval Facilities Engineering Systems Command, Pacific  
National Oceanic and Atmospheric Administration, National Marine Fisheries  
U.S. Department of Agriculture, Natural Resources Conservation Service  
U.S. Department of the Interior, National Park Service  
U.S. Department of the Interior, Office of Insular Affairs  
U.S. Environmental Protection Agency, Region 9  
U.S. Fish and Wildlife Service, Pacific Islands Office  
U.S. Navy Commander, Joint Region Marianas  
U.S. Navy Commander, Pacific Fleet  
U.S. Navy, Joint Guam Program Office

### **8.1.3 CNMI Agencies**

CNMI Bureau of Environmental and Coastal Quality, Division of Environmental Quality and Division of Coastal Resources Management

CNMI Office of Planning and Development

Commonwealth Bureau of Military Affairs

Commonwealth Ports Authority

Commonwealth Utilities Corporation

Department of Community and Cultural Affairs, Historic Preservation Office

Department of Lands and Natural Resources

Division of Fish and Wildlife

Department of Public Lands

Department of Public Works

Marianas Visitors Authority

Office of Military Liaison and Veterans Affairs

Western Pacific Region Fisheries Management Council

### **8.2 Libraries Receiving Hard Copy**

Joeten Kiyu Public Library, Saipan

Tinian Public Library

Rota Public Library