

CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

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Acronyms and Abbreviations

%		percent	HE	high explosive
cal		caliber	mm	millimeter
CFR		Code of Federal Regulations	MSL	mean sea level
CJMT	Commonwealth of the Northern Mariana Islands	Joint Military Training	NEPA	National Environmental Policy Act
CNMI	Commonwealth of the Northern Mariana Islands		OEIS	Overseas EIS
DoN	Department of the Navy		RTA	Range and Training Area
EIS	Environmental Impact Statement		U.S.	United States
			W	Warning Area

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

This chapter identifies the proposed action and a range of reasonable alternatives that meet the purpose and need for the Commonwealth of the Northern Mariana Islands (CNMI) Joint Military Training (CJMT) proposed action. Per Council on Environmental Quality regulations, an Environmental Impact Statement (EIS) is to provide a thorough discussion of the environmental impacts of the proposed action and a range of reasonable alternatives, including a no-action alternative. The no-action alternative represents the continuation of approved training activities in the CNMI. This chapter is designed to assist decision makers by presenting options to avoid or minimize adverse impacts to the environment and to identify with a preferred alternative (40 Code of Federal Regulations [CFR] 1502). The preferred alternative is the alternative that the lead agency prefers, and it may be based on a variety of factors in addition to impacts to the environment, to include agency needs, agency mission requirements, legislative or executive direction, and cost.

This chapter describes three action alternatives for Tinian, two action alternatives for Pagan, and the no-action alternative. In compliance with National Environmental Policy Act (NEPA), the no-action alternative is carried forward for analysis even though it does not satisfy the purpose and need for the action.

[Section 2.1](#) provides an overview of the proposed action.

[Section 2.2](#) describes the training requirements, representative training, the associated weaponry and equipment, and training participants and scenarios that would be related with the proposed action and alternatives.

[Section 2.3](#) focuses on alternative development and the criteria used to identify the alternatives.

[Section 2.4](#) describes the three Tinian unit level Range and Training Area (RTA) alternatives and the no-action alternative for Tinian.

[Section 2.5](#) presents the two Pagan combined level RTA alternatives and the no-action alternative for Pagan.

[Section 2.6](#) discusses alternatives considered but eliminated from further analysis.

[Section 2.7](#) identifies the preferred alternative.

2.1 OVERVIEW OF THE PROPOSED ACTION

The proposed action is to establish a series of live-fire ranges, training courses, and maneuver areas within the CNMI to reduce existing joint service training deficiencies and meet the United States (U.S.) Pacific Command Service Components' unfilled unit level and combined level training requirements in the Western Pacific. An RTA refers to live-fire ranges, training courses, maneuver areas, and associated support facilities, collectively, that are located in close proximity to each other. Under the proposed action, a unit level RTA is proposed on Tinian and a combined level RTA is proposed on Pagan. Establishing a unit level RTA and combined level RTA in the CNMI would support joint Service training requirements, ongoing operational requirements, changes to U.S. force structure, and geographic repositioning of forces in the Western Pacific.

As described in detail later in the chapter, three alternatives are identified for the Tinian unit level RTA and two alternatives for the Pagan combined level RTA; a combination of one Tinian unit level alternative and one Pagan combined level alternative meets the purpose and need for fulfilling the unfilled training requirements. The alternatives include several common elements:

- **Land Use Agreements** to provide land area necessary to support simultaneous and integrated training as appropriate (including amendments to existing agreements).
- **Construction** to support RTA development and associated infrastructure.
- **Range Management** to sustain RTA training capabilities in an environmentally responsible manner.
- **Expanded Training and Operations** to include combined arms, live-fire, amphibious landings, and maneuver training.
- **Danger Zones** to establish safe separation of non-participating military personnel and the public from live-fire training over water (i.e., sea space). Danger zones may be closed to the public on a full-time or intermittent basis (Title 33 CFR Part 334). Danger zones are established pursuant to statutory authority of the Secretary of the Army and are administered by the Army Corps of Engineers. Surface danger zones are three-dimensional areas that delineate portions of the earth's surface and the overlying airspace in which personnel and/or equipment may be endangered by ground weapons firing or detonation activities because of ricochet or fragmentation hazard.
- **Designation of Special Use Airspace** to identify areas to which activities must be confined because of their nature, or where limitations are imposed upon aircraft that are not part of those activities, or both. Special Use Airspace is geographically defined by vertical and horizontal limits over a portion of the earth's surface. The Federal Aviation Administration is the agency responsible for regulatory oversight and implementation of Special Use Airspace.

Construction would occur to support range and target installation; administrative, command, and control functions; access roads and trails; delivery of utilities (i.e., water, electric, wastewater, communications and solid waste handling); personnel lodging; and equipment and munitions storage. Additionally, all alternatives include RTA management activities, RTA use and scheduling, range observation to provide live feedback on training activities and target scoring, vegetation management for range use and firebreak purposes, as well as vehicle and equipment use and maintenance activities for RTA training. For all action alternatives, it is anticipated that approximately 95 full-time personnel would be needed to carry out range management and maintenance activities. These personnel would have responsibility for both RTAs on Tinian and Pagan, for purposes of analysis it is assumed these employees would live on Tinian. Both the Tinian RTA and the Pagan RTA require amphibious training beaches linked to an existing or improved road/trail system, maneuver areas to support personnel on foot or in vehicles, as well as access points (i.e., airfields, ports) for personnel, equipment, and cargo deliveries.

Based on the planned deployment and training exercise tempo for units in the U.S. Pacific Command Area of Responsibility, it was determined that 20 weeks of live-fire training on Tinian and 16 weeks of live-fire training on Pagan would meet the unfilled training requirements; therefore, these time periods

will be analyzed in this document. In addition, other activities including pre-training and post-training activities (arrival and departure of trainees and equipment), non-live-fire training (e.g., logistics training), and RTA maintenance and management functions would occur outside of the live-fire training durations throughout the year. Major conflicts, terrorism, international lawlessness, natural disasters, and the current U.S. national strategy to focus on the Pacific theater have the potential to change the structure of military forces in the region and the required training frequency. A potential change in force structure, unit type, and/or location may result in the need to change operational training tempo in the future.

This EIS/OEIS analyzes 20 weeks per year of live-fire training on Tinian and 16 weeks per year of live-fire training on Pagan. In addition to the weeks of live-fire training for Tinian and for Pagan, other activities including pre-training and post-training activities (arrival and departure of trainees and equipment), non-live-fire training (e.g., logistics training), and RTA maintenance and management functions would occur outside of the live-fire training durations throughout the year.

The potential increase in training described in the *Unconstrained Training Concept for Tinian and Pagan* (Appendix C) reflects the maximum training capacity for each island. Potential future live-fire training could be accommodated up to a total of 45 weeks of training on Tinian and a total of 40 weeks of training on Pagan. Should the tempo of live-fire training need to be increased above the annual live-fire training demand of 20 weeks for Tinian and 16 weeks for Pagan analyzed in this EIS/ Overseas EIS (OEIS), additional NEPA compliance and agency consultations would be completed before implementing any increase in tempo.

Two additional projects are not being formally proposed at this time, but they are anticipated to be needed and would be implemented in the future although no specific timeframe has been identified. The two projects are: (1) relocation of the existing International Broadcasting Bureau on Tinian and (2) new dock and associated breakwater on Pagan. The International Broadcasting Bureau is located within the Military Lease Area. If, as a result of the selected alternative, the International Broadcasting Bureau must be relocated outside of the Military Lease Area, then additional NEPA analysis will be done as needed. The new International Broadcasting Bureau facility must be complete and fully operational before relocation occurs. Potential relocation of the International Broadcasting Bureau and the dock and breakwater on Pagan are analyzed programmatically in this EIS/OEIS (see Section 4.18, *Programmatic Analysis of Future Potential Project Components*).

2.2 UNIT AND COMBINED LEVEL TRAINING REQUIREMENTS, REPRESENTATIVE TRAINING, WEAPONS, EQUIPMENT, PARTICIPANTS, AND TRAINING SCENARIOS

Section 2.2 provides an overview of the training requirements that the proposed action and alternatives are intended to meet ([Section 2.2.1, Unfilled Unit and Combined Level Training Requirements](#)). It also provides a representative training structure that includes a general description of the ground, logistical, aviation, and service personnel that come together to train ([Section 2.2.2, Representative Training](#)). The types of weapons and equipment that would be used in the representative training are described in [Section 2.2.3, Representative Weapons and Equipment](#). Representative training participants (e.g., bilateral, multilateral, joint exercises) are described and a representative 1-week training scenario is portrayed in [Section 2.2.4, Representative Live-Fire Training Participants and Scenarios](#).

2.2.1 Unfilled Unit and Combined Level Training Requirements

As discussed in Section 1.3.6, *Training Requirements and Siting Study*, the 2013 *CNMI Joint Military Training Requirements and Siting Study* (Department of the Navy [DoN] 2013a) concluded that 42 unfilled training requirements could be achieved at the unit and combined levels in the CNMI. [Table 2.2-1](#) provides a list of the 42 unfilled training requirements and identifies whether they apply to unit level, combined level, or both RTAs. For example, a High Hazard Impact Area is needed in both unit level and combined level RTAs to support live-fire munitions delivery. Other requirements common to both RTAs include, but are not limited to, Battle Sight Zero Range (i.e., range used to calibrate weapons firing), Field Artillery Indirect Firing Range (i.e., aiming and firing munitions without relying on a direct line of sight between the gun and its target), Mortar Range, Close Air Support, Landing and Drop Zones.

Table 2.2-1. Pacific Command Service Components' Unfilled Training Requirements in the CNMI

Requirement	Name	Training Level
1	High Hazard Impact Area	U,C
2	Combat Pistol Range	U
3	Multi-purpose Automated Unknown Distance Range	U
4	Live Hand Grenade Range	U
5	Field Artillery Indirect Fire Range	U,C
6	Mortar Range	U,C
7	Field Fire Range	U
8	Anti-Armor Tracking Range	U
9	Field Artillery Direct Fire Range	C
10	Tank/Fighting Stationary Target Range	U
11	Light Anti-Armor Weapon Range Live	U
12	Grenade Launcher Range	U
13	Battle Sight Zero Range	U,C
14	Infantry Platoon Battle Course	U
15	Multi-Purpose Training Range	U
16	Tank/Fighting Vehicle Multi-Purpose Range Complex	U
17	Combined Arms Training Range to support Close Air Support and Naval Gunfire Support Training	C
18	Battle Area Complex	U
19	Combined Arms Live-Fire Amphibious Beaches with Maneuver Area	C
20	Urban Assault Course	U
21	Convoy Course	U
22	Tracked Vehicle Driver's Course	U
23	Tactical Amphibious Landing Beaches	U,C
24	Maneuver Area (Heavy Forces)	C
25	Maneuver Area (Light Forces)	U,C
26	Maneuver Area (Amphibious Forces)	U,C
27	Offensive Air Support Range	U,C
28	Close Air Support Range	U,C
29	Electronic Warfare Training Range*	U,C
30	Landing Zones	U,C
31	Drop Zones	U,C
32	Unmanned Aircraft Systems Operating Areas	U,C
33	Anti-Air Warfare Range	C
34	Terrain Flight Maneuver Area	U,C
35	Forward Arming and Refueling Point	U,C
36	Base camp and associated facilities and infrastructure	U,C
37	Range Control	U,C
38	Data Transfer Infrastructure	U,C
39	Ammunition Storage	U,C
40	Staging Areas	U,C
41	Adequate waterfront piers, harbor, and infrastructure	U,C
42	Adequate Roads, utilities, and infrastructure for training areas, ranges, and facilities	U,C

Legend: U=Unit Level Training; C=Combined Level Training.

Note: *Electronic Warfare Training Range will be addressed under another NEPA action.

2.2.2 Representative Training

The proposed action would provide the capability and capacity for military personnel to conduct unit level and combined level training. Unit level and combined level training participants could be from any single or multiple (i.e., “joint”) U.S. Service or include other nations hosted by U.S. forces (i.e., “bilateral” or “multilateral”). Joint training for both unit and combined levels would include ground combat training with support from air, naval, and logistics detachments.

To begin developing the unit level and combined level RTA components of the proposed action, an established, representative military training structure was identified. Although the U.S. Army, Navy, Marine Corps, and Air Force (as well as National Guard and Reserves) differ in command and training structure, many military occupational specialties are similar in regard to the types of training being conducted. For instance, ground-based (Army), sea-to-land (Navy), and air-to-ground (Air Force) forces need similar training as Marine Corps ground-, sea-, and air-based units. To account for unfilled training requirements across the Services for ground combat training, in conjunction with air, logistics, and naval support, and the unique Marine Corps amphibious capabilities, the Marine Corps force structure was adopted and a Marine Corps battalion landing team was chosen as the basis for designing the unit level and combined level RTAs for joint training (Figure 2.2-1). A representative Marine Corps battalion landing team encompasses the training needs required by the other combat units within the U.S. military branches—ground combatants working with aviation, logistics, and naval surface fire support as well as amphibious support (a Marine Corps-specific requirement).

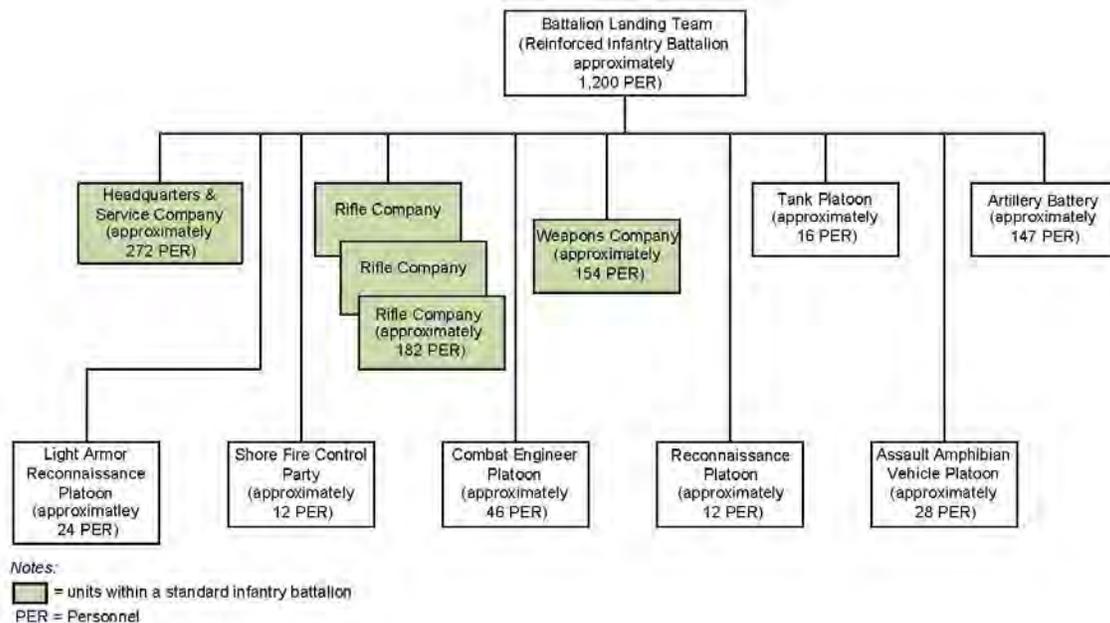


Figure 2.2-1 Representative Marine Corps Battalion Landing Team

A representative military training structure including ground combatants (e.g., battalion landing team) with aviation, logistics, and naval surface fire support is described below.

- **Ground Combatants.** A Marine Corps battalion landing team includes approximately 1,200 personnel and consists of two components: an infantry battalion (approximately 960 personnel) and attachments (approximately 340 personnel). The infantry battalion includes three rifle companies and one weapons company. An artillery battery, a light anti-armor reconnaissance platoon, an Amphibious Assault Vehicle platoon, a combat engineer platoon, a tank platoon, and a reconnaissance platoon could be included as attachments to form the battalion landing team. [Figure 2.2-1](#) provides the organizational structure for the battalion landing team used in this example.



Representative Ground Combatants
(From left to right: rifleman, Amphibious Assault Vehicle, artillery, personnel carrier)

- **Aviation Support.** Aviation support could include a Marine composite squadron (i.e., aviation detachments) with approximately 100 personnel providing aviation support. The composite squadron consists of medium lift aircraft (e.g., MV-22s) transporting troops, equipment, and supplies; heavy lift aircraft (e.g., CH-53) delivering troops and cargo; and light attack rotary-wing (e.g., AH-1s) and fixed-wing aircraft (e.g., F-35Bs) for ground troop support during combat assault. Ground-support units attached to the aviation squadron include command and control, ground refueling, and aircraft maintenance.



Representative Air Support
(From left to right: tilt-rotor personnel lift, rotary-wing assault support, fixed wing ground attack)

- **Logistics Support.** The logistics detachments could include approximately 500 personnel intended to provide combat logistics (e.g., cargo handling, refueling, and munitions handling) and engineering support (e.g., mobility support and maintenance).



Representative Logistics Support
(From left to right: refueling, maintenance, and mobility support)

- **Naval Surface Fire Support.** Naval surface fire support includes vessels for the purposes of providing naval gunfire support for ground training associated with combined level training. This would only occur for the combined exercises proposed for Pagan.



Representative Naval Fire Support
(From left to right: frigate, cruiser, and destroyer)

2.2.3 Representative Weapons and Equipment

Multiple types of weapons and equipment would be used on the proposed Tinian and Pagan RTAs. [Table 2.2-2](#) provides depictions of representative weaponry and equipment that could be used at both RTAs by a Marine Corps battalion landing team and other training groups. Specific weapons systems used by the U.S. and partner foreign nation forces that differ from those evaluated in this EIS/OEIS would be evaluated before they are employed in the RTAs to ensure their characteristics are equivalent to the weapon systems analyzed in this NEPA document.

**Table 2.2-2. Representative Weaponry and Equipment
Common to Both Unit and Combined Level Training**

Common to Both Unit and Combined Level Training	
 Pistols	<p>Where Employed: Combat Pistol Range, Battle Area Complex, Urban Assault Course</p> <p>Weapons Potentially Employed: 9 mm, combat shotgun and .45 caliber pistols</p>
 Rifles (e.g., M16)	<p>Where Employed: Multi-purpose Automated Unknown Distance Range, Field Fire Range, Battle Sight Zero Range, Infantry Platoon Battle Course, Battle Area Complex, Urban Assault Course, Maneuver Area (Heavy Forces), Maneuver Area (Light Forces)</p> <p>Weapons Potentially Employed: M16, M4 carbine rifles, 7.62 mm and .50 caliber sniper weapons, M27 infantry automatic rifle</p>
 Hand Grenades	<p>Where Employed: Live Hand Grenade Range with a dedicated High Hazard Impact Area</p> <p>Weapons Potentially Employed: M67 fragmentation grenade</p>
 Machine Guns (e.g., M240)	<p>Where Employed: Tank/Fighting Vehicle Stationary Target Range, Infantry Platoon Battle Course, Multi-Purpose Training Range, Tank/Fighting Vehicle Multi-Purpose Range Complex, Battle Area Complex, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Convoy Course, Tactical Amphibious Landing Beaches (Pagan only), Maneuver Area (Heavy Forces), Maneuver Area (Light Forces) (non-live-fire on Tinian), Maneuver Area (Amphibious Forces)</p> <p>Weapons Potentially Employed: M2 .50 caliber machine gun, M16 and M4 carbine rifles, M240 7.62 mm machine gun, M249 squad automatic weapon, M27 infantry automatic rifle</p>
 Rocket Launchers (e.g., Tube-fired, Optically-tracked, Wire-guided missile weapon systems)	<p>Where Employed: Anti-Armor Tracking Range, Light Anti-Armor Weapon Range Live with a dedicated High Hazard Impact Area, Multi-Purpose Training Range, Battle Area Complex, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area (Pagan only), Urban Assault Course, Maneuver Area (Heavy Forces), Maneuver Area (Light Forces) (non-live-fire on Tinian), Maneuver Area (Amphibious Forces)</p> <p>Weapons Potentially Employed: Live, high explosive and inert Anti-Tank-4 (84 mm) and Shoulder Launched Multi-Purpose Assault Weapon versions of the Javelin, Light Anti-Armor Weapon (66 mm), Tube-fired, Optically-tracked, Wire-guided missile, and Shoulder Launched Multi-Purpose Assault Weapon (83 mm) systems, M72</p>

Table 2.2-2. Representative Weaponry and Equipment

 <p>Grenade Launcher (e.g., M203 mounted on M16 rifle)</p>	<p>Light Anti-Armor/Tank Weapon</p> <p>Where Employed: Tank/Fighting Vehicle Stationary Target Range, Grenade Launcher Range with a dedicated High Hazard Impact Area, Multi-Purpose Training Range, Tank/Fighting Vehicle Multi-Purpose Range Complex, Battle Area Complex, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Maneuver Area (Heavy Forces), Maneuver Area (Light Forces), Maneuver Area (Amphibious Forces)</p> <p>Weapons Potentially Employed: M203 grenade launcher (40 mm), attached to an M16 or M4 rifle, MK19 40 mm grenade launcher</p>
 <p>Mortars (e.g., M252 81 mm)</p>	<p>Where Employed: Field Artillery Indirect Fire Range (firing into a High Hazard Impact Area), Mortar Range (firing into a High Hazard Impact Area)</p> <p>Weapons Potentially Employed: 120 mm mortar for all training ranges listed above, M224 60 mm mortar and the M252 81 mm mortar require firing positions immediately adjacent to a High Hazard Impact Area are limited to the Mortar Range</p>
 <p>Artillery (Howitzers) (e.g., M777 155 mm)</p>	<p>Where Employed: Field Artillery Indirect Fire Range (firing into a High Hazard Impact Area), Field Artillery Direct Fire Range (firing into a High Hazard Impact Area), Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Maneuver Area (Heavy Forces), Maneuver Area (Light Forces) (non-live-fire on Tinian), Maneuver Area (Amphibious Forces)</p> <p>Weapons Potentially Employed: 105 mm howitzer, the M777 155 mm howitzer</p>
 <p>Fighting Vehicle (e.g., Army Stryker Fire Support Vehicle)</p>	<p>Where Employed: Tank/Fighting Vehicle Stationary Target Range, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Maneuver Area (Heavy Forces), Maneuver Area (Light Forces), Maneuver Area (Amphibious Forces)</p> <p>Equipment Potentially Employed: Army Stryker Fire Support Vehicle with 105 mm mobile gun system</p>
 <p>Light Armored Vehicle (e.g., C2 variant of LAV-25)</p>	<p>Where Employed: Tank/Fighting Vehicle Multi-Purpose Training Range Complex, Convoy Course, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Maneuver Area (Heavy Forces), Maneuver Area (Light Forces) (non-live-fire on Tinian), Maneuver Area (Amphibious Forces)</p> <p>Equipment Potentially Employed: Light Armored Vehicle (LAV-25) with 25 mm chain gun</p>

Table 2.2-2. Representative Weaponry and Equipment

 <p>Wheeled Vehicles</p>	<p>Where Employed: Convoy Course, Maneuver Areas</p> <p>Equipment Potentially Employed: High Mobility Multi-Purpose Wheeled Vehicles with the M2 heavy machine gun, the M240G/B machine gun, 7-Ton Trucks, Combat Vehicle</p>
 <p>Amphibious Assault Vehicle (e.g., AAV-7A1)</p>	<p>Where Employed: Tank/Fighting Vehicle Multi-Purpose Training Range Complex, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Tracked Vehicle Driver's Course, Tactical Amphibious Landing Beaches, Maneuver Area (Heavy Forces), Maneuver Area (Amphibious Forces)</p> <p>Equipment Potentially Employed: Amphibious Assault Vehicle (AAV-7A1), representative weapons are MK19 40 mm grenade launcher and M2HB .50-caliber machine gun</p>
 <p>Small Boats (e.g., Rubber Raiding Craft)</p>	<p>Where Employed: Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Tactical Amphibious Landing Beaches, Maneuver Area (Amphibious Forces)</p> <p>Equipment Types: Rubber Raiding Craft, Rigid Hulled Inflatable Boat</p>
 <p>Landing Craft Air Cushion</p>	<p>Where Employed: Tactical Amphibious Landing Beaches</p> <p>Equipment Types: Landing Craft Air Cushion</p>
 <p>Attack Helicopter (e.g., AH-1)</p>	<p>Where Employed: Tank/Fighting Vehicle Multi-Purpose Training Range Complex, Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Close Air Support Range, Offensive Air Support Range</p> <p>Equipment and Weapons Potentially Employed: AH-1 Cobra or the AH-64 Apache attack helicopter delivering aviation munitions such as Global Positioning System guided munitions, direct fire rockets, or bullets fired from guns</p>

Table 2.2-2. Representative Weaponry and Equipment

 <p>Fixed-Winged Aircraft (e.g., Support, Fighter and Attack [FA-18])</p>	<p>Where Employed: Offensive Air Support Range, Close Air Support Range, Tinian International Airport, North Field, Pagan airfield, Drop Zones</p> <p>Equipment Potentially Employed: FA-18 Hornet, F-35 Lighting II (Joint Strike Fighter), F-16, F-22, F-15E, AV-8B Harrier II, C-130, C-17, KC-135, KC-46 and similar aircraft</p>
 <p>Helicopters and Tilt-rotor aircraft (e.g., MV-22)</p>	<p>Where Employed: Landing Zones, Drop Zones, Terrain Flight Maneuver Area</p> <p>Equipment Potentially Employed: helicopters, tilt-rotor aircraft (i.e., MV-22). No weapons would be used.</p>
 <p>Unmanned Air Vehicle (e.g., Marine Shadow)</p>	<p>Where Employed: Unmanned Aircraft System Operating Areas, Landing Zones, open areas</p> <p>Equipment and Weapons Potentially Employed: Unmanned Air Vehicle Groups 1-4, e.g., Marine Corps RQ-7B Shadow (Group 3)</p>
 <p>Helicopter Expedient Refueling Systems</p>	<p>Where Employed: Forward Arming and Refueling Point</p> <p>Equipment: Helicopter Expedient Refueling Systems used to provide refueling for aircraft</p>
Unit Level Training Only	
 <p>Military Operations on Urban Terrain/Urban Assault Course Structures</p>	<p>Where Employed: Urban Assault Course</p> <p>Weapons Potentially Employed: Small arms (e.g., rifle, pistol, and machine guns)</p>

Table 2.2-2. Representative Weaponry and Equipment

Combined Level Training Only	
 <p>Naval Gunfire (e.g., Royal Australian Navy Frigate)</p>	<p>Where Employed: Combined Arms Training Range to Support Close Air Support and Naval Gunfire Support Training with a dedicated High Hazard Impact Area</p> <p>Weapons Potentially Employed: 5-inch naval gunfire high-explosive rounds firing into a High Hazard Impact Area</p>

Note: See Appendix C, *Unconstrained Training Concept for Tinian and Pagan* for more detailed descriptions of ranges and weapons. mm = millimeter.
 Source: DoN 2014a.

2.2.4 Representative Live-Fire Training Participants and Scenarios

2.2.4.1 Unit Level Training Participants

The goal for unit level training is to provide a RTA with the capacity to support the number and type of weapons and equipment associated with ground combat training. The necessary logistics and aviation support, and suitable Special Use Airspace and sea space are linked to the RTA. Additionally, the unit level RTA must be able to accommodate amphibious- and land-based live-fire training for U.S. Pacific Command Service Components, as well as bilateral and multilateral forces.

The cumulative duration of live-fire training in the unit level RTA would be up to 20 non-consecutive weeks per year (140 days per year), with varying lengths of training exercises. Prior to and after each live-fire training event, additional non-live-fire training preparation would occur with between 2 and 100 U.S. military personnel on island for administrative and logistical support. A majority of the training preparation weeks are likely to overlap, and a total of approximately 22 additional non-live-fire preparation weeks are anticipated. There would also be periodic maintenance and range management conducted on the RTA during times when live-fire training is not being conducted (see [Section 2.1, Overview of the Proposed Action](#)).

Construction will occur over a period of 8 to 10 years. During the proposed construction period, live-fire training activities would be incrementally increased, eventually culminating to the final 20 weeks proposed.

Training participants could include bilateral forces, multilateral forces, joint Services, Marine units, Special Operations Command forces, Marine Aircraft Wing aviation forces, and other U.S. military Services such as the National Guard and Reserves, among others. It is anticipated that participants would use the Tinian RTA for up to 2 weeks at a time and could include between 30 and 2,200 personnel. Tinian unit level representative training and exercise duration are summarized in [Table 2.2-3](#) and described in the following paragraphs.

Unilateral/Bilateral Training. One U.S. company and one allied force company (approximately 500 personnel) would train for 2 weeks, once a year. Each training event would include approximately 1

week of pre-training and 1 week of post-training preparation time (approximately 25 personnel). Ground combatants (i.e., infantry) would train on most of the training facilities. Limited logistics support would be anticipated and aviation support could occur but it is not emphasized as part of this training. Aviation training (i.e., Offensive Air Support, Close Air Support, Unmanned Aircraft Systems, Anti-Air Warfare, Terrain Flight Maneuver Area, Forward Arming and Refueling Point) would also be conducted, but at a level less than some of the other anticipated exercise periods. Pre- and post-training mobilization would occur via marine and air transportation from Guam or locations outside of the Mariana Islands. For all training participants, transportation via Joint High Speed Vessels may not be viable from locations outside Guam.

Multilateral Training. One U.S. company training with two allied force companies (approximately 750 personnel) would train together for 2 weeks, once a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 30 personnel). This training would be similar to bilateral training except the number of personnel would increase along with munitions use. Pre- and post-training mobilization would occur via marine and air transportation from Guam or locations outside of the Mariana Islands.

Joint Services Exercises. U.S. Services (approximately 1,000 personnel) would train together for 2 weeks, twice a year. Each training event would include approximately 2 weeks of pre-training and 1 week of post-training preparation time (approximately 50 personnel). This training would be similar to bilateral training except that there would be an increase in the number of personnel and munitions, and the units would come from more than one U.S. Service (e.g., Marine Corps and Army units). This type of training would emphasize joint ground combat planning and execution. Aviation and logistical support would increase from what is planned for the bilateral and multilateral training exercises. Therefore, the majority of the training facilities would potentially be used, including aviation ranges and the Field Artillery Indirect Fire Range. Pre- and post-training mobilization would occur via marine and air transportation from Guam or locations outside of the Mariana Islands.

Marine Unit Training. A Marine Corps ground combat element with aviation and logistics attachments (approximately 2,200 personnel) would train for 1 week, twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 100 personnel). As part of the training, personnel would depart from a ship offshore and come ashore using Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, as well as rotary- and tilt-wing aircraft. This training emphasizes ground combat with aviation and logistics support. Therefore, all training facilities would potentially be used. Pre- and post-training mobilization would occur from Navy ships off the coast of Tinian with Landing Craft Air Cushion vessels, Amphibious Assault Vehicles, and air transportation used to move personnel from the ship to shore. Ships would typically originate outside of Guam, but could stop there in transit to Tinian.

Special Operations Command Exercises. Special operations forces (approximately 30 personnel) would train for 1 week, twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 2 personnel). All training facilities would potentially be used. Pre- and post-training mobilization would occur via air transportation from Guam or locations outside of the Mariana Islands.

Marine Aircraft Wing Aviation Training Relocation. Marine Aircraft Wing personnel (approximately 300 personnel) would train for 2 weeks, twice a year. Each training event would include approximately 2 weeks of pre-training and 2 weeks of post-training preparation time (approximately 30 personnel). This training currently occurs on Tinian and continues under all alternatives. Emphasizing aviation, personnel would practice expeditionary airfield operations (e.g., refueling rotary-wing, tilt-rotor, and fixed-wing aircraft), arrested landings, and command and control of aircraft. Training activities would be focused on North Field and Tinian International Airport. Pre- and post-training mobilization would occur via air transportation from a location outside of the Mariana Islands.

U.S. Services (National Guard, Reserves). Along with active duty Navy and Air Force units stationed on Guam, various Army and Air Force Reserve as well as National Guard units are based within the Mariana Islands (approximately 500 personnel) and would train for 2 weeks, twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 25 personnel). One of these units is an infantry battalion whose training would be similar to the multilateral training noted above. Other units are specialized and provide such functions as engineering, supply, medical, security, and civil affairs. These units would use various training ranges consistent with their mission essential tasks. Pre- and post-training mobilization would occur via air and marine transportation from Guam and Saipan. A summary of Tinian unit level representative training and exercise time spans are provided in [Table 2.2-3](#).

Table 2.2-3. Unit Level Training and Exercises, Duration, and Personnel

<i>Training and Exercises</i>	<i>Live-Fire Training Duration and Personnel</i>		<i>Pre-Training Duration and Personnel (non-live-fire)*</i>		<i>Post-Training Duration and Personnel (non-live-fire)*</i>	
	<i>Duration</i>	<i>Personnel</i>	<i>Duration</i>	<i>Personnel</i>	<i>Duration</i>	<i>Personnel</i>
Bilateral Training	2 weeks, once a year	500	1 week, once a year	25	1 week, once a year	25
Multilateral Training	2 weeks, once a year	750	1 week, once a year	30	1 week, once a year	30
Joint Services Exercises	2 weeks, twice a year	1,000	2 weeks, twice a year	50	1 week, twice a year	50
Marine Unit Training	1 week, twice a year	2,200	1 week, twice a year	100	1 week, twice a year	100
Special Operations Command Exercises	1 week, twice a year	30	1 week, twice a year	2	1 week, twice a year	2
Marine Aircraft Wing Aviation Training Relocation	2 weeks, twice a year	300	2 weeks, twice a year	30	2 weeks, twice a year	30
Other Services	2 weeks, twice a year	500	1 week, twice a year	25	1 week, twice a year	25
Total:	20 weeks per year	NA	16 weeks per year*	NA	12 weeks per year*	NA

*Note: After accounting for overlap, a combined total of 22 pre- and post-training weeks are anticipated per year. Pre- and post-training durations are typically 1 to 2 weeks in duration and are not inclusive of other approved non-live-fire training. NA = not applicable.

2.2.4.2 Unit Level Training Scenario

For planning purposes, the representative unit level training scenario is based on a Marine Unit (up to 2,200 personnel) training for 1 week, twice a year, plus pre- and post-training preparation time. A Marine Unit includes ground combat elements (i.e., battalion landing team) along with aviation support and logistic support. This training scenario was selected because it could potentially include training on most of the training facilities within the proposed Tinian RTA and, therefore provide the broadest training scenario as compared to other potential training participants. A key difference between Marine Unit training exercises and other types of training participants' exercises is that a Marine Unit is largely self-contained and does not have the same degree of non-organic logistical needs (i.e., needs beyond those inherent to the unit) as the other participants. For example, a Marine Unit does not require a base camp, fueling, or transportation like many other training participants would.

The following example training scenario is based on a Marine Unit that trains for 1 week. Operations for small-caliber and airfield training in the following training scenario are assumed to occur about 80 percent (%) during the hours of 7:00 a.m. to 10:00 p.m. and 20% during the hours of 10:00 p.m. and 7:00 a.m. Large-caliber operations are assumed to occur about 96% during the hours of 7:00 a.m. to 10:00 p.m. and 4% during the hours of 10:00 p.m. and 7:00 a.m. The training scenarios described below are examples of the types of training that could occur, and they are not all-inclusive of every training event that may occur on the island.

2.2.4.2.1 Marine Unit Training Scenario, Tinian

Pre-Training Preparations. Approximately 1 week prior to the beginning of the training exercise, Tinian RTA Range Control personnel and a Marine Unit advance team of 100 personnel would perform various pre-exercise administrative functions within the Tinian RTA such as sign out of base camp facilities and equipment, clear the Military Lease Area of non-participating personnel, establish check points/road blocks at various internal Military Lease Area locations, and conduct communications checks between ship units and Tinian Range Control on control and safety (i.e., military frequency radio communications). If equipment were flown or shipped in prior to training, personnel would unload the equipment and stage it for training use. Appropriate biosecurity measures would be conducted for incoming aircraft, ships, and cargo (see Section 4.9, *Terrestrial Biology* and Appendix D, *Best Management Practices* for further discussion of biosecurity measures). All units would receive appropriate briefings regarding environmental, natural, and cultural resource restrictions and concerns related to training at the Tinian RTA. Pre-training preparations are outside the 20 weeks estimated for live-fire training.

Training Day 1. Marine Unit Reconnaissance and Surveillance teams would conduct intelligence gathering actions, to include a report of surf conditions for the various amphibious training sites. Amphibious units (Amphibious Assault Vehicles and Landing Craft Air Cushion vessels) would conduct an Amphibious Demonstration as a feint (no actual beach landings) used as a dry run for the actual training assault. Activities conducted on this training day could include both live-fire and non-live-fire training.

Training Day 2. The Marine Unit would conduct a company-sized amphibious assault using Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, combat swimmers, and small boats at the various Military Lease Area approved/selected amphibious training beaches. The amphibious assault would be combined with vertical insertion (i.e., helicopter or rotary-wing aircraft dropping off personnel or equipment) of an infantry company via MV-22s and CH-53s at North Field. As these units come ashore, they would move either by vehicle (i.e., High Mobility Multi-Purpose Wheeled Vehicles off Landing Craft Air Cushion vessels) or foot to the base camp. Portions of other Marine Unit (aviation combat element and logistics combat element) would come ashore in successive waves to establish logistical support of follow-on training events. Activities conducted on this training day could include both live-fire and non-live-fire training.

Training Day 3. Marine Unit personnel would come ashore and conduct required safety briefs and range orientation. Based on their organic weapons (i.e., weapons belonging to and brought along with the unit), units would conduct live-fire weapons calibration on various ranges (i.e., Battle Sight Zero Range for small weapons systems; Light Armored Vehicles and Amphibious Assault Vehicles on the Tank/Fighting Vehicle Multi-Purpose Range Complex). Utilizing Special Use Airspace, aviation units would support ground training using aircraft such as AH-1 and AV-8B Harrier II. Ground personnel would direct delivery of aviation munitions into the High Hazard Impact Area, followed by non-live-fire or live-fire munitions delivery (i.e., shooting from aircraft or discharging munitions), using the High Hazard Impact Area. This would also entail mortar and artillery firing at targets within the High Hazard Impact Area. As needed, some units may conduct pistol and rifle re-qualification training.

Training Day 4. Battalion Landing Team infantry units (selected platoons) would cycle through the Infantry Platoon Battle Course, conducting a day dry run (i.e., non-live-fire), and a day and/or night live-fire scenario. Light armored reconnaissance and Amphibious Assault Vehicle units would conduct live-fire and maneuver training on the Tank/Fighting Vehicle Multi-Purpose Range Complex with other selected infantry platoons embarked. The Amphibious Assault Vehicle platoon would also conduct amphibious training for unit level training and provide embarked re-qualification training for those infantry units that did not participate in the initial landings. Mortar and artillery units would conduct unit level training, firing at targets within the High Hazard Impact Area. With careful scheduling to create a safe separation of training activities around the impact area, infantry units would perform hand grenade, grenade launcher, and rocket training utilizing the High Hazard Impact Area.

Training Day 5. Battalion Landing Team infantry units (all three infantry companies) would cycle through the Battle Area Complex(es), conducting a day dry run, and day live-fire scenario. MV-22s and CH-53s would use Landing Zones within or near the Battle Area Complex objective areas to insert segments of the infantry units, while other segments of the infantry unit conduct an assault on foot. Aviation support of ground combat training would be integrated into the fire support plan, using the High Hazard Impact Area.

Training Day 6. Training activities would be largely concentrated on a night cycle. Similar to Training Day 5, the units would execute company level offensive assaults at night on the Battle Area Complex(es). This includes night Landing Zone use and employment of offensive air support (aviation support for ground combat training).

Training Day 7. Battalion landing team units would cycle through the Convoy Course, typically with approximately 10 vehicles in a convoy, each vehicle with approximately 4 individuals. Units would use various vehicles (i.e., High Mobility Multi-Purpose Wheeled Vehicles, 7-ton trucks, Light Armored Vehicles) and proceed through the course, engaging targets as dictated by the specific training scenario for that day/unit type (number of engagement areas/course route is Alternative-dependent). The scenario would include integration of offensive air support in coordination with ground troop movement and casualty evacuation.

Post-training Events. Similar to the advance team, the number of personnel associated with the post-training team can vary greatly. Each unit can have a post-training team of anywhere between 2 and 100 personnel. After completion of training, the post-training Marine Unit team would take approximately 1 week to complete exercise withdrawal, and conduct post training maintenance. Post training events are outside of the 20 weeks estimated for live-fire training. Biosecurity inspections and wash-downs would be conducted at designated facilities prior to air or sea departure.

2.2.4.3 Combined Level Training Participants

The concept for the combined level RTA is to provide the capability and capacity to train and conduct exercises using the wide spectrum of weapons and equipment, to include, but not be limited to, ground troops, close air support from the U.S. and/or allied nation air forces, and sea-to-surface weapons coverage from the Navy and/or allied nation navies. To carry out large-scale, amphibious, ground-based, as well as air- and sea-based live-fire training, military units would use the proposed combined level RTA for combat and maneuver exercises with other U.S. armed forces (Army, Navy, and Air Force) as well as multilaterally with other allied nations. Military units would use the combined level RTA for fire and maneuver training in combined arms scenarios that are unavailable elsewhere in the Mariana Islands or U.S.-controlled lands in the Western Pacific. Combined level training is most beneficial to the training participants when the training scenarios are varied and unique in order to simulate combat situations.

The cumulative duration of live-fire training in the combined level RTA would be up to 16 non-consecutive weeks per year. An approximately 19 additional weeks of non-live-fire pre- and post-training preparations would be required for logistical support. During these weeks there would be between 6 and 50 U.S. military personnel on island for administrative and logistical support. There would also be periodic maintenance and range management conducted on the RTA during times when live-fire training is not being conducted. Representative combined level RTA training participants and training exercise duration are summarized in [Table 2.2-4](#) and discussed in the following paragraphs. A gradual increase in operations over the proposed 8 to 10 year construction period is anticipated.

Table 2.2-4. Combined Level Training and Exercises, Duration, and Personnel

<i>Training and Exercises</i>	<i>Live-Fire Training Duration and Personnel</i>		<i>Pre-Training Duration and Personnel (non-live-fire)*</i>		<i>Post-Training Duration and Personnel (non-live-fire)*</i>	
	<i>Duration</i>	<i>Personnel</i>	<i>Duration</i>	<i>Personnel</i>	<i>Duration</i>	<i>Personnel</i>
Marine Unit Training	1 week, twice a year	2,200	1 week, twice a year	10	1 week, twice a year	10
Transiting Marine Unit Training	2 weeks, twice a year	2,200	1 week, twice a year	10	1 week, twice a year	10
Pacific Command Exercises	2 weeks, twice a year	1,000	2 weeks, twice a year	50	1 week, twice a year	50
Bilateral and Multilateral Training	2 weeks, twice a year	750	1 week, twice a year	40	1 week, twice a year	40
Special Operations Forces Training	1 week, twice a year	30	1 week, twice a year	6	1 week, twice a year	6
Total:	16 weeks per year	NA	12 weeks per year*	NA	10 weeks per year*	NA

*Note: After accounting for overlap, a combined total of 19 pre- and post-training weeks are anticipated per year. Pre- and post-training durations are typically 1 to 2 weeks in duration and are not inclusive of other approved non-live-fire training. NA = not applicable.

Marine Unit Training. The ground combat element (battalion landing team) of a Marine Unit, with aviation and logistics element support (approximately 2,200 personnel) would originate from outside of the Mariana Islands and join to train together for 1 week, twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 10 personnel). As part of this training, personnel would depart from naval ships offshore and come ashore using Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, small boats, or aviation (rotary-wing or tilt-rotor aircraft). This training would be purely expeditionary (i.e., minimal permanent facilities would exist) with an emphasis on ground combat live-fire and maneuver, combined arms training with logistics, aviation, and naval gunfire support. During the initial training exercises on Pagan, logistical training activities could include military training trail improvement, airfield clearance, and development of the expeditionary base camp/bivouac area and staging areas. These improvements would be associated with the first training exercises on Pagan only and would not be recurring. All ranges and maneuver areas would be utilized as part of this training. Pre- and post-training mobilization would occur via Navy ships located off the coast of Pagan with personnel coming to and from shore on Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, small boats and aircraft.

Transiting Marine Unit Training. This is similar to the Marine Unit Training (approximately 2,200 personnel) described above except that this training would include a Marine Unit transiting through the area from outside of the Mariana Islands and the duration would be for 2 weeks, twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 10 personnel). Pre- and post-training mobilization would occur via Navy ships located off the Coast of Pagan with personnel coming to and from shore on Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, small boats and aircraft.

Pacific Command Exercises. U.S. and multilateral Services (approximately 1,000 personnel) originating from outside of the Mariana Islands would train for 2 weeks, twice a year. Each training event would include approximately 2 weeks of pre-training and 1 week of post-training preparation time (approximately 50 personnel). This training would be similar to Marine Unit training with the additional

facets of integrating multilateral units into the training audience and the incorporation of joint mission essential training goals, spanning a much wider scope and depth than other exercises. Pre- and post-training mobilization would occur via Navy ships located off the coast of Pagan with personnel coming to and from shore on Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, small boats and aircraft. Other air transportation (i.e., not from navy ships) could also occur.

Unilateral, Bilateral and Multilateral Training. One to two U.S. companies and one to two allied force company(ies) (approximately 750 personnel) would originate from outside of the Mariana Islands and join to train for 2 weeks, twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 40 personnel). This training would be similar to Marine Unit training, with the additional facet of integrating the bilateral or multilateral units into the training audience. Pre- and post-training mobilization would occur via Navy ships located off the coast of Pagan with personnel coming to and from shore on Amphibious Assault Vehicles, Landing Craft Air Cushion ships, small boats and air craft. Other air transportation (i.e., not from navy ships) could also occur.

Special Operations Forces Training. Special operations forces (approximately 30 personnel) would arrive via aircraft and train for approximately 1 week twice a year. Each training event would include approximately 1 week of pre-training and 1 week of post-training preparation time (approximately 6 personnel). All ranges and maneuver areas would potentially be used. Pre- and post-training mobilization would occur via Navy ships located off the coast of Pagan with personnel coming to and from shore primarily by aircraft.

2.2.4.4 Combined Level Training Scenario

For planning purposes, the representative training scenario is based on a Marine Unit (up to 2,200 personnel) training for 1 week twice a year. This training scenario was selected because it could potentially include training on virtually all the training facilities within the Pagan RTA, and therefore, provide the broadest training scenario compared to some of the other potential training participants. However, this scenario is merely an example of the type of training that could occur and is not all-inclusive of every training event that would occur on the island.

2.2.4.4.1 Marine Unit Training Scenario, Pagan

This training scenario assumes that the majority of operations would occur during the hours 7:00 a.m. to 10:00 p.m.; however, up to 50% of a training event could occur during the hours 10:00 p.m. to 7:00 a.m.

Pre-training Preparations. Approximately 19 additional weeks of non-live-fire preparations time for pre- and post-training logistical support is anticipated. The number of personnel associated with the advance team can vary greatly depending on the mode of travel, amount of equipment brought with the team, and required set-up time, among other factors. Range Control personnel and a Marine Unit advance team of approximately 10 personnel would perform various pre-exercise administrative functions and set up logistics within the Pagan RTA such as clearing maneuver areas and live-fire ranges, establishing live-fire targets within selected areas, road blocks, setting up Range Control ashore, and performing communications checks. Appropriate biosecurity measures would be conducted for incoming cargo. Range Control personnel would ensure that Pagan was cleared of non-training personnel. Pre-training preparations would take approximately 1 week and are not included in the 16 weeks estimated for live-

fire training. Prior to the start of training, all units would receive instruction concerning environmental, natural and cultural resource restrictions and concerns in the training areas.

Training Day 1. Pre-landing training attacks would occur to simulate attrition of enemy forces. For example, aircraft and naval ships would fire at “enemy” targets as a first wave of attack. Specialized intelligence gathering units (i.e., four-person reconnaissance team) would conduct reconnaissance and surveillance of landing force objective areas. Amphibious units (Amphibious Assault Vehicles, Landing Craft Air Cushion vessels) would conduct an amphibious demonstration as a feint (no actual beach landings) used as a dry run for the actual assault.

Training Day 2. Various teams such as six-person Fire Support Teams and five-person Shore Fire Control Parties would move ashore via MV-22s, inserted at various observation vantage points throughout the island to guide weapons employment and provide control of aviation and naval ship delivered munitions before and during the assault stage. These actions are to continue the degradation of enemy air defenses and indirect fire capabilities such that the enemy forces are unable to successfully oppose the assault.

Training Day 3. An infantry company of approximately 182 personnel would conduct an amphibious assault using Amphibious Assault Vehicles and Landing Craft Air Cushion vessels at Landing Force Objective A (Blue Beach) and Landing Force Objective B (Red Beach), combined with vertical insertion of an infantry company via MV-22 and CH-53s near Landing Force Objective C (airfield). Fixed-wing and rotary-wing assets would provide close air support in support of movement ashore, engaging enemy targets that offer opposition to movement ashore. Artillery battery and mortar teams would come ashore in phases, set up firing positions, and support maneuver with ground fire. Reconnaissance and Surveillance teams would provide objective area observations and target refinement. Support units (approximately 200 personnel) would develop a Forward Arming and Refueling Point at the air strip. Based on exercise scenario demand, Marine Unit aviation support would use both the Forward Arming and Refueling Point and amphibious craft for rearming and refueling. MV-22s and CH-53s would provide logistical resupply of ground forces using nearby Landing Zones. Logistics combat elements would prepare and set up the expeditionary base camp as a short-term bivouac area and supply point ashore.

Training Day 4. An infantry company of the Battalion Landing Team would conduct a company coordinated movement to seize Landing Force Objective D (high ground north of Laguna Sanhalom [Upper Lake], northwest side of Mount Pagan). The infantry company would maneuver from Landing Force Objectives A and B via the western corridor, primarily by foot. Fixed-wing and rotary-wing aviation would conduct close air support for offensive ground maneuver (i.e., provide aviation “cover” for ground combatant movements). Indirect fire weapons would be repositioned as necessary to support the ground movement timeline.

Training Day 5. An infantry company of the Battalion Landing Team would conduct a company coordinated movement to seize Landing Force Objective E (northeast quadrant of northern Pagan, northeast of Mount Pagan). The infantry company would maneuver from Landing Force Objective C via the eastern corridor, primarily by foot. Live-fire fixed-wing and rotary-wing close air support (i.e., aviation support of ground combatants) would be conducted in concert with the ground scheme of maneuver.

Training Day 6. The infantry companies ashore would plan and execute defensive fire operations, begin re-positioning for withdrawal, and hand over battlespace to a notional follow-on unit. Fixed-wing and rotary-wing aviation would conduct close air support (i.e., aviation support of ground combatants) in concert with defensive fire operations.

Training Day 7. The infantry companies ashore would begin a complete withdrawal. Units would move toward their original assault locations for transit back to amphibious craft, in reverse sequence.

Post-training Events. Over approximately 1 week, a Marine Unit post-training team of approximately 100 personnel would complete exercise withdrawal, tear-down, prepare to ship equipment back to home base and clean up. Biosecurity inspections and wash-downs would be conducted per appropriate protocols. All training and Range Control personnel and equipment would move back to amphibious craft via Amphibious Assault Vehicles, Landing Craft Air Cushion vessels, and aviation (MV-22, CH-53).

2.3 ALTERNATIVES DEVELOPMENT

The U.S. Marine Corps Forces Pacific as the Executive Agent undertook the following methodical process to identify potential alternatives for meeting unfilled, joint military training requirements in the CNMI. The U.S. Marine Corps Forces Pacific first developed and applied operational siting criteria (see [Section 2.3.1, Operational Siting Criteria](#)) which identified Tinian and Pagan as the only suitable locations for development of RTAs for unit level and combined level training, respectively. Use of both the islands is required to meet the purpose and need for the proposed action. Alternative development then analyzed various laydowns on Tinian and Pagan to address the unfilled training requirements.

2.3.1 Operational Siting Criteria

Operational siting criteria were developed as part of the *CNMI Joint Military Training Requirements and Siting Study* (DoN 2013a) (see Section 1.3.6, *Training Requirements and Siting Study*) to identify potential locations within the CNMI that could meet these unfilled training requirements. These criteria included land use and topographic compatibility, the need for beachfront and transition lands for amphibious training, airspace and sea space, military training trails, and the ability to employ a spectrum of weapons systems ([Table 2.3-1](#)).

Table 2.3-1. Requirements and Siting Study – Operational Siting Criteria

Unit Level RTA	Combined Level RTA
<p>Land Use Compatibility:</p> <ul style="list-style-type: none"> U.S. publicly-owned or leased land is preferred. Pursuant to §806 of the 1976 Covenant, the U.S. Government, in recognizing and respecting the scarcity and special importance of land in the CNMI, agreed to first seek an interest in public real property before pursuing any private real property interest. Sufficient space for high hazard impact and safety areas. <p>Topographic Compatibility:</p> <ul style="list-style-type: none"> Maneuver areas should have varying terrain but cannot exceed 30% slope for vehicles. Have an unobstructed line of sight for direct-fire ranges, with a downward slope of no more than 2% from the firing points to the targets on fixed firing ranges. <p>Beachfront and Transition to Land:</p> <ul style="list-style-type: none"> Near offshore lands must allow for amphibious training. Beachfront must have a slope less than 7%, a width of at least 1,640 feet (500 meters), and be clear of obstacles (such as boulders) that are greater than 3 feet (1 meter). Transit space for amphibious vehicles to move from amphibious beach training areas to live-fire training venues. <p>Airspace and Sea Space:</p> <ul style="list-style-type: none"> Allow designation of restricted areas and military operations areas to separate non-participating aircraft from military activities. Sufficient water surfaces to accommodate warning areas that separate military operations from non-participating marine vessels. 	<p>Meet All Unit Level Requirements:</p> <ul style="list-style-type: none"> Land use and topographic compatibility. Beachfront and transition to land. Airspace and sea space. <p>Mobility Corridor(s):</p> <ul style="list-style-type: none"> Sufficient space for movement of military personnel, vehicles, and other mission-essential equipment to transit in execution of military training. Provide for the flexibility of movement for multiple units towards multiple objects (e.g., targets) in support of the training purpose. Allow several units to conduct simultaneous multiple live-fire training tasks. <p>Full Spectrum Weapons Employment:</p> <ul style="list-style-type: none"> High Hazard Impact Area must provide sufficient land to allow live-fire from the suite of weapons deployed from ground-based units, as well as those mounted on aircraft and Navy vessels. Allow simultaneous execution and command and control of ground forces with aircraft and Navy vessels.

Source: DoN 2013a.

The operational siting criteria (see [Table 2.3-1](#)) were applied to screen the 14 CNMI islands for feasible RTA sites. Of the 14 CNMI islands, only a combination of RTA sites on Tinian and Pagan were identified as capable of meeting unit level and combined level screening criteria, and could address virtually all 42 unfilled training requirements ([Table 2.3-2](#)).

Table 2.3-2. RTA Siting Criteria for Islands in the CNMI

Island	Unit level Criteria				Combined level Criteria			Unit and Combined level Criteria
	Land Use	Topographic	Beach-front	Airspace	Land Area	Mobility Corridor	Full Spectrum Weapons	Land Area
Agrihan	Yes	No	No	Yes	No	No	No	No
Aguijan	Yes	No	No	Yes	No	No	No	No
Alamagan	Yes	No	No	Yes	No	No	No	No
Anatahan	Yes	No	No	Yes	No	No	No	No
Farallon de Medinilla	No	No	No	Yes	No	No	No	No
Pagan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Sarigan	No	No	No	Yes	No	No	No	No
Tinian	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Guguan	No	Guguan, Asuncion, Maug, and Uracus were considered and dismissed because they are protected from development pursuant to Article XIV of the CNMI Constitution.						No
Asuncion	No							No
Maug	No							No
Uracus	No							No
Saipan	No	Saipan and Rota were dismissed because of insufficient compatible lands.						No
Rota	No							No

Source: DoN 2013a.

While the ideal scenario would be to site both RTAs on one island, neither Tinian nor Pagan individually have the space to support both. In addition, the lands currently leased by the Department of Defense on Tinian lack land areas large enough to accommodate the safety footprint for the broad spectrum of weapons used in combined level training. Therefore, Tinian would be most suitable for unit level RTA development and Pagan for combined level RTA training. Tinian and Pagan collectively is the only combination of training locations that meets the purpose of and need for the proposed action.

2.3.2 Development of Unit Level Range and Training Area Alternatives on Tinian

The primary criteria for unit level RTA alternative development was maximizing use of the Military Lease Area — an area controlled by the U.S. government under a long-term lease.

The Military Lease Area meets the operational siting criteria for a unit level training RTA. It is located away from civilian population centers to ensure safe separation of military activities and the public. The Military Lease Area also has accessible beaches for amphibious training and roadways for tracked and wheeled vehicles. There is suitable topography and land area for maneuvering purposes for unit level RTAs. There are suitable airfields, available airspace, and adjacent sea space to accommodate the

proposed training activities on Tinian. Additionally, Tinian International Airport and the Port of Tinian are both in close proximity to provide efficient personnel, cargo, and equipment deliveries.

The goal for Tinian unit level RTA training is two-fold: the first provides the capability and capacity for using the weapons organic to (i.e., belonging to and brought along with) units ranging in size of about 30 to 2,200 personnel. The second goal is to link ground-based activities with aviation and amphibious training. Tinian alternatives development went through two stages. The first stage included the initial identification of the locations of training facilities and support facilities on Tinian. The second stage was a refinement of alternatives to better meet the purpose and need for the proposed action and address socioeconomic and environmental concerns and input from public comment.

2.3.2.1 Initial Development of Tinian Unit Level Range and Training Area Alternatives

Initial alternative development on Tinian involved identifying where unit level support facilities and training facilities could be accommodated (DoN 2014a). An alternative needs to maximize the potential for simultaneous use so that multiple ranges and training areas can be used simultaneously and the use of one range does not necessarily preclude the use of other ranges. Opportunities for compatible combinations or configurations of ranges, training courses, or maneuver area laydowns were evaluated to minimize land needed and maximize the ability to train at a given location if other types of training were ongoing in another location (i.e., simultaneity of use).

To be considered a viable and reasonable alternative, any RTA layout on Tinian must satisfy the following criteria:

Land Use Compatibility: An alternative must have a suitable location and sufficient land area for the High Hazard Impact Area that will accommodate the spectrum of weapons and munitions proposed; allow for the Hand Grenade Range, Mortar Range, Light Anti-Armor Range, Grenade Launcher Range, Demolition Range, Field Artillery Indirect Fire Range targets, Offensive Air Support Range targets, and Close Air Support Range targets; and provide a buffer area to ensure public safety. Additionally, this impact area must be situated in such a manner that when it is active, maneuver training could still be conducted in its vicinity.

Topographic Compatibility: An alternative must have land areas with adequate space and suitable topography (slope) for the largest components of proposed training (e.g., Tank/Fighting Vehicle Multi-Purpose Range Complex, Infantry Platoon Battle Course, and Battle Area Complex).

Beachfront and Transition to Land: An alternative must have beaches suitable to conduct ship-to-objective maneuvering or amphibious training. Required capability is that four Amphibious Assault Vehicles can land at one location at one time and transit from the landing beach to suitable land areas for conducting tactical maneuvering to established ranges (e.g., Tracked Vehicle Driver's Course, Tank/Fighting Vehicle Multi-Purpose Range Complex).

Airspace and Sea Space: An alternative must have sufficient land, airspace and sea space for ground-training activities to operate in conjunction with aircraft maneuvering in overlying airspace (e.g., Close Air Support Range training, Offensive Air Support Range training).

An alternative must include suitable locations for aircraft Drop Zones (e.g., personnel and cargo delivery via parachute) and Landing Zones (i.e., locations for aircraft takeoffs and landings), and airfields and open space where Unmanned Aircraft Systems can operate in Special Use Airspace. An alternative must have enough sea space to safely separate military operations from non-participating marine vessels.

The next step of alternative development identified how Tinian could accommodate the various training components and included the steps identified below.

Step 1: Apply Criteria for Large-Scale Unit Level Training Components. Initial planning involved siting the largest ranges (i.e., Tank/Fighting Vehicle Multi-Purpose Range Complex, and Battle Area Complex), High Hazard Impact Area and their associated surface/weapons danger zones. Siting of the largest ranges took into account alternatives that allowed for (1) the continued operation of the International Broadcasting Bureau in its present location within the Military Lease Area; and (2) eventual discontinuation of the operation of the International Broadcasting Bureau within the Military Lease Area.

Step 2: Apply Screening Criteria for Additional Unit Level Training Components. Following placement of the larger training components, the smaller ranges/training areas (e.g., Combat Pistol Range) and supporting infrastructure were sited.

Step 3: Evaluate and Select Alternatives for Analysis. The above process identified three reasonable alternatives to be carried forward for analysis (see [Section 2.4](#), *Tinian Alternatives*). These alternatives on Tinian were identified and presented during the scoping period.

2.3.2.2 Refinement of Tinian Unit Level Range and Training Area Alternatives

After evaluating the continuous input obtained through ongoing dialogue with the CNMI government and other stakeholders (see Section 1.5.3.3, *Collaborative Stakeholder Coordination*) and the results of intensive field surveys, the three alternatives were further refined. Notable changes that have occurred since scoping include:

Tank/Fighting Vehicle Multi-Purpose Range Complex. The Tank/Fighting Vehicle Multi-Purpose Range Complex was shifted west due to airspace conflicts, avoidance of National Historic Landmark and terrain obstacles. Firing locations were moved to avoid terrain obstacles and provide longer engagement zones for Light Armor Vehicle weapon training.

High Hazard Impact Area. The High Hazard Impact Area was reduced in size by eliminating explosive aviation ordnance and restricting use to inert aviation ordnance. This facilitated improved mortar firing positions and accommodated fire and maneuver activities on the Battle Area Complex. This reduction enabled the layout of the fire break/road to shift away from cliff line/limestone forests and off the National Historic Landmark. These changes minimized environmental impacts.

Convoy Course. The Convoy Course was moved to reduce the size of the course and number of engagement areas. These changes were made to keep training activities away from Lake Hagoi, provide the ability on a portion of the course to fire into the High Hazard Impact Area, maximize the use of existing paved areas to the greatest extent possible, distance the engagement areas from surface water

bodies to minimize potential negative socioeconomic and environmental effects, and to reduce the overlap of surface danger zones with commercial airspace.

Field Artillery Indirect Fire Range. One Field Artillery Indirect Fire Range firing position was shifted away from Ushi Point and onto flat terrain.

Special Use Airspace. Special Use Airspace was modified to avoid conflict with Saipan International Airport's Class D airspace and to encompass the surface danger zones associated with the Convoy Course and other ranges. Additional modifications to Special Use Airspace overlying Tinian were made to minimize impacts to aircraft transiting between Saipan and Tinian. Previously planned Special Use Airspace was partitioned both vertically and horizontally to allow a greater degree of scheduling precision to match specific airspace with specific ground range use, and commercial on-land operations.

Amphibious Training. All beaches within the Military Lease Area were considered for amphibious training operations; however, a careful selection process was employed based on engineering analysis and environmental factors. Beaches on the windward side of the Military Lease Area, including Unai Chiget, Unai Dankulo and Unai Masalok, were not considered for use of Amphibious Assault Vehicle landings due to wind and wave action. The reef configuration at Unai Dankulo would not support training for Landing Craft Air Cushion vessel landings. Unai Masalok was the only windward beach identified as a feasible location for amphibious training with Landing Craft Air Cushion vessels, small boats and swimmers. On the leeward side Unai Lam Lam, Unai Babui and Unai Chulu were considered for amphibious training. Unai Lam Lam was considered too small for Amphibious Assault Vehicle and Landing Craft Air Cushion vessel training, but suitable for small boats and swimmers. Based on environmental criteria including analysis of bathymetry and coral cover, Unai Babui and Unai Chulu were both considered for Amphibious Assault Vehicle and Landing Craft Air Cushion vessel training. A detailed engineering analysis of construction alternatives was conducted for these two locations (see Appendix J, *Amphibious Beach Landing Site Engineering and Coastal Processes Analyses*). Three different methods for constructing amphibious landing ramps were considered, including a dredge only option, a pile-armored ramp, and a tribar-armored ramp. The dredge only option was dismissed, as the longevity of the exposed reef surface with no armoring was uncertain. The tribar alternative was also dismissed, due to uncertainty of the tribar surface compatibility with Amphibious Assault Vehicle operations. The pile-armored ramp alternative was chosen for its stable design and long-term durable surface.

After careful consideration of data and input from resource agencies, it was determined that the minimum tactical amphibious training requirements could be met at one beach. Unai Chulu was chosen as the single beach for Amphibious Assault Vehicle landings due to wider configuration which better fits the training requirement. Ultimately, Unai Babui was dismissed from consideration for Amphibious Assault Vehicle training to lessen environmental impacts, but it would still support training for Landing Craft Air Cushion vessels, small boat, and swimmer training.

Areas outside of Military Lease Area were discounted for tactical amphibious training because they do not provide immediate access (i.e., contiguous) to live-fire training, which is a training criterion.

Compatibility with Existing Land Uses Outside of the Military Lease Area. Potential conflicts with existing land uses were accounted for, such as location of populated areas (i.e., noise receptors), recognized historic properties, sensitive natural resources, existing infrastructure (e.g., runways, roads, power supply), recreation sites, and economic activities.

2.3.3 Development of Combined Level Range and Training Area Alternatives on Pagan

2.3.3.1 Initial Development of Pagan Combined Level Range and Training Area Alternatives

Combined level training is different from unit level in that it allows various units or unit types to train simultaneously towards a single training objective within the RTA whereas in unit level training, generally only one unit type trains together towards an objective. As in combat, each unit works in coordination with one another during combined level training. The land area for combined level training must be capable of supporting multiple unit level tasks simultaneously, combined into a broader task. The combined level training RTA is designed to replicate, to the extent possible, the fluid nature of a battlefield with multiple land, sea, or air-based units engaging in a series of activities at the same time (DoN 2014a).

The primary criterion for combined level RTA alternative development was to maximize land use on northern Pagan. This portion of the island is sparsely vegetated due to volcanic activity, has several accessible beaches, and contains an inactive World War II-era airfield. The relative lack of vegetation provides the visibility required for Field Artillery Indirect Fire Range, Mortar Range, Field Artillery Direct Fire Range, Combined Arms Training Range to support Close Air Support and Naval Gunfire Support Training, and space for maneuvering (i.e., heavy forces, light forces, and amphibious forces). Accessible beaches allow for amphibious training (i.e., Combined Arms Live-Fire Amphibious Beaches with Maneuver Area, Tactical Amphibious Landing Beaches, and Maneuver Area [Amphibious Forces]) and logistical support for delivering cargo and personnel. The presence of an airfield supports aviation activities.

Development of combined level RTA alternatives on Pagan involved identifying where training facilities could potentially be accommodated on the island (DoN 2014a). To be a viable and reasonable alternative, any RTA on Pagan must at a minimum satisfy the conditions for unit level training as well as the following additional criteria:

- **Land Use Compatibility:** An alternative must have land areas with a suitable location for a High Hazard Impact Area (or areas) that will accommodate the spectrum of weapons and munitions proposed, allow for ground-based, aviation, and naval munitions; and provide a buffer to ensure public safety. This impact area (or areas) must be situated in such a manner that when it is active, maneuver training could still be conducted in its vicinity.
- **Topographic Compatibility:** An alternative must have land areas with adequate space and suitable topography (slope) for maneuvering (e.g., heavy forces, amphibious forces). Land areas were identified for use as “military training trails;” these would serve as unimproved pathways to move and maneuver personnel, vehicles, and equipment across the island to an objective. The maneuver area should be at least 1,640-feet (500-meters) wide with a slope of less than 30% to support a mechanized/motorized infantry company in a tactical formation.
- **Beachfront and Transition to Land:** An alternative must have beaches suitable to conduct ship-to-objective maneuvering or amphibious training (e.g., Combined Arms Live-Fire Amphibious

Beaches with Maneuver Area, Tactical Amphibious Landing Beaches, and Maneuver Area [Amphibious Forces]).

- **Airspace and Sea Space:** An alternative must have a suitable location for aircraft operations at Landing Zones (i.e., areas where aircraft land and take off) and Drop Zones (i.e., areas where aircraft drop personnel and cargo delivery via parachute), and airfields and overlying airspace to support Unmanned Aircraft Systems and other aircraft operations. Sufficient water surfaces to accommodate danger zones that separate military operations from non-participating marine vessels.
- **Full Spectrum Weapons Employment:** An alternative must include a suitable location(s) for the High Hazard Impact Area(s) that would accommodate the full spectrum of weapons required for combined level training while providing a safe distance from the proposed expeditionary base camp/bivouac area and airfield. The targets for the Field Artillery Indirect Fire Range, Mortar Range, Field Artillery Direct Fire Range, Combined Arms Training Range to Support Close Air Support and Naval Gunfire Support Training, Offensive Air Support Range, and Close Air Support Range need to be co-located as these types of training utilize high explosive munitions which require a High Hazard Impact Area to provide a larger variety of target placement and engagement scenarios. The High Hazard Impact Area needs to be in a central area for Field Artillery Indirect Fire Range points to fire overhead into the impact area.
- **Mobility Corridor(s):** An alternative must allow for mobility corridors with sufficient space and flexibility for integrated ground, air, and sea training by including sufficient land, airspace, and sea space to conduct simultaneous training of combined arms, live-fire, amphibious maneuvering, naval surface fire support (i.e., ship-to-shore bombardment), air-delivered munitions, and indirect (i.e., artillery and mortars) and direct munitions firing training. The area must be large enough to provide separate impact areas and maneuver areas, such that live-fire and maneuver training can be safely conducted simultaneously.

The next step of alternative development identified how Pagan could accommodate the various training components as discussed in the steps below:

Step 1: Apply Criteria for Large-Scale Combined Level Training Components. The initial planning effort was to site the largest ranges and High Hazard Impact Area(s) and their associated surface/weapons danger zones.

Step 2: Apply Screening Criteria for Additional Combined Level Training Components. Following placement of various configurations of the larger training components, the bivouac area and airfield extension were sited.

Step 3: Evaluate and Select Alternatives for Analysis. The above process identified two reasonable alternatives to be carried forward for analysis.

2.3.3.2 Refinement of Pagan Combined Level Range and Training Area Alternatives

After consideration of input received at the public scoping meetings, intensive field surveys and ongoing dialogue with the CNMI government, the alternatives were further refined. Notable changes since presentation of the preliminary alternatives at the public scoping meetings include:

High Hazard Impact Area. Changes were made to the configuration of the northern High Hazard Impact Area to provide separation from Lake Sanhalom and to provide space for safe maneuverability on the ground and account for danger zones associated with weapons systems and munitions employment. Under one of the alternatives, one High Hazard Impact Area was removed from the Pagan isthmus to reduce environmental impact and allow for greater room for ground maneuvers.

Special Use Airspace. Airspace was modified to better facilitate civil aviation activity during periods of military training. Previously planned Special Use Airspace (Pagan R-7204) was partitioned to allow a greater degree of scheduling precision to match specific airspace with specific ground range use. Airspace was partitioned both vertically and horizontally to enable use by certain aviation and maritime activities during training and to facilitate access into and around the island.

Amphibious Training. All beaches on Pagan were considered for amphibious training. A careful identification process was employed based on training operations and environmental factors. Beaches on the windward side were not considered for Amphibious Assault Vehicle landings due to wind and wave action. Based on environmental criteria including analysis of bathymetry, bottom type and coral cover, Blue, Green and Red Beach were considered for Amphibious Assault Vehicle landings. Adjustments were made in the approach zone to lessen potential effects to coral. Blue, Green, Red, and South were also considered for Landing Craft Air Cushion vessel training. North Beach and Gold Beach were identified for small boat and swimmer insertions.

Environmental and Operational Considerations. Environmental (e.g., lakes, coral reef habitat, Endangered Species Act species presence, cultural resources) and operational (e.g., lack of beach access or foot trails to southern Pagan) considerations were evaluated and resulted in readjustment of the locations or configurations of ranges, maneuver areas, or supporting infrastructure.

2.3.4 Action Alternatives Carried Forward for Analysis

Action alternatives carried forward for analysis in this EIS/OEIS, which meet the purpose and need for the proposed action, include three unit level RTA alternatives on Tinian and two combined level RTA alternatives on Pagan and their associated usage. These are discussed in Sections [2.4, Tinian Alternatives](#), and [2.5, Pagan Alternatives](#), respectively. Implementation of one Tinian unit level alternative and one Pagan combined level alternative is required to satisfy the purpose and need for the proposed action.

To Meet the Purpose and Need, An Alternative Must Include:

1. One Tinian unit level alternative.
2. One Pagan combined level alternative.

2.4 TINIAN ALTERNATIVES

Three Tinian unit level RTA alternatives (herein referred to as the “Tinian action alternatives”) that, when combined with a Pagan action alternative, meet the purpose and need described in Chapter 1, Section 1.3, *Purpose of and Need for the Proposed Action*, were identified for unit level training on Tinian. An overview map of the island of Tinian is provided in [Figure 2.4-1](#). The following describes the Tinian action alternatives including the elements common to all action alternatives and details relating to each of them and a single Tinian no-action alternative.

2.4.1 Elements Common to All Action Alternatives

Each of the three Tinian action alternatives has common elements. These include: (1) Land Use Agreements; (2) Construction and Improvements, (3) Training Operations, (4) Operations and Management; (5) Transportation; (6) Munitions; (7) Danger Zones; (8) Amphibious Operations; (9) Airspace Requirements; and (10) Sea Space Requirements.

Best management practices and standard operating procedures would be incorporated into the proposed action and are common to all Tinian action alternatives. Best management practices are existing policies, practices, and measures required by law, regulation, or Department of Defense policy that reduce the environmental impacts of a proposed action and are common practices in the industry. Best management practices include standard military design, construction, or operations practices or procedures, compliance with laws and typical regulatory permit requirements that the Department of Defense is committed to implementing. The best management practices relevant to this proposed action are discussed in Appendix D, *Best Management Practices*, and listed in Table D-1, *Best Management Practices*. Best management practices are inherent in the construction and operation of the proposed project and are not considered separately as mitigation.

For the purpose of this EIS/OEIS, mitigation, avoidance and minimization measures are modifications to the proposed action that are implemented for the sole purpose of reducing a specific potential environmental impact on a particular resource or implemented to actively benefit a resource. Mitigation, avoidance and minimization measures are considered additional, project-specific measures proposed during the environmental review process and regulatory agency consultation. Unlike best management practices, there is no commitment to the mitigation measure until it is documented through the Record of Decision, a permit/approval, programmatic agreement or other formal agreement. Mitigation measures are not discussed in Chapter 2 as part of the proposed action but are detailed by each resource area in Chapter 4 and summarized in Section 4.20, *Summary of Impacts and Mitigation Measures*.

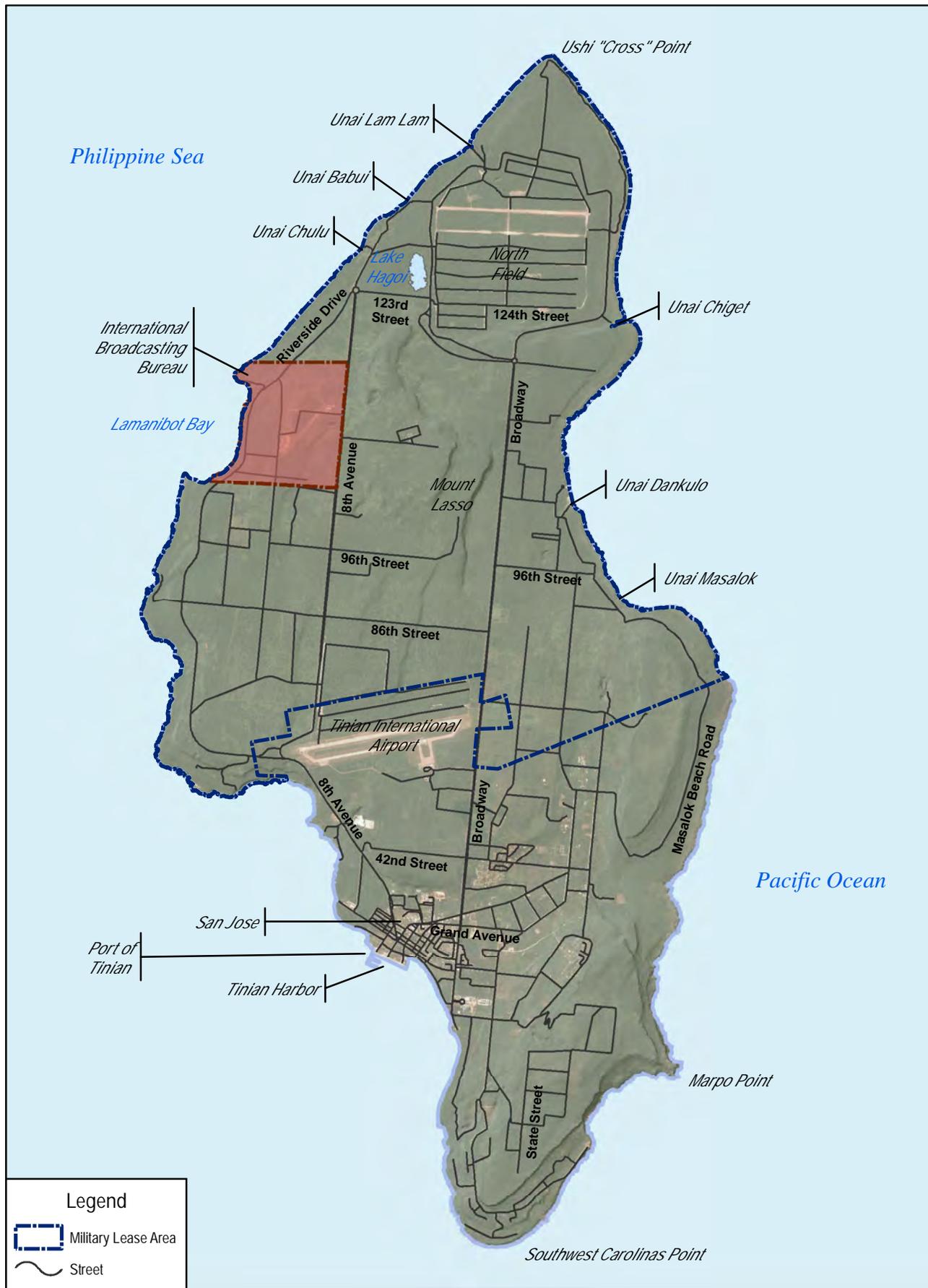


Figure 2.4-1
Tinian Location Map

2.4.1.1 Land Use Agreements

Various land use agreements would be required to implement the proposed action on Tinian. The U.S. currently has a real estate agreement for nearly two-thirds of Tinian, (i.e., the Military Lease Area). The Department of Defense would acquire jurisdictional control of additional lands outside of the Military Lease Area through long-term real estate agreements. Since the 1975 Covenant and Technical Agreement (see Appendix K, *Summary of Historical Land Use Agreements between the U.S. and the CNMI*), some areas covered under the original lease have been returned to the CNMI government through lease amendments. Long-term real estate agreements with the CNMI for roadway and utility easements would be required. The additional areas would include the north portion of Tinian International Airport and parcels near the Port of Tinian.

The International Broadcasting Bureau site is located within the Military Lease Area. Under Tinian Alternative 1, the International Broadcasting Bureau facility would continue to operate. Under Tinian Alternatives 2 and 3, the International Broadcasting Bureau facility would no longer exist in its current location. The International Broadcasting Bureau is a Cooperating Agency for this EIS/OEIS and has been involved in this NEPA process. A full discussion of land acquisition and land uses on Tinian is provided in Chapters 3.7 and 4.7, *Land Use*.

2.4.1.2 Construction and Improvements

Construction of the training facilities, (e.g., ranges, training courses, High Hazard Impact Area, Landing Zones, Drop Zones, Observation Posts, Surface Radar sites) would start after the Record of Decision (anticipated in Summer 2016). Construction is expected to span 8 to 10 years depending on funding and operational commitments of the U.S. military.

Construction and Improvements

1. Support Facilities and Infrastructure Construction.
2. Training Facilities Construction.

Construction activities would involve ground disturbance and disturbance of nearshore reef areas (e.g., grading, excavating, digging, clearing, leveling, trenching, drilling, dredging) during construction of proposed support facilities, roads, utilities, and training facilities.

Anticipated ground disturbance resulting in impervious surfaces include roads, airport improvements, base camp facilities, port improvements, and minor structures associated with training facilities. Not all ground disturbances would create impervious surfaces. Anticipated ground disturbance activities that would allow for the continuation of pervious surfaces include landscape vegetation clearance, grading, leveling, and vegetation maintenance. Vegetation maintenance on Tinian and Pagan is discussed in Sections [2.4.1.4](#), *Operation and Management of Tinian Range and Training Area*, and [2.5.1.4](#), *Operation and Management of Pagan Range and Training Area*, respectively. Appendix F, *Geology and Soils Technical Memo*, provides a summary of ground disturbance and impervious surfaces associated with the construction of the RTA facilities and infrastructure.

Construction and improvements for this alternative include two broad categories: (1) support facilities and infrastructure, and (2) training facilities.

Support Facilities and Infrastructure Construction. Support facilities include the base camp, Munitions Storage Area, airport and port improvements, access roads, gates, fences, fuel pipeline, and utilities (including water, wastewater, electrical, information technology, communications, and solid waste).

Construction and improvement of support facilities common to all of the action alternatives are described in subsections [2.4.1.2.1](#), *Base Camp Construction*, to [2.4.1.2.7](#), *Utility Improvements*.

Training Facilities Construction. Numerous training facilities (e.g. ranges, training courses, maneuver areas, High Hazard Impact Area, Landing Zones, Drop Zones, range Observation Posts, Surface Radar sites) would be constructed within the Tinian RTA for all action alternatives. To provide the reader with an easier way to identify the various RTA training facilities, they were grouped into four range complexes based on geographic proximity. The complexes are identified as Range Complex A, B, C, and D. Construction and improvement of training facilities common to all of the action alternatives are described in subsections [2.4.1.2.8](#), *Range Complex A Construction*, to [2.4.1.2.12](#), *Military Lease Area-wide Training Assets Construction*.

2.4.1.2.1 Base Camp Construction

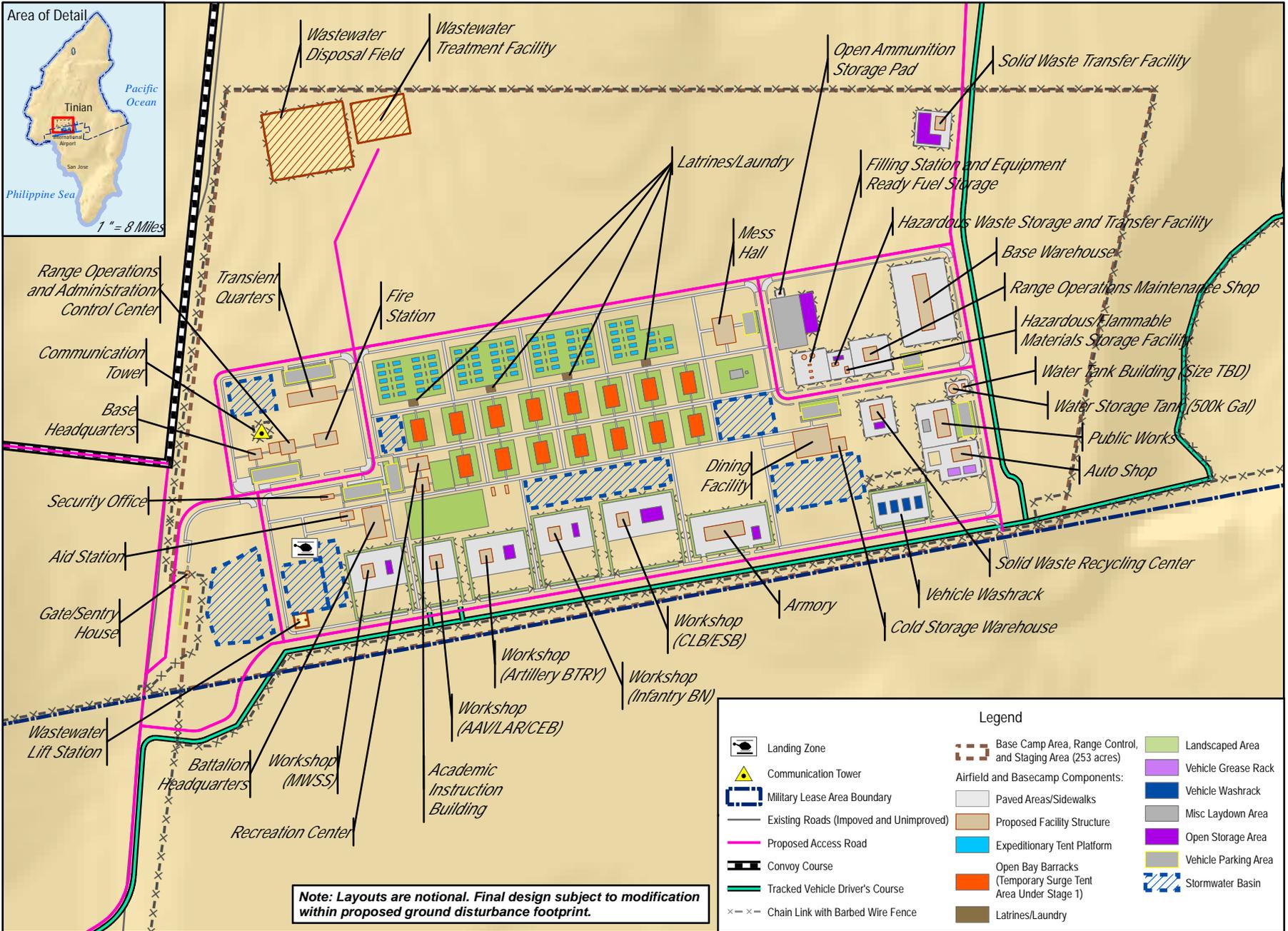
As depicted on [Figure 2.4-2](#), the proposed base camp would be established to support multiple units at a given time. The base camp is designed to support up to 1,500 trainees in 15 permanent, open-bay barracks. Tent pads and a temporary mess hall would also be constructed to support an additional 1,500 surge trainees which allow for the overlap of more than one training group with either a pre- or post-training party.

Facilities would also be built for headquarter functions, dining, medical aid, security and fire protection, utilities (electrical power, potable water, wastewater, solid waste handling and recycling, information technology/communication), fuel storage, equipment warehouse, weapons armory, a Landing Zone, range management, communications tower, and vehicle/equipment maintenance. Visiting training units would also be provided with work space, staging areas for laydown/motor pool/storage for their equipment, as well as drill and physical training fields. Ground disturbance associated with construction of the base camp would be approximately 257 acres (104 hectares) with approximately 30 acres (12 hectares) of that being newly created impervious surface.

2.4.1.2.2 Munitions Storage Area Construction

A permanent Munitions Storage Area would be established, surrounded by a fence for security and safety. As depicted on [Figure 2.4-3](#), the permanent Munitions Storage Area would include the following: (1) eight munitions storage magazines (2) an entry control point (guard shack); (3) a biosecurity area; (4) ordnance operations area; (5) electrical charging station; (6) munitions handling equipment fuel point; (7) a receipt, stowage, segregation, and issue facility; (8) two auxiliary storage facilities; (9) custodial storage facility; (10) a loading dock; (11) a munitions holding pad; (12) a maintenance facility; (13) a munitions assembly pad; (14) an inert storage facility; (15) fencing; and (16) access roads and parking.

Communications support to the storage area includes video, electronic security and monitoring systems, and telephone. Munitions would be transported to Tinian using either sea (primarily) or air transport, and the necessary biosecurity inspections would be conducted at the point of departure (e.g., on Guam) and/or upon arrival at Tinian for incoming munitions cargo. Ground disturbance associated with construction of the Munitions Storage Area would be approximately 38 acres (15 hectares) with approximately 8 acres (3 hectares) of that being newly created impervious surface.



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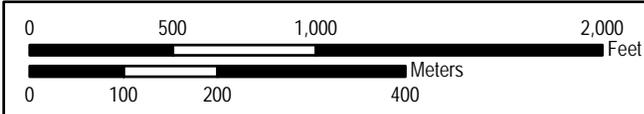


Figure 2.4-2
Tinian All Action Alternatives
Base Camp

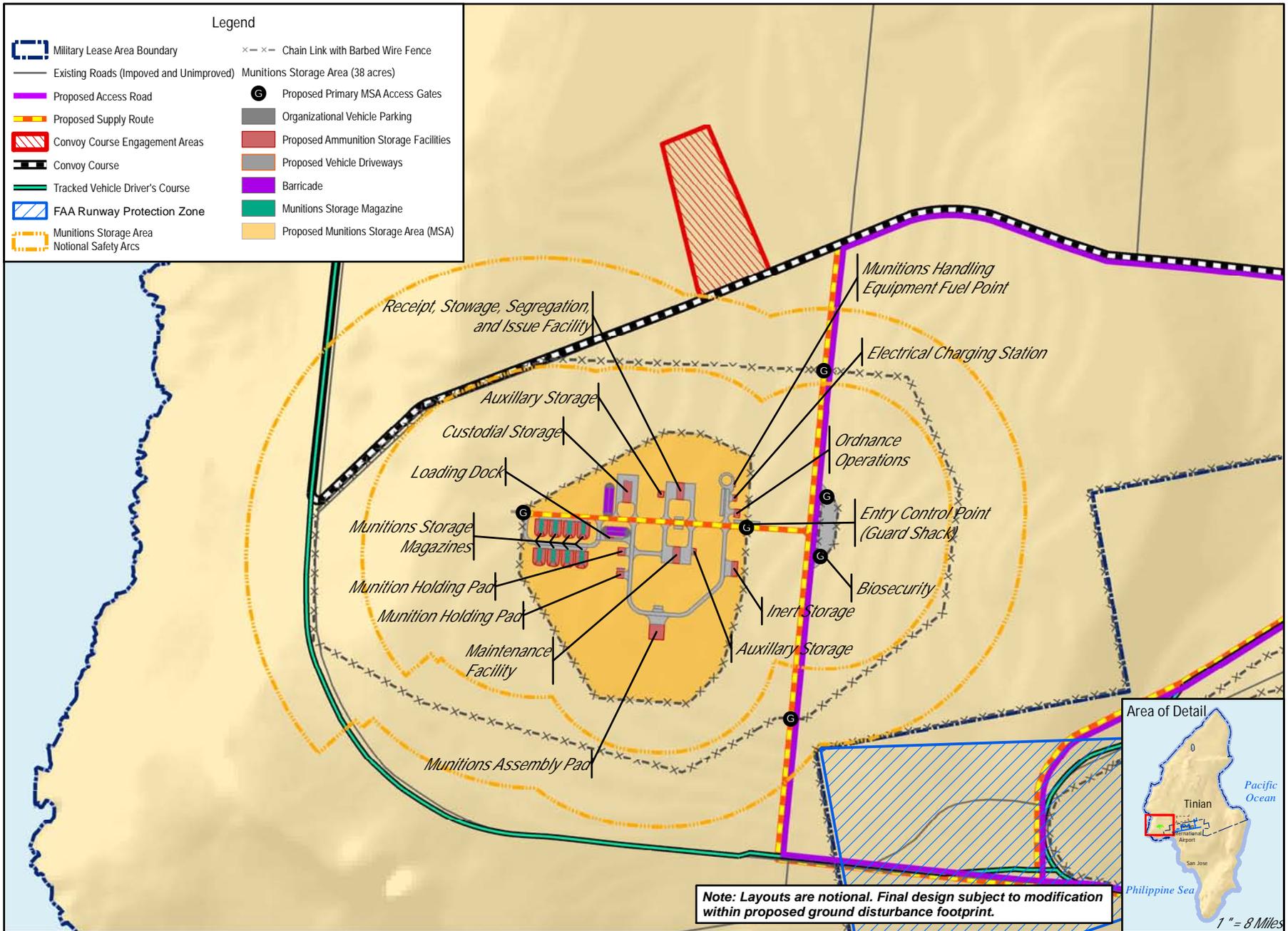


Figure 2.4-3
Tinian All Action Alternatives
Munitions Storage Area

To support live-fire training during construction of the permanent Munitions Storage Area, a temporary Munitions Storage Area would be established. Transportation and inspection procedures would be conducted as noted for the permanent Munitions Storage Area. Ground disturbance associated with the construction of the temporary Munitions Storage Area would be approximately 19 acres (8 hectares) and located within the same area for the permanent Munitions Storage Area.

2.4.1.2.3 Airport Improvements Construction

To accommodate the anticipated aircraft training tempo and equipment/cargo needs, taxiways, directly north and adjacent to the runway of Tinian International Airport, would be constructed. Airport improvements are depicted on [Figure 2.4-4](#) and would include: (1) tactical aircraft parking ramp; (2) cargo aircraft parking ramp; (3) connecting taxiways; (4) ordnance arming and de-arming pads; (5) hot cargo (i.e., munitions) pad/combat aircraft loading area; (6) fuel tanks and expeditionary/temporary refueling area; (7) arresting gear pads; (8) munitions holding pads; (9) taxiway crossings; and (10) access roads connecting to the airfield.

The existing runway would not be extended or reconfigured. However, it would be improved (i.e., the runway painted to replicate conditions found on an aircraft carrier at sea) for a Field Carrier Landing Practice Pad and Landing Helicopter Dock Pad to practice takeoff and landings adjacent to the proposed improvement area ([Figure 2.4-4](#)). Ground disturbance associated with construction of the airfield improvements would be approximately 41 acres (17 hectares) with approximately all 41 acres (17 hectares) of that being newly created impervious surface.

The Commonwealth Ports Authority manages and operates the airports and seaports throughout the CNMI. The U.S. military has been working with the Commonwealth Ports Authority to develop an Airport Layout Plan for the proposed improvements at Tinian International Airport. The Airport Layout Plan shows the existing airport layout and planned future development. The Commonwealth Ports Authority as the airport sponsor maintains the Airport Layout Plan and is required to submit any proposed changes on the Airport Layout Plan to the Federal Aviation Administration for review and approval to confirm that the proposed changes meet Federal Aviation Administration airport standards and requirements. The proposed new military development at Tinian International Airport, which is the subject of this EIS/OEIS is shown on the *Draft Engineering Drawing of Airport Layout Plan* included as Appendix S.

2.4.1.2.4 Port of Tinian Improvements and Supply Route

[Figure 2.4-5](#) shows the locations of the proposed shoreside Port of Tinian improvements and supply route. Proposed port improvements include the construction of the following new facilities: (1) a biosecurity building; (2) a vehicle and equipment wash down area; (3) vehicle inspection area; (4) a bulk fuel storage facility; (5) parking; (6) a stormwater retention pond; and (7) cargo inspection and holding area. Improvements would be made on Commonwealth Ports Authority land in the vicinity of the existing old public boat ramp at the Port of Tinian in order to facilitate egress from the ramp to the roadway. No in-water construction is proposed.

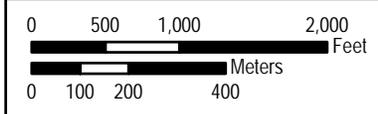
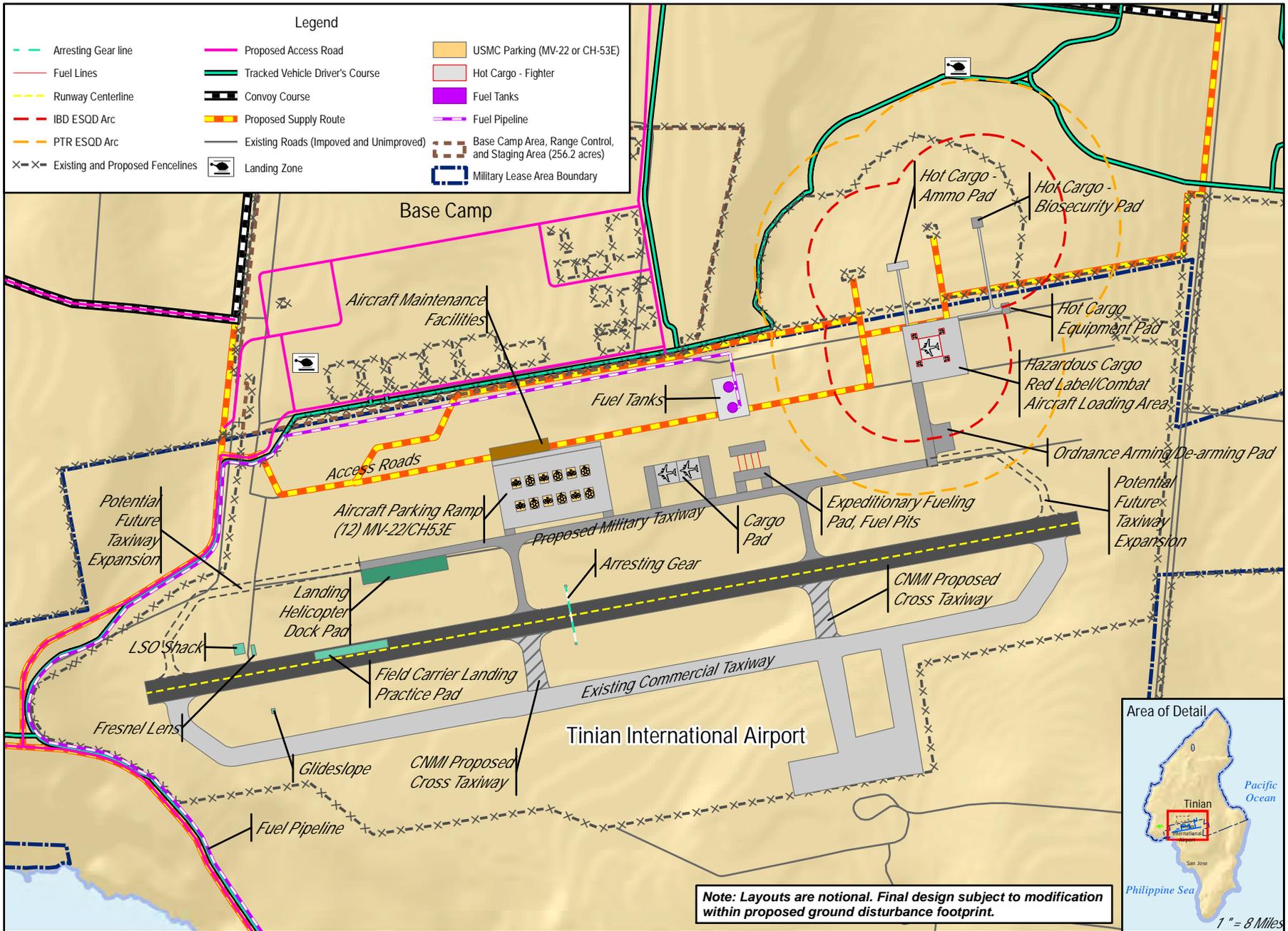


Figure 2.4-4
Tinian All Action Alternatives
Airport Improvements



Figure 2.4-5
Tinian All Action Alternatives
Port Improvements and Supply Route

Ground disturbance associated with construction of the port improvements would be approximately 5 acres (2 hectares) with approximately all 5 acres (2 hectares) of that being newly created impervious surface. The design and sizing of the port and biosecurity facilities is notional and subject to further consultation and needs assessment.

As depicted in [Figure 2.4-5](#), a primary cargo transport route with road upgrades would be constructed from the port to the Military Lease Area to support the movement of heavy equipment, vehicles, personnel, and munitions associated with the training units and for the anticipated increase of traffic numbers. A secondary supply transportation route would be provided for an alternate route between the airport and the Munitions Storage Area. These road improvements are discussed in [Section 2.4.1.2.5.1, Road Improvements](#).

Ground disturbance associated with approximately 6-mile supply road from the port to the Military Lease Area is included in the overall ground disturbance for all of the roadways (see [Section 2.4.1.2.6, Fence Lines and Gates](#)).

2.4.1.2.5 Access Road Improvements

2.4.1.2.5.1 Road Improvements

Improvements to existing roadways and construction of new roadways would be required to provide and/or improve access to training facilities to support training activities and to improve public access on Tinian (within and outside the Military Lease Area) ([Figure 2.4-6](#)). Ground disturbance for roadway improvements would total approximately 133 acres (53 hectares), with approximately 83 acres (34 hectares) of newly created impervious surface. Best management practices associated with design, construction and stormwater management are included in Appendix D, *Best Management Practices*. Fences and gates would be installed that would restrict access to the Military Lease Area and select training areas when live-fire training is occurring. Roadway improvements considered for implementation as part of the proposed action are described below:

Improve Road Right-of-Way for Utilities. Utility connections and a fuel pipeline would be provided in a 6.0-foot (1.8-meter) wide utility corridor adjacent to existing roadways. Utility connections are proposed along the west side of Broadway, from IT&E (cable landing facility) to 42nd Street, and along the north side of 42nd Street, from Broadway to 6th Avenue/8th Avenue. Utility improvements would occur within the road right-of-way, but would not require improvements to the roadway. Total ground disturbance would be approximately 2 acres (1 hectares); it is assumed that all of this would be newly created impervious surface.

Repair Existing Road for Public Use. The public access roadway is a paved asphalt concrete roadway that contains two 10.0-foot (3.0-meter) wide travel lanes (one lane in each direction) with 4.0-foot (1.2-meter) wide graded gravel shoulders on both sides. The typical cross section width would be 28.0 feet (8.5 meters). Public access roadways provide circulation for both military and public use and include portions of 8th Avenue, Riverside Drive, Chulu Beach Road, and Lennox Avenue. Improvement actions include clearing overgrown vegetation and resurfacing existing roads to safely accommodate two-way traffic. Total ground disturbance would be approximately 38 acres (15 hectares); it is assumed that no newly created impervious surface would be associated with this.



Figure 2.4-6
Tinian All Action Alternatives
Range Access Improvements, Fence Lines, and Gates

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Repair Existing Road for Public Use - Boulevard. The public access boulevard is a variant of the public access roadway. Its key distinction is the division of the roadway by a center landscape (dirt/grass) median that varies in width along the roadway. It contains two 10.0-foot (3.0-meter) wide travel lanes (one lane in each direction) with 4.0-foot (1.2-meter) wide graded gravel shoulders on both sides. The segment of 8th Avenue from 71st Street to 123rd Street would be repaired to a public access boulevard. Improvement actions include clearing overgrown vegetation and resurfacing the existing road (specifically the entire length of the west [southbound] travel lane, and segments of the east [northbound] lane as needed) to safely accommodate two-way traffic. The existing dirt/grass median would not be improved, with the exception of vegetation clearance where required for sight distance and visibility. Total ground disturbance is included in the repairs to existing roads for public use (above).

Construct New Paved Road. Paved roads are asphalt concrete roadways used for on-site circulation and access to the Munitions Storage Area at the base camp, as well as inside and outside the Military Lease Area. These roadways contain two 10.0-foot (3.0-meter) wide paved travel lanes (one lane in each direction) with 4.0-foot (1.2-meter) wide graded gravel shoulders on both sides. Some roadways in this classification may accommodate curbs and sidewalks. The typical cross section width would be 28.0 feet (8.5 meters). The cross section for this type of roadway is identical to that of the public access roadway, but this roadway type has a different pavement loading requirement and is not intended for public use. Improvement actions include clearing overgrown vegetation, resurfacing existing paved roads, and reconstructing/upgrading existing dirt/gravel roads to paved roads. Total ground disturbance would be approximately 29 acres (12 hectares); it is assumed that all of this would be newly created impervious surface.

Repair Existing Road for General Use. General use roadways are graded gravel base roads with sand bind and/or seal on the surface and top layers. This roadway type provides general access and circulation and consists of two 10.0-foot (3.0-meter) wide travel lanes (one lane in each direction) with 4.0-foot (1.2-meter) wide shoulders on both sides. The typical cross section width would be 28.0 feet (8.5 meters). The segment of 86th Street from 8th Avenue to Broadway would be repaired to serve as a general use roadway. Improvement actions include vegetation clearance and reconstruction to sealed dirt/graded gravel road. Total ground disturbance would be approximately 12 acres (5 hectares); it is assumed that no newly created impervious surface would be associated with this.

Construct New Gravel Road. Gravel roads are graded gravel base roads with sand bind and/or seal on the surface and top layers, and are generally intended for relatively flat terrain. This roadway is most suited for handling unidirectional traffic patterns; as such, they are most suitable for points with directional split travel characteristics. Gravel roads provide one travel lane measuring 14.0-feet (4.3-meters) wide, and are used for military access to Observation Posts and circulation around the High Hazard Impact Area perimeter. Convoy Course engagement areas (492 feet [150 meters] in length) may be used as pull-outs where possible (e.g., along the High Hazard Impact Area perimeter) to allow for vehicle passing or emergency parking. No additional pullouts would be constructed. This type of roadway is not intended for use by the public. Total ground disturbance would be approximately 8 acres (3 hectares). Although gravel roads are not typically considered impervious surfaces, however, with frequent use and because these roads would be constructed over limestone-derived soils and rock, they will take on an impervious quality. Therefore, it is assumed that all 8 acres (3 hectares) would be newly created impervious surface.

Establish Military Training Road. Military training roads are unpaved (dirt/gravel) roadways and are for military use within the Military Lease Area. These roads would be designed with one travel lane measuring 14.0-foot (4.3-meters) wide. Convoy Course engagement areas (492 feet [150 meters] in length) may be used as pull-outs where possible (i.e., along Riverside Drive) to allow for vehicle passing or emergency parking. No additional pullouts would be constructed. This type of roadway is not intended for use by the public. Total ground disturbance would be approximately 18 acres (7 hectares). Although unpaved military training trails are not typically considered impervious surfaces, with frequent use and because these trails would be constructed over limestone-derived soils and rock, they will take on an impervious quality. Therefore, it is assumed that all 18 acres (7 hectares) would be newly created impervious surface.

Perimeter Patrol Road. The perimeter patrol road is an unpaved (sand sealed/dirt surface layers and graded gravel base) road that is designed to run along the southern perimeter of the Military Lease Area and the northern, eastern perimeters of the base camp, and the western perimeter of the High Hazard Impact Area. It provides one travel lane measuring 10.0-foot (3.0-meters) wide with a 3.0-foot (0.9-meter) wide shoulder on one side and 3.0 feet (0.9 meters) of vegetation clearance between the road and the perimeter fence on the other side. An additional 10.0 feet (3.0 meters) of vegetation clearance would be provided outside the Military Lease Area adjacent to the perimeter fence. Perimeter patrol roads would be constructed as new roadways in locations where there is no existing road. This type of roadway is not intended for use by the public. Total ground disturbance would be approximately 26 acres (10 hectares). Although unpaved roads are not typically considered impervious surfaces, with frequent use and because these roads would be constructed over limestone-derived soils and rock, they will take on an impervious quality. Therefore, it is assumed that all 26 acres (10 hectares) would be newly created impervious surface.

Road Closures – No Improvements. Closures are proposed for those roadways (i.e., roads within the High Hazard Impact Area) that would be closed to unauthorized personnel. The roads would remain in place but would be used only as range clearance service roads. This type of roadway is not intended for use by the public.

The following cargo transit and tracked-vehicle transit routes would be established on Tinian:

Port to the Base Camp and Munitions Storage Area. Tracked and wheeled vehicles would transit between the boat ramp and 8th Avenue along a new cargo transit route/tracked vehicle transit lane. The cargo transit route/tracked vehicle transit lane would be located south of and run parallel to West Avenue to the Tinian Power Plant and continue north to its intersection with 8th Avenue. The cargo transit route/tracked vehicle transit lane would provide two 10.0-foot (3.0-meter) wide paved travel lanes (one lane in each direction) with one 4.0-foot (1.2-meter) wide gravel shoulder and one 14.0-foot (4.3-meter) wide gravel road to support tracked vehicles within a minimal footprint. The typical cross section width would be 44.0 feet (13.4 meters). Total ground disturbance and impervious surface associated with these roadways are included in [Section 2.4.1.2.5.1, Road Improvements](#).

Tracked-Vehicle Training Trail (Driver's Course). The tracked-vehicle training trail ([Figure 2.4-13](#)) is an unpaved trail composed of sealed dirt/graded surface layers and gravel base. It provides one travel lane measuring 14.0-foot (4.3-meters) wide and is best suited for handling unidirectional traffic patterns. Convoy Course engagement areas (492 feet [150 meters] in length) may be used as pull-outs where

possible to allow for vehicle passing or emergency parking. No additional pull-outs would be constructed. Roadway surfaces would be reinforced (e.g., with a concrete pad) at locations where cross-over travel for tracked vehicles must be accommodated. The tracked-vehicle training trail would also be used by other military vehicles within the Military Lease Area and would merge with the perimeter patrol road near the base camp. This type of roadway is not intended for use by the public. Total ground disturbance and impervious surface associated with Driver’s Course is included in [Section 2.4.1.2.5.1, Road Improvements](#).

Road improvements are summarized in [Table 2.4-1](#) and [Figure 2.4-6](#) shows the locations of the proposed access improvements, fence lines, and gates.

Table 2.4-1. Proposed Tinian Unit Level RTA Road Improvements

<i>ID</i>	<i>Road</i>	<i>Segment</i>	<i>Current Type and Condition</i>	<i>Operational Requirement</i>	<i>Proposed New Construction or Improvement to Existing</i>
A	Broadway	South of 42 nd Street	Paved, good condition	Port and base camp utility connections	Utilities
B	42 nd Street	Between 8 th Avenue and Broadway	Paved, good condition	Port and base camp utility connections	Utilities
C	Boat ramp access	Between boat ramp and unnamed East/West road	Dirt/grass, overgrown, nonexistent	Military supply route, tracked-vehicle transit route	Construct new paved road
D	Unnamed North/South road	Unnamed East/West road to West Street	Nonexistent	Port and base camp utility connections	Construct new paved road, tracked-vehicle trail
E	Unnamed East/West road	Port of Tinian to 6 th Avenue	Dirt/grass, overgrown, nonexistent	Military supply route, tracked-vehicle transit route	Construct new paved road, tracked-vehicle trail
F	New road	6 th Avenue Bypass	Dirt/grass, overgrown, Nonexistent	6 th Avenue Bypass	Dirt/grass, overgrown, Nonexistent
G	6 th Avenue	Between West Street and 8 th Avenue	Coral gravel, some paving, good condition	Military supply route, port and base camp utility connections	Improve for public use
HA	8 th Avenue	Between Dump and Riverside Drive	Paved, fair condition	Public access, military supply route, port and base camp utility connections	Construct new paved road
HB	8 th Avenue	Between Dump and 6 th Avenue	Ungraded, poor condition	Public access, military supply route, port and base camp utility connections	Improve for public use
I	8 th Avenue	West of Tinian International Airport	Gravel, ungraded, poor condition	Public access, military supply route, port and base camp utility connections, realignment to accommodate potential runway expansion	Construct new paved road

Table 2.4-1. Proposed Tinian Unit Level RTA Road Improvements

ID	Road	Segment	Current Type and Condition	Operational Requirement	Proposed New Construction or Improvement to Existing
J	Riverside Drive	Between 8 th Avenue and 71 st Street	Dirt/grass, fair condition	Munitions supply route, MSA access, utility connections, live-fire Convoy Course	Construct new paved road
K	MSA access	Between Riverside Drive and 71 st Street	Dirt/grass, fair condition	MSA access	Construct new paved road
L	71 st Street	Between MSA gate and 8 th Avenue	Dirt/grass, fair condition	MSA access, live-fire Convoy Course	Construct new paved road
M	Base camp internal roads	Base camp	Nonexistent	base camp circulation	Construct new paved road
N	Base camp training access road	Base camp to 86 th Street	Nonexistent	base camp circulation	Construct new paved road
O	8 th Avenue	Realigned 8 th Avenue to base camp gate	Paved, poor condition	Public access, military supply route, port and base camp utility connections	Improve for public use
P	8 th Avenue	Base camp gate to 86 th Street	Paved, poor condition	Public access, military supply route, port and base camp utility connections	Improve for public use (boulevard)
Q	8 th Avenue	Between 86 th Street and 123 rd Street	Paved, overgrown, poor condition	Public access, live-fire Convoy Course, Observation Post and range utility connections	Improve for public use (boulevard)
R	Riverside Drive	Between 123 rd Street and Unai Chulu and Babui Road	Paved, poor condition	Public access, amphibious landing access	Improve for public use
S	Lennox Avenue Access Road	Between 8 th Avenue and Lennox Avenue	Paved, poor condition	Public access, live-fire Convoy Course, access to ranges	Improve for public use
T	Lennox Avenue/Boston Post Road	Between Lennox Avenue Access Road and Unai Lam Lam Access Road	Paved, poor condition	Public access, live-fire Convoy Course, access to ranges	Improve for public use
U	86 th Street	Between 8 th Avenue and Broadway	Paved, poor condition	Live-fire Convoy Course, access to ranges	Improve for general use
V	71 st Street	Between MSA gate and Riverside Drive	Dirt/grass, fair condition	Live-fire Convoy Course	Establish military training road
W	Riverside Drive	West of 71 st Street	Dirt/grass, fair condition	Access to Observation Posts and ranges	Establish military training road
X	Riverside Drive	Between 71 st Street and 86 th Street	Dirt/grass, fair condition	Live-fire Convoy Course, Observation Post utility connections	Establish military training road

Table 2.4-1. Proposed Tinian Unit Level RTA Road Improvements

ID	Road	Segment	Current Type and Condition	Operational Requirement	Proposed New Construction or Improvement to Existing
Y	Riverside Drive	Between 86 th Street and southern International Broadcasting Bureau boundary	Dirt/grass, fair condition	Live-fire Convoy Course, Observation Post utility connections	Establish military training road
Z	Riverside Drive	Between southern International Broadcasting Bureau boundary and 123 rd Street	Dirt/grass, fair condition	Live-fire Convoy Course, Observation Post utility connections	Establish military training road
AA	113 th Street (International Broadcasting Bureau internal road)	Between Riverside Drive and 8 th Avenue	Dirt/grass, fair condition and nonexistent	Live-fire Convoy Course (Tinian Alternative 1 only)	Establish military training road (Road only improved if IBB is relocated, would require new construction to connect to Riverside Drive)
AB	96 th Street	Between Broadway and Masalok Beach Road	Dirt/grass, fair condition	Access to ranges	Establish military training road
AC	Access Observation Post 8	Between Broadway and Observation Post 8	Gravel, fair condition	Access to Observation Post 8, access to ranges	Establish military training road
AD	Access Observation Post 8	Between Broadway and Observation Post 8	Gravel, fair condition	Access to Observation Post 8, access to ranges	Construct new gravel road
AE	Access to Masalok Beach	Masalok Beach	Foot trail, fair condition	Amphibious landing access (LCAC)	Construct new gravel road
AF	Access Observation Post 7	East of High Hazard Impact Area	Nonexistent	Access to Observation Post 7, Observation Post utility connections	Construct new gravel road
AG	High Hazard Impact Area perimeter road	East of High Hazard Impact Area	Nonexistent	Live-fire Convoy Course, access to ranges, fire break	Construct new gravel road
AH	High Hazard Impact Area perimeter road	East of High Hazard Impact Area	Nonexistent	Live-fire Convoy Course, access to ranges, fire break	Construct new gravel road
AI	High Hazard Impact Area perimeter road	West of High Hazard Impact Area	Nonexistent	Access to ranges, fire break	Construct new perimeter patrol road
AJ	Military Lease Area/base camp perimeter patrol road and tracked-vehicle trail	Military Lease Area/base camp perimeter	Nonexistent	Perimeter patrol road, tracked-vehicle transit route	Construct new perimeter patrol road/tracked-vehicle trail
AK	Military Lease Area perimeter patrol road	Military Lease Area perimeter	Nonexistent	Perimeter patrol road	Construct new perimeter patrol road

Table 2.4-1. Proposed Tinian Unit Level RTA Road Improvements

ID	Road	Segment	Current Type and Condition	Operational Requirement	Proposed New Construction or Improvement to Existing
AL	Military Lease Area perimeter patrol road	Military Lease Area perimeter	Nonexistent	Perimeter patrol road	Construct new perimeter patrol road
AM	Base camp perimeter patrol road	Base camp perimeter	Nonexistent	Perimeter patrol road	Construct new perimeter patrol road
AN	Broadway	South of roundabout	Paved, overgrown, fair condition	High Hazard Impact Area	Roadway closure
AO	Broadway	North of roundabout	Paved, fair condition	High Hazard Impact Area	Roadway closure
AP	Lennox Avenue	West of roundabout	Paved, poor condition	High Hazard Impact Area	Roadway closure
AQ	116 th Street	West of roundabout	Paved, poor condition	High Hazard Impact Area	Roadway closure
AR	116 th Street	East of roundabout	Gravel, dirt/grass, fair condition	High Hazard Impact Area	Roadway closure
BA	Access to Surface Radar 1	Between 86 th Street and Surface Radar 1	Nonexistent	Access to Surface Radar 1	Construct new gravel road
BB	Access to Surface Radar 2	Between unnamed road and Surface Radar 2	Nonexistent	Access to Surface Radar 2	Construct new gravel road
BC	Access to Surface Radar 3	Between Riverside Drive and Surface Radar 3	Nonexistent	Access to Surface Radar 3	Construct new gravel road
BD	Access to Surface Radar 5	Between unnamed existing road and Surface Radar 5	Nonexistent	Access to Surface Radar 5	Construct new gravel road
BE	Access to Surface Radar 6	Between Unai Dankulo Trail and Surface Radar 6	Nonexistent	Access to Surface Radar 6	Construct new gravel road

Legend: ID = Segment identification letter code corresponding to segment ID on proposed roadway improvements as shown in [Figure 2.4-6](#); LCAC = Landing Craft Air Cushion; MSA = Munitions Storage Area.

Source: DoN 2014b.

2.4.1.2.6 Fence Lines and Gates

The Military Lease Area would become an active military training area that includes hazardous activity. Gates and fencing would be employed for access control and security (see [Figure 2.4-6](#)). Ground disturbance and impervious surfaces associated with fence lines and gates are included in the support facility (e.g., base camp), roadway, trail, or training facility (e.g., Range Complex A) of which they are associated.

Two types of security fences are proposed on Tinian:

Chain-Link with Barbed Wire Fence. The chain-link with barbed wire fence would be 7.0-feet (2.1-meters) high plus three strands of barbed wire at the top on a single extension arm. This type of chain-link fence accommodates a swinging gate.

Barbed Wire Fence. The barbed wire fence would be 4.0-feet (1.2-meters) tall with four strands of barbed wire (farm-style fence), which accommodates farm-type gates.

In accordance with military safety protocols and security regulations, demarcation of the boundary of the installation and access point restrictions would be constructed. Appropriate signage will be placed along boundary fencing at regular intervals. A new airport chain-link fence would be constructed along the border of the Commonwealth Ports Authority property (i.e., the airport boundary) and the Military Lease Area, separating the airport property from the Military Lease Area and proposed base camp. A new barbed wire fence would delineate the boundary to the west of the airport to the shoreline, and east of the airport to the shoreline. There would be two gates in the western perimeter fence, one of which would be at the intersection with 8th Avenue and the other at the intersection with Riverside Drive. Consistent with safety and security requirements, access to the Military Lease Area would be restricted to authorized personnel during certain training events. All access points would be either closed or manned to ensure unauthorized access does not occur during restricted times.

Base Camp. There would be a perimeter chain-link with barbed wire fence and four access points to the base camp. There would be one entry control facility located at the base camp for use by all U.S. military personnel, visitors, and vehicle traffic to the installation.

Munitions Storage Area. A new chain-link with barbed wire perimeter fence would be constructed around the Munitions Storage Area with two entry gates and access restricted to authorized personnel. An additional barbed wire fence would be located from 300 to 1,400 feet (91 to 427 meters) out from the chain-link fence for secondary protection of the Munitions Storage Area.

High Hazard Impact Area. A new barbed wire fence would delineate the High Hazard Impact Area. There would be access gates for use by military personnel authorized to enter this area.

Training Facilities. There would be limited fencing within the Military Lease Area. Access points to specific training areas on roadways would have gates with fenced extensions on roadways to restrict entry during training events. Surface Radar sites would be fenced and restricted from public access.

2.4.1.2.7 Utility Improvements

[Figure 2.4-7](#) shows the locations of the proposed utility improvements. Technical utilities studies were prepared to determine facility requirements for the proposed action based on existing infrastructure capacity and proposed action demand or load on the infrastructure. These studies, inclusive of methods and assumptions, are included in this EIS/OEIS as Appendix P, *Utilities Study*. Ground disturbance and impervious surfaces associated with utility improvements are included in the support facility (e.g., base camp), roadway, trail, or training facility (e.g., Range Complex A) of which they are associated.

2.4.1.2.7.1 Electrical Power

The existing Tinian Power Plant generation capacity is sufficient to support the anticipated power demand of the proposed action and no additional power generation is proposed. There is a requirement to support mission critical facilities during power blackouts and individual emergency generators would be installed near these facilities.

New power distribution lines and improvements to existing power distribution lines would be required. The alignments are shown on [Figure 2.4-7](#). Key components are as follows: (1) use current power distribution line from the power plant to the International Broadcasting Bureau, aligned along 8th Avenue to the proposed base camp and Munitions Storage Area; (2) upgrade portions of the existing line to underground between the base camp going north to the RTA and International Broadcasting Bureau; and (3) extend electrical service to Surface Radar sites as shown in [Figure 2.4-7](#). In the future, should the underground sections of power distribution lines be more desirable than overhead, a change could be implemented.

New overhead power lines would tie into existing overhead power lines to service the proposed new port facilities. This would require new power poles, overhead distribution lines, and a service transformer.

2.4.1.2.7.2 Potable Water

Potable water improvements are proposed for meeting the potable water requirements for the intended future military presence on the island. Average daily potable water demand for the proposed action is anticipated at approximately 262,200 gallons per day (see Section 4.14, *Utilities*). The potable water source will come from new vertical wells drilled within the Military Lease Area. Approximately five new wells are required to support the proposed facilities and personnel during Stage 1 and will be installed in areas to the northeast of the base camp ([Figure 2.4-7](#)). In addition, the military proposes improvements to the existing potable water service in the port area of the village of San Jose. A water tank with a minimum storage volume of 500,000 gallons (1,892,706 liters) is proposed within the base camp for operational, fire and emergency demands.

2.4.1.2.7.3 Stormwater

Management of stormwater quality and quantity would be provided to maintain existing condition hydrology to the maximum extent feasible and to control pollutant loading in accordance with the CNMI regulations and U.S. federal and Navy guidance/policies. This will be accomplished through the use of best management practices, described in Appendix D, *Best Management Practices*, including the use of conventional stormwater conveyance, treatment and detention, and integrated management practices such as Low Impact Development and water quality monitoring and management.

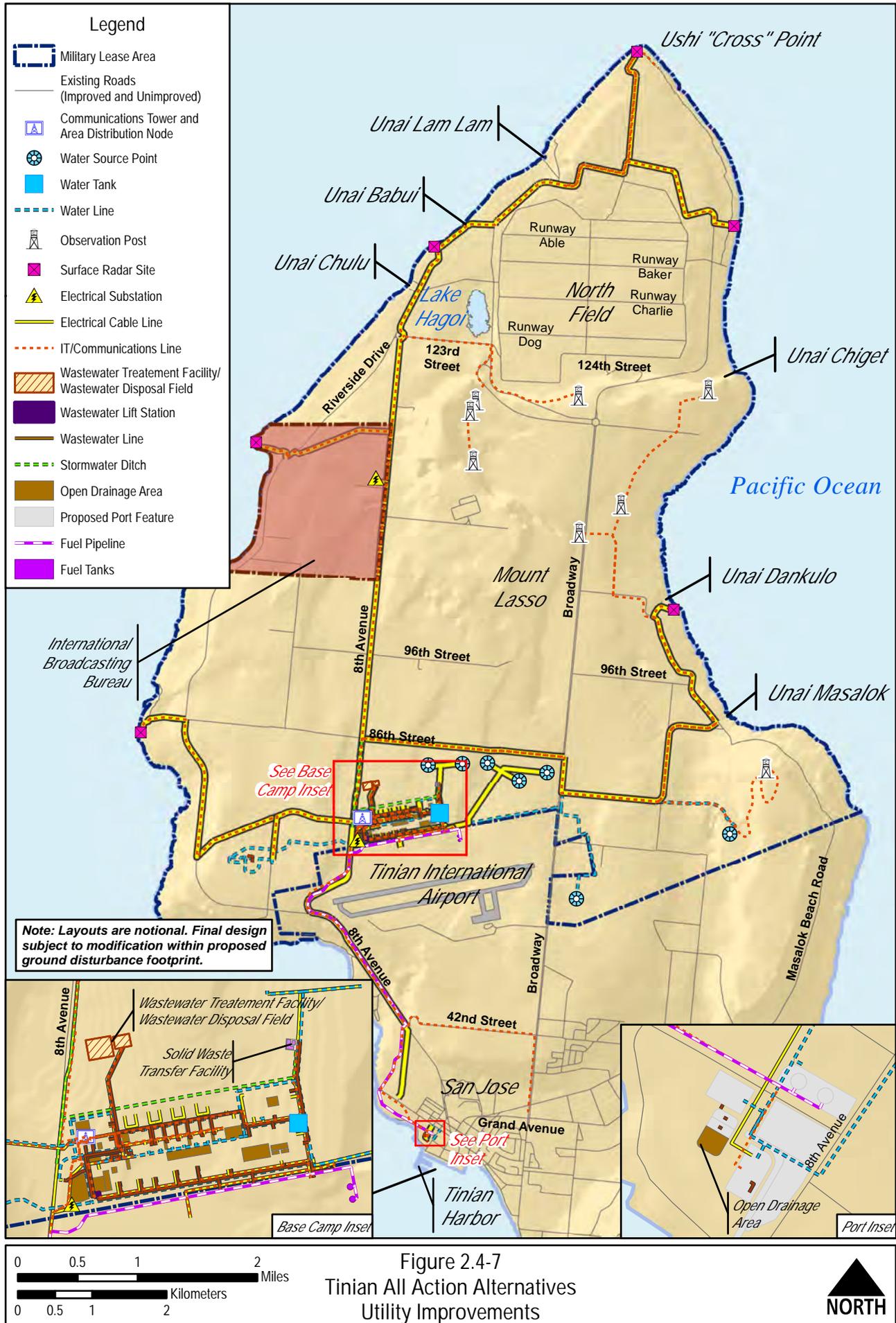


Figure 2.4-7
Tinian All Action Alternatives
Utility Improvements

Swale conveyance will be utilized where feasible in place of gray infrastructure (pipe and inlets) to route surface stormwater to detention ponds for control of runoff rates.

Stormwater treatment includes small scale Low Impact Development treatment devices located throughout the areas of proposed improvements along with larger scale downstream extended detention and retention, as applicable.

Grading and overall stormwater management will be performed in a manner to maintain existing basin and sub-basin hydrology, where feasible, to limit the required stormwater infrastructure and pond sizes.

2.4.1.2.7.4 Wastewater

The base camp wastewater system would consist of a gravity collection system with one pump station, a treatment plant (minimum secondary treatment), and a subsurface disposal area consisting of sub-leaching fields. The proposed gravity collection system would be built along the proposed roadway alignments. The wastewater collection system would discharge wastewater generated from base camp facilities to the proposed wastewater treatment plant. The recommended conceptual layout of the proposed wastewater system is shown in [Figure 2.4-7](#). Final disposal of the treated effluent would be through a leach field within the base camp area. The leach field would be located west of the proposed treatment plant. Wastewater from the Munitions Storage Area would have a separate septic tank and leach field.

Two wastewater systems would be associated with the port facilities, one for industrial wastewater at the vehicle washdown facility, and one for domestic wastewater generated at the biosecurity building (see Appendix P, *Utilities Study*). Portable toilets would be used at the port and emptied using a vacuum truck. The waste would be conveyed to the wastewater treatment plant at the base camp for treatment and disposal.

Airfield facilities would consist of portable toilets that would be used and emptied periodically using a vacuum truck and conveyed to the proposed wastewater treatment plant at the base camp system for treatment and disposal.

Within the RTA, portable toilets would be used and emptied periodically using a vacuum truck and conveyed to the proposed wastewater treatment plant at the base camp for treatment and disposal.

2.4.1.2.7.5 Solid Waste

A solid waste transfer station and recycling center would be constructed at the base camp. Solid waste would be processed and size-reduced for shipment to a permitted Resource Conservation and Recovery Act subtitle D landfill, potentially located off-island. This approach could be revised in the future should island-wide options be implemented by the CNMI. Such options could include a new landfill or an incineration facility. Incineration would provide substantial volume reduction but still require disposal of ash in a properly permitted landfill.

2.4.1.2.7.6 Communications/Information Technology

The proposed telecommunications system for each alternative would consist of a combination of overhead pole-mounted cabling and underground conduits, manholes/handholes, and pull-boxes that would provide the site infrastructure to support government communications systems (e.g., government telephone, government data, security, and closed circuit television), as well as

commercial utility services, including commercial telephone, internet, and cable television. The proposed core information technology/communications hardwired cable connections through overhead pole-supported cabling and underground concrete-encased duct banks and cabling would connect the area distribution node at the base camp to ranges and range surveillance locations (Observation Posts and Surface Radar sites). Distribution from the base camp node would be provided through underground concrete-encased duct banks when required near or on ranges. New distribution infrastructure originating at the two area distribution nodes would distribute telecommunications services to end-user buildings and facilities in the base camp, ranges, and other facilities. Proposed core information technology/communications hardwired cable connections through overhead pole-supported cabling and underground concrete-encased duct banks and cabling would connect the area distribution node at the base camp to the area distribution node near Mount Lasso and to range entrances. Distribution from the area distribution node near Mount Lasso would be provided through underground concrete-encased duct banks and cabling for connections to the range entrances.

Commercial telephone, internet, and cable television services would be provided to the base camp through infrastructure provided by the commercial utility providers. The cables are anticipated to be installed mostly overhead except for routing that crosses the runway clear zone, which would be installed underground. Inside the base camp, the cables for commercial telephone, internet, and cable television service would be distributed around the base camp through overhead pole-supported cabling.

The Munitions Storage Area would include communications for video surveillance, monitoring security systems, Non-secure Internet Protocol Router/Secure Internet Protocol Router, management information systems (e.g., maintenance data input/collection), and wireless capability where possible. The Surface Radar sites would include communications for radar, video, and/or thermal imaging equipment. The Observation Posts would include communication for telephones. Should the overhead system be deemed unsatisfactory, there is a potential to reroute those sections to underground in the future. Both cases are considered — a mix of overhead and underground, and all underground.

2.4.1.2.8 Range Complex A Construction

The four range complexes comprise the Tinian RTA, Range Complexes A, B, C and D ([Figure 2.4-8](#)), would be located throughout the Military Lease Area.

Range Complex A ([Figure 2.4-9](#)) would include: (1) a High Hazard Impact Area; (2) Live Hand Grenade Range (a ground range); (3) firing positions for the Mortar Range (a ground range); (4) Light Anti-Armor Weapon Live Range (a ground range); (5) Grenade Launcher Range (a ground range); (6) a Demolition Range (a ground range); (7) targets associated the Offensive Air Support Range (an aviation range); (8) targets associated with the Close Air Support Range (an aviation range). Also located within the High Hazard Impact Area would be targets associated with the Field Artillery Indirect Range and the Convoy Course (both discussed under [Section 2.4.1.2.12](#), *Military Lease Area-wide Training Assets Construction*).

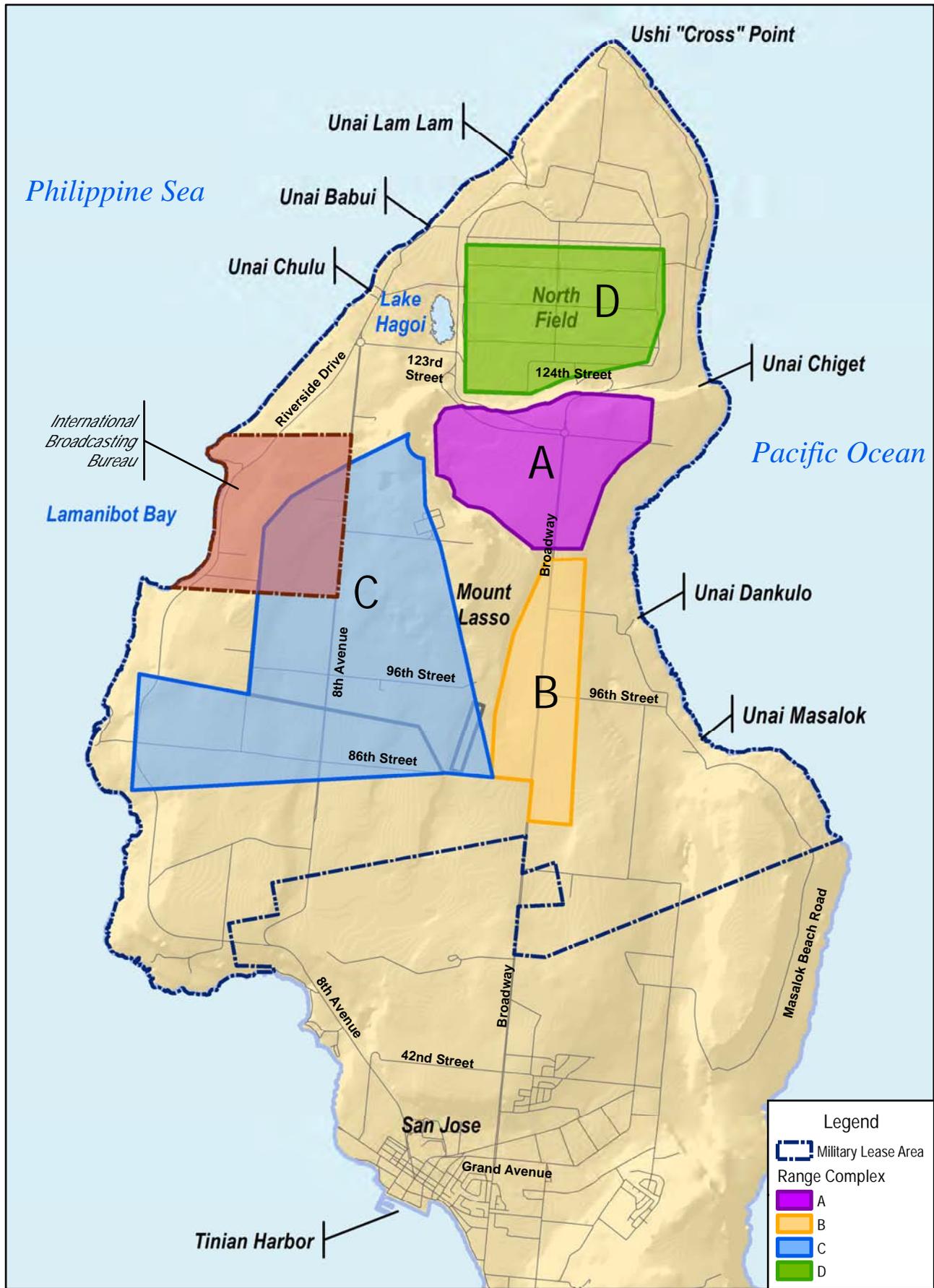
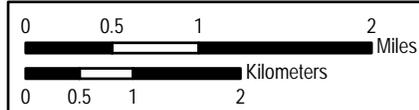


Figure 2.4-8
Tinian Range Complexes



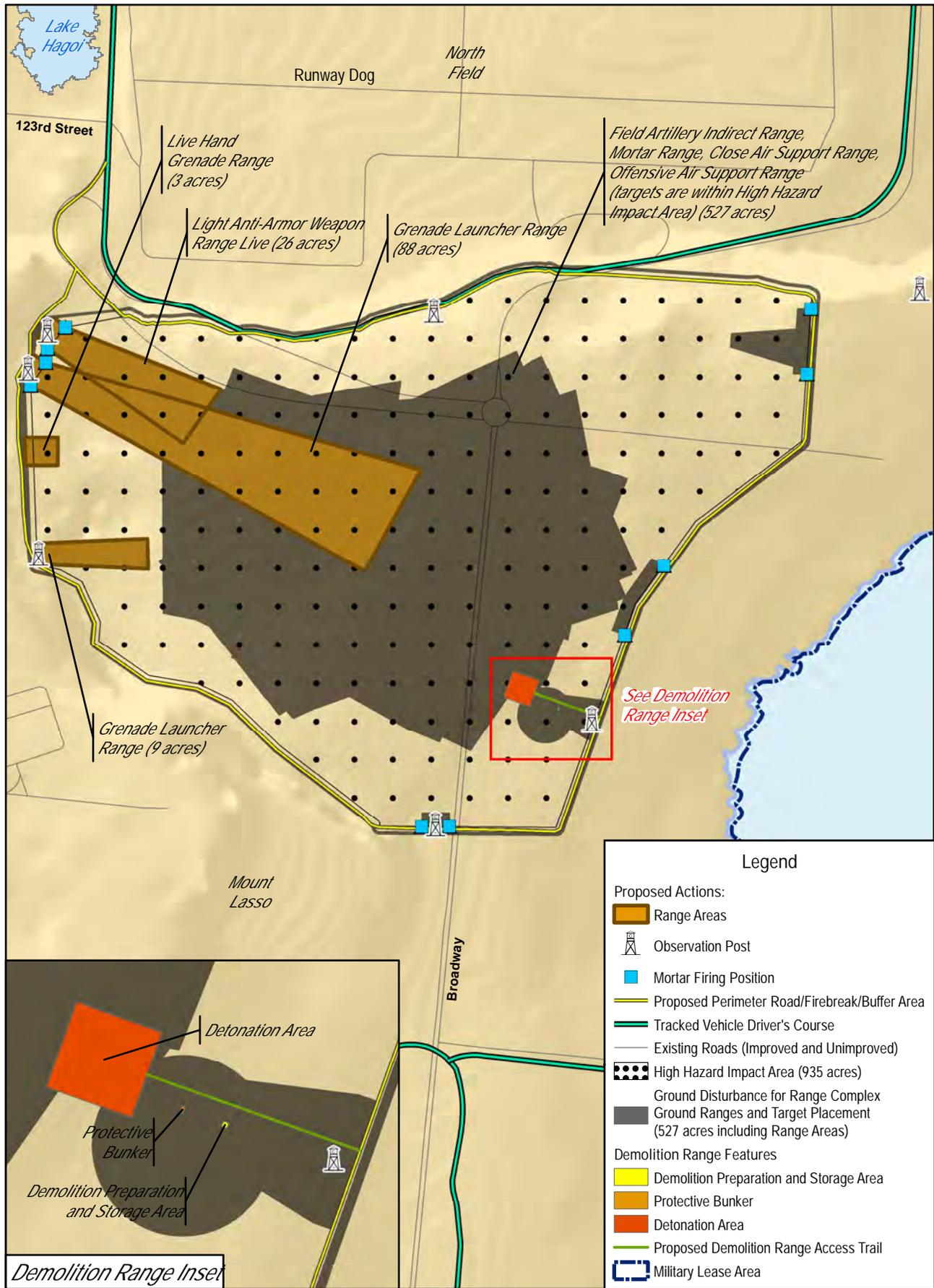


Figure 2.4-9
Tinian All Action Alternatives
Range Complex A

Associated with each range are target areas that would require an initial construction ground disturbance to create a line of sight to the target area. The firing positions for ground ranges would be located at the edge of the High Hazard Impact Area. The Demolition Range would be located on the southeastern side of the High Hazard Impact area and include construction of a cleared area for detonating charges, a 10 foot by 20 foot (3 meter by 6 meter) protected bunker and a 20 foot by 20 foot (6 meter by 6 meter) covered area for demolition preparation and ammunition storage. The Live Hand Grenade Range would include construction of four throwing positions/pits with 6 foot (1.8 meter) high earthen berms between each position. In addition, a 98-foot (30-meter) fire break to include a perimeter road would be constructed around the High Hazard Impact Area. The perimeter road would provide one travel lane measuring 10-feet (3-meters) wide with a 3.0-foot (0.9-meter) shoulder on one side and 3.0 feet (0.9 meters) of vegetation clearance between the road and the perimeter fence on the other side. Fencing and signage would be placed around the perimeter of the High Hazard Impact Area. Interior roads would also be constructed to facilitate range complex maintenance.

Proposed roads and fencing under the Tinian action alternatives are described in [Section 2.4.1, Elements Common to All Action Alternatives](#). Although the entire outline of Range Complex A is 935 acres (375 hectares), the total ground disturbance area associated with construction for Range Complex A would be approximately 527 acres (213 hectares) which includes the clearance for the target areas and firing positions associated with each of the ground and aviation ranges as well as the targets associated with the Field Indirect Range. The ground disturbance for the perimeter and access roads is included in the roadway improvements. With repeated use for training (i.e., targets for high explosive munitions), it is assumed that the 527 acres (213 hectares) would not be impervious.

2.4.1.2.9 Range Complex B Construction

Range Complex B ([Figure 2.4-8](#) and [Figure 2.4-10](#)) would include six ground ranges: (1) the Combat Pistol Range; (2) Anti-Armor Tracking Range; (3) Tank/Fighting Vehicle Stationary Target Range; (4) Battle Sight Zero Range; (5) Multi-Purpose Training Range; and (6) the Tank/Fighting Vehicle Multi-Purpose Range Complex. The Combat Pistol Range and the Battle Sight Zero Range would each include construction of 13 foot (4 meter) high earthen berms, and a 20-foot (6-meter) high impact berm would be constructed at the Multi-Purpose Training Range. Within Range Complex B, ground disturbance associated with construction would include interior roadways and target firing points and objectives. The total ground disturbance area associated with construction for this range complex would be approximately 47 acres (20 hectares). With repeated use for training, it is assumed that the ground disturbed areas would take on an impervious quality and is thus considered newly created impervious surface. The ground disturbance total does not include the acreage for the lines of sight (83 acres [34 hectares]) as these areas would not be disturbed during construction and would only require vegetation maintenance as part of routine range maintenance.

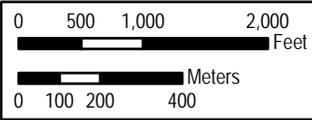
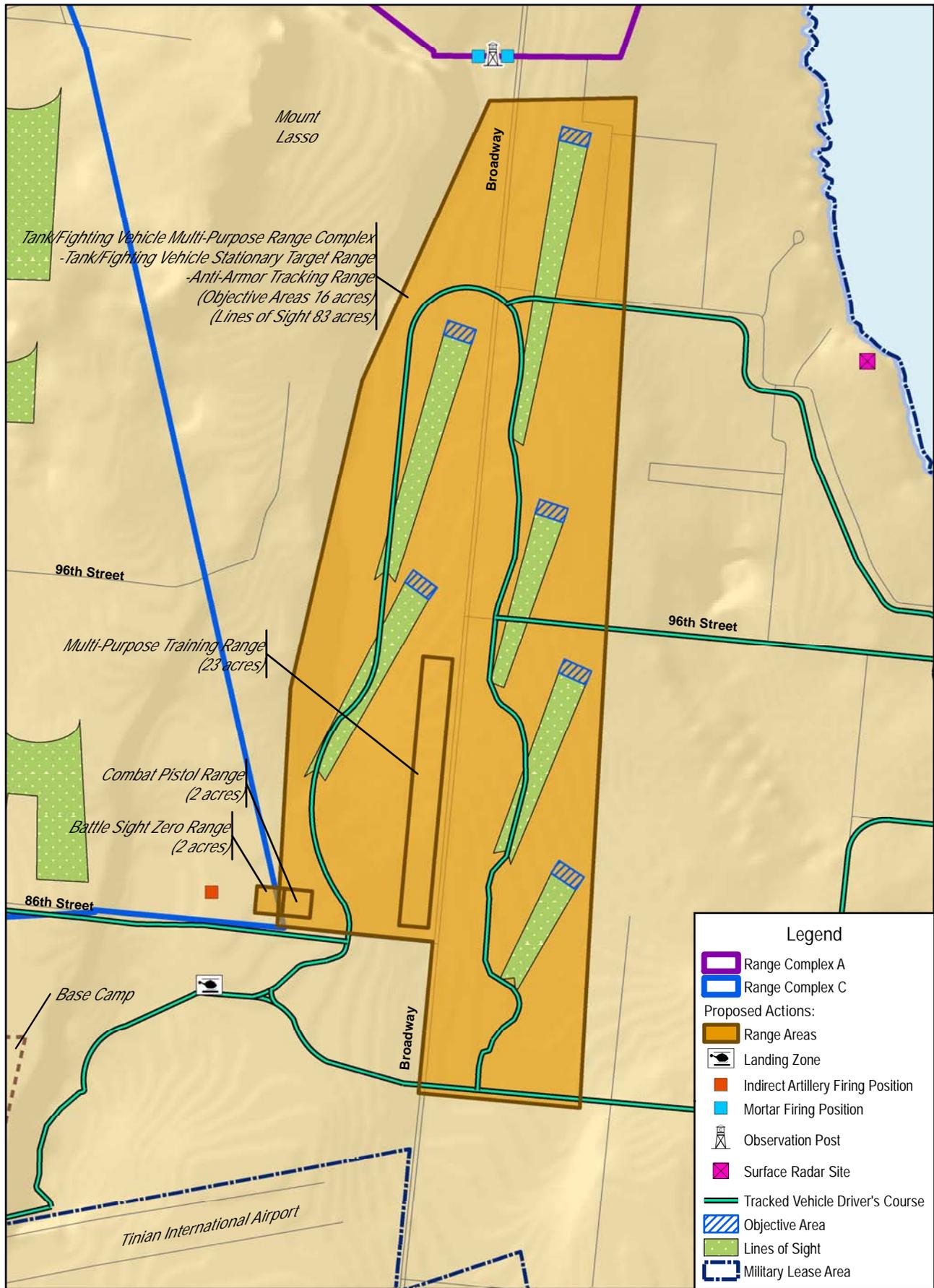


Figure 2.4-10
 Tinian All Action Alternatives
 Range Complex B



2.4.1.2.10 Range Complex C Construction

Range Complex C ([Figure 2.4-8](#) and [Figure 2.4-11](#)) includes four ground ranges: (1) the Multi-Purpose Automated Unknown Distance Range; (2) Field Fire Range; (3) Infantry Platoon Battle Course; and (4) Urban Assault Course. Within Range Complex C, interior roadways and objective areas would require ground disturbance associated with construction. In addition, approximately 20 temporary one-story roofless structures would be installed as part of the proposed Urban Assault Course and a 26-32 foot (8-10 meter) high no impact berm is required for the Multi-Purpose Automated Unknown Distance Range. The total ground disturbance area associated with construction for this range complex would be approximately 80 acres (32 hectares). With repeated use for training, it is assumed that the ground disturbed areas would take on an impervious quality and is thus considered newly created impervious surface. The ground disturbance total does not include the acreage for the lines of sight (88 acres [35 hectares]) as these areas would not be disturbed during construction and would only require vegetation maintenance as part of routine range maintenance.

2.4.1.2.11 Range Complex D Construction

Range Complex D ([Figure 2.4-8](#) and [Figure 2.4-12](#)) would include: (1) an aviation Drop Zone; (2) an aviation Landing Zone (i.e., existing cleared runways Able, Baker, Charlie); (3) Unmanned Aircraft Systems Ground Station; and (4) a Forward Arming and Refueling Point. Within Range Complex D, there are expeditionary runways (North Field runways) that have already been cleared and maintained. Ground disturbance would be approximately 475 acres (192 hectares); however, none of it would be considered newly created impervious surface as only existing impervious surfaces (e.g., runways, taxiways) would be repeatedly used (e.g., Landing Zone) and the remainder (associated with the Drop Zone) would be maintained as vegetated lands. Historic assets at the North Field National Historic Landmark (located within Range Complex D) would be protected during construction activities. For further discussion of historic assets at North Field, see Sections 3.11 and 4.11, *Cultural Resources*.

2.4.1.2.12 Military Lease Area-wide Training Assets Construction

In addition to the training facilities associated with Range Complexes A, B, C, and D, several individual facilities would be constructed throughout the Military Lease Area ([Figure 2.4-13](#)). These include the following:

2.4.1.2.12.1 Field Artillery Indirect Fire Range

Field Artillery Indirect Fire Range construction would involve ground disturbance at ten designated firing points — five south of Unai Masalok, two north of the base camp, and three east of Ushi Point. Total ground disturbance associated with these firing points would be 85 acres (34 hectares); it is assumed that through repeated use that the firing points would take on an impervious quality and are considered newly created impervious surface.

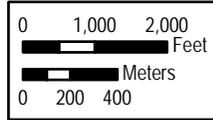
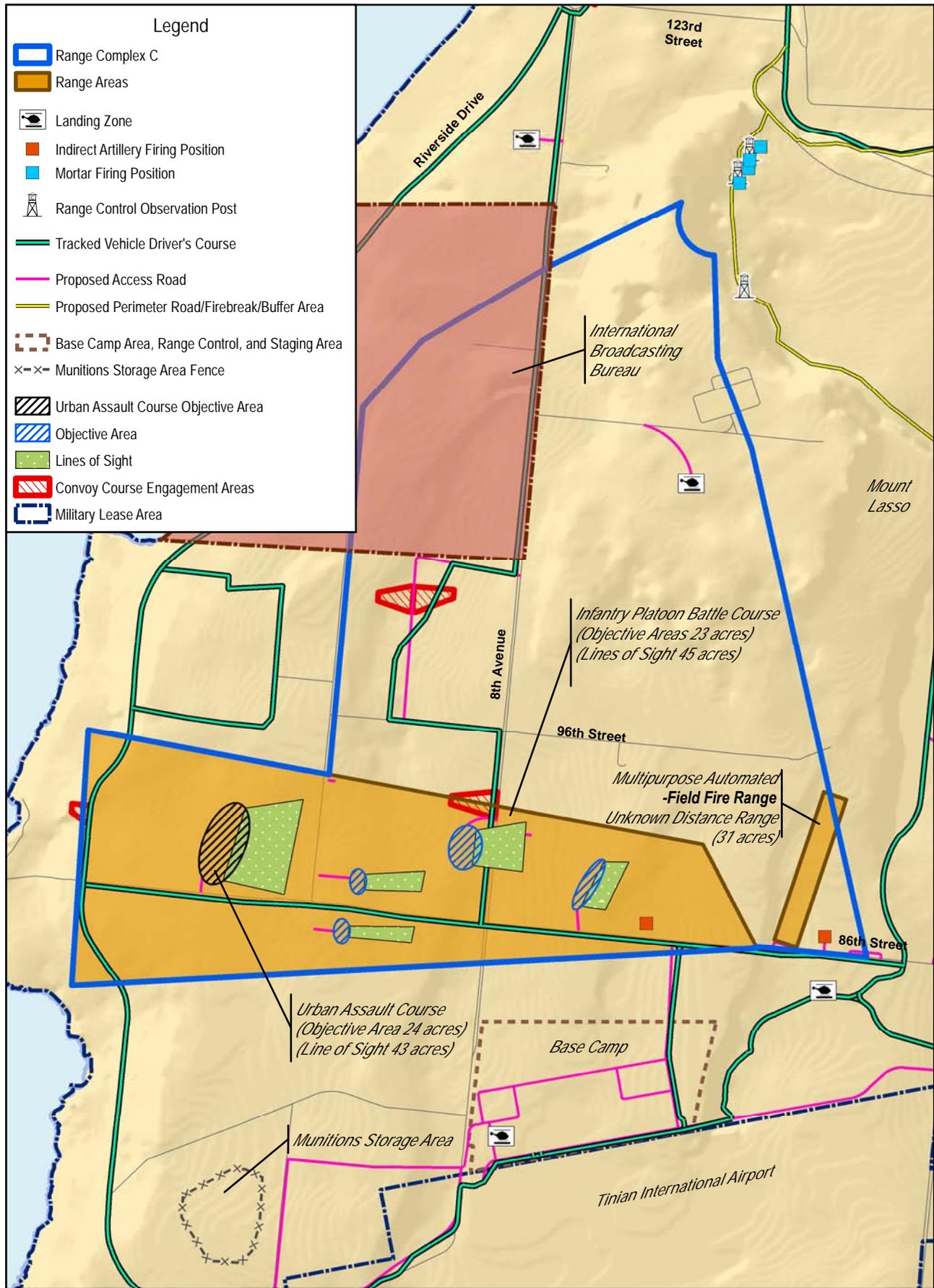
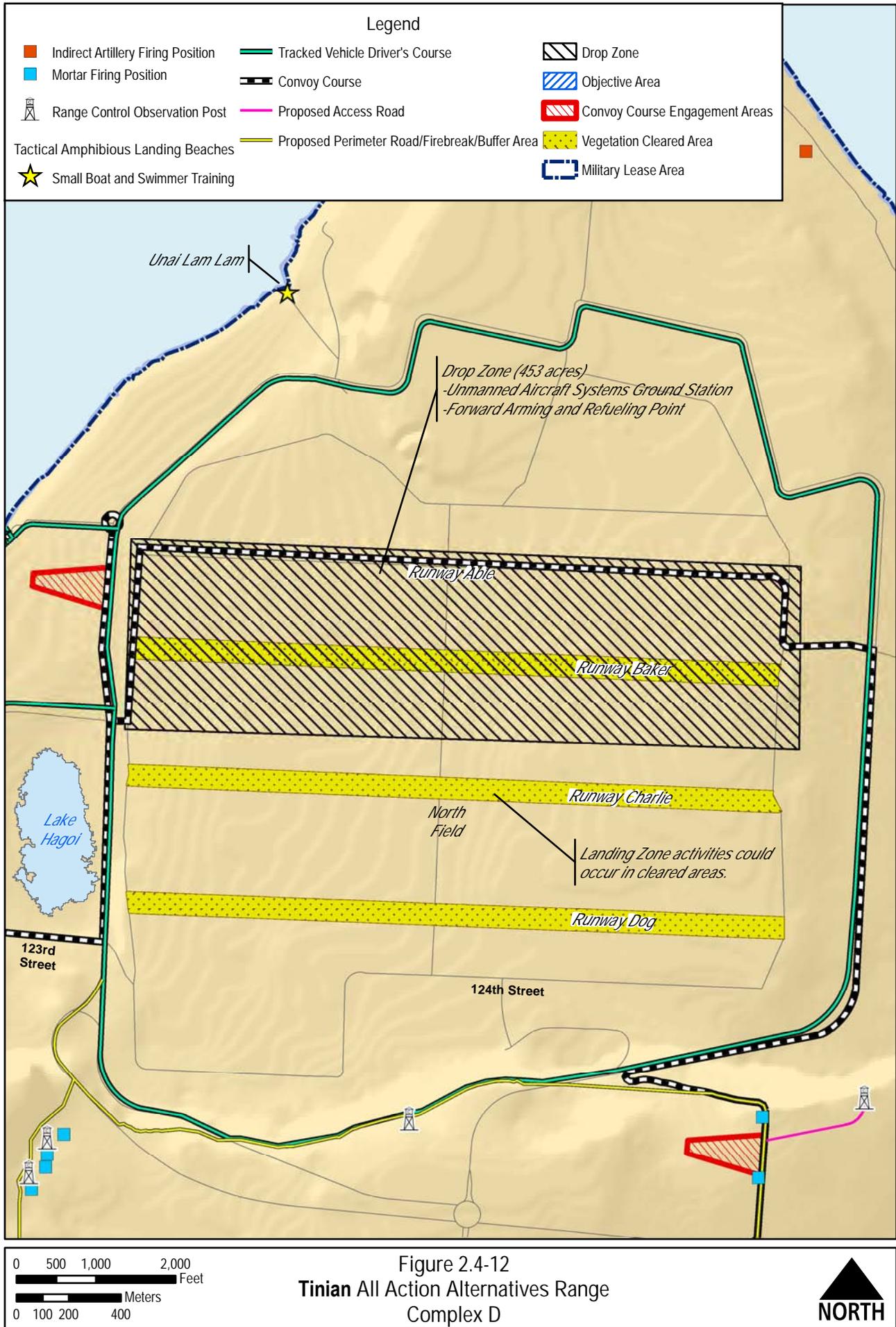


Figure 2.4-11
**Tinian All Action Alternatives Range
 Complex C**





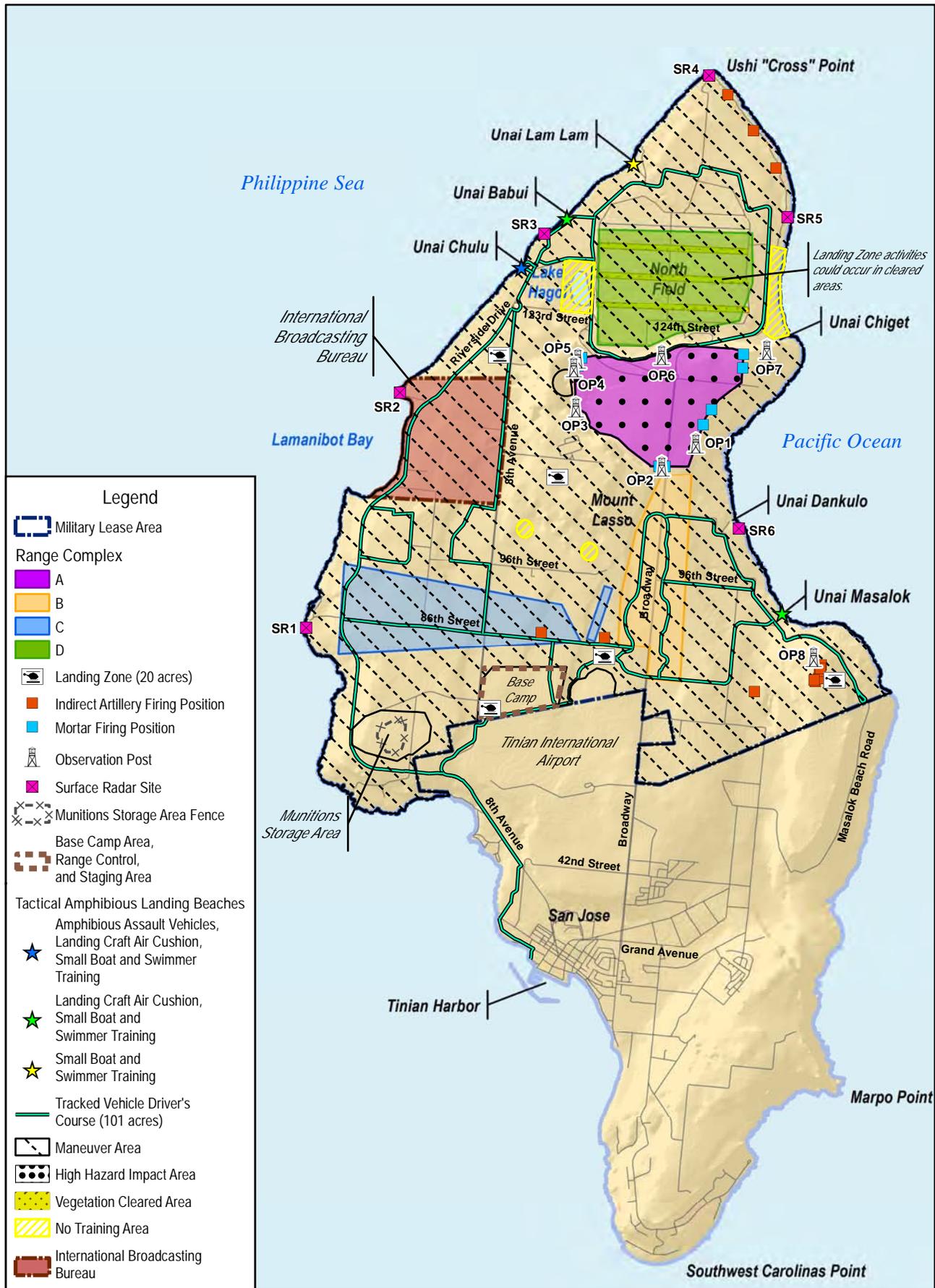


Figure 2.4-13
 Tinian All Action Alternatives
 Military Lease Area-Wide Training Assets



2.4.1.2.12.2 The Convoy Course

Convoy Course construction would involve ground disturbance of the designated course and engagement areas under all action alternatives (six for Alternative 1 and 11 for Alternatives 2 and 3) and course roadways within the military lease area. The Convoy Course length for Alternative 1 is longer than that associated with Alternatives 2 and 3. [Section 2.4.2](#), *Tinian Alternative 1*, and [Section 2.4.3](#), *Tinian Alternative 2*, provide details on construction footprint for the action alternatives.

2.4.1.2.12.3 Tracked Vehicle Driver's Course

Tracked Vehicle Driver's Course construction would include gravel pathways largely parallel to existing and proposed roads extending from the port to the Military Lease Area (considered transit lanes not part of the live-fire training course) and throughout the Military Lease Area (considered live-fire training course). Roadway surfaces would be reinforced (e.g., with a concrete pad) at locations where cross-over travel for tracked vehicles must be accommodated. The total ground disturbance associated with the Tracked Vehicle Driver's Course located outside of Range Complexes A through D would be 100 acres (40 hectares) and is included in the overall ground disturbance associated with road improvements (see [Section 2.4.1.2.6](#), *Fence Lines and Gates*).

2.4.1.2.12.4 Tactical Amphibious Beach Landings (non-live-fire)

A tactical amphibious training ramp would be constructed on federal submerged lands for Amphibious Assault Vehicles at Unai Chulu to create a safe landing surface for training operations. Construction of the in-water landing area for Amphibious Assault Vehicles would modify the seafloor (i.e., limestone, coral reef) by contouring the approach zone (landing area) to create a pile-armored ramp at a 15 degree slope. The pile-armored ramp would consist of a gravel bed atop the coral base and a durable grooved concrete slab surface designed to be stable under severe wave conditions. Trenches with concrete anchors would secure the toe and top of the ramp and join the ramp with existing ocean surfaces. The construction would create a stable landing area for the Amphibious Assault Vehicles to safely come ashore on a repeated basis. The amphibious landing ramp at Unai Chulu would be approximately 656-foot (200-meters) long and average 160-foot (50-meters) wide with an anticipated dredge volume of 798,111 cubic feet (22,600 cubic meters) (Figures [2.4-14](#), [2.4-15](#), and [2.4-16](#)).

Construction is anticipated to take approximately 36 weeks. Construction logistics include up to 2 acres (1 hectare) for staging on North Field, and two smaller laydown areas totaling 1 acre (0.4 hectare) adjacent to the beach, and access roads for transportation of materials and supplies ([Figure 2.4-14](#)). Temporary causeways would be constructed to allow an excavator access over the water. The temporary causeways would be constructed using pile-supported trestles through the surf zone and out to 12 feet (4 meters) depth. Steel sheet piles and steel pipe piles would be installed into the reef and penetrate approximately 40 feet (12 meters) into the substrate (see Figures [2.4-15](#) and [2.4-16](#)). The causeways would be constructed using dredged material and would be removed after amphibious landing ramp construction was complete. After the removal of the causeways, excess fill material (i.e., dredge material) would be reused or disposed of at an approved in-water or upland disposal sites. See Appendix J, *Amphibious Beach Landing Site Engineering and Coastal Processes Analyses* for additional details on the proposed construction methods for the amphibious landing ramps.

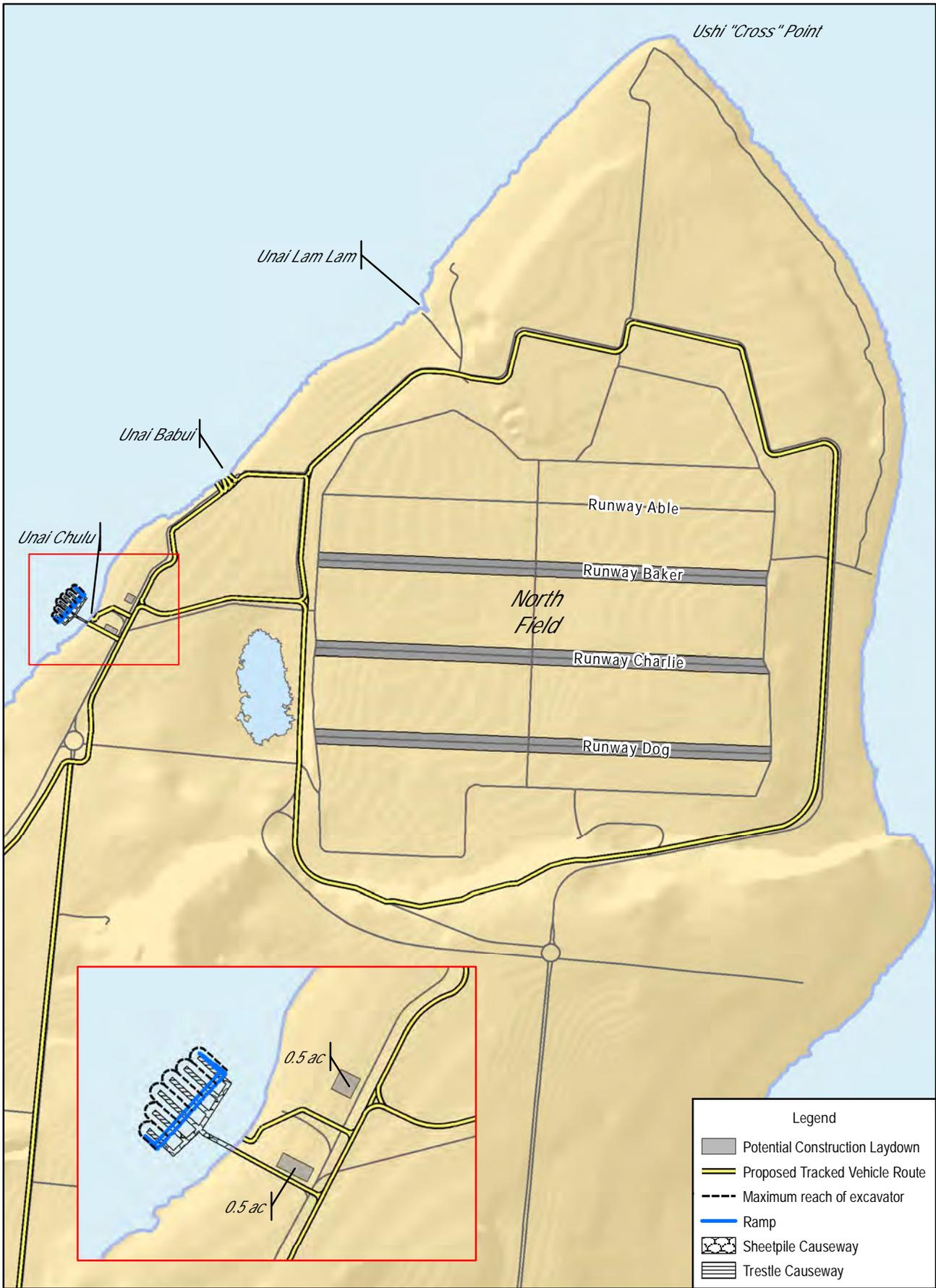


Figure 2.4-14
 Tinian Tactical Amphibious
 Beach Landing Laydown Area and Access

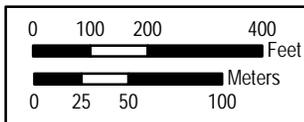
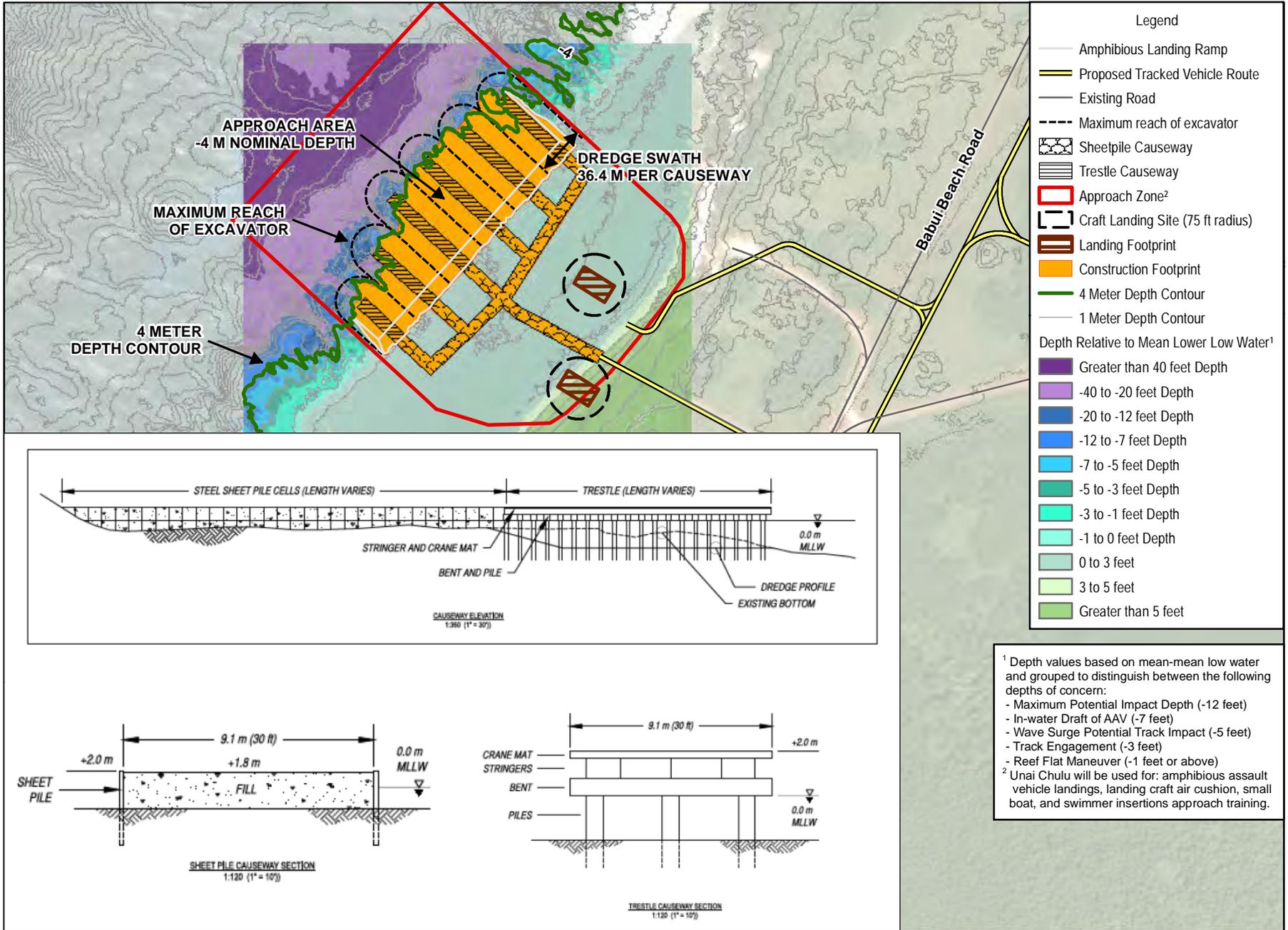
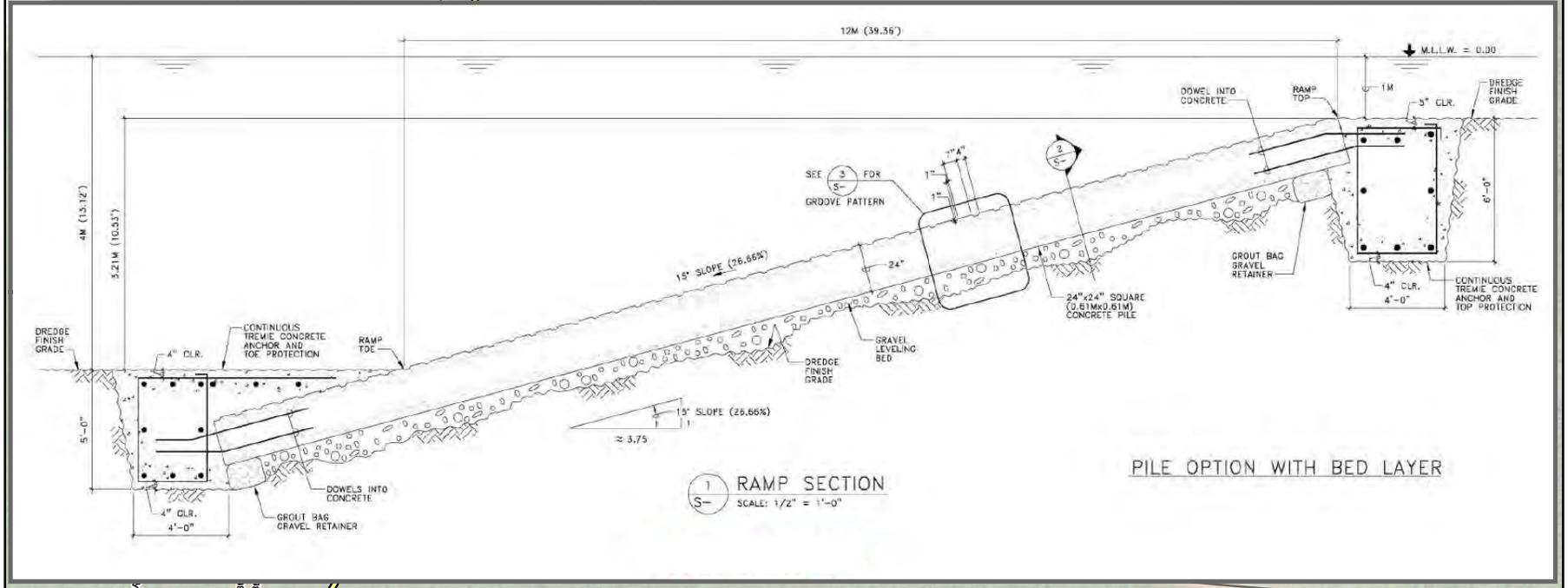
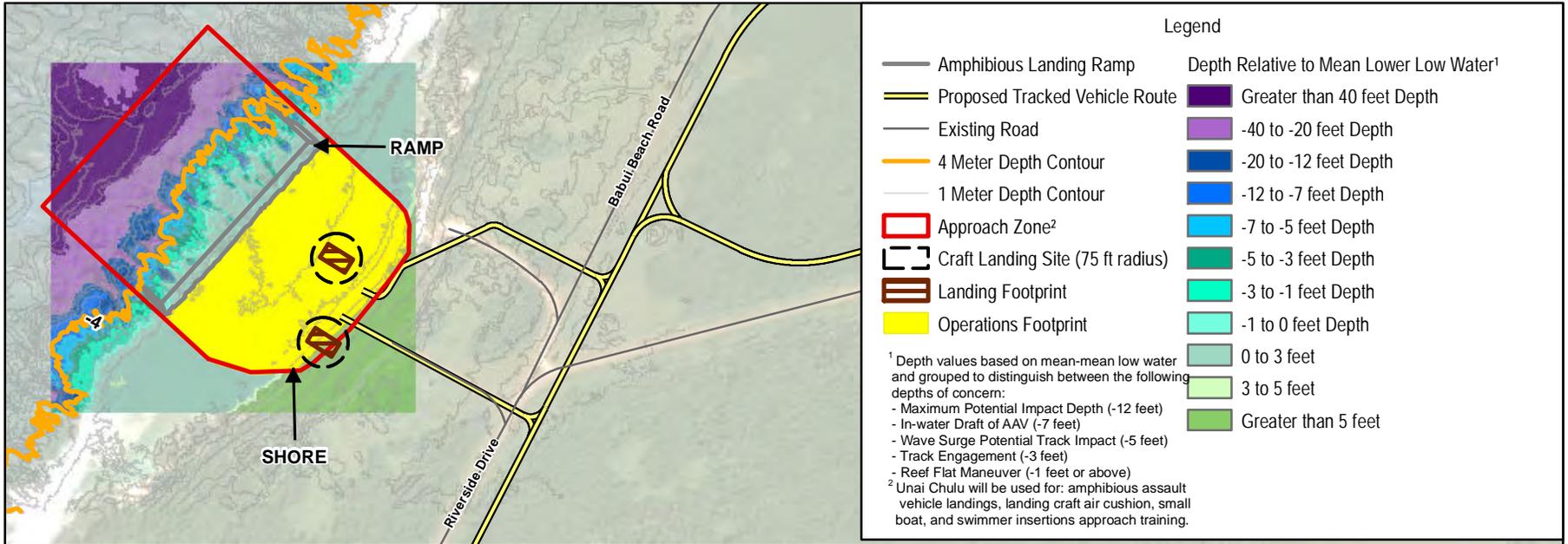


Figure 2.4-15 Unai Chulu
Tactical Amphibious Beach Landing
Dredging and Construction



0 100 200 400 Feet
 0 25 50 100 Meters

Figure 2.4-16 Unai Chulu Tactical Amphibious Beach Landing Operations

NORTH
 Source: NAVFAC Pacific 2013: Sea Engineering, Inc. 2014

2.4.1.2.12.5 Maneuver Area (Light Forces)

Maneuver Area (Light Forces) training would not involve any construction activities.

2.4.1.2.12.6 Landing Zones

A total of six Landing Zones would be constructed under each of the action alternatives: (1) base camp; (2) Range Complex D; (3) Pina; (4) east of the base camp; (5) within Range Complex C; and (6) north of Range Complex C. Construction ground disturbance associated with Landing Zones proposed for the base camp and Range Complex D are included in the overall ground disturbance for the base camp and Range Complex D (see Sections [2.4.1.2.1](#), *Base Camp Construction*, and [2.4.1.2.11](#), *Range Complex D Construction*). The Landing Zone at North Field would utilize cleared runways (e.g., Baker, Charlie and Dog) and would not include any new ground disturbance (see discussion under [Section 2.4.1.2.11](#), *Range Complex D Construction*). The other Landing Zones would be approximately 3 acres (1 hectare) each inclusive of two MV-22 landing pads in addition to a 350-foot (107-meter) buffer area located around the Landing Zone to allow for the wind velocity, engine exhaust and high temperatures created by the hovering aircraft. Ground disturbance associated with all of the smaller Landing Zones would total 13 acres (5 hectares); it is assumed that through repeated use that the four smaller Landing Zones would take on an impervious quality and are considered newly created impervious surface.

2.4.1.2.12.7 Observation Posts

Observation Posts would be constructed at up to eight locations within the Military Lease Area. The Observations Posts will primarily be used to observe the High Hazard Impact Area (Range Complex A). Each tower would be capable of holding a maximum of six personnel and would be constructed above the tree/vegetation line in order to achieve uninterrupted views.

Each Observation Post would be constructed (centered) in an approximately 50 foot by 50 foot (15 meter by 15 meter) area that would be cleared of vegetation. Observations Posts 1 through 6 would be approximately 50-feet (15-meters) tall and Observation Posts 7 and 8 would be approximately 65-feet (20-meters) tall. The towers would include telephone service through above-ground or below-ground telephone transmission lines. There would be no electrical power supplied to the towers. Ground disturbance associated with the Observation Posts outside the High Hazard Impact Area would involve clearing approximately 0.06 acre (0.02 hectare) per post for a total of 0.2 acre (0.08 hectare). The same amount of impervious surface is anticipated due to repeated use. Six Observation Posts would be located inside the High Hazard Impact Area fence for security. Five of the Observation Posts would be located within ground disturbed areas associated with the High Hazard Impact Area. Observation Posts 1 through 6 would be accessible via the High Hazard Impact Area perimeter road and Observation Posts 7 and 8 would have dedicated access roads.

2.4.1.2.12.8 Surface Radar Sites

Surface Radar sites would be constructed - one at each of six different locations within the Military Lease Area. The Surface Radar sites would monitor the surface danger zones. They would consist of approximately 25 to 50 foot (8 to 15 meter) towers constructed (centered) in an approximately 80 by 80 foot area will be cleared of vegetation and be fenced and gated for security. Information technology/communications infrastructure would be provided through above-ground and below-ground transmission lines. Each site would include electrical service, single mode fiber optic communications

connections, a Surface Radar, a visual color camera and/or a thermal imager, and a diesel back-up generator. Surface Radar sites 1 and 6 will include an additional camera for monitoring the surface danger zone to shore interface. Ground disturbance associated with each Surface Radar sites would be approximately 0.15 acre (0.06 hectare) per post for a total of approximately 0.9 acre (0.4 hectare). The same amount of impervious surface is anticipated due to repeated use. Surface Radar sites would have dedicated access roads (with the exception of Surface Radar site 4, situated at Ushi Point).

2.4.1.3 Training Operations

At the proposed Tinian RTA, the amount and variety of training would progressively increase over the 8 to 10 year construction period culminating in the final 20 weeks proposed. It is anticipated that training would commence when the Tinian RTA is first established. Live-fire training using small-arms would occur from the start; however, training with large-caliber weapons would not occur until the Special Use Airspace is approved and mapped by the Federal Aviation Administration. This approval involves federal rule-making.

Some ranges may be used daily during training weeks such as the Combat Pistol Range, others may be used for only specialized training events of short duration (e.g., Battle Sight Zero Range), while others, such as the Infantry Platoon Battle Course, may be used for longer durations. Units planning to conduct training on Tinian would schedule their training through a scheduling system approximately 6 months prior to the training event.

- Training Operations**
- Range Complex A Training Operations.
 - Range Complex B Training Operations.
 - Range Complex C Training Operations.
 - Range Complex D Training Operations.
 - Military Lease Area-wide Training Assets Training Operations.
 - Simultaneous Use of Training Assets.

2.4.1.3.1 Range Complex A Training Operations

Range Complex A comprises the High Hazard Impact Area where live-fire high explosives from ground-based and aviation training activities would be employed. Ground-based activities would include hand grenades thrown and launched from the Live Hand Grenade and Grenade Launcher ranges, respectively; personnel would use 60 and 81 millimeter mortars at the Mortar Range firing positions; and rockets would be employed at the firing points associated with the Light Anti-Armor Weapon Live Range. The Live Hand Grenade Range would include construction of four throwing positions/pits with 6 foot (1.8 meter) high earthen berms between each position. Within the Demolition Range, explosives training would occur, there would be detonations of charges with a maximum of 24 pounds net explosive weight within a designated detonation point (a cleared area set back from roads and supporting facilities).

Aviation activities would use live munitions from machine guns and rockets and delivery of inert aviation ordnance at targets within the High Hazard Impact Area as part of Offensive Air Support Range and Close Air Support Range training. Additionally, artillery would be fired indirectly at the High Hazard Impact Area from Field Indirect Fire Range firing positions throughout the RTA (see Military Lease Area-wide Training below). Once active, the High Hazard Impact Area would be used for live-fire training only; no maneuvering would be allowed and access would be restricted to authorized personnel only.

2.4.1.3.2 Range Complex B Training Operations

The primary emphasis of Range Complex B would be to conduct live-fire vehicle-mounted (e.g., tanks, fighting vehicles) training. Personnel in vehicles would move to firing points and using the lines of sight they would practice firing at stationary and moving targets (i.e., target objectives). Although not the primary purpose for this range complex, personnel would maneuver on foot within the range complex in squads. This type of foot maneuvering differs from that within the Infantry Platoon Battle Course (Range Complex C) which occurs in larger groups (i.e., platoon level).

Training at the following ranges would include the use of rifles, machine guns, as well as grenade and rocket launchers: (1) Anti-Armor Tracking Range, (2) Tank/Fighting Vehicle Stationary Target Range, (3) Multi-Purpose Training Range, and (4) Tank/Fighting Vehicle Multi-Purpose Range Complex. Munitions at those ranges would include live munitions as well as inert grenades, rockets, and 60 millimeter and 81 millimeter mortars.

Training at the Combat Pistol and Battle Sight Zero ranges would involve small caliber weapons (e.g., pistols, rifles, and shotguns). These two ranges are co-located in Range Complex B to maximize training space efficiency.

Simulated aviation training would occur within Range Complex B but it would not involve firing of weapons.

2.4.1.3.3 Range Complex C Training Operations

The primary emphasis of Range Complex C would be the live-fire training activities associated with the Infantry Platoon Battle Course and the Urban Assault Course. Training activities at the Infantry Platoon Battle Course, and Urban Assault Courses would involve personnel moving primarily on foot to target objective areas employing live munitions for rifles and inert munitions for grenade and rocket launchers. The two smaller ranges (e.g., Multi-Purpose Automated Unknown Distance Range and Field Fire Range) would be stationary and co-located in the complex to maximize space efficiency.

Simulated aviation training would occur within Range Complex C but it would not involve firing of weapons. This type of aviation training involves the flight patterns used for live-fire munitions delivery, but without the release or delivery of munitions. Attack helicopters and fixed-wing aircraft (jets) would perform these “dry-runs” to provide ground-based tactical air controllers air-ground coordination training.

2.4.1.3.4 Range Complex D Training Operations

Training within Range Complex D emphasizes both aviation training and ground training. Aviation training would occur within a Drop Zone, a Landing Zone, an Unmanned Aircraft Systems Ground Station, and a Forward Arming and Refueling Point. Aviation training would include takeoff and landing practice for fixed wing, helicopters, tilt-rotor aircraft, and unmanned aircraft (i.e., drones), drop (parachute) of personnel/cargo/equipment, aircraft refueling, and aviation command and control. Historic assets at North Field will be protected during Range Complex D training operations. For further discussion of historic assets at North Field, see Sections 3.11 and 4.11, *Cultural Resources*.

2.4.1.3.5 Military Lease Area-wide Training Assets Training Operations

The Military Lease Area-wide training assets would include the following live-fire and non-live-fire training operations:

2.4.1.3.5.1 Field Artillery Indirect Fire Range (live-fire)

Field Artillery Indirect Fire Range would involve personnel firing live rounds (such as 120 millimeter mortar and 155 millimeter high explosive) from ten designated firing points (five south of Unai Masalok, two north of the base camp, and three east of Ushi Point) into the High Hazard Impact Area (Range Complex A).

2.4.1.3.5.2 Convoy Course (live-fire)

Convoy Course training would involve personnel driving vehicles in a convoy along a specific route through the Tinian RTA. The primary emphasis of this course is for vehicles (wheeled and tracked) to progress from one engagement zone to the next, firing weapons at targets and maneuvering the vehicles. Tracked vehicles conducting convoy course training would be limited to those roads intended for tracked vehicles (i.e., Tracked Vehicle Driver's Course). The designated course and engagement areas vary between alternatives. [Section 2.4.2](#), *Tinian Alternative 1*, and [Section 2.4.3](#), *Tinian Alternative 2*, provide details on the designated course for each of the action alternatives.

2.4.1.3.5.3 Tracked Vehicle Driver's Course (non-live-fire)

Tracked Vehicle Driver's Course training would involve personnel driving tracked vehicles (e.g., Amphibious Assault Vehicles) along designated roads or pathways. Tracked vehicles conducting convoy course training would be limited to those roads intended for tracked vehicles (i.e., Tracked Vehicle Driver's Course). Training conducted on the course is non-live-fire which would use blank munitions to conduct force on force weapons training.

2.4.1.3.5.4 Tactical Amphibious Landing Beaches (non-live-fire)

Tactical Amphibious Landing Beach training (i.e., "amphibious training") would take place to varying degrees at four beaches within the Military Lease Area: (1) Unai Babui; (2) Unai Chulu; (3) Unai Lam Lam; and (4) Unai Masalok. Tactical amphibious training would involve the use of Amphibious Assault Vehicles (at Unai Chulu), Landing Craft Air Cushion vessels (at Unai Babui, Unai Chulu, and Unai Masalok), small boats (e.g., inflatable Rubber Raiding Craft) and combat swimmers (at Unai Babui, Unai Chulu, Unai Lam Lam, and Unai Masalok). These activities are described in the following bullets.

- *Amphibious Assault Vehicles* would land at Unai Chulu and the vehicles would come ashore and use military roads to gain access to the Tracked Vehicle Driver's Course.
- *Landing Craft Air Cushion* vessels would land at Unai Babui, Unai Chulu, and Unai Masalok. Vessels would come ashore or near shore, offload personnel, equipment and vehicles, and personnel would move either on foot or by vehicle to training facilities within the RTA.
- *Combat swimmer and small boat landings* would occur at Unai Babui, Unai Chulu, Unai Lam Lam, and Unai Masalok. Personnel and swimmers would come ashore and move either on foot or by vehicle to training facilities within the RTA.

2.4.1.3.5.5 Maneuver Area (Light Forces) (non-live-fire)

Maneuver Area (Light Forces) training would involve personnel moving on foot along roadways, pathways, and open land areas within the Military Lease Area. Vehicle maneuvering would only occur on developed roads and trails. This training is non-live-fire which would use blank munitions to conduct force on force weapons training.

2.4.1.3.5.6 Maneuver Area (Amphibious Forces) (non-live-fire)

Maneuver Area (Amphibious Forces) would involve personnel driving Amphibious Assault Vehicles from designated amphibious training beaches to engage in training within the RTA. Tracked vehicles would travel only along the Tracked Vehicle Drivers course. Furthermore, at designated amphibious training beaches, Landing Craft Air Cushion vessels would embark and/or disembark personnel and wheeled vehicles; small boats would on- and/or off-load personnel; and combat swimmers would come ashore and/or depart. Personnel and equipment would engage in training within the RTA. This training is non-live-fire which would use blank munitions to conduct force on force weapons training only when personnel and equipment are on shore.

2.4.1.3.5.7 Landing Zones (non-live-fire)

Training using Landing Zones would involve fixed wing, helicopters, tilt-rotor, and unmanned aircraft landing and taking off at existing (cleared) North Field runways (e.g., Baker, Charlie and Dog). In addition, five smaller designated Landing Zones at Pina (south of Unai Masalok), base camp, east of base camp, within Range Complex C, and north of Range Complex C would involve helicopters and tilt-rotor aircraft landing and taking off. Landing Zone training is non-live-fire and no aviation munitions would be employed (including blanks).

2.4.1.3.5.8 Observation Posts (non-live-fire)

Observation Posts within the Military Lease Area would allow personnel to observe operations in the high hazard impact area and monitor ordnance scoring and detonation.

2.4.1.3.5.9 Surface Radar Sites (non-live-fire)

Surface Radar sites along the shoreline would monitor the surface danger zones. Through visual inspection and the use of cameras and/or a thermal imaging, the surface danger zones will be cleared and monitored prior to and during training events. Surface Radar sites 1 and 6 would include an additional camera for monitoring the surface danger zone to shore interface.

2.4.1.3.5.10 Terrain Flight Maneuver Area (non-live-fire)

Terrain Flight Maneuver Area training would occur while aircraft are in transit. This type of training is non-live-fire and does not involve the use of weapons. It includes a flight over terrain below 200 feet (60 meters).

2.4.1.3.6 Amphibious Training Operations

Proposed amphibious training operations include non-live-fire tactical and administrative operations on the island of Tinian. Tactical amphibious training operations are intended to represent a combat situation where as administrative amphibious training is intended to allow amphibious craft to come ashore for logistical purposes. As described in [Section 2.4.1.3.5](#), *Military Lease Area-wide Training*

Assets, under all Tinian action alternatives, four beaches within the Military Lease Area would be used for tactical amphibious training operations: Unai Babui, Unai Chulu, Unai Lam Lam, and Unai Masalok. In addition, the old boat ramp at the Port of Tinian would be used for administrative amphibious training (see [Section 2.4.1.2.12.4, Tactical Amphibious Beach Landings \(non-live-fire\)](#)).

- *Amphibious Assault Vehicle Landings*—Unai Chulu
- *Landing Craft Air Cushion Vessel Landings*—Unai Chulu, Unai Babui, and Unai Masalok
- *Small Boat and Swimmer Training*—Unai Chulu, Unai Babui, Unai Lam Lam, and Unai Masalok

Typically, an amphibious craft leaves the larger ship (or stages itself for the training event) anywhere between 2 to 4 miles (4 to 7 kilometers) away from the landing beach. [Table 2.4-2](#) provides annual estimated tactical amphibious operations under any of the action alternatives.

The number of daily tactical amphibious landings (i.e., use of an amphibious craft to come ashore) may vary based on many factors such as the training scenario and objectives, weather/sea state, and vehicle availability. The combination of these factors present challenges in predicting the frequency of tactical amphibious training. In general, tactical amphibious training on Tinian would be spread evenly throughout the 20 weeks of military training, consistent with the unit level of training emphasis, with daily variations as noted below. The amphibious training on Tinian would occur less frequently but over a longer period of time than the Pagan amphibious training.

Table 2.4-2. All Tinian Action Alternatives Proposed Annual Amphibious Operations

<i>Type of Amphibious Landing</i>	<i>Proposed Annual Landing Events</i>	<i>Number of Vehicles/Landing per Event**</i>	<i>Annual Total Landings*</i>
Amphibious Assault Vehicle-Landings			
Marine Unit-simulated landings	54	4	852
Marine Unit-landings	66	4	
Foreign Allies-landing	27	4	
Major Joint Exercises-landings	66	4	
Landing Craft Air Cushion-Landings			
Marine Units	32	2	144
Foreign Allies	16	2	
Major Joint Exercises	24	2	
Small Boats-Landings			
Special Operations Forces	12	2	1,368
Marine Units	54	22	
Foreign Allies	6	18	
Major Joint Exercises	24	2	

Notes: *Total number of vehicles landing annually.

** An event is a single vehicle landing or a single vehicle departure.

Source: DoN 2014a.

2.4.1.3.6.1 Tactical Amphibious Assault Vehicle Landings

For Amphibious Assault Vehicles, a typical light training day may consist of four vehicles landing and departing three times in a 24-hour period, on a specified beach. A typical heavy training day may consist of 16 vehicles landing and departing two times in a 24-hour period, on a specified beach. Generally, these heavy and light training days occur at various intervals over individual two week training cycles at Tinian. Amphibious Assault Vehicles can transport up to 18 individuals per vehicle.

2.4.1.3.6.2 Landing Craft Air Cushion Vessel Landings

For Landing Craft Air Cushion vessels, similar training frequencies would occur. A typical light training day may consist of two vessels landing and departing two times in a 24-hour period, and a typical heavy training day two vessels would land and depart six times. Unai Chulu and Unai Masalok would be used more often than Unai Babui. These typical days would occur within a one or two week training cycle. Landing craft air cushion vessels can transport up to 186 individuals per vehicle.

2.4.1.3.6.3 Small Boat Training

For small boat and swimmer training, a typical light training day may consist of four boats landing and departing four times, and a typical heavy training day would be four boats landings and departing ten times each. All designated beaches would be used at a similar frequency. Small boats can transport up to 8 individuals per vehicle.

2.4.1.3.6.4 Combat Swimmer Training

Combat Swimmer training to occur on Unai Chulu, Unai Babui, Unai Lam Lam, and Unai Masalok, could occur two ways: (1) insertion, and, (2) scout swimmers (initial terminal guidance) to guide small boats (not Amphibious Assault Vehicles and Landing Craft Air Cushion) to the landing beach. A typical group of swimmers is four, but could be as large as 16. As far as average frequency, a typical group of four swimmers would train daily, on any given beach, during the 20 weeks of live-fire training on Tinian.

2.4.1.3.7 Airfield Training Operations

All Tinian action alternatives would include airfield operations for training at Tinian International Airport, North Field and on proposed Landing Zones. For the purposes of this EIS, Landing Zones are considered crude airfields for field use by rotary-wing and tilt-rotor aircraft. Airfield training operations would include take-offs and landings, field carrier landing practice operations, helicopter and tilt-rotor aircraft training at Landing Zones, and the base for Unmanned Aircraft Systems operations. [Table 2.4-3](#) provides a summary of annual training operations by aircraft type and time of day associated with the airfields at Tinian International Airport and North Field.

Table 2.4-3. Tinian All Alternatives Proposed Annual Airfield Military Operations¹

Aircraft Type ²	Tinian International Airport			North Field			Total		
	7:00 a.m.-10:00 p.m.	10:00 p.m.-7:00 a.m.	Total	7:00 a.m.-10:00 p.m.	10:00 p.m.-7:00 a.m.	Total	7:00 a.m.-10:00 p.m.	10:00 p.m.-7:00 a.m.	Total
Transport Tilt-rotor	720	280	1,000	320	80	400	1,040	360	1,400
Transport Rotary-wing	680	280	960	280	80	360	960	360	1,320
Attack Helicopter	520	240	760	120	40	160	640	280	920
Transport Fixed Wing	800	400	1,200	800	400	1,200	1,600	800	2,400
Unmanned	200	100	300	200	100	300	400	200	600
Fighter	1,600	400	2,000	Not applicable			1,600	400	2,000
Heavy commercial transport ³	24	0	24	Not applicable			24	0	24
Fighter – Field Carrier Landing Practice	2,500	500	3,000	Not applicable			2,500	500	3,000
Total	7,044	2,200	9,244	1,720	700	2,420	8,764	2,900	11,664

Notes: ¹Operations include a takeoff or a landing and each are counted as one operation. A take-off and a landing are two operations.

²Examples of aircraft types: Transport Tilt-rotor – MV-22; Transport Rotary-wing – CH-53; Attack Helicopter – AH-1 and AH-64; Transport Fixed Wing – C-130, KC-135, and C-17; Unmanned Aerial System – RQ-7; and Fighter – F-18, AV-8, and F-35.

³See also [Section 2.4.1.5.1, Air Transportation](#).

[Table 2.4-4](#) presents annual aircraft training operations by aircraft type and time of day which include training for pilots and ground personnel for the insertion or extraction of personnel and equipment simulating combat situations. The operations can include close air support in transit to or from the operation.

Table 2.4-4. All Tinian Action Alternatives Proposed Typical Annual Landing Zone Operations

Aircraft Type (Example)	Annual Number of Operations	
	7:00 a.m.-10:00 p.m.	10:00 p.m.-7:00 a.m.
Transport Tilt-Rotor (MV-22)	320	80
Transport Rotary-Wing (CH-53)	280	80
Attack Helicopter (AH-1/H-60)	120	40
Total	720	200

Notes: ¹Number of operations include all Landing Zones.

²A portion of the training flights would include transport of personnel and equipment as part of their training mission.

2.4.1.3.8 Simultaneous Use of Training Assets

For safety purposes, Range Control personnel would coordinate with training exercise planners to establish when each training facility would be used throughout a training day. In general, a degree of simultaneous use of each range complex could occur. However, certain activities at a given range complex or training facility might temporarily exclude other activities in the same range complex or other area. For example, within Range Complex A, during aviation training associated with Offensive Air Support Range training or Close Air Support Range training, certain ground based ranges (i.e., Hand Grenade Range, Mortar Range, Grenade Launcher Range, and Light Anti-Armor Weapon Range) would

not be in operation. This is due to the overlap of weapons danger zones associated with the aviation munitions and the ground-based ranges located within Range Complex A. Similarly, during live-fire training on the Convoy Course, other training activities not associated with the live-fire Convoy Course in the vicinity of the “hot” engagement areas would not be allowed.

Range Control and training exercise planners would factor the number of training events planned for a given day, the intent or objective of each event, number of personnel, types of equipment, weaponry, and munitions and devise a plan to safely accommodate training on as many range complexes and training facilities as possible. This type of planning and simultaneous training execution takes place at similar live-fire training venues throughout the military Services and is the subject of specific range regulations and standard operating procedures.

2.4.1.4 Operation and Management of Tinian Range and Training Area

2.4.1.4.1 Operation of Tinian Range and Training Area

Approximately 95 personnel would be employed, likely reside on Tinian, and work year-round supporting Tinian RTA operations and maintenance activities. Overall, the proposed Tinian RTA would operate 20 weeks per year (non-consecutive weeks of live-fire training), with a typical training duration of 2 weeks. Training would potentially occur 7 days per week. Operations for small-caliber and airfield training are assumed to occur about 80% during the hours of 7:00 a.m. to 10:00 p.m. and 20% during the hours of 10:00 p.m. and 7:00 a.m. Large-caliber operations are assumed to occur about 96% during the hours of 7:00 a.m. to 10:00 p.m. and 4% during the hours of 10:00 p.m. and 7:00 a.m. (DoN 2014c).

For a given live-fire training exercise period, it is anticipated that there would be 30 to 2,200 transient training and support personnel in addition to the 95 permanent support personnel at the Tinian RTA. However, in order to accommodate the possibility of overlapping training parties, the Tinian RTA base camp is designed to accommodate up to 3,000 personnel (1,500 trainees in permanent, open bay barracks and 1,500 trainees in tents). This would support overlap of a Marine Unit exercise with a multilateral training exercise or other overlapping exercise pre- or post-training party.

Personnel and cargo would move to and from the Military Lease Area, and to and from Tinian via barges, ferries, military Joint High Speed Vessels, amphibious craft, and other military sealift platforms.

The primary supply route from the Port of Tinian to the Military Lease Area would support the movement of heavy equipment, vehicles, personnel, and munitions associated with the training units. Amphibious Assault Vehicles would use the existing old public boat ramp with land-based improvements for administrative amphibious landings. A Tracked Vehicle Driver’s Course transit lane (graded and graveled) for the Amphibious Assault Vehicles and tanks would allow these vehicles to transit directly from the old boat ramp (after completing biosecurity measures) at the Port of Tinian to the Military Lease Area. Personnel arriving via the port would be bused to the base camp. A logistical support plan for munitions, fuel, equipment, and vehicle movement would be developed. This logistical plan, along with the required spill prevention and response plan, would address explosive safety, biosecurity, and commercial port and airport transport requirements; the plans would be coordinated with the Defense Logistics Agency and Naval Supply Systems Command Energy as appropriate.

2.4.1.4.1.1 Security

In accordance with U.S. military safety and security regulations the RTA boundary would be identified by erecting a mix of both chain-link and barbed-wire fences at specific locations within the Military Lease Area. [Figure 2.4-6](#) illustrates where fences and gates would be established to restrict access and ensure public safety when training facilities are active.

2.4.1.4.1.2 Public Access

Public access would largely be available to certain portions of the Military Lease Area and waters off the Military Lease Area when no training is occurring, with some exceptions. Public access would always be restricted at the following areas: (1) the entire High Hazard Impact Area; (2) the Munitions Storage Area; (3) the base camp; and (4) the Observation Posts and Surface Radar sites. In general, public access would be allowed to all locations except the four noted above when training is not occurring.

Access procedures would be implemented to ensure safety and provide guidance and direction. Public access would be provided by an entry control facility, or “Visitors Office” along the southern boundary of the Military Lease Area. Entry control is the primary method used to assure safety by separating hazardous training activities from non-participants. Entry control procedures would be applicable during training events. The entry control facility would conduct visitor processing, vehicle registration, identification checks, as well as privately-owned vehicle and truck inspections. Visitors would check in at the entry control facility prior to entering and upon leaving the Military Lease Area (DoN 2014d).

Public access to the Military Lease Area including the North Field National Historic Landmark, grazing lands, beaches, trails and other points of interest is a priority. Public access to the RTA would be prohibited, to varying degrees depending on training tempo, in some to all areas of the RTA during live-fire and other training events. However, public access would be allowed at times when such training events are not taking place. It is envisioned that public access to some or all areas of the RTA would occur during a couple daylight hours on a nearly daily basis. A range control facility and dedicated range scheduler would be in place to assess public access in real-time and to provide advance notice of public access dates, time frames, and areas. Range control and the scheduler would coordinate public access directly with the Tinian Mayor's Office and other interested parties, such as ranchers and entities within the tourism industry.

Units would schedule their live-fire training through a schedule system approximately 6 months prior to the training event (DoN 2014d), and training periods would be published electronically by the U.S. military using current methods of public notification and with posted signs. Public notices for daily training events would be published. This prior planning would allow sufficient lead time for commercial travel and tourism companies to engage in potential markets for those individuals seeking to visit Tinian. This notice would also provide visitors and residents days and times when they may access the Military Lease Area. As training cycles are refined, a public RTA access plan would be developed to address individual requests for access (DoN 2014d).

Access to nearshore waters would be allowed outside of the proposed 20 weeks of live-fire training. During training events, access to nearshore waters would be regulated through the establishment of danger zones. Danger zones are discussed further in [Section 2.4.1.9](#), *Sea Space Requirements*.

2.4.1.4.1.3 Biosecurity

The Department of Defense will require development and implementation of detailed Hazard Analysis and Critical Control Point plans tailored for individual construction, transport, and logistics activities related to CJMT actions. For all training activities, general Hazard Analysis and Critical Control Point plans will be developed prior to initiation of training, and implementation will be required for each training event. The Department of Defense will require a biosecurity education program for 100% of contractors, Department of Defense civilian and military personnel, and foreign military on native versus non-native species, including the brown treesnake; prevention and control methods; and reporting requirements. To address non-native species risk pathways, DoN funded the development of a Regional Biosecurity Plan. When the plan is completed, for recommendations applicable to CJMT activities, the Department of Defense will work cooperatively with appropriate agencies to develop and implement interdiction and control protocols. Finally, Joint Region Marianas has established a comprehensive brown treesnake interdiction program to ensure that military activities, including the transport of personnel and equipment from Guam, do not contribute to the spread of brown treesnakes within the CNMI. Brown treesnake interdiction requirements contained in Navy Region Marianas and Joint Region Marianas instructions will be implemented for CJMT activities. Additional biosecurity details are provided in Section 4.9, *Terrestrial Biology* and Appendix D, *Best Management Practices*.

2.4.1.4.1.4 Emergency Services

Military personnel coming to train at the Tinian RTA would be accompanied by their associated medical/emergency medical personnel and equipment. A medical evacuation plan would be prepared to address how a critically injured person would receive medical treatment.

A fire management plan specific to proposed CJMT activities would be prepared prior to initiation of live-fire training on Tinian. This fire management plan would address the preventative and immediate actions required for fire hazards connected with RTA training. Water resources and labor would be identified to ensure safe training and protection of public safety and property. A 90-foot (30-meter) firebreak would be provided around the High Hazard Impact Area. Water trucks and hydrants would be located at the base camp and Munitions Storage Area. Prescribed burns to control vegetation would occur within the High Hazard Impact Area only after assessment of fire conditions. Other emergency response plans are discussed in Section 4.17, *Public Health and Safety*.

It is anticipated that appropriate mutual aid agreements or memorandums will be established among the civilian and military emergency services prior to training events.

2.4.1.4.1.5 Operational Range Management

Live-fire ranges would be managed in accordance with current Marine Corps range management policies and procedures, which are designed to ensure the safe, efficient, effective, and environmentally sustainable use of the range areas. The RTA on Tinian would be managed in accordance with Marine Corps Order P3550.10 with Change 1, Policies and Procedures for RTA Management (DoN 2005).

These policies and procedures would be reviewed and coordinated with Joint Region Marianas regional range management. All service policies include the following:

- A Range Safety Program would be established per Marine Corps Order 3570.1C, Range Safety detailing procedures for RTA safety, emergency response (medical and fire), Explosive Ordnance Disposal, training mishap investigations, safety training, and range inspections (DoN 2012).
- RTA procedures for scheduling, collecting utilization data and reporting range use.
- Controls for RTA airspace in accordance with Federal Aviation Administration regulations and agreements, with an objective of use by multiple agencies with minimal interference and maximum safety.
- Controls for monitoring danger zones to ensure safety of mariners in nearshore waters.
- Management of movement and access into and within the RTA.
- Coordination of all RTA communications and radar surveillance.
- Provision of range maintenance including vegetation maintenance, operational range clearance, and clearance of unexploded ordnance.
- Maintenance of ranges, targets, training devices, fencing, gates, and signage.
- Coordination of vehicle and transportation operations and maintenance.
- Procedures for environmental protection.
- Provide administration and personnel management.

2.4.1.4.1.6 Environmental Protection

In the ongoing periodic training use and maintenance of the proposed ranges, basic environmental protection features that would be incorporated into the RTA Management Plan would include:

- Fire condition monitoring for firefighting readiness and modification of training as appropriate as part of RTA management procedures. Unit-based firefighting personnel can access range areas with appropriate equipment.
- Specific regulations and information provided for using units to protect the environment as part of RTA procedures. Adherence to protective measures established in natural and cultural resource management plans.
- Adherence to RTA procedures and information provided under Marine Corps Order P3550.10 for using units to protect the environment.
- Clear marking of ranges and transit routes necessary to reach these areas. Restricting vehicular activities to designated/previously identified areas.
- Adherence to existing policies and management activities to prevent erosion and preserve soils, including applicable stormwater pollution prevention plans.

2.4.1.4.1.7 Range Environmental Vulnerability Assessment

Department of Defense Instruction 4715.14 is the overarching policy that establishes the requirement for the Marine Corps Range Environmental Vulnerability Assessment program (Department of Defense 2005). This policy requires the military services to assess the potential environmental impacts of military munitions use on existing operational ranges and determine whether there has been a release or a substantial threat of a release of munitions constituents (i.e., chemical components of munitions) to an off-range area. If a release occurs off-range, the policy also requires the military services determine whether or not the release poses an unacceptable risk to human health and/or the environment based

upon the known characteristics of the chemical(s). The Range Environmental Vulnerability Assessment process includes data collection, analysis, documentation and follow-on activities, as needed. See Section 4.3, *Water Resources* and Section 4.16, *Hazardous Materials and Waste* for additional description of Range Environmental Vulnerability Assessment and its application to the proposed action.

2.4.1.4.1.8 Bulk Fuel Storage

Bulk fuel requirements (regular unleaded gas, diesel, and aviation fuel) would be replenished either by sea or air on a periodic basis at the Port of Tinian and base camp. Military and commercial fuel supply vessels would dock and deliver fuel to the new Jet Propellant bulk fuel storage facility at the Port of Tinian (see [Figure 2.4-5](#)). Regular unleaded gas and diesel would be provided through the current Tinian commercial facilities adjacent to the port. The fuel would be trucked from the port fuel storage facility to an expeditionary bulk storage facility at the airfield-base camp (see [Figure 2.4-2](#)) or a fuel pipeline would be constructed to transfer fuel to the bulk storage facility at the airfield. Individual fuel distribution would be from the co-located facility at the airfield-base camp location. Additionally, bulk fuel would be delivered via air resupply from such platforms as a KC-130 or other military air tanker-refueled to the expeditionary bulk fuel storage facility at the airfield-base camp. It is anticipated that a fuel storage capacity of up to 850,000 gallons (3,217,600 liters) of Jet Propellant would be needed to support RTA operations and management. Up to 195,000 gallons (738,000 liters) of diesel would be needed annually. Ground disturbance associated with bulk fuel storage is included in the improvements to the Port of Tinian and the base camp improvements.

As with munitions movement, a logistical support plan, including required spill prevention plan and spill response plan, that coordinates explosive safety, biosecurity, and commercial port and airport requirements will be developed as appropriate.

2.4.1.4.2 Vegetation Management at Tinian Range and Training Area

To maintain RTA operations, vegetation control would be required and undertaken by Range Control personnel. The proposed base camp, airfield improvements, port improvements, and RTA facilities would all require varying degrees of vegetation management. For example, accommodating line-of-sight, fire control, and equipment laydowns are factors dictating the degree of proposed vegetation maintenance. A description of proposed vegetation maintenance areas and management is provided in Appendix F, *Geology and Soils Technical Memo*.

2.4.1.5 Transportation

Air, marine and ground transportation options are common to all three Tinian action alternatives and are identified below.

2.4.1.5.1 Air Transportation

Air transportation support to and from Tinian would include contracted commercial air carriers and the occasional use of U.S. military aircraft. Air operations associated with transport are discussed in this section, while air operations associated with tactical maneuver training are discussed in [Section 2.4.1.3.7, Airfield Training Operations](#). Air transport operations (or sorties) could be between Andersen Air Force Base on Guam and Tinian International Airport or originate outside of the Mariana Islands (see Appendix O, *Transportation Study* for further detail). Approximately 24 annual heavy commercial

operations (e.g., Boeing 747 or equivalent) would support the transport of personnel and equipment, with operations occurring between 7:00 a.m. and 10:00 p.m. The proposed new military parking apron planned north of the current runway is anticipated to alleviate current challenges on Tinian when military aircraft land and offload near the terminal. Biosecurity protocols would be instituted for aircraft carrying military equipment and/or personnel arriving and departing Tinian.

2.4.1.5.2 Ground Transportation

Ground transportation would be provided by each unit transporting its own equipment required for training. These would include High Mobility Multi-Purpose Wheeled Vehicles (i.e., Humvees), Medium Tactical Vehicle Replacements, 7-ton trucks for convoy training, and other tactical vehicles (e.g., Amphibious Assault Vehicles, Light Armored Vehicles). In addition, various types of military and commercial vehicles and/or equipment are planned for personnel movement and permanent support of administrative and range maintenance functions for base camp and range administrative and maintenance functions as well as airfield and port operations. These include: 8 buses, 2 cars, 15 4-wheel drive light trucks, 5 medium tactical 7-ton trucks, 5 commercial flatbed trucks, 2 D7 bulldozers, 2 front-end loaders, 1 forklift, 1 material handling equipment, 3 fire trucks, 1 firefighting water supply truck, 1 extended boom forklift, 8 4-wheel drive dump trucks, 2 gang mowers with tractors, and 4 mowers. It should be noted that this list is not inclusive of vehicles and/or equipment that would be used during the construction period. The training participants using the Tinian RTA would be transient personnel and therefore, privately-owned vehicles would not be authorized for use during non-training hours.

2.4.1.5.3 Marine Transportation

Equipment and personnel movement would be by commercial or military vessels including but not limited to Joint High Speed Vessels, commercial high-speed ferry, other ferry, Amphibious Assault Vehicles, or any other passenger/cargo vessel.

Based on annual training requirements, Joint High Speed Vessels are anticipated to dock at the Port of Tinian between 60 and 120 times annually. Each training event is different and is characterized by a different mix of personnel and equipment, therefore actual number of annual landings may vary. Depending on the mix of cargo, we can anticipate that the JHSV will be in port between 6 and 12 hours each visit. The duration in port will vary and can be impacted by mechanical issues or weather delays, either of which can extend a port stay by days.

See Appendix O, *Transportation Study* for detailed information. Biosecurity protocols would be instituted for vessels transporting military equipment and/or personnel arriving and departing Tinian.

2.4.1.6 Munitions

Under all of the Tinian action alternatives, munitions transportation, storage, and expenditure would be the same, as each alternative would accommodate the same amount of munitions use during training activities. [Table 2.4-5](#) provides a breakdown of munitions expenditures. Munitions are divided by type, as well as identifying whether they are employed by ground-based personnel or delivered from aircraft. No naval shore bombardment munitions would be expended at the Tinian RTA. The potential for military expended materials falling outside of designated ranges complexes is discussed in [Section 2.4.1.7, Danger Zones](#).

**Table 2.4-5. Proposed Tinian RTA Representative Annual Munitions Expenditures:
All Tinian Action Alternatives***

<i>Munitions Type</i>	<i>Quantity (individual munitions)</i>
Ground-Based Training	
Field Artillery /Mortar/Rocket/Grenade	
155 mm HE	13,596
155 mm Illumination	1,056
155 mm Smoke	660
120 mm HE	6,600
120 mm Illumination	1,668
120 mm Smoke	1,668
21 mm Sub-cal Trainer	4,104
25 mm gun (Inert)	6,240
40 mm Grenade HE	54,250
40 mm Practice	7,371
60 mm HE	1,452
60 mm Illumination	336
60 mm Smoke	168
60 mm Inert	1,536
66 mm HE	372
81 mm HE	1,632
81 mm Illumination	612
81 mm Smoke	336
83 mm HE	256
83 mm practice round	1,032
84 mm	372
Grenade (practice)	6,174
Grenade (Fragmentation)	3,190
Small Arms	
9 mm	27,623
5.56 mm	3,368,159
.45 cal	3,000
.50 cal	251,364
7.62 mm	1,241,977
Shotgun	32,520
Air-Delivered Munitions	
25 pound Aviation Ordnance (Inert)	1,000
500 pound Aviation Ordnance (Inert)	175
1,000 pound Aviation Ordnance (Inert)	175
Laser Guided Training Round (Inert)	250
2.75-inch Rocket (Inert)	2,500
5-inch Rocket (Inert)	2,500
20 mm Training Practice Bullet	22,500
25 mm Training Practice Bullet	22,500
7.62 mm Bullet	75,000
.50 cal Bullet	50,000

Legend: mm = millimeter; cal = caliber; HE = high explosive; Inert = non explosive.

**Note:* All munitions listed are representative and can be substituted with a similar munition on a one-for-one basis if the substituted munitions are of equal or lesser net explosive weight. Assuming operational parameters (i.e., firing positions, target areas) remain the same and the substituted munitions are of equal or lesser net explosive weight, it is assumed to have a comparable noise profile as the listed munition.

2.4.1.7 Danger Zones

Under all Tinian action alternatives, three-dimensional areas would be designed that delineate portions of the earth's surface and the overlying airspace in which personnel and/or equipment may be endangered by ground weapons firing or detonation activities because of ricochet or fragmentation hazard. The size and configuration of the three-dimensional area, called a "surface danger zone," is dependent on the performance characteristics of a given weapons system, training requirements, range configuration, and geographical location. As described in [Section 2.4.1.8, Airspace Requirements](#), the Federal Aviation Administration would establish Special Use Airspace restrictions above these areas in accordance with Federal Aviation Administration rule-making authority. As described in [Section 2.4.1.9, Sea Space Requirements](#), when a surface danger zone extends over the water, the area would be established as a "danger zone" via the U.S. Army Corps of Engineers rule-making process.

In accordance with the Operational Risk Management process outlined in OPNAV Instruction 3500.39C and Marine Corps Order 3500.27B (DoN 2010a, 2011), the project Range Control staff would implement a variety of mechanisms to manage risk within the surface danger zone, including:

- Develop and clearly mark surface danger zones, which determine the restricted land, airspace, and sea space requirements to laterally and vertically contain projectiles, fragments, debris, and components resulting from the firing of weapons. Surface danger zones over navigable waterways may be marked by buoys if practical; these areas will be noted on nautical charts and are off limits during live-fire training events.
- Prior to conducting training activities, clear public and non-participating personnel from the training area.
- Continually assess the live-fire range operations and update/revise safety measures as needed.

[Figure 2.4-17](#) shows composite surface danger zones for each of the three Tinian action alternatives. Only portions of the surface danger zone that correspond to active training areas would be closed off during training events.

The surface danger zones associated with training operations on Tinian would overlap nearshore waters by approximately 18,280 acres (7,397 hectares) in Tinian Alternative 1, and 20,255 acres (8,197 hectares) in Tinian Alternatives 2 and 3. There would be a small chance that an expended projectile would fall outside of the immediate range footprint, within the surface danger zone. There would be an even smaller chance for an expended projectile to fall within the nearshore waters portion or the fringes of the surface danger zone.

2.4.1.8 Airspace Requirements

Special Use Airspace is required under all alternatives in support of both aviation and ground based training. For descriptions of the affected airspace environment as well as the environmental consequences of the proposed action on airspace, see Sections 3.6, *Airspace* and 4.6, *Airspace*, respectively. Special Use Airspace (e.g., Restricted Areas, Military Operations Areas, and Warning Areas) is designated by the Federal Aviation Administration when military training activities warrant special procedures to ensure the safety of all users of the national airspace system.

The proposed airspace is needed to support training with live munitions in the RTA by troops on the ground and by pilots training in air-to-ground combat tactics. The Special Use Airspace would support: (1) use of live-fire ground-based weapon systems; (2) Offensive Air Support Range and Close Air Support Range training; (3) use of a Drop Zone at North Field; (4) training in the operation and use of Unmanned Aircraft Systems; and (5) use of Landing Zones at North Field, Pina (south of Unai Masalok), base camp, within Range Complex C, and north of Range Complex C. Operations at Tinian International Airport would operate in accordance with Federal Aviation Administration flight procedures (these are non-live-fire activities).

Special Use Airspace is required for all Tinian action alternatives to support the activities listed above. Two types of Special Use Airspace are proposed to meet the safety and control aspects of military training at the proposed Tinian RTA: (1) Restricted Areas; and (2) a Military Operations Area. Establishment of Restricted Areas and a Military Operations Area would provide for safe separation of military training activities from other users (i.e., civilian/commercial/non-participating military) of the airspace (Figures [2.4-18](#) and [2.4-19](#)). The establishment of charted Special Use Airspace with overlying Air Traffic Control Assigned Airspace would accommodate those weapons systems with vertical hazard altitudes that could be a danger to other airspace users.

Air Traffic Control Assigned Airspace would be requested on an as-needed basis to extend the vertical boundaries of the Tinian Military Operations Area. One basic airspace design option provides the necessary coverage for all three Tinian action alternatives and is depicted in [Figure 2.4-18](#). This airspace design (i.e., Restricted Areas and Military Operations Area) is proposed that would ensure the safety of non-participating aircraft while allowing for the continued availability of the training facilities needed to provide realistic, mission-oriented training. The components of the proposed airspace design are described in the following paragraphs.

2.4.1.8.1.1 Restricted Areas

A Restricted Area is needed to ensure that non-participating aircraft are segregated from training activities that are considered hazardous to aircraft operations. Training would involve the use of munitions during ground-based and aviation training.

A Restricted Area is identified by an area on the surface of the earth with a vertical component within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Restricted Areas denote the existence of unusual hazards to aircraft, often invisible, such as ground and air-to-ground munitions operations. When activated for use, flying within Restricted Areas without prior authorization from the using or controlling agency (e.g., the U.S. military or Federal Aviation Administration) is subject to restrictions.

The proposed Restricted Areas would be scheduled for use, and information on active times would be provided to the public through existing Federal Aviation Administration Notice to Airmen procedures. Not all training requires activation of this airspace. However, when live-fire is occurring, some or all of the Restricted Areas would be “turned on” or activated and non-participating aircraft would be prohibited from entering or traversing the airspace without positive clearance from the controlling agency.

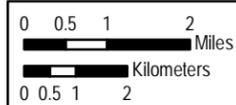
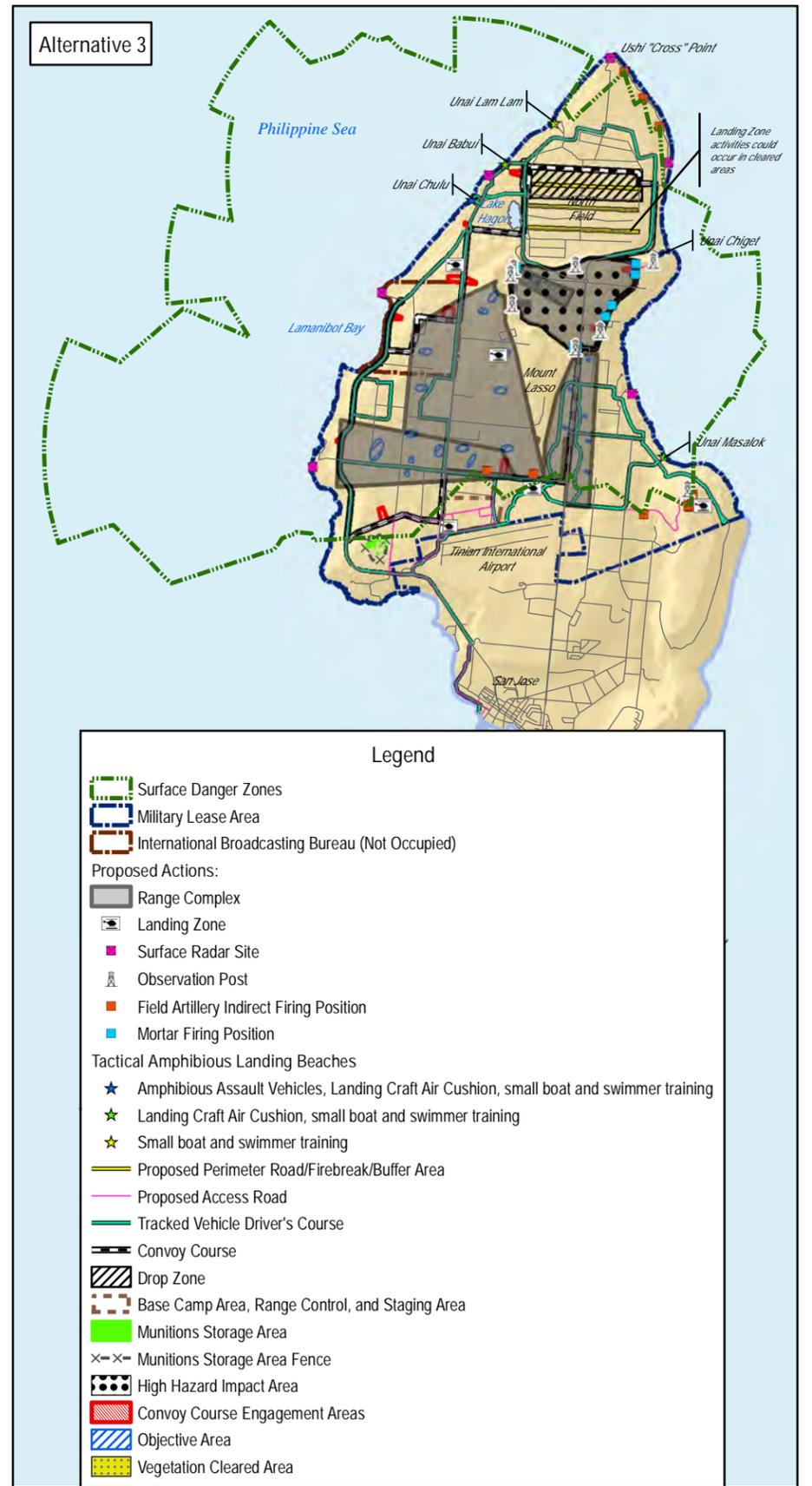
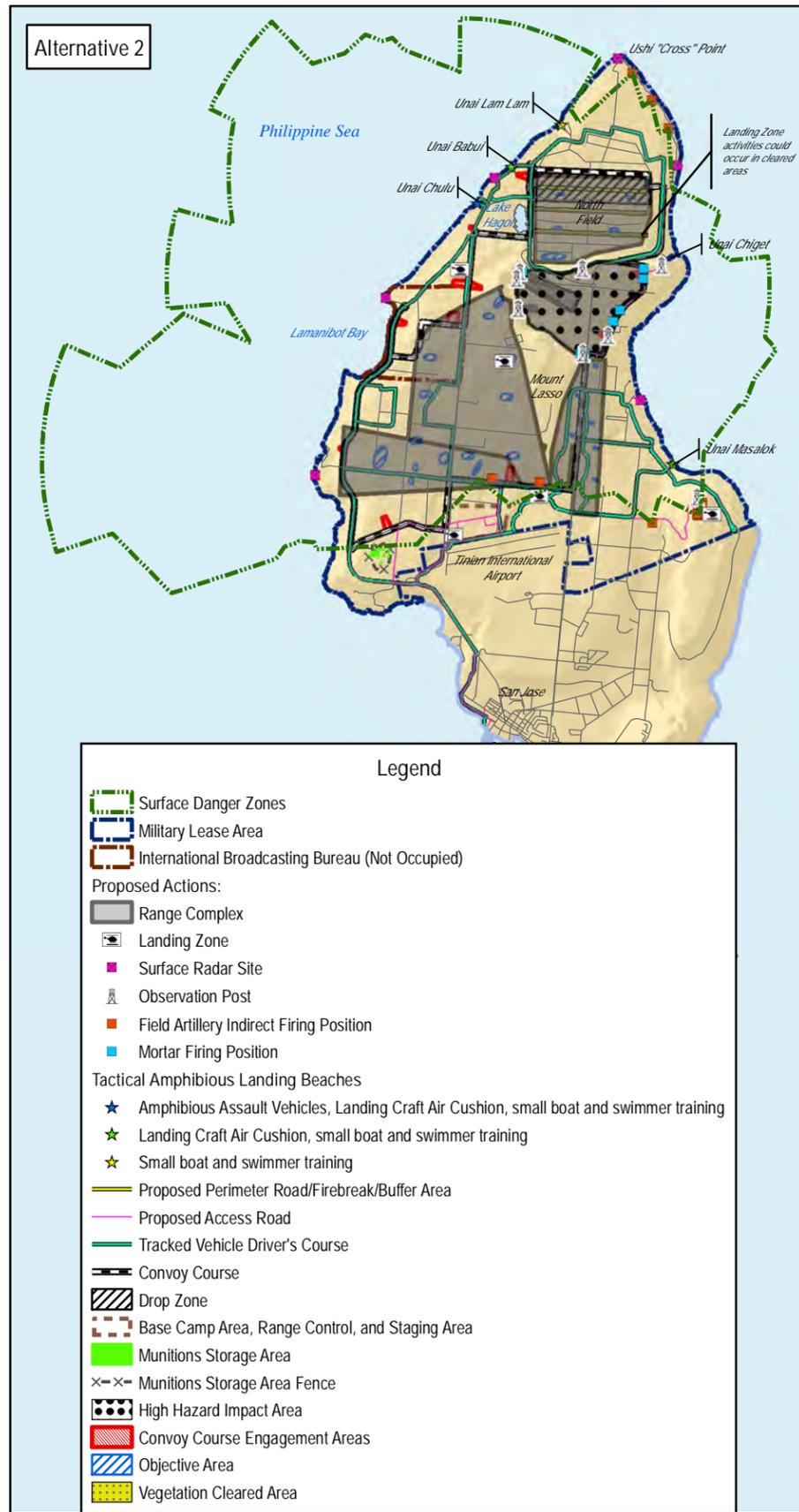
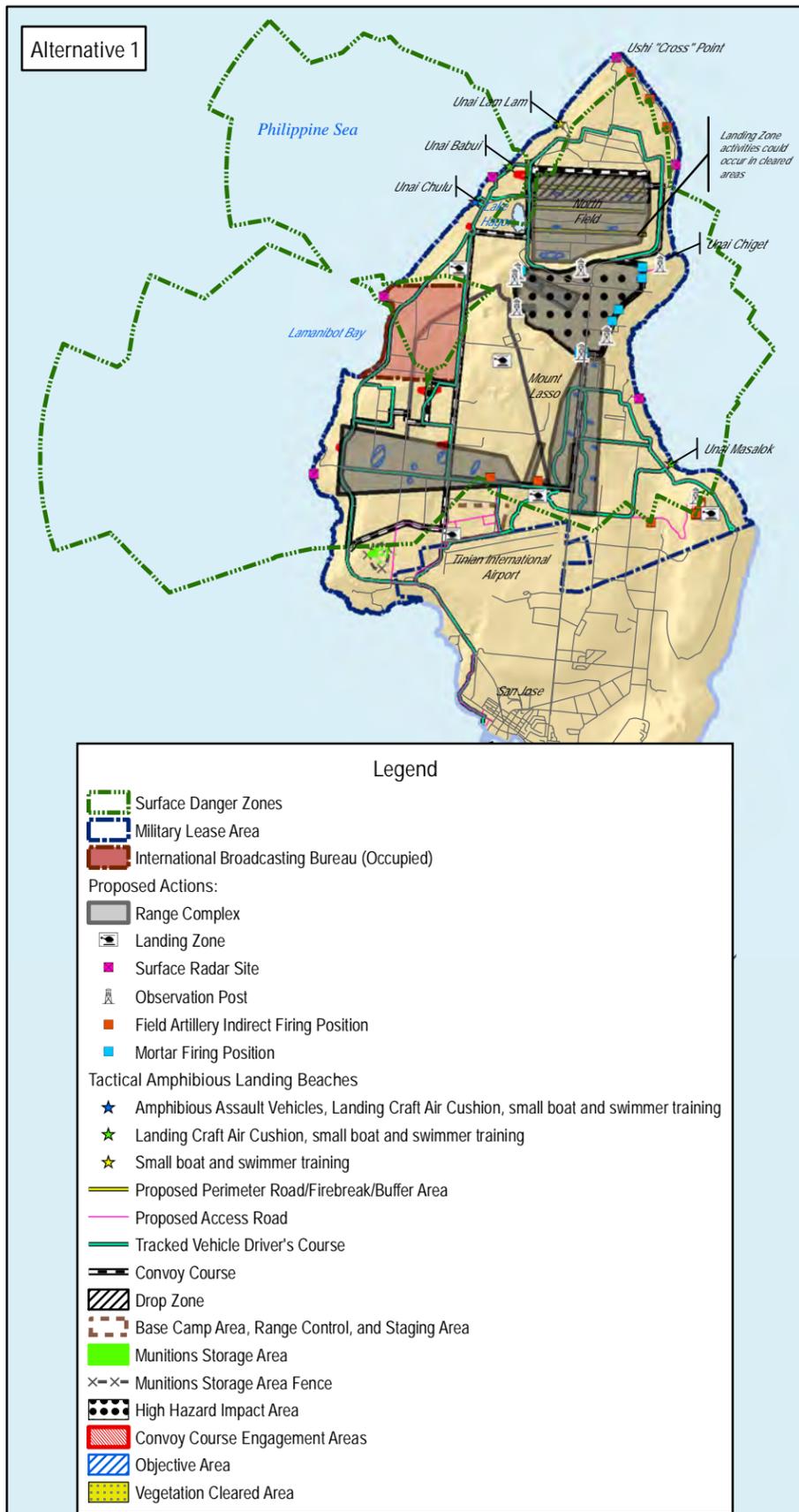


Figure 2.4-17
Tinian All Action Alternatives Surface Danger Zones



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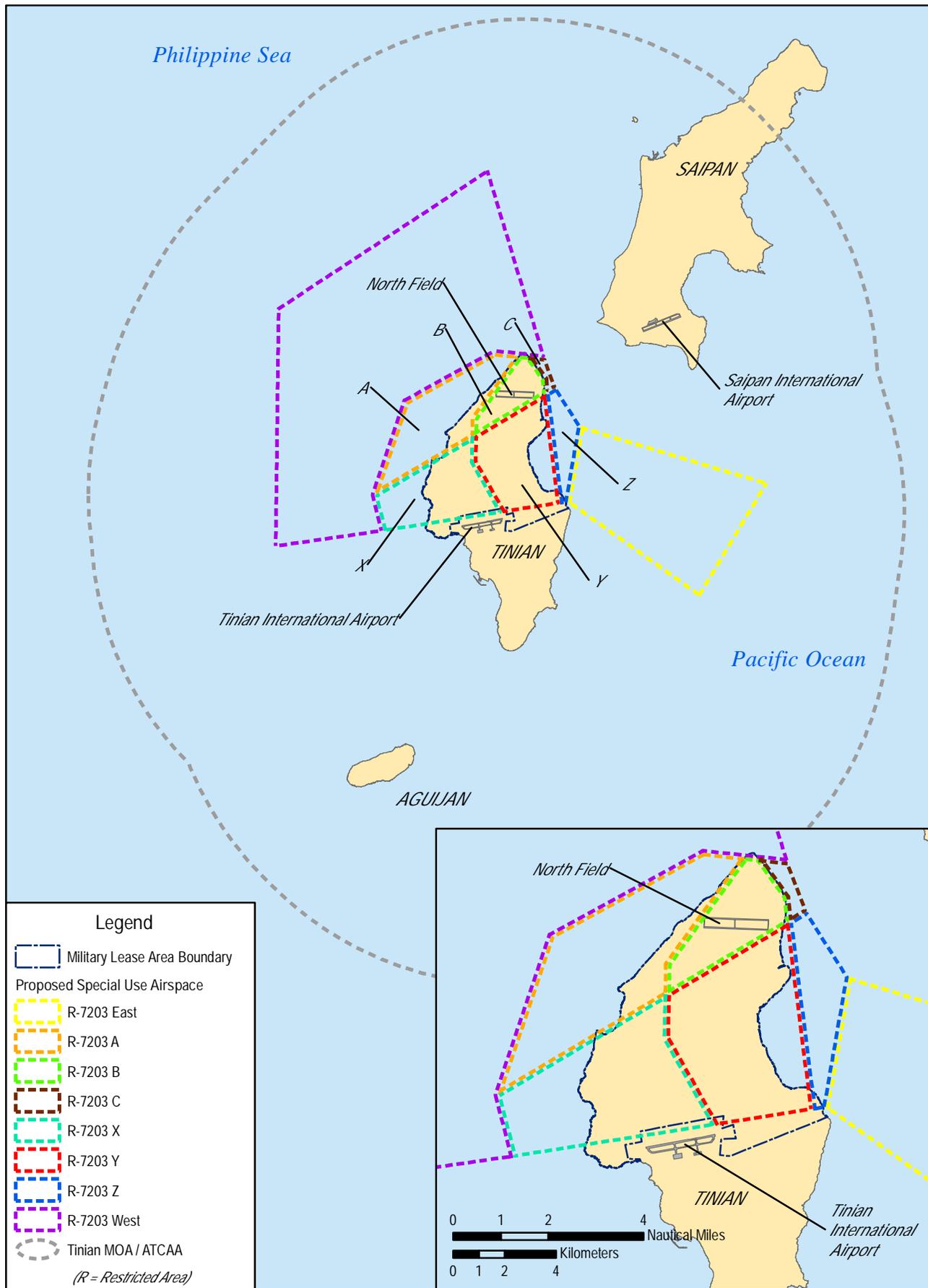
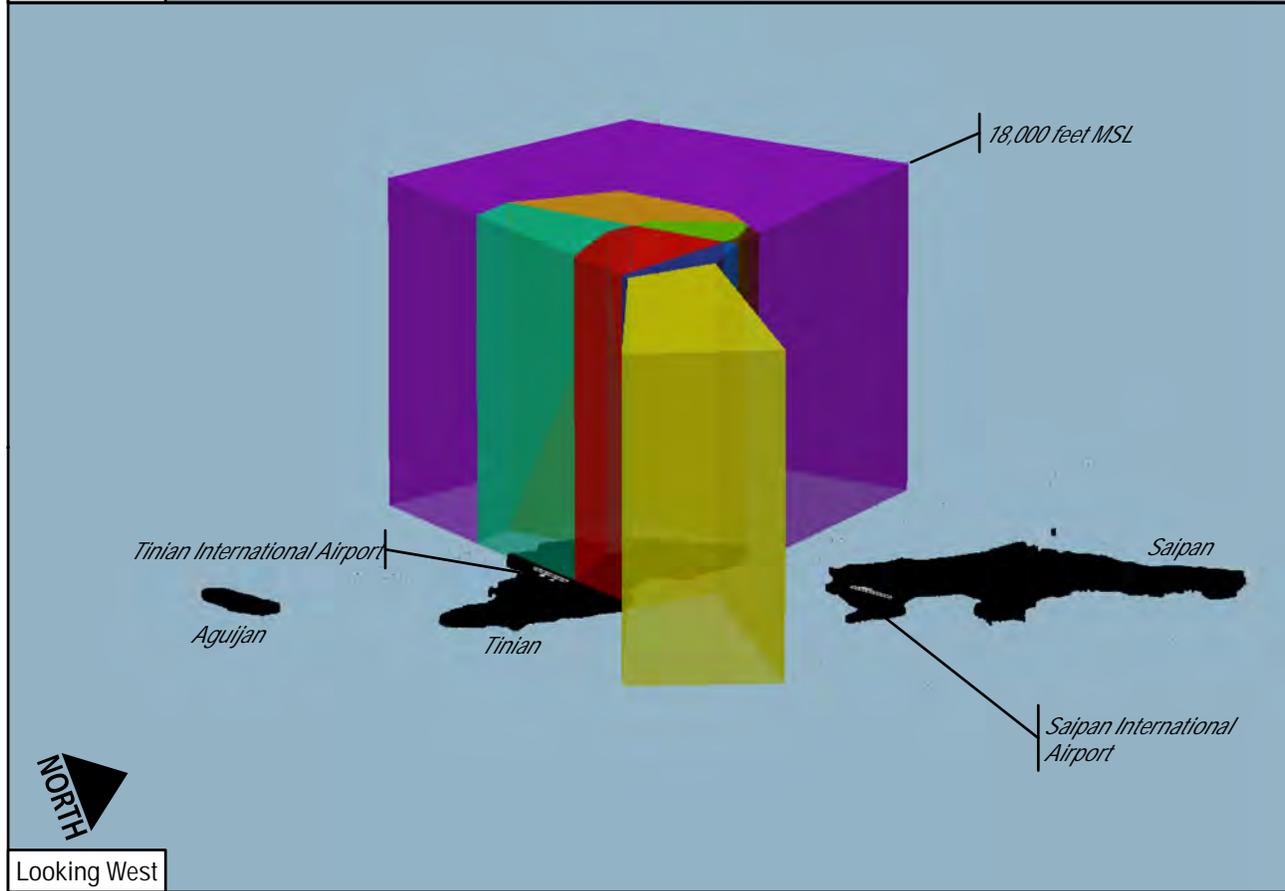
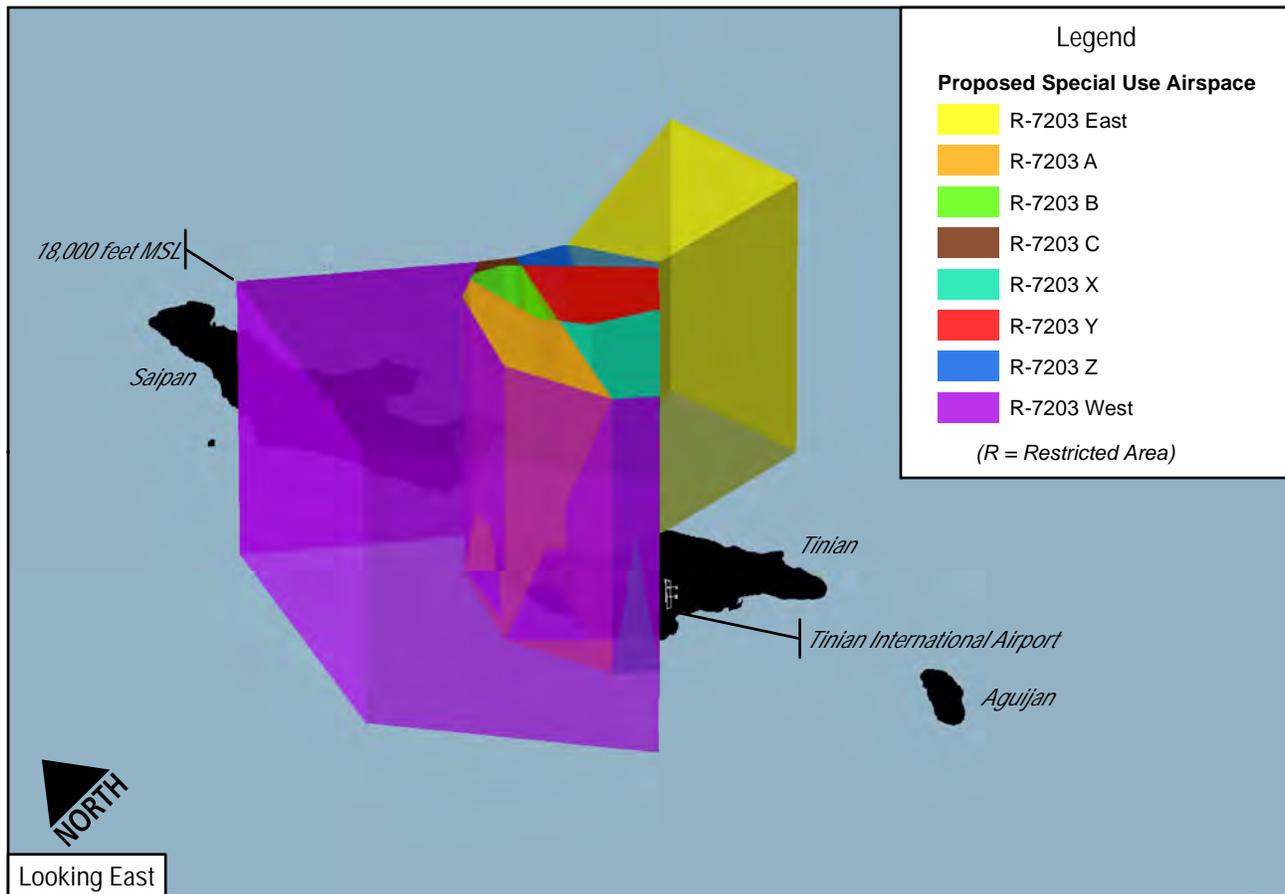


Figure 2.4-18
 Tinian All Action Alternatives
 Special Use Airspace: Two-Dimensional Perspective

0 1 2 4 Nautical Miles
 0 1 2 4 Kilometers





0 1.5 3 6 Nautical Miles

0 1.5 3 6 Kilometers

Figure 2.4-19
Tinian All Action Alternatives
Special Use Airspace: Three-Dimensional Perspective

The boundaries of each proposed Restricted Areas are based on the location of the live-fire areas and safety zone associated with each area. Safety zones are based on the hazards associated with each type of training. The safety zones and hazard areas are based on the types of munitions to be employed, and the maneuvering space for participating aircraft. The boundaries of each Restricted Area are based on the minimum airspace needed to ensure the safety of non-participating aircraft during different phases of military training.

Restricted Area 7203 is proposed under all Tinian action alternatives. R-7203 is divided into eight segments to support management of the airspace when needed to enable deconfliction with civilian air traffic. Proposed restricted areas above and surrounding Tinian are R-7203 East/West/A/B/C/X/Y/Z as depicted in Figures [2.4-18](#), [2.4-19](#), and [2.4-20](#). Restricted Area segments could be activated individually, collectively, or all together as needed to allow for safety of non-participating aircraft during different phases of military training. All Restricted Areas would be charted from the surface to 18,000 feet (5,486 meters) mean sea level (MSL).

- **Restricted Area 7203 East** could be activated together with the Tinian Military Operations Area through the Notices to Airman process for approximately 2 hours per day and up to 2 weeks per month (or up to 135 days per year). The Tinian Military Operations Area and R-7203E would be used primarily to support fighter aircraft during close air support missions. R-7203 E would specifically be used by attack helicopters.
- **Restricted Area 7203 West** could be activated through the Notices to Airman process together with the Tinian Military Operations Area and R-7203E for aircraft activity as described for R-7203E above. However, R-7203W would also be activated independently as needed for live-fire training by ground troops. R-7203W would be activated as needed for some part of up to 140 days per year.
- **Restricted Area 7203 A/B/C** would be charted for use daily from 7:00 a.m. to 10:00 p.m. for up to 140 days per year except for periods during Saipan International Airport Scheduled Jetliner flight activity. R-7203A/B/C would support both aircraft activity and live-fire training by ground troops. When needed outside of these hours, R7203A/B/C would be activated through the Notices to Airman process.
- **Restricted Area 7203 X/Y/Z** would be charted for use daily from 7:00 a.m. to 10:00 p.m. for up to 140 days per year. Restricted Area 7203 X/Y/Z would support both aircraft activity and live-fire training by ground troops. When needed outside of these hours, R-7203X/Y/Z would be activated through the Notices to Airman process.

Restricted Areas would be activated to the appropriate elevation when live-fire training includes caliber weapons such as 5.56 and 7.62 caliber rifles, 60, 81 or 120 millimeter mortars, artillery, demolitions, unmanned aerial systems and/or close air support training events. Each Restricted Area would be activated as needed from the surface to altitudes between 4,000 feet (1,219 meters) and 18,000 feet (5,182 meters) MSL based on the ranges and weapons to be used and the intent to train with participating aircraft. The proposed Restricted Area would be available for joint use as defined in a Letter of Agreement with the Controlling Agency (e.g., Guam Combined Center/Radar Approach Control and/or Saipan Air Traffic Control).

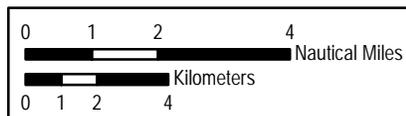
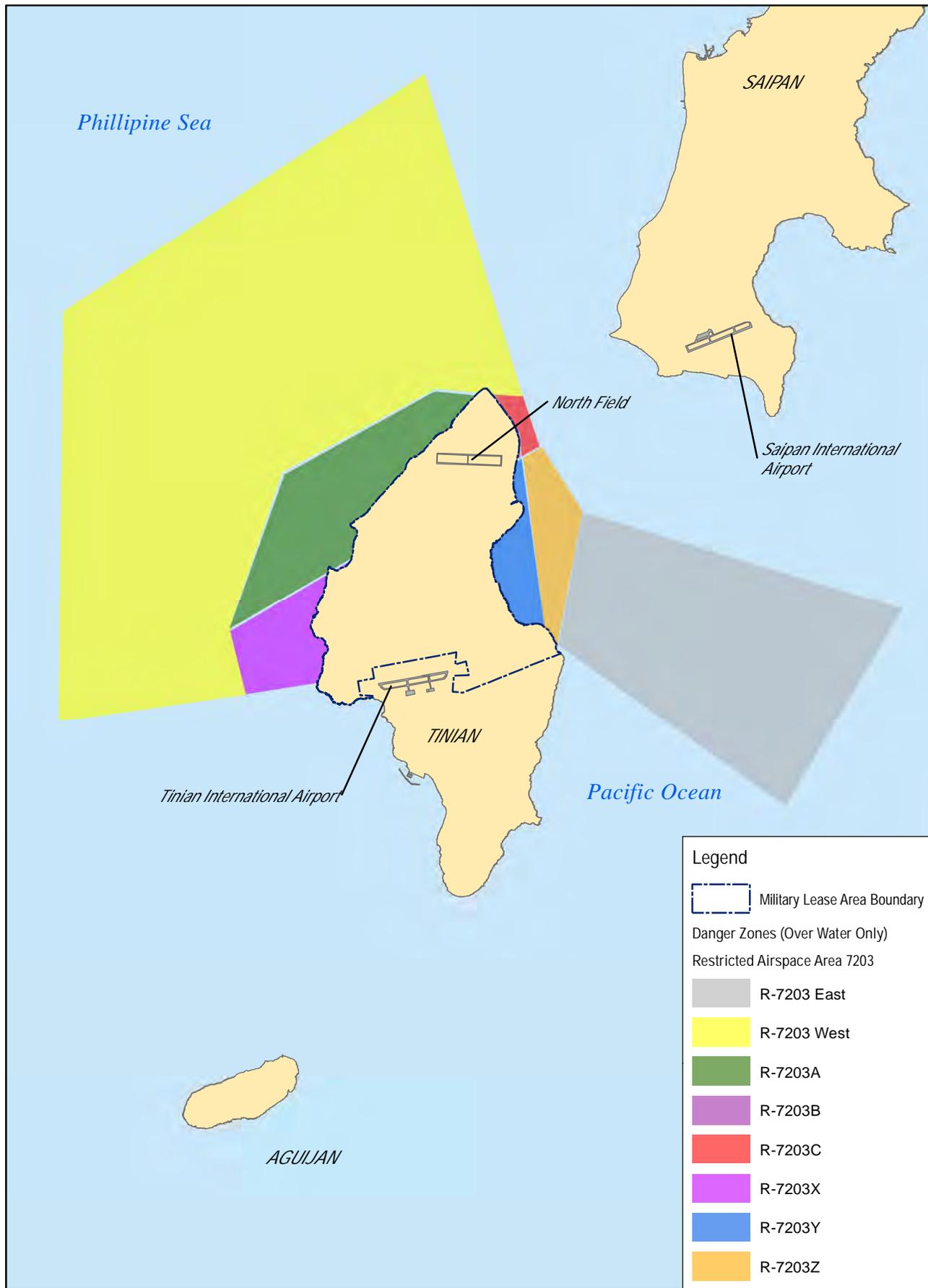


Figure 2.4-20
Tinian All Action Alternatives
Danger Zones



Table 2.4-6 provides a summary of proposed annual operations that various aircraft associated with Tinian RTA training activities would be operating in the proposed Military Operating Area and proposed Restricted Areas around Tinian. Table 2.4-6 does not include air operations associated with military transportation (see Section 2.4.1.5.1, *Air Transportation*) or civilian aviation activities (see Section 3.13, *Transportation*).

Table 2.4-6. All Tinian Action Alternatives Proposed Annual Operations in Special Use Airspace

Aircraft Type (Example)	Annual Number of Operations*	
	7:00 a.m. – 10:00 p.m.	10:00 p.m. – 7:00 a.m.
Fighter (F-15E/F-18/F-16/F-35)	6,000	1,400
Transport Tilt-Rotor (MV-22)	160	40
Transport Rotary-Wing (CH-53)	150	30
Attack Helicopter (AH-1/H-60)	60	20
Transport Fixed-Wing (C-130) (Note 2)	1,200	300
Unmanned Aerial Systems (RQ-7B Shadow)	160	40
Total	7,730	1,830

Notes: *One operation is counted each time an aircraft enters a different airspace unit.

¹Each individual aircraft will use one or more Special Use Airspace areas during the same mission. Each mission typically includes multiple aircraft operating at the same time.

²Numbers represent Tinian Military Operations Areas; restricted area activity would be less.

2.4.1.8.1.2 Military Operations Area

A Military Operations Area with an overlying Air Traffic Control Assigned Airspace is needed in support of rotary- and fixed-wing close air support missions. The Military Operations Area/Air Traffic Control Assigned Airspace would serve as a means to separate air traffic flying under Instrument Flight Rules from military activities, and to alert air traffic flying under Visual Flight Rules where military activity is being conducted.

The Military Operations Area is airspace designated to separate or segregate certain nonhazardous military activities from other air traffic and to identify where and when these activities are conducted. The Military Operations Area is specifically defined to contain nonhazardous, military flight activities including, but not limited to, air combat maneuvers, air intercepts, and low altitude tactics. Airspace of this nature is primarily established over land and offshore but not beyond the U.S. 12-nautical miles (about 22-kilometers) territorial limit.

2.4.1.8.1.3 Air Traffic Control Assigned Airspace

Air Traffic Control Assigned Airspace is used to extend the vertical extents of a Military Operations Area into Class A airspace. Class A airspace is generally defined as the airspace from 18,000 feet (5,846 meters) MSL up to and including flight level 600 (approximately 60,000 feet [18,288 meters] MSL). Unless otherwise authorized, all operations in Class A airspace are conducted under instrument flight rules. Air Traffic Control Assigned Airspace is requested from the Federal Aviation Administration’s controlling agency by the U.S. military on an as needed basis. The Federal Aviation Administration releases the airspace for military use when it will not interfere with other users of the airspace.

Under all Tinian action alternatives, the proposed Tinian Military Operations Area is defined by a 12-nautical mile (22-kilometer) boundary, from and parallel to the Tinian shoreline. The proposed Tinian

Military Operations Area would start at an altitude of 3,000 feet (914 meters) MSL and stop at an altitude of up to but not including 18,000 feet (5,486 meters) MSL (see [Figure 2.4-19](#)). Overlying the proposed Tinian Military Operations Area, an Air Traffic Control Assigned Airspace would be identified and may be requested for use as needed when the proposed Tinian Military Operations Area is active. This overlying airspace has a floor of 18,000 feet (5,486 meters) MSL and extends to a ceiling of 30,000 feet (9,144 meters) above MSL.

It is anticipated that military training aircraft operations within the proposed Tinian Military Operations Area would occur up to 135 days per year for 1-2 hours per day. (DoN 2014a). The Tinian Military Operations Area and Tinian Air Traffic Control Assigned Airspace would be scheduled for use as needed using the Notice to Airmen process.

Sea space directly supporting and contiguous to certain potentially hazardous training activities (i.e., live-fire ranges on land) is required by 33 CFR Part 334, *Navigable Waters* (Danger Zone and Restricted Area Regulations) to be designated as a danger zone, and published for public safety. A danger zone is a defined water area (or areas) used for hazardous operations. Consistent with military safety requirements, access to danger zones is strictly prohibited while live-fire or dangerous military activities are underway, but would be open to the public when no training is occurring in that zone. Certain portions of the proposed Tinian restricted airspace (i.e., the water area under R-7204A) in general define the lateral boundaries of water areas to be designated as danger zones (see [Figure 2.4-17](#)). The U.S. Coast Guard publishes a monthly Notice to Mariners for danger zones, informing the maritime community of hazardous operations in the area.

2.4.1.9 Sea Space Requirements

Sea space directly supporting and contiguous to certain potentially hazardous training activities (i.e., live-fire ranges on land) is required by 33 CFR Part 334, *Navigable Waters* (Danger Zone and Restricted Area Regulations) to be designated as a danger zone, and published for public safety. A danger zone is a defined water area (or areas) used for hazardous operations. Consistent with military safety requirements, access to danger zones is strictly prohibited while live-fire or dangerous military activities are underway, but would be open to the public when no training is occurring in that zone. Certain portions of the proposed Tinian restricted airspace (i.e., the water area under R-7204A) in general define the lateral boundaries of water areas to be designated as danger zones (see [Figure 2.4-20](#)). The U.S. Coast Guard publishes a monthly Notice to Mariners for danger zones, informing the maritime community of hazardous operations in the area.

2.4.2 Tinian Alternative 1

Proposed range and supporting infrastructure configurations for Tinian Alternative 1 are shown in [Figure 2.4-21](#). Under Tinian Alternative 1, the facilities to be constructed, training operations, operations and management, transportation, munitions, danger zones, amphibious operations, airspace requirements, and sea space requirements (i.e., the elements common to all alternatives) would be the same as those described in [Section 2.4.1](#), *Elements Common to All Action Alternatives*, but with the distinctions identified in Sections [2.4.2.1](#), *Construction and Improvements*, and [2.4.2.2](#), *Training*. Tinian Alternative 1 is depicted in [Figures 2.4-2](#) through [2.4-11](#), and [2.4-13](#) through [2.4-23](#).

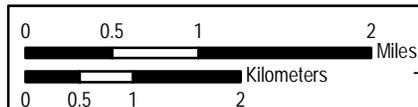
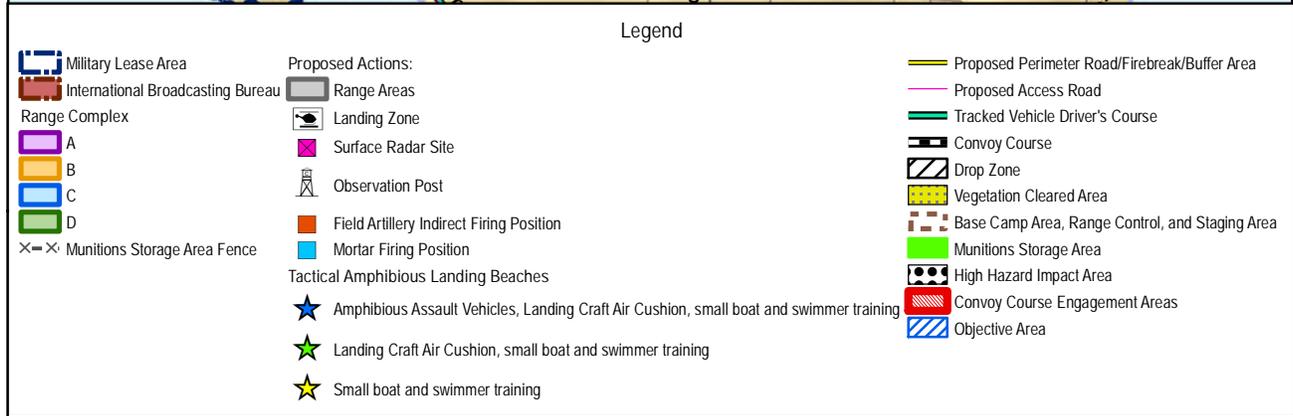
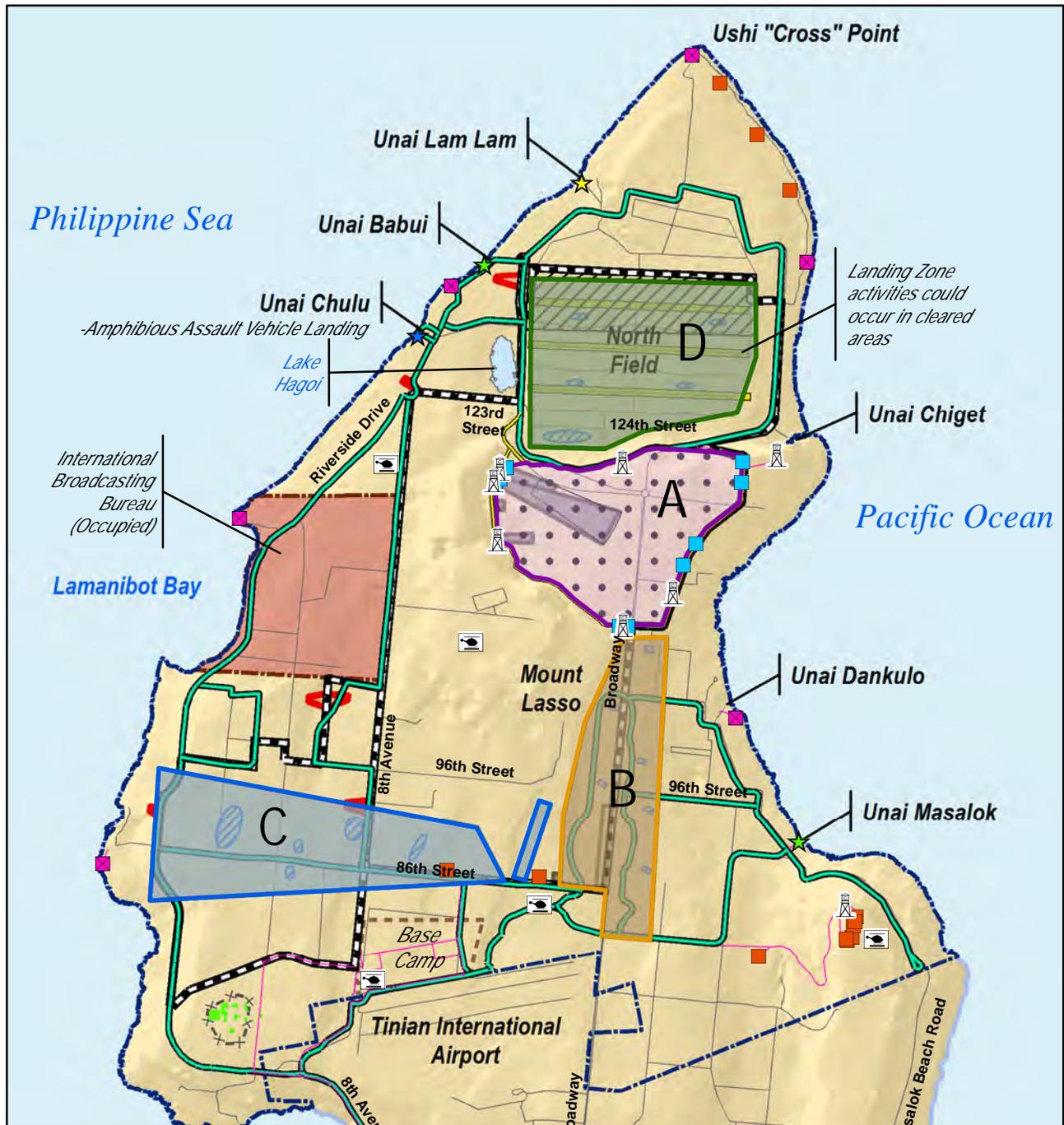


Figure 2.4-21
Tinian Alternative 1 Range Complexes



2.4.2.1 Construction and Improvements

Construction and improvements under this alternative would be the same as those described in [Section 2.4.1, Elements Common to All Action Alternatives](#), with the following distinctions:

- **Range Complex D:** A northern Battle Area Complex along with an associated Urban Assault Course would be constructed ([Figure 2.4-22](#)) within North Field. The northern Battle Area Complex increases the overall ground disturbance footprint by approximately 22 acres (9 hectares) for a total of 475 acres (192 hectares). Battle Area Complex construction improvements would include target objectives and lines of sight. In addition, approximately 20 one-story, roofless structures related to the Urban Assault Course (included as the final objective of the Battle Area Complex) would be constructed. The addition of the northern Battle Area Complex inclusive of the Urban Assault Course creates approximately 22 acres (9 hectares) of impervious surface. Historic assets at North Field would be protected during construction of the Battle Area Complex. For further discussion of historic assets at North Field, see Sections 3.11 and 4.11, *Cultural Resources*.
- **Military Lease Area-wide Training Assets:** The Convoy Course would support six engagement areas that would require ground disturbance of 31 acres (13 hectares) and ground disturbance of 66 acres (28 hectares) along the course ([Figure 2.4-23](#)). All of this acreage would be considered newly created impervious surface.

2.4.2.2 Training

Training operations under this alternative would be the same as those described in [Section 2.4.1, Elements Common to All Action Alternatives](#), with the following distinctions:

- **Range Complex D:** Training associated with the northern Battle Area Complex and the Urban Assault Course on North Field would involve personnel movement primarily on foot to the target objectives and firing weapons such as pistols, rifles, shotguns, and machine guns at targets. Due to the continued presence of the International Broadcasting Bureau, the Battle Area Complex would be limited to a smaller area (i.e., North Field) than under the other action alternatives. The presence of the International Broadcasting Bureau would require that weapons be fired away from the facility and thus create a constraint to training. The smaller area, as compared to other alternatives, provides a lower degree of training scenario flexibility. Units are physically constrained when using this smaller Battle Area Complex than if training on a larger Battle Area Complex (i.e., Tinian Alternatives 2 and 3). Historic assets at North Field would be protected during training operations in the Battle Area Complex. For further discussion of historic assets at North Field, see Sections 3.11 and 4.11, *Cultural Resources*.
- **Military Lease Area-wide Training Assets:** Due to the continued presence of the International Broadcasting Bureau, the Convoy Course would be longer and training would offer fewer engagement areas (six compared to 11) and training scenario options compared to the other Tinian action alternatives. Fewer engagement areas equates to a lower number of unique training opportunities, as each zone provides different threat presentations (i.e., fewer instances of improvised explosive devices, roadblocks, and pop-up targets). Decreased engagement areas decreases the training value of this training asset compared to the other action alternatives.

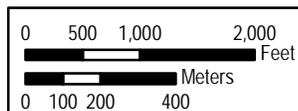
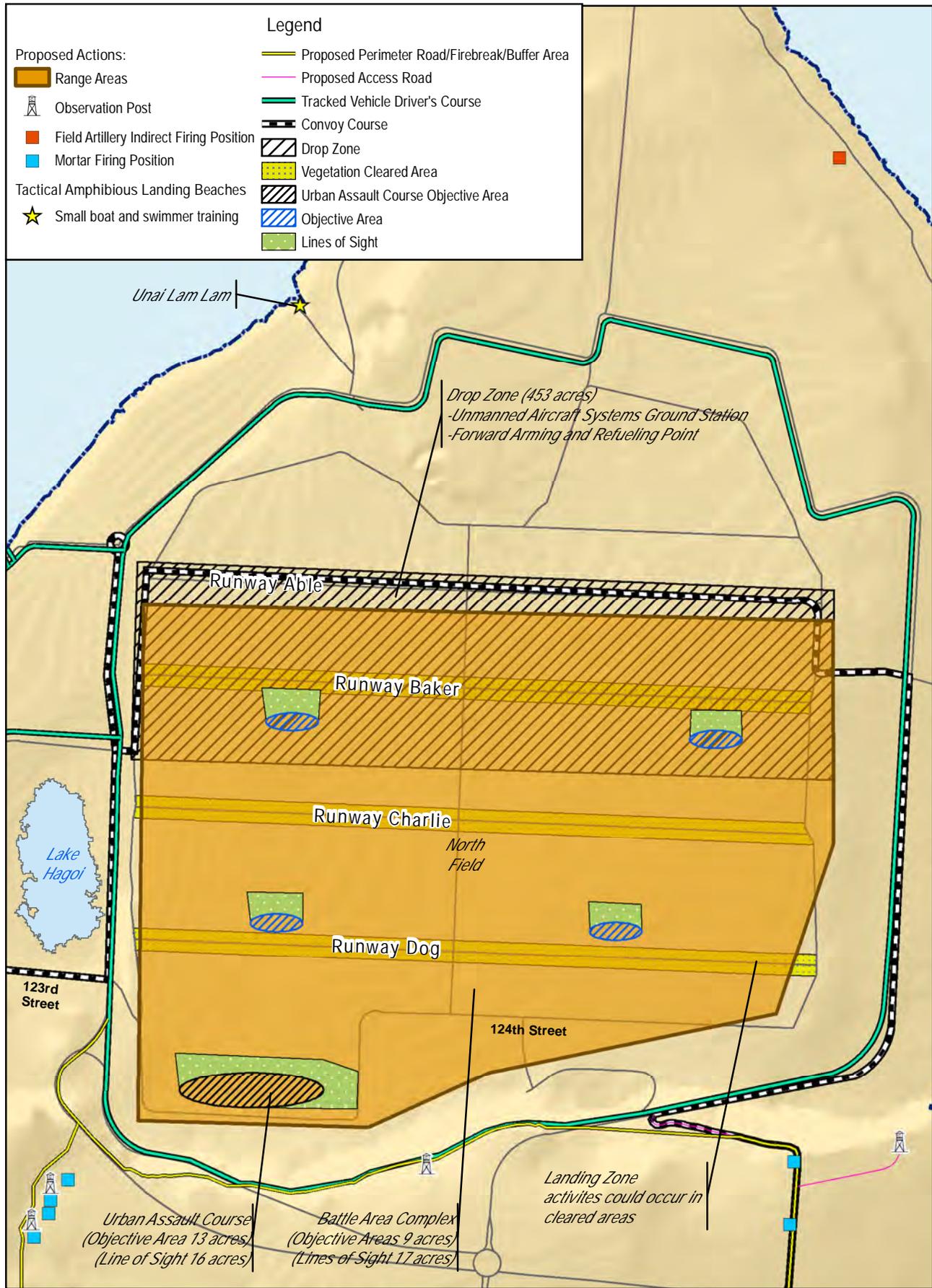


Figure 2.4-22
 Tinian Alternatives 1 and 2
 Range Complex D



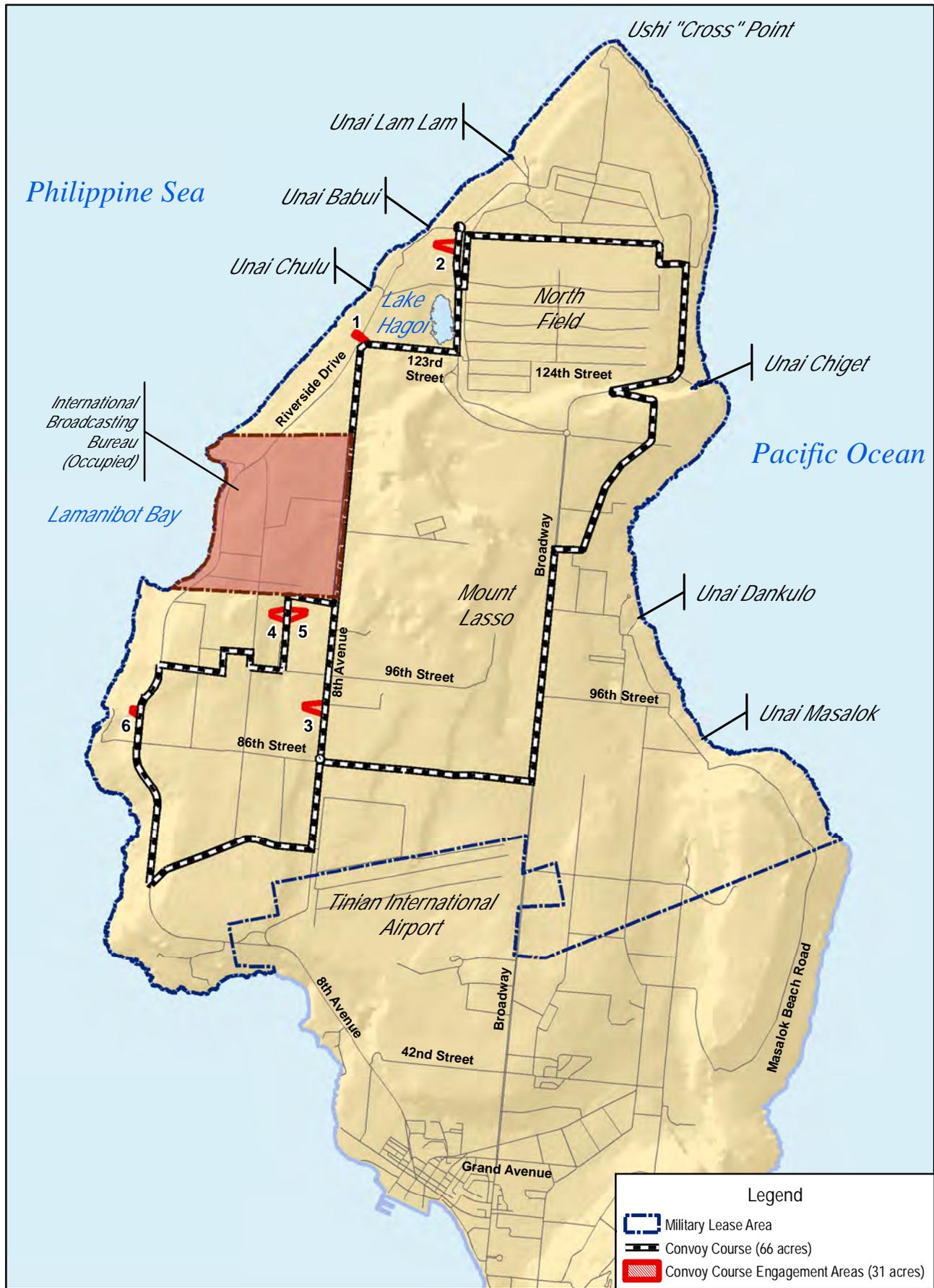


Figure 2.4-23
Tinian Alternative 1
Convoy Course



A composite of the surface danger zones that would be generated under Tinian Alternative 1 is shown in [Figure 2.4-17](#). When compared to Tinian Alternative 2, this alternative provides good training value but does not provide as much training flexibility. When compared to Tinian Alternative 3, the training flexibility of Tinian Alternative 1 is slightly less.

2.4.3 Tinian Alternative 2

Proposed range and supporting infrastructure configurations for Tinian Alternative 2 are shown in [Figure 2.4-24](#). Under Tinian Alternative 2, transportation, munitions, amphibious operations, and airspace requirements (i.e., some of the elements common to all alternatives) would be the same as those described in [Section 2.4.1](#), *Elements Common to All Action Alternatives*. However, there are differences in construction and improvements, and training operations when compared to Tinian Alternative 1 ([Section 2.4.2](#), *Tinian Alternative 1*). These distinctions are described in the following sections.

2.4.3.1 Construction and Improvements

Construction and improvements under this alternative would be the same as those described in [Section 2.4.2](#), *Tinian Alternative 1*, with the following distinctions:

- **Range Complex C:** The International Broadcasting Bureau would no longer operate at its current location during the 8 to 10 year construction period. After the International Broadcasting Bureau facility is vacated, the buildings would be emptied for use in training, the antennae would be removed, and a southern Battle Area Complex, along with an associated Urban Assault Course, would be constructed ([Figure 2.4-25](#)). The addition of the southern Battle Area Complex increases the ground disturbance footprint to construct the target objectives as well as approximately 20 one-story roofless structures for the Urban Assault Course (included as the final objective of the Battle Area Complex). The increase in ground disturbance would be approximately 77 acres (31 hectares) compared to Tinian Alternative 1 for a total ground disturbance of 157 acres (64 hectares). The additional ground disturbance would be considered newly created impervious surface.
- **Military Lease Area-wide Training Assets:** The Convoy Course would support 11 engagement areas ([Figure 2.4-26](#)) compared to 6 under Tinian Alternative 1. The additional engagement areas would increase the ground disturbance footprint by approximately 50 acres (20 hectares) and a decrease in course length as compared to that of Tinian Alternative 1 for a total ground disturbance footprint of 143 acres (58 hectares). The additional ground disturbance would be considered newly created impervious surface.

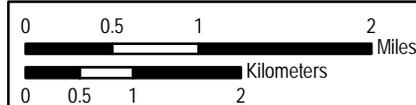
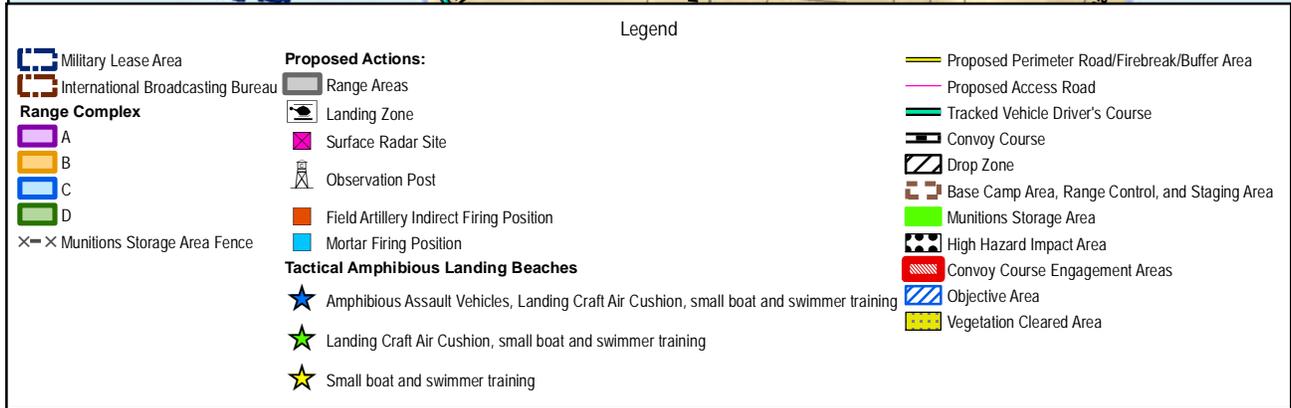
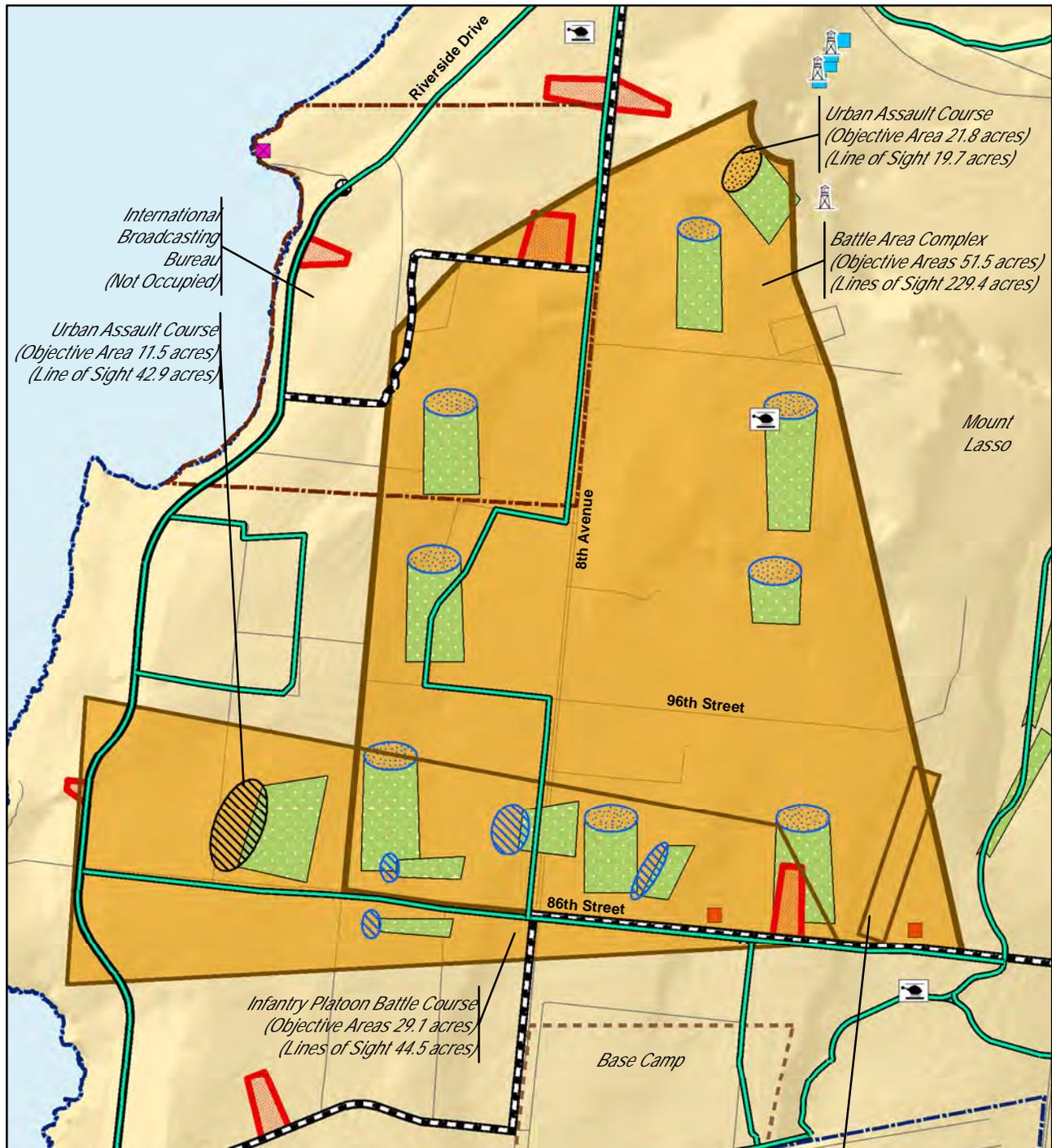


Figure 2.4-24
Tinian Alternative 2 Range Complexes





Legend

Military Lease Area	Tracked Vehicle Driver's Course
Proposed Actions:	Convoy Course
Range Areas	Base Camp Area, Range Control, and Staging Area
Landing Zone	Convoy Course Engagement Areas
Surface Radar Site	Urban Assault Course - Battle Area Complex
Observation Post	Urban Assault Course - Infantry Platoon Battle Course
Field Artillery Indirect Firing Position	Objective Area - Battle Area Complex
Mortar Firing Position	Objective Area - Infantry Platoon Battle Course
	Lines of Sight

Tinian International Airport

Multipurpose Automated-Field Fire Range Unknown Distance Range (31.0 acres)

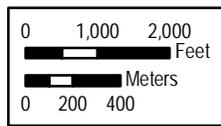


Figure 2.4-25
Tinian Alternatives 2 and 3
Range Complex C



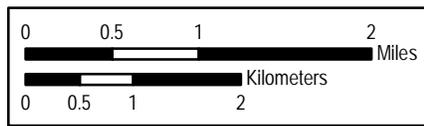
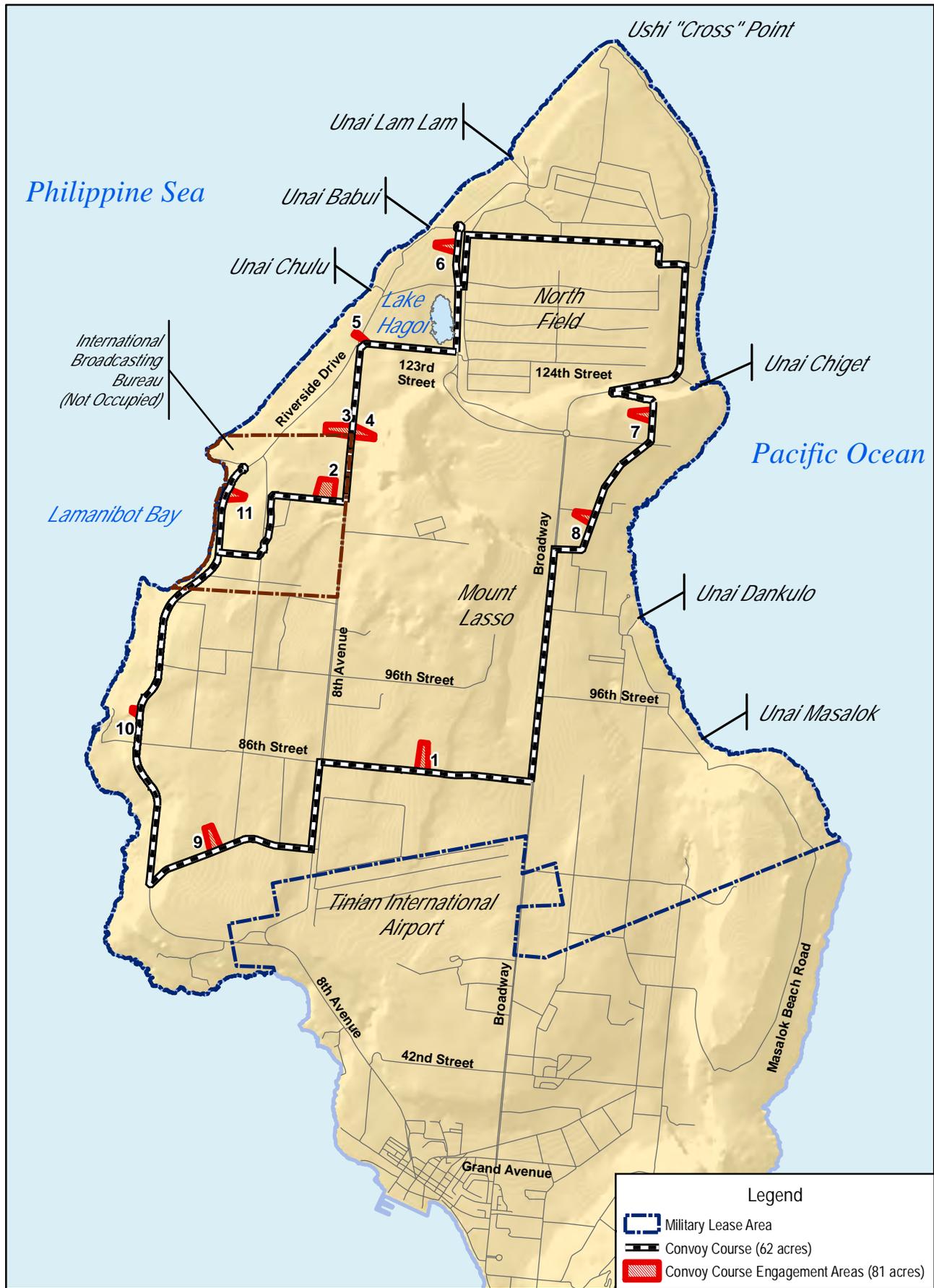


Figure 2.4-26
Tinian Alternatives 2 and 3
Convoy Course

Legend

-  Military Lease Area
-  Convoy Course (62 acres)
-  Convoy Course Engagement Areas (81 acres)



2.4.3.2 Training

Training operations under this alternative would be the same as those described in [Section 2.4.2](#), *Tinian Alternative 1*, with the following distinctions:

- Two Battle Area Complexes would be operable and allow for greater training options and flexibility when compared to Tinian Alternative 1. A northern Battle Area Complex would be located in Range Complex D (same as Tinian Alternative 1). It would emphasize fire and movement towards training objectives. A southern Battle Area Complex would be located in Range Complex C. It would emphasize fire, movement, and maneuvering towards training objectives. Both Battle Area Complexes could be in use at the same time thus providing more flexibility in training than Tinian Alternative 1.
- The addition of the southern Battle Area Complex could impact the way training could occur on the Infantry Platoon Battle Course (and the associated Urban Assault Course) within Range Complex C; however, as described in [Section 2.4.1.3](#), *Training Operations*, with coordination, both training facilities could be used simultaneously. Similarly, the addition of a second Battle Area Complex in Range Complex C could impact the way training would simultaneously occur within the Military Lease Area due to the increase in the surface danger zones associated with training on Range Complex C. It is anticipated that Range Control personnel and training exercise planners would coordinate training activities to maximize the number of training activities during a given training period.
- Convoy Course training would involve a convoy's movement along Military Lease Area roads past 11 engagement areas, which provide more training options when compared to Tinian Alternative 1. Increased engagement areas equates to a greater number of unique training opportunities, thus increasing the training value of this training facility. The addition of five engagement areas would impact simultaneity of training in the vicinity of each zone. This is because when an engagement zone is in use, non-participating activities within the surface danger zones would cease. It is anticipated that Range Control personnel and training exercise planners would coordinate training activities to maximize the number of training activities during a given training exercise.
- A composite of the surface danger zones that would be generated under Tinian Alternative 2 is shown in a side-by-side comparison with the other alternatives in [Figure 2.4-17](#). The Alternative 2 surface danger zones would be larger than Tinian Alternative 1, due to the presence of the southern Battle Area Complex. Internal surface danger zones associated with individual training features are the basis for generation of the composite surface danger zones. The internal surface danger zones under Tinian Alternative 2 are the largest among the three alternatives, due to the presence of the northern and southern Battle Area Complexes and the 11 Convoy Course engagement areas.

2.4.4 Tinian Alternative 3

Proposed range and supporting infrastructure configurations for Tinian Alternative 3 are shown in [Figure 2.4-27](#). Under Tinian Alternative 3, transportation, munitions, amphibious operations, and airspace requirements (i.e., some of the elements common to all alternatives) would be the same as those described in [Section 2.4.1, Elements Common to All Action Alternatives](#). However, there are differences in construction and improvements and training operations when compared to Tinian Alternative 1 ([Section 2.4.2, Tinian Alternative 1](#)).

2.4.4.1 Construction and Improvements

Construction and improvements under this alternative would be the same as those described in [Section 2.4.2, Tinian Alternative 1](#), with the following distinctions:

- **Range Complex C:** Range Complex C would be the same as that described in [Section 2.4.3, Tinian Alternative 2](#).
- **Range Complex D:** The northern Battle Area Complex and the associated Urban Assault Course (the final objective of the Battle Area Complex) included in Tinian Alternative 1 would not be established (see [Figure 2.4-12](#)). The overall ground disturbance footprint would be reduced by approximately 22 acres (9 hectares) compared to Tinian Alternative 1 for a total ground disturbance footprint of 453 acres (183 hectares).
- **Military Lease Area-wide Training Assets:** The Convoy Course would be the same as that described in [Section 2.4.3, Tinian Alternative 2](#).

2.4.4.2 Training

Training under this alternative would be the same as those described in [Section 2.4.2, Tinian Alternative 1](#), with the following distinctions:

- Battle Area Complex training would be limited to a single southern Battle Area Complex within Range Complex C, as there would be no northern Battle Area Complex in Range Complex D. Compared to the northern Battle Area Complex (Tinian Alternatives 1 and 2), the southern Battle Area Complex is larger and offers a wider array of training options. This factor provides greater potential training value under Tinian Alternative 3 than that found under Tinian Alternative 1.
- Aviation training at Range Complex D would be less constrained because there would be no Battle Area Complex or Urban Assault Training (i.e., no live-fire training) within Range Complex D.

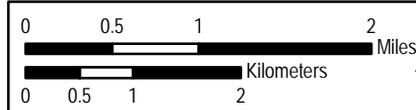
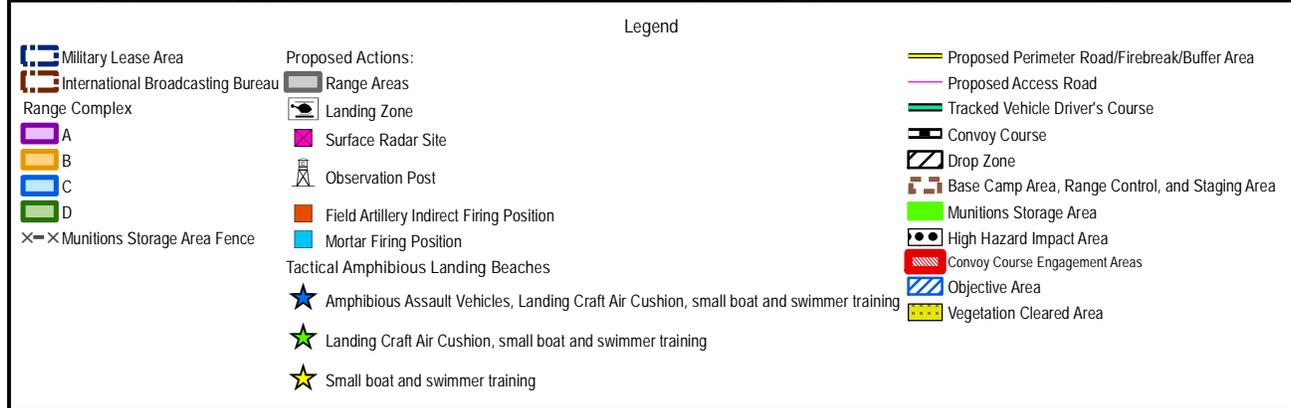
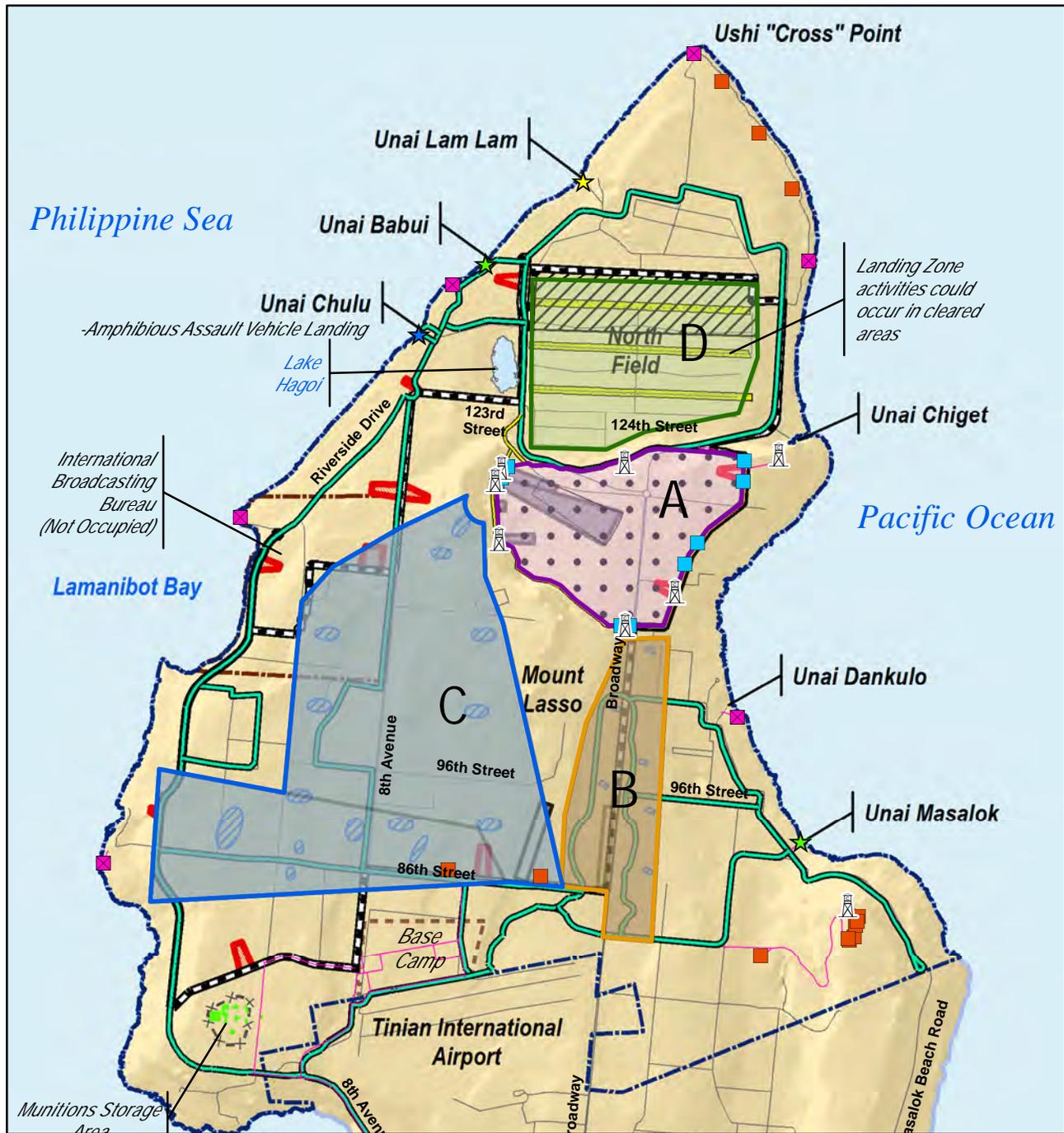


Figure 2.4-27
Tinian Alternative 3 Range Complexes



Convoy Course training would be the same as described under Tinian Alternative 2 (see [Section 2.4.3.2, Training](#)).

- A composite of the surface danger zones that would be generated under Tinian Alternative 3 is shown in a side-by-side comparison of the alternatives in [Figure 2.4-17](#). The Tinian Alternative 3 surface danger zones would be larger than Tinian Alternative 1 due to the presence of the southern Battle Area Complex and additional engagement areas associated with the Convoy Course. Although the composite of the surface danger zones is the same under Tinian Alternative 2, the individual surface danger zones associated with the ranges under Tinian Alternative 3 are smaller due to the absence of the northern Battle Area Complex.

2.4.5 Tinian No-Action Alternative

Section 1502.14(d) of Council on Environmental Quality regulations implementing NEPA requires an EIS/OEIS to analyze the no-action alternative. No action means that the proposed action would not take place. Analysis of the no-action alternative provides a benchmark, enabling decision-makers to compare the magnitude of the environmental effects of the proposed action or alternatives versus the potential impacts if no action were implemented. In many projects, a no-action alternative is the same as the description of the existing condition. However, in the case of this proposed action, the no-action alternative would not be a static situation but represents the continuation of having military training exercises on Tinian as well as the implementation of training ranges and operations that have been documented in recent Records of Decisions for other NEPA actions.

The no-action alternative would continue current training activities on Tinian, including those contained in other Department of Defense documents such as the Mariana Islands Range Complex EIS/OEIS (July 2010 Record of Decision, DoN 2010b), and would complete construction of four live-fire ranges on Tinian contained in the September 2010 Record of Decision in the Guam and CNMI Military Relocation EIS/OEIS (DoN and Department of the Army 2010). These activities are summarized in [Table 2.4-7](#) and below.

Table 2.4-7. Summary of No-Action Alternative Training on Tinian Exclusive Military Use Area by U.S. Air Force, Army, Marine Corps, Navy, and Guam National Guard/Reserve

<i>Training Activity</i>	<i>Description</i>
Mariana Islands Range Complex EIS/OEIS (see Tables 2-7 and 2-8 in the EIS/OEIS)	
Field Training Exercise	The battalion and its combat and service support units deploy to field locations to conduct tactical training activities under simulated combat conditions.
Ship to Objective Maneuver	Training conducted to gain a tactical advantage over the enemy; it is not aimed at seizing the beach but expanding the battle space.
Noncombatant Evacuation Operation	Training activities are conducted when directed by the Departments of State and Defense, or other appropriate authority whereby noncombatants are evacuated from foreign countries to safe havens or to the U.S., when their lives are endangered by war, civil unrest, or natural disaster.
Assault Support	This training provides helicopter support for Command and Control, assault escort, troop lift/logistics, reconnaissance, search and rescues, medical evacuation, reconnaissance team insertion/extract, and helicopter coordinator duties.
Reconnaissance and Surveillance	Activity conducted to evaluate the battlefield and enemy forces, and to gather intelligence.

Table 2.4-7. Summary of No-Action Alternative Training on Tinian Exclusive Military Use Area by U.S. Air Force, Army, Marine Corps, Navy, and Guam National Guard/Reserve

Training Activity	Description
Combat Search and Rescue	Train rescue forces personnel in the tasks needed to be performed to affect the recovery of distressed personnel during war or military operations other than war.
Current Training Activities Occurring on Tinian Categorical Exclusion	
Geiger Fury	The Marine Corps conducts aviation and expeditionary force training exercises on Tinian and Pagan. For components not specifically covered under the Mariana Islands Range Complex EIS/OEIS, Joint Region Marianas prepared a Categorical Exclusion document, conducted Section 106 consultation, and ensured compliance with all regulations.
Forager Fury	
Forager Fury II	
Forager Fury III	
Guam and CNMI Relocation EIS/OEIS (see Table 2.3-1 in the Guam and CNMI Relocation EIS)	
Known Distance Range	This range trains personnel on the skills necessary to identify, engage, and hit stationary targets from a known distance with a rifle.
Automated Combat Pistol/Military Police Firearms Qualification	This range is designed to meet training and qualification requirements with combat pistols and revolvers and used to train and test personnel on the skills necessary to identify, engage, and hit stationary infantry targets.
Field Firing Range	This range supports training in target engagement techniques with the rifle, including identifying, engaging, and hitting stationary infantry targets.
Platoon Battle Course	A range designed for training and qualifying infantry platoons, either mounted or dismounted, on movement techniques and operations. This course trains and tests platoons on the skills necessary to conduct tactical movement techniques, detect, identify, engage, and defeat stationary and moving infantry targets in a tactical array.

2.4.5.1 Mariana Islands Range Complex

The Mariana Islands Range Complex consists of three primary components: ocean surface and undersea areas, training land areas, and Special Use Airspace.

1. The ocean surface and undersea areas extending from waters south of Guam to north of Pagan and from the Pacific Ocean east of the Mariana Islands to the middle of the Philippine Sea to the west, encompassing 501,873 square nautical miles (1,299,851 square kilometers) of open ocean and littorals (coastal areas).
2. The range complex including training area/facilities on Guam, Rota, Tinian, Saipan, and Farallon de Medinilla, encompassing 64 square nautical miles (220 square kilometers) of land.

The Special Use Airspace consisting of Warning Area 517 (W-517), restricted airspace over Farallon de Medinilla (R-7201), and Air Traffic Control Assigned Airspace encompassing 63,000 square nautical miles (216,360 square kilometers) of airspace, including over Tinian.

The *Mariana Islands Range Complex Final EIS/OEIS* (DoN 2010c) documented the intent to have increased training activities in the Mariana Islands Range Complex as a result of upgrades and modernization of existing training areas and the requirement to meet new training and capability requirements for personnel and platforms. The increase involves an overall increase in the number and types of events (including major exercises, the Intelligence, Surveillance and Reconnaissance/Strike Air Force initiative at Andersen Air Force Base, other services and agencies (Marine Corps, U.S. Coast Guard,

Department of Homeland Security, and the participation of the allied forces in major exercises in the Mariana Islands Range Complex). Activities will also increase as a result of the acquisition to and development of new Portable Underwater Tracking Range capabilities supporting Anti-Submarine Warfare, and new facility capabilities supporting Military Operations in Urban Terrain training.

On pages 2-31 to 2-41 of the *Mariana Islands Range Complex Final EIS/OEIS* (DoN 2010c), there is more detailed descriptions of the above referenced training activities in the Mariana Islands Range Complex.

2.4.5.2 Current Training Operations on Tinian

Since issuance of the *Mariana Islands Range Complex EIS/OEIS* (July 2010 Record of Decision, DoN 2010b) and the *Guam and CNMI Military Relocation EIS/OEIS* (DoN and Army 2010), the Department of Defense has held a number of training operations on Tinian beginning in 2012. As described below, the “Fury” series of exercises held on Tinian generally featured communications set up and air traffic control at North Field, training at West Field, tactical water purification system set up for generating potable water, fuel bladders for refueling aircraft, clearing of vegetation for runways (except for Forager Fury II), and 72-hour surge operations for intense training activity (except for Forager Fury III).

2.4.5.2.1 Geiger Fury

Held on Tinian from 13 May to 8 June 2012, Geiger Fury was an exercise for about 200 Marines in landing in a remote area and establishing an airfield that can refuel aircraft. The expeditionary exercise involved setting up a forward operating base, reviving (clearing vegetation on) an abandoned airfield (Baker), practicing arrestments of F/A-18 landings at West Field, and landing a KC-130J Hercules aircraft on Runway Baker in North Field. The training involved three full squadrons of F/A-18s and a squadron of wing support. To refuel aircraft, the exercise installed a Tactical Air Fueling Dispensing System able to hold up to 60,000 gallons (227,125 liters) of fuel.

2.4.5.2.2 Forager Fury I

Conducted on Tinian from 27 November to 12 December 2012, Forager Fury I involved training Marines on tactical aviation and aviation ground support in order to further develop a distributed expeditionary combat capability within the Mariana Islands Range Complex. It included F/A-18 Hornet jet squadrons, wing support detachments, and elements of III Marine Expeditionary Force, 1st Marine Aircraft Wing, 9th Engineer Support Battalion, 3rd Marine Logistics Group and Marine Medium Tilt-rotor Squadron 265. Forager Fury I did not involve clearing new runways; it continued training on the previously cleared West Field runway.

2.4.5.2.3 Forager Fury II

Forager Fury II was conducted on Tinian from 02 to 20 December 2013. This eighteen day exercise featured approximately Marines, Airmen and Sailors establishing a forward arming and refueling point at two locations for rapid refueling of fixed-wing and rotary aircraft and returning them to a simulated fight protecting Tinian from enemy aircraft while responding to a ground invasion on Guam. The exercise featured F/A-18A++ Hornets, F/A-18Cs, F/A-18Ds, KC-130J Super Hercules, and MV-22B Ospreys. The exercise also involved clearing 161 acres of overgrowth vegetation on Tinian from the Echo and Delta runways at North Field and their interconnecting access roads.

2.4.5.2.4 Valiant Shield

Valiant Shield was a biennial joint forces exercise of about 450 Marines, Navy, and Guam National Guardsmen training for detecting, locating, tracking, and engaging units at sea, in the air, on land, and in cyberspace in response to a range of mission areas. This exercise was held from 15 to 23 September 2014 on Tinian with some participants arriving on 22 August.

2.4.5.2.5 Forager Fury III

From 24 September to 6 October 2014, Forager Fury III had approximately 517 Marines on Tinian undergoing tactical aviation and aviation ground support training for fixed-wing and rotary aircraft. The mission included setting up a forward operating base, preparing an airstrip, and providing support for all units. The exercise involved clearing Echo Field, landing a KC130J Super Hercules, unloading hundreds of pieces of gear, transporting fuel and fueling equipment, practicing expeditionary arrested landings, refueling, and parking aircraft, such as Navy SH-60S helicopter. Participants also trained in defending forward deployed operations.

2.4.5.3 Additional Ranges and Training

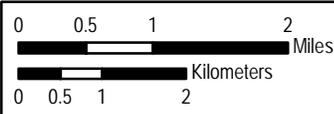
Under the September 2010 Record of Decision in the Guam and CNMI Military Relocation Final EIS/OEIS (DoN and Department of the Army 2010), training operations on Tinian would support up to company-level (200 Marines or larger) sustainment training for Marine Corps forces on Guam. Company and battalion level live-fire and non-live-fire trainings areas already exist and are utilized on these leased Tinian parcels. These leased parcels would also be developed to accommodate four new limited live-fire training ranges capable of handling small unit combat skills training. The use of ranges on Tinian will be as an expeditionary setting, operating on a largely self-sustaining basis with very little infrastructure and support staff (Joint Guam Program Office Record of Decision, pages 9-10). Since the 2010 Record of Decision, these four proposed ranges have not been programmed into budgeting or undergone detailed planning. It also should be noted that the footprint where these live-fire training were proposed in the 2010 Record of Decision would be used for different purposes under the proposed action of this EIS/OEIS. As a result, the four proposed live-fire training ranges under the 2010 Record of Decision are not in addition to those proposed in this proposed action. The following provides some details of each of the ranges documented in the 2010 Record of Decision. [Figure 2.4-28](#) displays the location of these approved ranges. For more information on impacts and mitigation measures of these proposed actions, refer to the Guam and CNMI Military Relocation Final EIS (DoN 2010d).

2.4.5.3.1 Rifle Known Distance Range (5.56 millimeter, 1,000 yards [914 meters])

This range is intended for rifle marksmanship training and target engagement techniques. It would be used to train personnel on the skills necessary to identify, engage, and hit stationary targets in a static array from a known distance. This range would supplement the Known Distance range on Guam (refer to Volume 2, Chapter 2, Section 2.3 of the 2010 Final EIS) by providing capability for the required eventual use of up to 1,000 yards (914 meters). Twenty-five firing points would be constructed, with a range width of 100 yards (91 meters) and a length of 1,000 yards (914 meters). Firing line berms and back-stop berms would be constructed, along with sanitary facilities provided for shooters and target pullers.



Figure 2.4-28
 Tinian No-Action Alternative
 (Four Ranges in 2010 Record of Decision)



The range area would be subject to grading for line of sight and management of vegetation by periodic cutting. The total distance of ground disturbing activities is approximately 1,050 yards (960 meters) by 100 yards (91 meters), or 22 acres (9 hectares). The notional surface danger zone for this range, limited to firing of 5.56-millimeter ammunition, would extend 2.17 miles (3.5 kilometers) horizontally, with a vertical hazard distance of 388 yards (355 meters).

2.4.5.3.2 Automated Combat Pistol/Military Police Firearms Qualification Course

This range is intended to meet training and qualification requirements with combat pistols and revolvers and used to train and test personnel on the skills necessary to identify, engage, and hit stationary infantry targets. All targets would be fully automated for scored training. This range would supplement the Pistol Known Distance Qualification Course located on Guam. The range would be suitable for 9-millimeter and .45 caliber weapons. Up to 25 firing points would be constructed, with a maximum range distance of 50 yards (46 meters). The total distance of ground disturbing activities would be approximately 55 yards by 50 yards (50 meters by 46 meters), or 0.6 acre (0.2 hectare). The notional surface danger zone for this range would extend 1.12 miles (1.8 kilometers horizontally, with a vertical hazard of 109 yards [100 meters]).

2.4.5.3.3 Platoon Battle Course

This range is intended for the training and qualification requirements of infantry platoons, either mounted or dismounted, on movement techniques and operations. This course would be used to train and test platoons on the skills necessary to conduct tactical movement techniques, detect, identify, engage, and defeat stationary and moving infantry targets in a tactical array. Targets would not be fully automated and would not have the capability to execute computer driven/scored training scenarios. This course would provide the capacity for small units up to approximately 40 personnel to train in tactical scenarios, engaging targets at varying distances and angles while moving. There is no such range on Guam because the required range footprint and surface danger zones exceed available land areas. Weapons that would be used on this range are those found at the platoon level that is 5.56-millimeter carbines and rifles and Squad Automatic Weapons. The range footprint would be approximately 1,312-yards (1,200-meters) long and 656 yards (600 meters) wide, encompassing approximately 178 acres (72 hectares). Within that footprint, target pits, access ways, and back stops would be constructed.

For operation of the targets and safety management of the range, the notional surface danger zone would extend 2.17 miles (3.5 kilometers) from the farthest firing position down range, with a vertical hazard distance of 388 yards (355 meters). The notional surface danger zone for this range reflects control of the target engagement distance to maintain lateral limits of fire to 30 degrees on either flank of the range.

2.4.5.3.4 Field Firing Range

This range is intended to support training target engagement techniques with the rifle, including identifying, engaging, and hitting stationary infantry targets. This would be a scored range with automated targets for use with the 5.56-millimeter rifle, but also would be suitable for the M4 Carbine and Squad Automatic Weapons. The proposed range would be approximately 219-yards (200-meter) wide by 547-yards (500-meters) long, or approximately 25 acres (10 hectares). The length of the surface danger zone is approximately 2.17-miles (3.5-kilometers) long from the firing line and 388-yards (355-

meters) vertically. More information can be found in Volume 3, of the Guam and CNMI Military Relocation Final EIS/OEIS (DoN 2010d), for further details on the anticipated environmental impacts, and the September 2010 Record of Decision in the Guam and CNMI Military Relocation EIS/OEIS (DoN and Army 2010) for further details on mitigation measure commitments regarding these ranges.

In conclusion, under the no-action alternative in this EIS/OEIS, the suite of proposed Tinian RTA and Pagan RTA would not be constructed. The identified training deficit would persist, and the existing Western Pacific RTAs would remain insufficient to support U.S. Pacific Command Service Components' Title 10 training requirements for the region. Per Council on Environmental Quality regulations, the no-action alternative is carried forward for analysis in this EIS/OEIS.

2.4.6 Summary Comparison of Tinian Alternatives

[Table 2.4-8](#) provides a summary comparison of the proposed action elements for each of the three Tinian action alternatives and the no-action alternative.

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

<i>Comparison of Tinian Action Alternatives</i>				
	<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>	<i>No-Action Alternative</i>
General Differences	<ul style="list-style-type: none"> Lacks a southern Battle Area Complex. 	<ul style="list-style-type: none"> Includes a southern Battle Area Complex. 		<ul style="list-style-type: none"> No extensive development of land, sea and air live-fire training ranges and exercises. Continued limited military training exercises in the MLA pursuant to recent regional NEPA document. Possible future development of four live-fire training ranges.. Surface danger zones support live-fire training; smaller than the action alternatives.
	<ul style="list-style-type: none"> Includes a northern Battle Area Complex. 		<ul style="list-style-type: none"> Lacks a northern Battle Area Complex. 	
	<ul style="list-style-type: none"> 6 Convoy Course engagement areas. 	<ul style="list-style-type: none"> 11 Convoy Course engagement areas. 		
	<ul style="list-style-type: none"> International Broadcasting Bureau present. Limits some weapons employment in Range Complexes C and D. 	<ul style="list-style-type: none"> International Broadcasting Bureau absent. Allows for full array of weapons employment in Range Complexes C and D. 	<ul style="list-style-type: none"> International Broadcasting Bureau absent. Allows for full array of weapons employment in Range Complex C. 	
	<ul style="list-style-type: none"> Surface danger zones supports live-fire ranges over land and over water. 	<ul style="list-style-type: none"> Surface danger zones larger than Alternative 1. 		

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

Comparison of Tinian Action Alternatives				
	Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Simultaneous Use	<ul style="list-style-type: none"> • Simultaneous use of training assets coordinated with Range Control and training exercise planners to maximize training for participants. 			<ul style="list-style-type: none"> • Limited existing periodic training exercises would not require extensive management of simultaneous use
	<ul style="list-style-type: none"> • Presence of one (northern) Battle Area Complex limits training options. 	<ul style="list-style-type: none"> • Presence of two Battle Area Complexes provides most training options. 	<ul style="list-style-type: none"> • Presence of one (southern) Battle Area Complex limits training options. 	
Training Value	<ul style="list-style-type: none"> • International Broadcasting Bureau presence limits some of the firing directions that could be used in Range Complexes C and D. • Fewer Convoy Course engagement areas. • No southern Battle Area Complex in Range Complex C. • A lesser degree of training options when compared to Alternatives 2 and 3. 	<ul style="list-style-type: none"> • International Broadcasting Bureau absence allows for full array of weapons employment in Range Complex C and D. • The full array of RTA training facilities available providing greater flexibility in training activities across all range complexes. • Increased number of trainees actively training at any given time compared to Alternatives 1 and 3. • Greatest training value when compared to Alternatives 1 and 3. 	<ul style="list-style-type: none"> • International Broadcasting Bureau absence allows for full array of weapons employment in Range Complex C. • The southern Battle Area Complex affords more training options than the northern Battle Area Complex when compared to Alternative 1. • Affords a lesser degree of training value when compared to Alternative 2, but more than Alternative 1. 	<ul style="list-style-type: none"> • Limited training value, but continued importance of Tinian MLA for periodic training is critical
Elements Common to All Tinian Action Alternatives				
Training Facilities Construction	Alternatives 1, 2, and 3			No-Action Alternative
<i>Base Camp</i>	Includes headquarters, administrative, and range control facilities; permanent barracks and temporary facilities for personnel; security facilities; warehouse; equipment storage; weapons armory; staging area; a Landing Zone; and utilities infrastructure.			Not Planned
<i>Munitions Storage Area</i>	Includes controlled entry, fencing, assembly, holding and storage facilities, explosive safety stand-off, and communications infrastructure.			Not Planned
<i>Airport Improvements</i>	Includes tactical aircraft parking ramp, cargo aircraft parking ramp, connecting taxiways, ordnance arming and de-arming pads, hot cargo pad/combat aircraft loading area, expeditionary/temporary refueling area, arresting gear pads, munitions holding pads, taxiway crossings, access roads connecting to the airfield, field carrier landing practice pad, and landing helicopter dock pad, primarily on the north side of the airport.			Not Planned

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

<i>Elements Common to All Tinian Action Alternatives</i>		
Training Facilities Construction	Alternatives 1, 2, and 3	No-Action Alternative
<i>Port Improvements</i>	Includes on-shore boat ramp improvements, biosecurity facility, bulk fuel storage, upgrades of access roads from the port to the Military Lease Area for heavy equipment and vehicle movement, tracked vehicle transit, and utilities infrastructure.	Not planned
<i>Access Road Improvements, Fence Lines, Gates</i>	Access road improvements throughout the Military Lease Area. Fencing along the southern Military Lease Area boundary and around the base camp, airfield, munitions storage area, and the High Hazard Impact Area.	Limited upgrades
<i>Utility Improvements</i>	<p><i>Electrical power</i>—distribution system from the power plant to facilities in the Military Lease Area, base camp, Munitions Storage Area, range/target activities, Range Control, etc. Lines would be either underground or overhead.</p> <p><i>Potable Water</i>— new dedicated military water supply system to support proposed action within the Military Lease Area plus improvements to existing Commonwealth Utilities Corporation water system to serve the proposed Port of Tinian facilities.</p> <p><i>Wastewater</i>—new wastewater treatment plant and disposal facilities at the base camp with an underground sewer system; septic system at the Munitions Storage Area; portable toilets across the RTA, Port and Tinian International Airport for trainee use that would be transferred to the base camp treatment and disposal system; holding tank for wastewater generated at the biosecurity building at the port; treatment and disposal for vehicle wash water at the proposed vehicle wash down facility at Port of Tinian.</p> <p><i>Communications</i>—install overhead and underground lines to the base camp, Range Control facilities, Munitions Storage Area, port facilities, IT&E cable landing facility on Broadway.</p> <p><i>Solid Waste</i> – proposed base camp transfer station and recycling center.</p>	Limited upgrades
<i>Tactical Amphibious Beach Landing</i>	Construct an underwater tactical amphibious beach landing area for Amphibious Assault Vehicles at Unai Chulu. Construction would modify the seafloor (i.e., limestone, coral reef) by contouring landing area to create a pile-armored ramp.	Not planned
Range Operations and Maintenance	Alternatives 1, 2, and 3	No-Action Alternative
<i>Employment</i>	Approximately 95 personnel would work year-round supporting RTA operations and maintenance activities.	Not planned
<i>Public Access</i>	Common to all alternatives would be the prohibition of public access at any time to the High Hazard Impact Area (includes portions of Broadway Avenue), Munitions Storage Area, base camp, the Range Observation Posts and Surface Radar sites. Only certain portions of the Military Lease Area would be open during the training periods. As training cycles are better defined, an access plan would be developed and published for public information.	Public access would be limited during periodic training exercises (Broadway Avenue to remain open when ranges are not in use.)
<i>Security</i>	Fences and monitoring systems would ensure safety and security within Military Lease Area boundaries. Only certain portions of the Military Lease Area would be open during the training periods. As training cycles are better defined, an access plan would be developed and published for public information.	Existing security during periodic military training exercises

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

<i>Elements Common to All Tinian Action Alternatives</i>		
Range Operations and Maintenance	<i>Alternatives 1, 2, and 3</i>	<i>No-Action Alternative</i>
<i>Biosecurity</i>	Biosecurity protocols would be established for personnel, cargo, and equipment arriving on Tinian. Specific protocols for logistics movements and tactical movements would be developed. Washdown and inspection areas would be established.	Biosecurity would be done for periodic training exercises
<i>Emergency Services</i>	Military fire and safety services would be established as well as medical emergency procedures.	No emergency services established
<i>Transportation</i>	Various roads and trails would be improved. Aircraft and marine operations would be conducted for arriving and departing personnel, equipment, cargo, and fuel.	Limited upgrades
<i>Munitions</i>	Total: 4,882,013 rounds/year	Total: 3,280,000 rounds/year*
Amphibious Training Beaches	<i>Alternatives 1, 2, and 3</i>	<i>No-Action Alternative</i>
<i>Operations</i>	The following amphibious operations would occur: <ul style="list-style-type: none"> • Unai Chulu – Amphibious Assault Vehicle landings, Landing Craft Air Cushion vessel landings, swimmer training and insertions, and small boat landings • Unai Babui and Unai Masalok would be used for Landing Craft Air Cushion vessel landings, swimmer training and insertions, and small boat landings. • Unai Lam Lam would be used for swimmer training and insertions, and small boat landings. 	<ul style="list-style-type: none"> • Administrative landings of Amphibious Assault Vehicles at the Port of Tinian • Swimmer training and insertions and small boat landings
Airspace Requirement	<i>Alternatives 1, 2, and 3</i>	<i>No-Action Alternative</i>
<i>Operations</i>	Special Use Airspace would be established. <ul style="list-style-type: none"> • Restricted Area 7203 East/West/A/B/C/X/Y/Z would be established and activated from the surface to various altitudes based on the training being conducted, up to a maximum of 18,000 feet (5,486 meters) MSL. • Tinian Military Operations Area would extend 12 nautical miles (22 kilometers) from the Tinian shoreline. The floor would start at 3,000 feet (914 meters) MSL and extend to a ceiling of up to a maximum of 18,000 feet (5,486 meters). • An Air Traffic Control Assigned Airspace would be activated whenever military operations are occurring in the Military Operations Area. This overlying airspace starts at the Military Operations Area ceiling (at 18,000 feet [5,486 meters]) and extends to 30,000 feet (9,144 meters). 	Limited to actions in periodic military training exercises
Sea Space Requirement	<i>Alternatives 1, 2, and 3</i>	<i>No-Action Alternative</i>
<i>Operations</i>	Danger zones would be established using the Tinian Restricted Area boundaries. These danger zones would be activated when corresponding airspace is activated.	Limited to actions in periodic military training exercises

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

Comparison of Tinian All Action Alternatives: Ground Disturbance and Newly Created Impervious Surfaces				
	Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Total Ground Disturbance/Newly Created Impervious Surface	Total: 1,902 acres (771 hectares)/662 acres (270 hectares)	Total: 2,025 acres (820 hectares)/784 acres (319 hectares)	Total: 2,003 acres (811 hectares)/763 acres (310 hectares)	225 acres (91 hectares)* plus periodic short term and minor ground disturbances
<i>Base Camp</i>	257 acres (104 hectares) only 30 acres (12 hectares) would be considered newly created impervious surface	Same as Alternative 1	Same as Alternative 1	Not applicable
<i>Munitions Storage Area</i>	38 acres (15 hectares) only 8 acres (3 hectares) would be considered newly created impervious surface	Same as Alternative 1	Same as Alternative 1	Not applicable
<i>Airfield Improvements (Tinian International Airport)</i>	41 acres (17 hectares) only 41 acres (17 hectares) would be considered newly created impervious surface	Same as Alternative 1	Same as Alternative 1	Not applicable
<i>Port of Tinian Improvements</i>	5 acres (2 hectares) only 5 acres (2 hectares) would be considered newly created impervious surface	Same as Alternative 1	Same as Alternative 1	Not applicable
<i>Roadway Improvements</i>	133 acres (53 hectares) only 133 acres (53 hectares) would be considered newly created impervious surface	Same as Alternative 1	Same as Alternative 1	Not applicable
<i>Range Complex A</i>	527 acres (213 hectares)	Same as Alternative 1	Same as Alternative 1	Not applicable
<i>Range Complex B</i>	47 acres (20 hectares) all of which would be considered newly created impervious surface	Same as Alternative 1	Same as Alternative 1	Not applicable

Table 2.4-8. Summary Comparison of Action Tinian Alternatives

Comparison of Tinian All Action Alternatives: Ground Disturbance and Newly Created Impervious Surfaces				
	Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
<i>Range Complex C</i>	80 acres (32 hectares) all of which would be considered newly created impervious surface	157 acres (65 hectares) all of which would be considered newly created impervious surface	157 acres (65 hectares) all of which would be considered newly created impervious surface	Not applicable
<i>Range Complex D</i>	475 acres (192 hectares) only 22 acres (9 hectares) would be considered newly created impervious surface	Same as Alternative 1	453 acres (183 hectares) none of which would be considered newly created impervious surface	Not applicable
<i>Military Lease Area-wide</i>	296 acres (120 hectares) all of which would be considered newly created impervious surface	342 acres (138 hectares) all of which would be considered newly created impervious surface	342 acres (138 hectares) all of which would be considered newly created impervious surface	Minor increases in impervious surface

Note: *DoN 2010d

2.5 PAGAN ALTERNATIVES

Two Pagan combined level RTA alternatives (herein after referred to as the “Pagan action alternatives”) that, when combined with a Tinian action alternative, meet the purpose and need were identified. The following describes the Pagan action alternatives including elements common to all alternatives and details relating to each of the action alternatives and a no-action alternative. [Figure 2.5-1](#) provides an aerial photograph showing the island and key place names.

2.5.1 Elements Common to All Action Alternatives

Elements common to both Pagan action alternatives include: (1) Land Use Agreements, (2) Construction and Improvements; (3) Training Operations; (4) Operations and Management; (5) Transportation; (6) Munitions; (7) Danger Zones; (8) Amphibious Operations; (9) Airspace Requirements; and (10) Sea Space Requirements. As with Tinian, best management practices could be incorporated into the proposed action and common to both Pagan action alternatives.

2.5.1.1 Land Use Agreements

Land use agreements will be required to implement the proposed action on Pagan. Pagan is owned entirely by the CNMI government. There are no federal lands on the island. The federal government would seek to acquire a real estate interest for the entire island of Pagan (approximately 11,794 acres [4,443 hectares]) from the CNMI government. A full discussion of proposed land acquisition and land uses on Pagan is provided in Section 4.7, *Land and Submerged Land Use*.

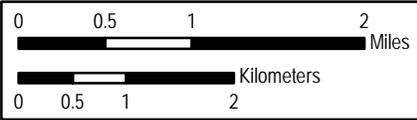
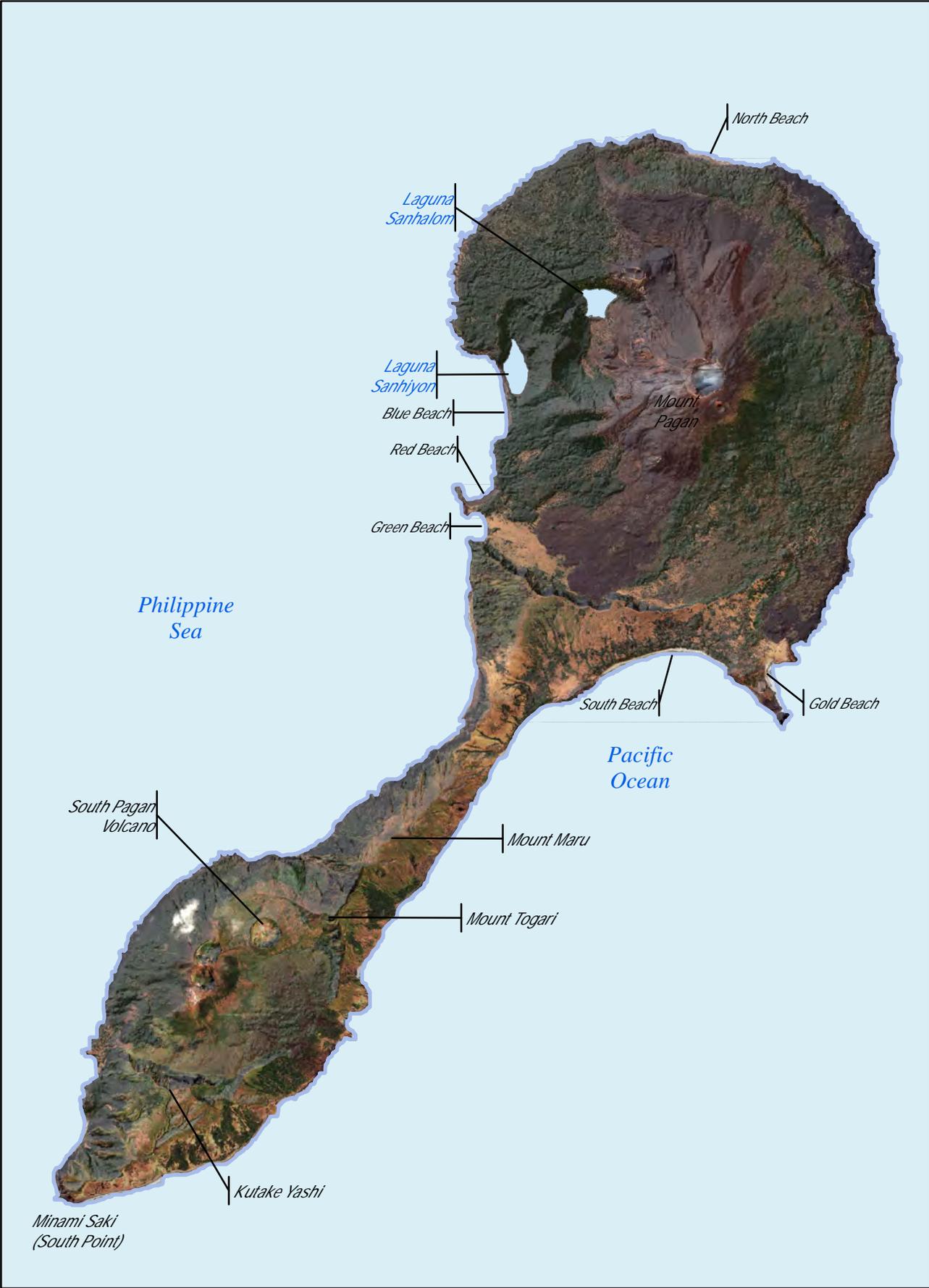


Figure 2.5-1
 Pagan Location Map



2.5.1.2 Construction and Improvements

Construction and Improvements

1. Support Facilities and Infrastructure Construction.
2. Training Facilities Construction.

Construction and improvements at Pagan RTA would commence only upon completion of required real estate actions. Construction is anticipated to span 8 to 10 years. Construction improvements may be part of initial training exercises on Pagan, and subsequent training events would include maintenance. Construction and improvements for the Pagan action alternatives include two broad categories: (1) support facilities and infrastructure, and (2) training facilities. These are further described below:

Support Facilities and Infrastructure Construction. Support facilities to be constructed include an expeditionary base camp/bivouac area, airfield, expeditionary military training trails, and a temporary Munitions Storage Area. These are described in Sections [2.5.1.2.1](#), *Expeditionary Base Camp/Bivouac Area*, through [2.5.1.2.4](#), *Military Training Trails*.

Training Facilities Construction. The combined level RTA is composed of High Hazard Impact Area(s), maneuver areas, amphibious training beaches, and Landing Zones, regardless of the alternative. To provide the reader with an easier way to identify the various RTA training facilities, they were grouped into two range complexes based on geographic proximity. The complexes are labeled North and South Range Complexes and are described in Sections [2.5.1.2.5](#), *North Range Complex Construction* and [2.5.1.2.6](#), *South Range Complex Construction*. The following provides a general description of the complexes; the depictions and differences in their composition are highlighted under each of the action alternative descriptions ([Section 2.5.2](#), *Pagan Alternative 1*, and [Section 2.5.3](#), *Pagan Alternative 2*).

2.5.1.2.1 Expeditionary Base Camp/Bivouac Area

An area adjacent to the existing airfield is planned for an expeditionary base camp/bivouac area. It would be large enough to provide space for up to 2,200 personnel, with additional surge capacity to accommodate up to 4,000 personnel ([Figure 2.5-2](#)). There would be no permanent buildings; only minimal facilities (e.g., established tent pads). A bivouac area would consist of crushed and compacted lava rock.

Training units would provide their own power sources such as mobile diesel engine electric power generator sets. Potable water sources would be employed by the units, either carried with them or produced through methods such as a reverse osmosis (sea water can be desalinated with a Marine Corps Tactical Water Purification System, or similar system). Wastewater would be managed with the use of field sanitation devices and expeditionary procedures described in the *Marianas Training Manual*. The primary sanitation device for human waste disposal would be a chemical toilet, which includes individual waste bags, Disposa-john, individual field toilet, and a drop-box toilet. Human waste collected in chemical toilets would be transported to approved disposal facilities. The estimated maximum domestic wastewater flow generated on Pagan would be 17,400 gallons per day (65,866 liters per day) from a maximum of 4,000 military training personnel. Temporary burn-out latrines and urinals with soakage pits can also be constructed.

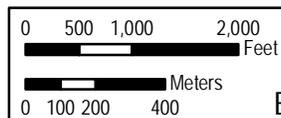
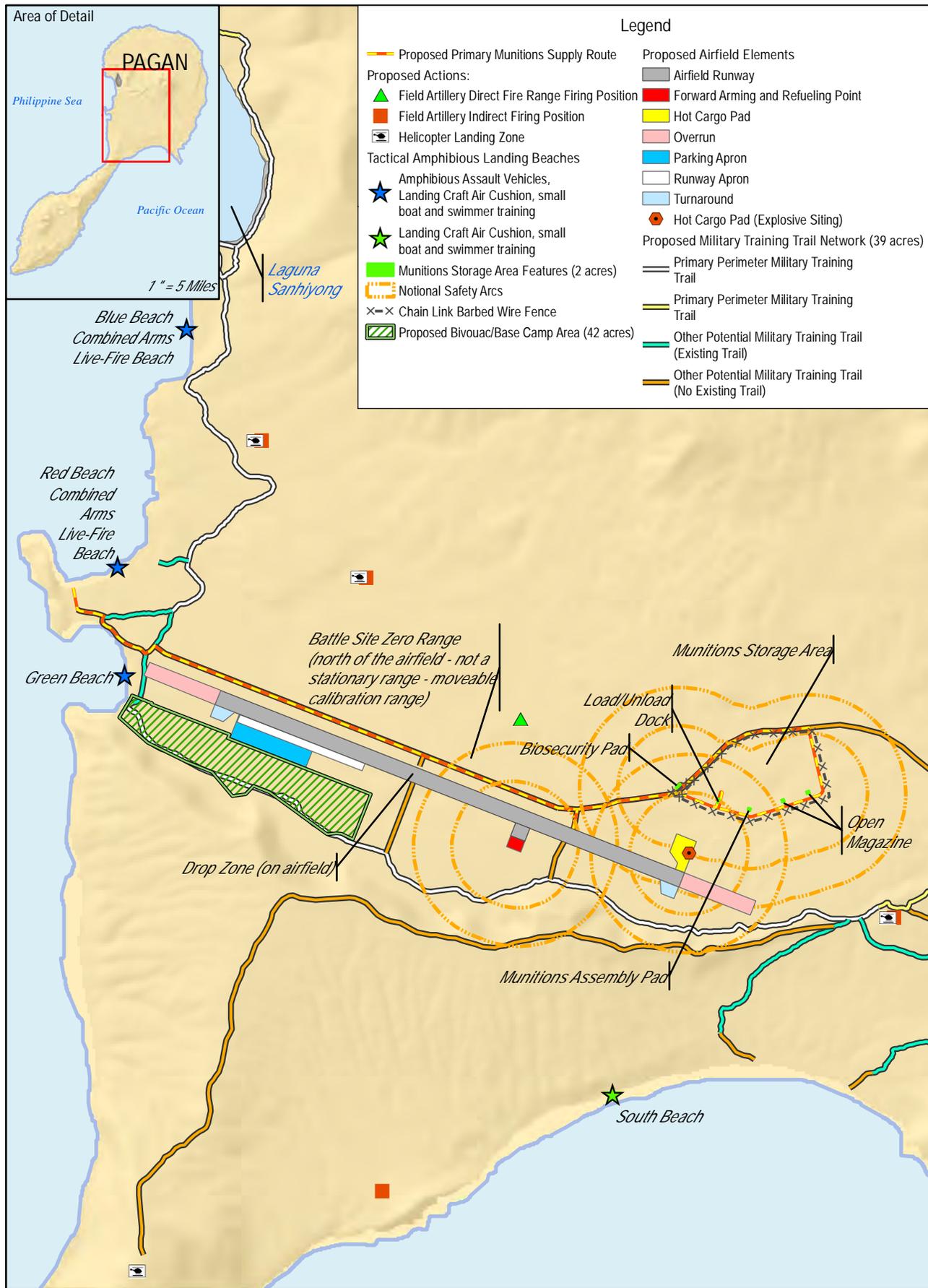


Figure 2.5-2
Pagan All Action Alternatives
Bivouac Area, Munitions Storage, and Airfield Improvements



Ground disturbance associated with the base camp/bivouac area would be approximately 42 acres (17 hectares); it is assumed that through repeated use that the ground disturbed area would take on an impervious quality and is considered newly created impervious surface. It should be noted that this area is included in the 484 acres (196 hectares) associated with the ground disturbance for the airfield clear zone (see [Section 2.5.1.2.2](#), *Expeditionary Airfield*).

2.5.1.2.2 Expeditionary Airfield

Under the proposed action, a grass expeditionary airfield would be improved to allow its use for aviation training and transport of personnel and supplies (see [Figure 2.5-2](#)). It is anticipated that Pagan airfield will be a public use airport owned and operated by the Commonwealth Ports Authority. To make the current 1,500-foot (457-meter) grass runway capable of accommodating fixed-wing C-130/C-17 it would need to be extended to 6,500 feet (1,220 meters). Airfield improvements would include the following: (1) airfield runway extension and strengthening; (2) turnarounds at both end of the runway; (3) a hot cargo pad; (4) overrun areas at each end of the runway; (5) parking apron; (6) runway apron; and (7) Forward Arming and Refueling Point. Near the airfield, a Drop Zone would be identified for equipment, cargo, and personnel delivery. The proposed Forward Arming and Refueling Point would be specified to provide aircraft refueling, as well as ordnance arming and de-arming operations. Because of the recurrent nature of the training, a concrete fuel bladder containment berm is planned. Bulk fuel would be delivered by KC-130s providing about 5,000 gallons (18,930 liters) of fuel per delivery. Necessary approvals for the proposed airfield would be coordinated with the Federal Aviation Administration.

Ground disturbance associated with the expeditionary airfield would be approximately 41 acres (17 hectares) which would be included in overall airfield clear zone of 484 acres (196 hectares). Due to compaction from repeated use, the expeditionary airfield is considered newly created impervious surface. However, the majority of the airfield clear zone (401 acres [162 hectares]) would not be compacted from use and not considered impervious. The airfield clear zone would have 100% vegetation maintenance (see Appendix F, *Geology and Soils Technical Memo*, for details on vegetation maintenance).

The portion of lava flow covering the existing airfield would be removed. Approximately 615,000 cubic yards (470,000 cubic meters) of lava rock would be removed under the construction activities associated with the airfield, and would be reused as gravel or fill material where possible.

2.5.1.2.3 Munitions Storage Area

A Munitions Storage Area would be established north of the airfield (see [Figure 2.5-2](#)). It would consist of: (1) security fencing; (2) open magazines; (3) a munitions assembly pad; (4) a munitions storage area; (5) a load/unload dock (pad); and (6) a biosecurity pad. The Munitions Storage Area would be secured by chain-link fencing with barbed wire. Utilities support (power, lights, and communications) would be expeditionary in nature, furnished by the training units. Ground disturbance associated with construction of the Munitions Storage Area would be approximately 35 acres (14 hectares) of that; it is assumed that through paved areas and repeated use that 5 acres (2 hectares) of the ground disturbed area would take on an impervious quality and is considered newly created impervious surface.

2.5.1.2.4 Military Training Trails

A military training trail network would be constructed including access military training trails to the High Hazard Impact Area, a perimeter military training trail system and other access corridors ([Figure 2.5-3](#)). On Pagan, the term “road” is not applicable, as the vehicular travel paths would not be constructed like a traditional road, but rather 16-foot-wide (5-meter) corridors would be cleared for vehicular maneuvering and mobility, as described below. A 22-mile (35-kilometer) gravel military training trail system is planned around the perimeter of the northern half of Pagan. Approximately 6 miles (10 kilometers) of this system would utilize existing all-terrain vehicle trails. The existing trails would be cleared, widened, stabilized, and improved. The other portion of the perimeter military training trail system would be constructed over terrain where no trails exist. During training activities, personnel would conduct the following improvements to provide military training trails: vegetation clearing, terrain cutting/filling, lava removal/compaction, and soil compaction. Culverts (water channels under trails) and low water crossings would also be inserted along fingers and draws in terrain, as appropriate, to allow proper stormwater management, drainage and minimize erosion and landslide potential while maintaining trail function. Heavy equipment that would be used to construct this military training trail network includes road graders, vibratory compactors, dozers, tractors rubber-tired articulated multi-purpose with buckets, dump trucks, and backhoe loaders. Clearing using chainsaws, weed-eaters, and other construction equipment and construction techniques that support timber cutting and clearing would be needed for vegetation clearing of medium to light tropical pine (ironwood) forest. In total, approximately 37 acres (15 hectares) would be cleared and graded to support wheeled and tracked vehicles movement ([Figure 2.5-3](#)). It is assumed that through repeated use that the military training trails would take on an impervious quality and are considered newly created impervious surface.

2.5.1.2.5 North Range Complex Construction

The North Range Complex would include construction or establishment of the training assets listed below.

High Hazard Impact Area Construction. A High Hazard Impact Area would be developed and would be centered on Mount Pagan. Due to the nature of its use, this High Hazard Impact Area would require only minimal ground disturbance to create target placements. A total of eight target areas would be constructed, primarily on areas without vegetation and thus requiring minimal vegetation removal and ground disturbance. If vegetation is present, it would be removed only to the extent that is needed to place the target. Targets for the Anti-Air Warfare Range would be located in the High Hazard Impact Area over Mount Pagan.

The footprint and target placement for each alternative is discussed in [Section 2.5.2](#), *Pagan Alternative 1*, and [Section 2.5.3](#), *Pagan Alternative 2*.



Legend

Proposed Actions:	Proposed Military Training Trail Network (39 acres)
▲ Field Artillery Direct Fire Range Firing Position	■ High Hazard Impact Area
■ Field Artillery Indirect Firing Position	— Restricted Access Military Training Trail (No Existing Trail)
Tactical Amphibious Landing Beaches	— Primary Perimeter Military Training Trail (Existing Trail)
★ Amphibious Assault Vehicles, Landing Craft Air Cushion, small boat and swimmer training	— Primary Perimeter Military Training Trail (No Existing Trail)
★ Landing Craft Air Cushion, small boat and swimmer training	— Other Potential Military Training Trail (Existing Trail)
★ Small boat and swimmer training	— Other Potential Military Training Trail (No Existing Trail)

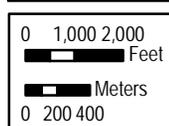


Figure 2.5-3
Pagan All Action Alternatives
Military Training Trail Improvements



Maneuver Areas Construction. Construction ground disturbance associated with the maneuver areas include the creation of a firing point for Field Artillery Direct Fire Range (10 acres [4 hectares]) training; 11 firing points for Field Artillery Indirect Fire Range training and 5 firing points for Mortar Range training. The footprint for the firing points for each alternative is discussed in [Section 2.5.2, Pagan Alternative 1](#), and [Section 2.5.3, Pagan Alternative 2](#). It is assumed that through repeated use that the firing points would take on an impervious quality and are considered newly created impervious surface.

Amphibious Training Beaches Construction. Up to six beaches would be used to conduct amphibious training (Green, Red, Blue, South, Gold, and North). No construction activities would occur at proposed amphibious training beaches.

Landing Zones Construction. There are 11 Landing Zones proposed across northern Pagan (nine of which correspond with Field Artillery Indirect Fire Range firing positions). The total ground clearance would be 36 acres (15 hectares). It is assumed that through repeated use that the Landing Zones would take on an impervious quality and are considered newly created impervious surface.

Field Artillery Direct Fire Range. Construction of the Field Artillery Direct Fire Range would involve construction of one firing position on the southern perimeter of the High Hazard Impact Area. Anticipated ground disturbance associated with the firing position is 10 acres (4 hectares). This is considered new impervious surface.

Field Artillery Indirect Fire Range. The Field Artillery Indirect Fire Range would involve construction of 11 firing positions around the Pagan North Range Complex. Nine of these firing positions correspond with Landing Zones. Anticipated ground disturbance associated with the firing positions is 110 acres (45 hectares). This is considered new impervious surface.

Mortar Range. The Mortar Range would involve construction of five firing positions around the perimeter of the northern High Hazard Impact Area. Anticipated ground disturbance associated with the firing positions is 60 acres (24 hectares). This is considered new impervious surface.

2.5.1.2.6 South Range Complex Construction

The South Range Complex would be used as a non-live-fire maneuver area. There would be no construction-related ground clearance undertaken.

2.5.1.3 Training Operations

2.5.1.3.1 North Range Complex Training Operations

Training operations within the North Range Complex would include the following:

2.5.1.3.1.1 High Hazard Impact Area Training Operations

The High Hazard Impact Area centered on Mount Pagan would be used for ground, air, and naval surface fire support live-fire and inert munitions expenditures. Specifically, this area would support the following ground-based training: (1) Field Artillery Indirect Fire Range; (2) Field Artillery Direct Fire Range; and (3) Mortar Range. In addition, this High Hazard Impact Area would support the following air-to-ground training: (1) Offensive Air Support Range; (2) Close Air Support Range; (3) Anti-Air Warfare Range; and (4) Combined Arms Training to Support Close Air Support and Naval Gunfire Support

Training. It would also support the ship-to-shore naval gunfire training (i.e., Combined Arms Training to Support Close Air Support and Naval Gunfire Support Training).

2.5.1.3.1.2 Maneuver Areas Training Operations

Training in the northern maneuver areas includes, but is not limited to: (1) patrolling, establishing defensive positions, and firing live-fire weapons into and/or around the High Hazard Impact Area; and, (2) integrating supporting arms (including aviation, artillery, and naval gunfire assets). Where possible, mounted wheeled vehicle maneuvering would be accomplished in the northern maneuver area as well. Vehicles would move along military training trails as well as other terrain that they could safely navigate (excluding “No Maneuver Areas”). As such, personnel would move along the landscape, call for supporting arms, and train in a manner similar to combat conditions. Unlike the Tinian RTA (comprised of designated maneuver and firing locations), the Pagan RTA challenges the command and control element of units to determine, design, and execute the most effective tactics by maneuvering units (varying in size) and securing objectives in dynamic battlefield scenarios. On Pagan, each unit would be authorized to develop unique scenarios and engagement areas. Units would be required to identify engagement area locations, direction of attack, targets/threats to be engaged, and types of weapon and ammunition to be used during an engagement. Developed scenarios, along with operational risk management, would be submitted to range control for approval prior to implementation. This flexibility allows units to develop scenarios that best prepare them for their assigned mission while ensuring range control can protect biological, natural and cultural resources.

Temporary objective areas could be set up within the live-fire maneuver area. Prior to training, temporary objective areas would be evaluated by the appropriate subject matter experts to ensure natural and cultural resources would not be impacted by the training scenario.

Use of the military training trail over the land bridge west of Laguna Sanhiyon would be limited to foot traffic during normal military activities. Vehicles would typically use the military training trail to the east of Laguna Sanhiyon and only use the land bridge in the event of an emergency.

2.5.1.3.1.3 Amphibious Training Operations

Up to six beaches (Red, Green, Blue, Gold, North, South) would be used to conduct live-fire tactical amphibious training. Three beaches, Green, Red, and Blue, would be used by Amphibious Assault Vehicles and Landing Craft Air Cushion training operations. Landing Craft Air Cushion training operations would also occur at South Beach. Green, Red, Blue, Gold, North, and South beaches would support small boat and combat swimmer training. Targets along the beachfront would be established for tactical training (primarily at Red Beach) and a path maintained to provide access to the trail/road network. Amphibious forces would maneuver from naval ships via water or air to various locations on Pagan, based on the training exercise design. Simulated enemy forces would be “activated” by exercise controllers and maneuvering forces would fire at targets in a synchronized fashion.

2.5.1.3.1.4 Landing Zones Training Operations

Tilt-rotor and rotary-wing aircraft such as CH-53, UH-1, and AH-1 would take off and land from Landing Zones proposed across northern Pagan (see [Figure 2.5-2](#)). Fixed-wing aircraft would use the airfield as would rotor and tilt-rotor aircraft. Live-fire would be allowed at Landing Zones.

2.5.1.3.1.5 Drop Zone

Drop zone training would occur at the airfield or any open field.

2.5.1.3.1.6 Unmanned Aircraft Systems Operating Area

Unmanned aircraft (i.e., drones) would include shoulder mounted systems that would take off wherever it is feasible, including areas away from the airfield.

2.5.1.3.1.7 Terrain Flight Maneuver Area

This type of training would occur while aircraft are in transit. This type of training is live-fire/non-live-fire. It includes flying over terrain below 200 feet (60 meters).

2.5.1.3.1.8 Field Artillery Direct Fire Range

The Field Artillery Direct Fire Range would support artillery training and allow personnel to set up weapons and ordnance at the direct firing position and engage targets positioned in a direct line-of-fire in the northern High Hazard Impact Area. Personnel would traverse the open terrain to access to the Field Artillery Direct Fire Range firing position.

2.5.1.3.1.9 Field Artillery Indirect Fire Range

The Field Artillery Indirect Fire Range would support artillery and large mortar training. Personnel would set up artillery and ordnance at indirect firing positions located between a minimum and maximum distance from the High Hazard Impact Area. The array of targets in the High Hazard Impact Area would not typically be visible from the indirect firing positions. A forward observer would provide target location information back to the personnel at the firing position, shifting fire trajectories to bring the impacts onto targets. Personnel would access the Field Artillery Indirect Fire Range firing positions by foot over open terrain, by military training trails or by Landing Zones.

2.5.1.3.1.10 Mortar Range

The Mortar Range would provide training for mortar teams. Firing positions adjacent to the High Hazard Impact Area would allow weapon system engagement with the array of targets therein. Personnel would traverse open terrain on foot to access to the Field Artillery Direct Fire Range firing position.

2.5.1.3.2 South Range Complex Training Operations

Training operations within the South Range Complex includes the following:

2.5.1.3.2.1 Maneuver Area Training Operations

In the south Pagan non-live-fire maneuver area, small units, a platoon or less, of special operations personnel (Navy SEALs, Marine Corps Special Forces, Army Rangers, etc.) would move toward an objective or Observation Post. From the Observation Post, units would direct forces and supporting arms in the north Pagan range. No force on force engagements (i.e., no weapons would be fired) would be conducted in the south Pagan training area. Troops would access South Pagan via air insertion (e.g., helicopter using fast rope) or using small boat (raiding craft) and swimmers. No tactical Landing Zones would be created in the south. Units would either walk out of the southern area or be extracted by helicopters using Special Control Insertion/Extraction, or small boats.

2.5.1.3.3 Amphibious Operations

On Pagan, six beaches are proposed for amphibious training: Red, Blue, Green, North, Gold and South beaches. All would experience amphibious operations, small boat landings, and swimmer training; however, only Green, Red, and Blue beaches would be used for Amphibious Assault Vehicle and Landing Craft Air Cushion vessel landings. South Beach would also be used for Landing Craft Air Cushion vessel landings.

The number of daily amphibious landings may vary based on many factors such as the training scenario and objectives, weather/sea state, and vehicle availability. In general, amphibious training on Pagan would be more focused and involve greater use over shorter periods of time than Tinian amphibious training. The majority of landings would occur at the beginning and end of training cycles (i.e., a week-long exercise or 2 week exercise) throughout the 16 weeks of military training, consistent with the combined level of training emphasis, with daily variations as noted in the following subsections.

2.5.1.3.3.1 Tactical Amphibious Assault Vehicle Training

For Amphibious Assault Vehicles, a typical light training day may consist of 16 vehicles landing and departing two times in a 24-hour period, on specified beaches. A typical heavy training day may consist of 16 vehicles landing and departing four times in a 24-hour period, on a specified beach. Generally, these heavy and light training days occur at various intervals over individual two week training cycles at Pagan, but would coincide with training for an initial amphibious assault, followed by land maneuver training, and ending with movement from the shore back to ships.

2.5.1.3.3.2 Landing Craft Air Cushion Vessel Training

For Landing Craft Air Cushion vessels, similar training frequencies would occur. A typical light training day may consist of two vessels landing and departing four times in a 24-hour period, and a typical heavy training day may consist two vessels would land and depart eight times. These typical days would occur at the beginning and end of the respective training cycles.

2.5.1.3.3.3 Small Boat and Swimmer Training

For small boat, a typical light training day may consist of four boats landing and departing four times, and a typical heavy training day would be four boats landings and departing ten times each.

2.5.1.3.3.4 Combat Swimmer Training

Combat swimmer training to occur on Red, Blue, Green, North, Gold and South beaches, could occur two ways: (1) insertion, and, (2) scout swimmers (initial terminal guidance) to guide small boats (not Amphibious Assault Vehicles and Landing Craft Air Cushion) to the landing beach. A typical group of swimmers is four, but could be as large as 16. As far as average frequency, a typical group of four swimmers would train daily, on any given beach, during the 16 weeks of live-fire training on Pagan.

[Table 2.5-1](#) provides the average annual number of amphibious operations under the Pagan action alternatives.

Table 2.5-1. All Pagan Action Alternatives Proposed Amphibious Operations

<i>Type of Amphibious Landing</i>	<i>Proposed Annual Landing Events**</i>	<i>Number of Vehicles/Landing**</i>	<i>Annual Total Landings*</i>
Amphibious Assault Vehicle			
Marine Unit-landings	28	14	2,842
Foreign Allies-landing	28	14	
Major Joint Exercises-landings	35	14	
Landing Craft Air Cushion-Landings			
Marine Unit	80	4	904
Foreign Allies	40	2	
Major Joint Exercises	30	4	
Small Boats-Landings			
Special Operations Forces	12	2	3,192
Marine Units	36	40	
Foreign Allies	6	18	
Major Joint Exercises	24	2	

Notes: *Total number of vehicles landing annually.

**An event is a single vehicle landing or a single vehicle departure.

Source: DoN 2014a.

2.5.1.3.4 Airfield Training Operations

All Pagan action alternatives would include airfield operations for training at the Pagan airfield and proposed Landing Zones. For the purposes of this EIS, Landing Zones are considered crude airfields for field use by rotary-wing aircraft. Airfield training operations would include take-offs and landings, helicopter and tilt-rotor aircraft training at Landing Zones, and the base for Unmanned Aircraft Systems operations. [Table 2.5-2](#) provides a summary of annual training operations by aircraft type and time of day associated with the airfields at the Pagan airfield.

Table 2.5-2. All Pagan Alternatives Proposed Annual Airfield Military Operations

<i>Aircraft Type (example)</i>	<i>Annual Number of Operations</i>		
	<i>7:00 a.m. - 10:00 p.m.</i>	<i>10:00 p.m. - 7:00 a.m.</i>	<i>Total</i>
Transport Tilt-rotor	480	120	600
Transport Rotary-wing	1720	440	2,260
Attack Helicopter	760	200	960
Transport Fixed Wing	800	200	1,000
Unmanned	240	60	300
Total	4,000	1,020	5,120

[Table 2.5-3](#) presents annual aircraft operations that include conducting air-to-ground operations and flight maneuvers in overlying airspace, and personnel and cargo transport at Landing Zones done by fixed-wing, rotary-wing, and tilt-rotor aircraft. The number of aircraft per operation and the average number of minutes an aircraft would spend in transit and within the mission-specific area is presented.

Table 2.5-3. All Pagan Action Alternatives Proposed Typical Annual Landing Zone Operations

<i>Aircraft Type (example)</i>	<i>Annual Number of Operations</i>		
	<i>7:00 a.m. - 10:00 p.m.</i>	<i>10:00 p.m. - 7:00 a.m.</i>	<i>Total</i>
Transport Tilt-Rotor (MV-22)	160	40	200
Transport Rotary-Wing (CH-53)	480	120	600
Attack Helicopter (AH-1/H-60)	320	80	400
Total	960	240	1,200

Notes: Number of operations include all Landing Zones.

2.5.1.4 Operation and Management of Pagan Range and Training Area

2.5.1.4.1 Operation of Pagan Range and Training Area

No personnel would reside permanently on Pagan. Combined level RTA ground, amphibious, and aviation training activities would occur up to 16 weeks per year (non-consecutive weeks of live-fire training), with a typical training duration of 1 to 2 weeks. Training would potentially occur 7 days per week. The RTA would be used about 50% during the hours 7:00 a.m. to 10:00 p.m. and 50% during the hours 10:00 p.m. to 7:00 a.m. (DoN 2014a). It is anticipated the expeditionary base camp/bivouac area would accommodate up to 2,200 personnel at any one time, with additional surge capacity for joint exercises. Due to the presence of an active volcano on Pagan, operational risk management would be employed to determine feasibility of proposed training schedules.

Munitions brought to Pagan via marine transportation would be moved east from the shore approximately 1.6 miles (2.6 kilometers) inland along a munitions supply route to this area for storage, preparation and use in support of specific training exercises. Munitions brought to Pagan via aircraft would offload to a hot cargo pad adjacent to the airfield, and then be transported to the Munitions Storage Area. No munitions would remain on Pagan between exercises.

2.5.1.4.1.1 Security

Under either alternative, the entire island of Pagan would be considered a military training area during training exercises. Requisite access restrictions consistent with military safety and security requirements would be implemented.

2.5.1.4.1.2 Public Access

During training periods, public access would be restricted from accessing areas within the Pagan RTA encumbered by surface danger zones for safety reasons. Depending upon the type of training and training scenario, portions of the island and surrounding waterways may be available for public access. During non-training periods, access would not be restricted with the exception of the High Hazard Impact Areas which, once it is activated, would be permanently off limits due to the presence of unexploded ordnance. A fence would be constructed where physically possible and signs would be posted to delineate the boundary of the High Hazard Impact Area. Unauthorized persons would be prohibited from entering High Hazard Impact Areas by use of positive controls to include fencing and/or posting of Unexploded Ordnance hazard warning signs. Appropriate measures would be used to restrict access to areas known or suspected to contain Unexploded Ordnance. Risk management would be used

to determine the type and extent of marking and/or fencing required. Primary factors to consider in making this risk decision are accessibility of the public to restricted locations.

Combined level training groups would schedule their live-fire training through a schedule system approximately 6 months prior to the training event (DoN 2014d), and training periods would be published electronically by the U.S. military using current methods of public notification and signs will be posted. Public notices for daily training events would be published as well. This prior planning would allow sufficient lead time for commercial travel and tourism companies to engage in potential markets for those individuals seeking to visit Pagan. As training cycles are refined, a public RTA access plan would be developed to address individual requests for access.

2.5.1.4.1.3 Biosecurity

The Department of Defense will require development and implementation of detailed Hazard Analysis and Critical Control Point plans tailored for individual construction, transport, and logistics activities related to CJMT actions. For all training activities, general Hazard Analysis and Critical Control Point plans would be developed prior to initiation of training, and implementation would be required for each training event. The Department of Defense will require a biosecurity education program for 100% of contractors, Department of Defense civilian and military personnel, and foreign military on native versus non-native species, including the brown treesnake; prevention and control methods; and reporting requirements. To address non-native species risk pathways, Department of Defense funded the development of a Regional Biosecurity Plan. When the plan is completed, for recommendations applicable to CJMT activities, the Department of Defense will work cooperatively with appropriate agencies to develop and implement interdiction and control protocols. Finally, Joint Region Marianas has established a comprehensive brown treesnake interdiction program to ensure that military activities, including the transport of personnel and equipment from Guam, do not contribute to the spread of brown treesnakes within the CNMI. Brown treesnake interdiction requirements contained in Navy Region Marianas and Joint Region Marianas instructions will be implemented for CJMT activities. Additional biosecurity details are provided in Section 4.9, *Terrestrial Biology* and Appendix D, *Best Management Practices*.

2.5.1.4.1.4 Emergency Services

Units would be accompanied by their associated medical/emergency medical personnel and equipment. A medical evacuation plan would be prepared to cover how a critically injured person would receive medical treatment.

A fire management plan specific to proposed CJMT activities would be prepared prior to initiation of live-fire training on Pagan. This fire management plan would address the preventative and immediate actions required for fire hazards connected with RTA training. Water resources and labor would be identified. Evacuation plans would also be developed in case of emergencies related to natural causes such as extreme weather events, earthquakes, increased volcanic activity, or tsunami events.

2.5.1.4.1.5 Operational Range Management

Live-fire ranges would be managed in accordance with current Marine Corps range management policies and procedures. The RTA on Pagan would be managed in accordance with Marine Corps Order 3550.10, *Policies and Procedures for Range Training Area Management*. These policies and procedures would be

reviewed and coordinated with Joint Region Marianas regional range management. All service policies include the following:

- A Range Safety Program will be established per Marine Corps Order 3570.1C, Range Safety detailing procedures for RTA safety, emergency response (medical and fire), explosive ordnance disposal, training mishap investigations, safety training, and range inspections.
- RTA procedures for scheduling, collecting utilization data and reporting range use.
- Controls for RTA airspace in accordance with Federal Aviation Administration regulations and agreements, with an objective of use by multiple agencies with minimal interference and maximum safety.
- Controls for monitoring danger zones to ensure safety of mariners in nearshore waters.
- Management of movement and access into and within the RTA.
- Coordination of all RTA communications.
- Provision of range maintenance including vegetation maintenance, operational range clearance and clearance of unexploded ordnance.
- Maintenance of ranges, targets, training devices, fencing, gates and signage.
- Coordination of vehicle and transportation operations and maintenance.
- Procedures for environmental protection.
- Provide administration and personnel management.

2.5.1.4.1.6 Environmental Protection

In the ongoing periodic training use and maintenance of the proposed ranges, basic environmental protection features that would be incorporated into the RTA Management Plan would include:

- Fire condition monitoring for firefighting readiness and modification of training as appropriate as part of RTA management procedures.
- Specific regulations and information provided for using units to protect the environment as part of RTA procedures.
- Adherence to protective measures established in natural and cultural resource management plans.
- Adherence to RTA procedures and information provided under Marine Corps Order P3550.10 for using units to protect the environment.
- Clear marking of ranges and transit routes necessary to reach these areas. Restricting vehicular activities to designated/previously identified areas.
- Adherence to existing policies and management activities to conserve soils, including applicable stormwater pollution prevention plans.

2.5.1.4.1.7 Range Environmental Vulnerability Assessment

Department of Defense Instruction 4715.14 is the overarching policy that establishes the requirement for the Marine Corps Range Environmental Vulnerability Assessment program (Department of Defense 2005).

This policy requires the military services to assess the potential environmental impacts of military munitions use on existing operational ranges and determine whether there has been a release or a substantial threat of a release of munitions constituents (i.e., chemical components of munitions) to an

off-range area. If a release occurs off-range, the policy also requires the military services determine whether or not the release poses an unacceptable risk to human health and/or the environment based upon the known characteristics of the chemical(s). The Range Environmental Vulnerability Assessment process includes data collection, analysis, documentation and follow-on activities, as needed. See Section 4.3, *Water Resources* and Section 4.16, *Hazardous Materials and Waste* for additional description of Range Environmental Vulnerability Assessment and its application to the proposed action.

2.5.1.4.1.8 Vegetation Management at Pagan Range and Training Area

To sustain continual RTA operations, vegetation control would be required. The degree of management would differ depending on the requirements for each individual range or training location. For example, accommodating firebreaks and equipment laydowns versus maneuver areas dictate the degree of vegetation maintenance needed. On Pagan, while a majority of the island is either covered in lava or too steep to use for training, management regimes would be followed where appropriate. A description of proposed vegetation maintenance areas and management for Pagan is provided in Appendix F, *Geology and Soils Technical Memo*.

2.5.1.5 Transportation

A major consideration for proposed training on Pagan is transporting personnel to the island. The primary mode of transportation for personnel, equipment, and cargo would be amphibious craft landing at designated amphibious training beaches as no docking facilities currently exist or are contemplated at Pagan under the proposed action. Air movement would be a secondary mode of transportation to the island, as the current airfield would be lengthened and upgraded to support fixed-, rotary-, and tilt-wing aircraft operations. No combat equipment would be permanently staged on Pagan, all units would arrive with their own equipment to train and survive as they would under combat conditions (DoN 2014a).

2.5.1.5.1 Air Transportation

Marine fixed-wing aircraft (KC-130) and Air Force Air Mobility Command C-17, C-130, rotary-wing (CH-53) and tilt-rotor aircraft (MV-22) from ships may provide personnel and equipment lift to and from Pagan; however, these operations would occur in association with training. Air transport operations to and from Pagan are not anticipated. Estimated annual aircraft operations associated with training are provided in [Section 2.5.1.3.4, Airfield Training Operations](#). Biosecurity protocols would be instituted for aircraft carrying military equipment and/or personnel arriving and departing Pagan.

2.5.1.5.2 Ground Transportation

On Pagan, a military training trail network (see [Figure 2.5-3](#)) would be constructed. It would connect the expeditionary base camp/bivouac area and airfield to North Range Complex. Given the terrain, there are three major approaches for ground movement available throughout North Range Complex: (1) a clockwise rotation, starting from the airfield heading north to the northwest tip of the island; (2) a counterclockwise rotation, starting at the landing strip heading east and then north until reaching the High Hazard Impact Area; and (3) moving south starting at the airfield, head east, and then due south along the isthmus.

2.5.1.5.3 Marine Transportation

Equipment and personnel movement would primarily be accomplished by military vessels. Cargo and personnel would be transferred to smaller craft (e.g., Amphibious Assault Vehicles, Landing Craft Air Cushion) able to land directly on beaches. These smaller craft would launch from larger vessels offshore, as no port facilities exist for vessel docking. There is no commercial marine vessel service to Pagan. [Section 2.5.1.3.3](#), *Amphibious Operations* provides a summary of annual amphibious operations for the Pagan action alternatives Munitions.

2.5.1.6 Munitions

Under the Pagan action alternatives, munitions would be brought in by the units, stored temporarily, and used during training exercises. Any remaining munitions would be packed and return with the units. In general, there would be no perceptible differences for munitions expended between the alternatives. This is because neither alternative precludes the ability to expend munitions. [Table 2.5-4](#) provides a breakdown of annual munitions expenditures. Both action alternatives would have the same munitions expenditures; these are presented below. The potential for military expended materials falling outside of designated ranges complexes is discussed in [Section 2.5.1.7](#), *Danger Zones*. It is assumed that ground-based operations would occur up to 50% during the hours of 10:00 p.m. to 7:00 a.m. Aircraft and naval operations are anticipated to occur up to 55% of the time during the hours of 7:00 a.m. to 10:00 p.m. and up to 45% during the hours of 10:00 p.m. to 7:00 a.m.

Table 2.5-4. All Pagan Action Alternatives Proposed Representative Annual Munitions Expenditures

<i>Munitions Type</i>	<i>Quantity (individual munition)</i>
Munitions Associated with Ground-Based Training	
Field Artillery Fire Range	
155 mm HE	592
155 mm Illumination	40
155 mm Smoke	320
120 mm HE	200
120 mm Smoke	200
120 mm Illumination	40
Small Arms	
5.56 mm	382,575
.50 cal	36,800
7.62 mm	192,080
Grenade/Mortar/Rocket	
40 mm HE	10,460
60 mm HE	480
60 mm Illumination	80
60 mm Smoke	40
81 mm HE	1,000
81 mm Illumination	80
81 mm Smoke	40
83 mm HE	8
Tube-launched Optically-tracked Wire-guided Missile	4
AT-4 HE	4
20 mm Target Practice Bullets	160

Table 2.5-4. All Pagan Action Alternatives Proposed Representative Annual Munitions Expenditures

<i>Munitions Type</i>	<i>Quantity (individual munition)</i>
Air-Delivered Munitions	
25 pound Aviation Ordnance (Inert)	1,000
500 pound Aviation Ordnance (Inert)	175
500 pound Aviation Ordnance (HE)	175
1,000 pound Aviation Ordnance (HE)	175
2,000 pound Aviation Ordnance (HE)	175
2.75 inch Rocket (HE)	500
2.75 inch Rocket (Illumination)	50
2.75 inch Rocket (Smoke)	75
5 inch Rocket (HE)	150
20 mm Target Practice Bullet	1,000
25 mm Target Practice Bullet	11,250
7.62 mm Bullet	34,000
.50 cal Bullet	20,000
Laser Guided Training Round (Inert)	250
Naval Ship Delivered Munitions	
5 inch (HE)	150
Air-to-Air Munitions and Expendables (Warning Areas Only)	
AIM-7	5
AIM-9	5
AIM-120	3
Chaff	2,400
Flares	2,400

Legend: mm = millimeter; cal = caliber; HE = high explosive, AIM= Air Intercept Missile; AT=Anti-Tank.

**Note:* All munitions listed are representative and can be substituted with a similar munition on a one-for-one basis if the substituted munitions are of equal or lesser net explosive weight. Assuming operational parameters (i.e., firing positions, target areas) remain the same and the substituted munitions are of equal or lesser net explosive weight, it is assumed to have a comparable noise profile as the listed munition.

2.5.1.7 Danger Zones

Under both Pagan action alternatives, three-dimensional areas will be designed that delineate portions of the earth’s surface and overlying airspace in which personnel and/or equipment may be endangered by ground weapons firing or detonation activities because of ricochet or fragmentation hazard. The size and configuration of the three dimensional area, called a “surface danger zone,” is dependent on the performance characteristics of a given weapons system, training requirements, range configuration, and geographical location. As described in [Section 2.5.1.8, Airspace Requirements](#), the Federal Aviation Administration would establish Special Use Airspace restrictions above these areas in accordance with Federal Aviation Administration rule-making authority. As described in [Section 2.5.1.9, Sea Space Requirements](#), when a surface danger zone extends over the water, the area would be established via the U.S. Army Corps of Engineers rule-making process.

In accordance with the Operational Risk Management process outlined in OPNAV Instruction 3500.39C and Marine Corps Order 3500.27B (DoN 2010a, 2011), the project Range Control staff would implement a variety of mechanisms to manage risk within the surface danger zone, including:

- Develop and clearly mark surface danger zones, which determine the restricted land, airspace, and sea space requirements to laterally and vertically contain projectiles, fragments, debris, and components resulting from the firing of weapons. Surface danger zones over navigable waterways may be marked by buoys if practical; these areas will be noted on nautical charts and are off limits during live-fire training events.
- As part of the pre-training activities, public and non-participating personnel would be cleared from the training area.
- Continually assess the live-fire range operations and update/revise safety measures as needed.

Figures [2.5-4](#) and [2.5-6](#) show composite danger zones and surface danger zones for each of the Pagan alternatives.

The surface danger zones associated with training operations on Pagan would overlap nearshore waters by approximately 47,259 acres (19,125 hectares) in on Pagan Alternative 1, and 39,828 acres (16,118 hectares) in Pagan Alternative 2 ([Figure 2.5-4](#)). There would be a small chance that an expended projectile would fall outside of the immediate range footprint, within the surface danger zone. There would be an even smaller chance for an expended projectile to fall within the nearshore waters portion, or the fringes of the surface danger zone.

2.5.1.8 Airspace Requirements

Aviation training would occur under both Pagan alternatives. To support this training, several major land-based training components are needed. These include: (1) target areas within a High Hazard Impact Area to support Offensive Air Support Range training and Close Air Support Range training; (2) a Drop Zone, Forward Arming and Refueling Points, and Unmanned Aerial System operations at the airfield; and (3) Landing Zones throughout the island. Terrain Flight Maneuver Area training would occur in the airspace above Pagan.

To provide safe separation of military activities from civil/commercial flights, designated airspace is required. One basic airspace design option provides the necessary coverage for both Pagan alternatives. As depicted in Figures [2.5-5](#) and [2.5-6](#), two types of Special Use Airspace are proposed to meet the safety and control aspects of military training.

Warning Area. This Special Use Airspace is assigned and designed to separate non-participating military and civil/commercial aircraft from hazardous air-to-ground and ship-to-shore operations (see Figures 2.5-5 and 2.5-6) in international airspace (outside of the U.S. 12-nautical mile [19 kilometers] territorial sea but within the U.S. Exclusive Economic Zone). The airspace would be designated Warning Area 14 Low and Warning Area 14 High. Each area would be a quadrilateral with a dimension of roughly 60 nautical miles by 80 nautical miles (111 kilometer engagement areas by 148 kilometers), from the center of Pagan. Airspace vertical boundaries for Warning Area 14 Low would start at the sea surface and extend up to a ceiling of 30,000 feet (9,144 meters). Warning Area 14 High would have a floor of 30,000 feet (9,144 meters) and a ceiling of 60,000 feet (18,288 meters) MSL (or in other terms, up to Flight Level 600).

Restricted Area. This Special Use Airspace is identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions by the Federal Aviation Administration. Restricted areas denote the existence of unusual hazards to aircraft, often invisible, such as artillery firing, aerial gunnery, or guided missiles. Flying within this type of Special Use Airspace, without prior authorization from the using or controlling agency (e.g., the Joint Region Marianas or Federal Aviation Administration, respectively) may be extremely hazardous to the aircraft and its occupants. A proposed restricted area above and surrounding Pagan, designated R-7204 A, B, C and D, would extend horizontally 12 nautical miles (22 kilometers) from Pagan’s shoreline. This Restricted Area would have a floor starting at the sea surface and extend up to a ceiling of 60,000 feet (18,288 meters) MSL (or Flight Level 60,000 feet).

Monthly, Notices to Airmen are issued by the Federal Aviation Administration for Special Use Airspace operations, informing pilots of hazardous operations in the area. Table 2.5-5 outlines anticipated operations in Warning Area-14 and R-7204 A, B, and C. These numbers are based on 16 weeks of operations.

Table 2.5-5. All Pagan Action Alternatives Aircraft Operations Proposed in Special Use Airspace

Aircraft Type (example)	Annual Number of Operations*		
	7:00 a.m. – 10:00 p.m.	10:00 p.m. – 7:00 a.m.	Total
Fighter (F-18/F-16/F-35)	1,880	470	2,350
Transport Tilt-Rotor (MV-22)	80	20	100
Transport Rotary-Wing (CH-53)	290	70	360
Attack Helicopter (AH-1/H-60)	130	30	160
Transport Fixed Wing (C-130)	720	180	900
Unmanned Aerial Systems (RQ-7B Shadow)	320	80	400
Total	3,420	850	4,270

Note: *One operation is counted each time an aircraft enters a different airspace unit.

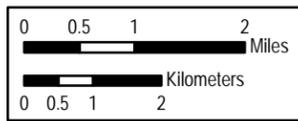
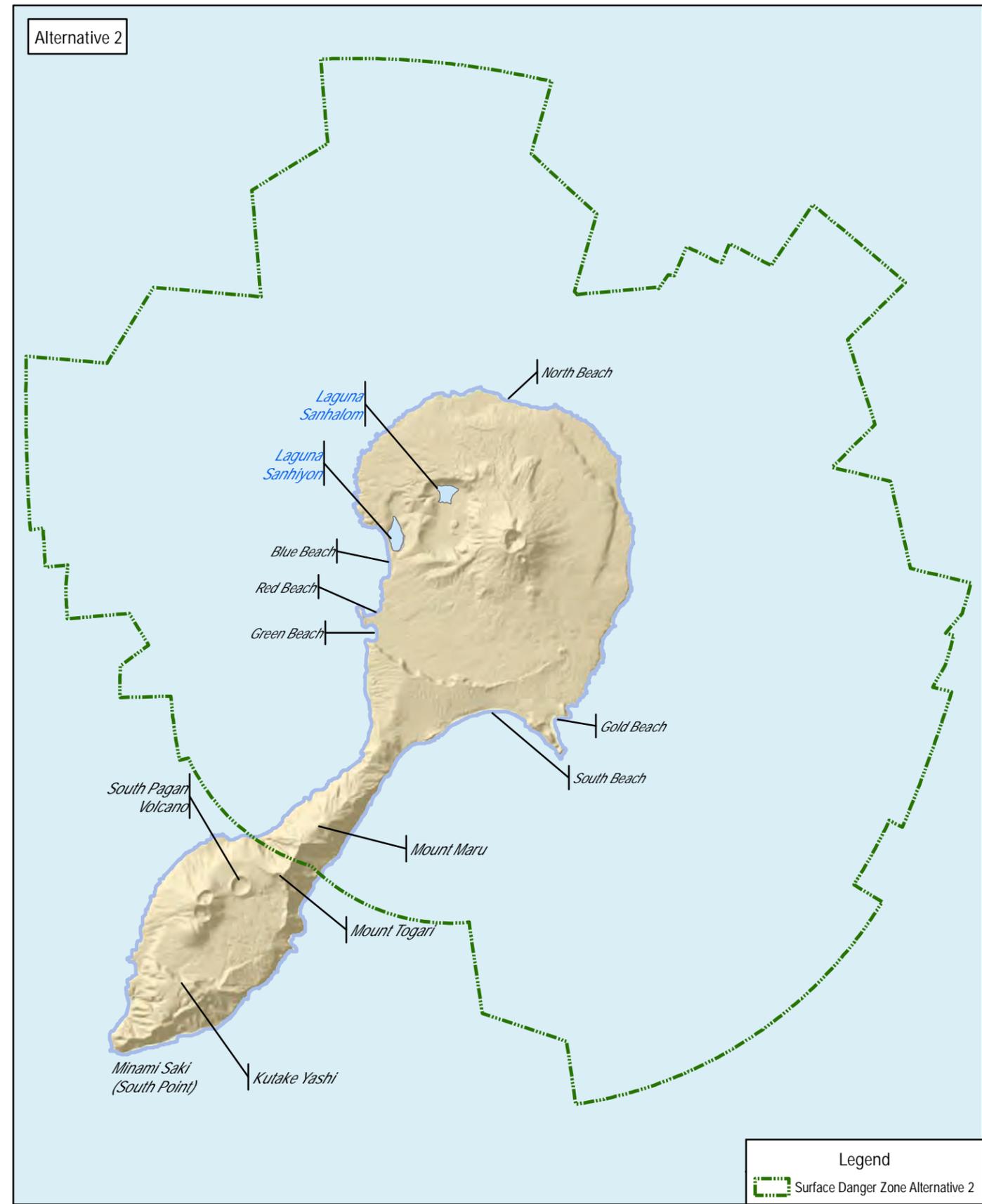
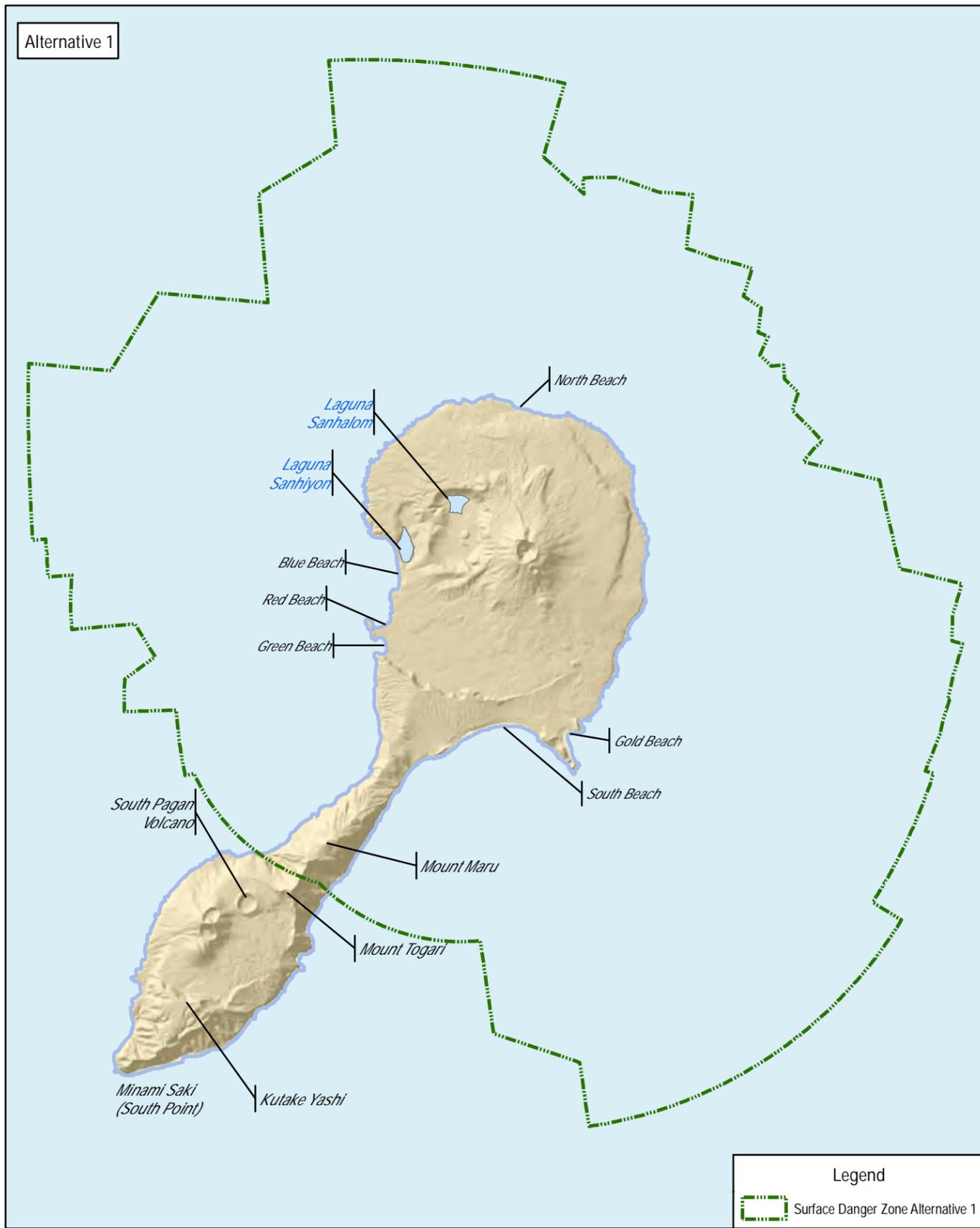
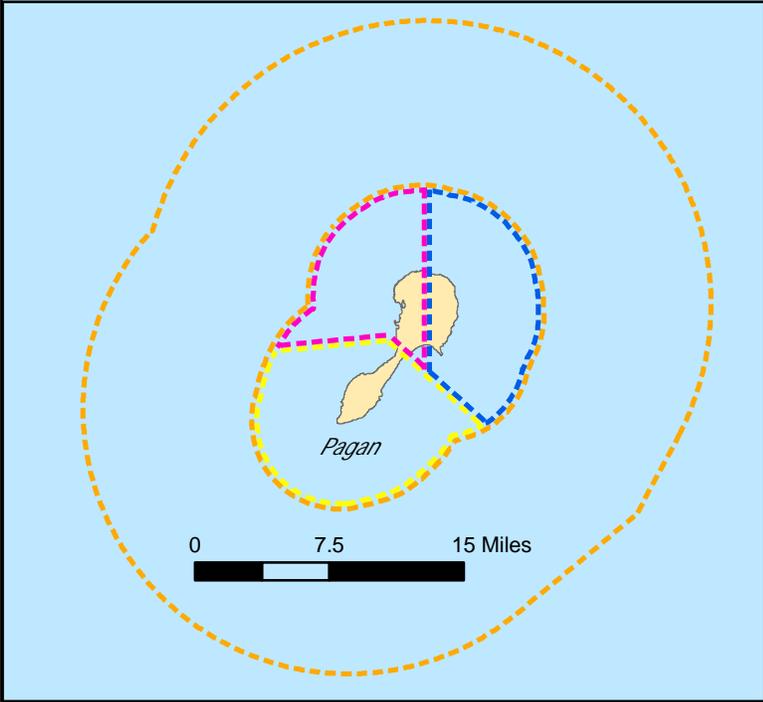
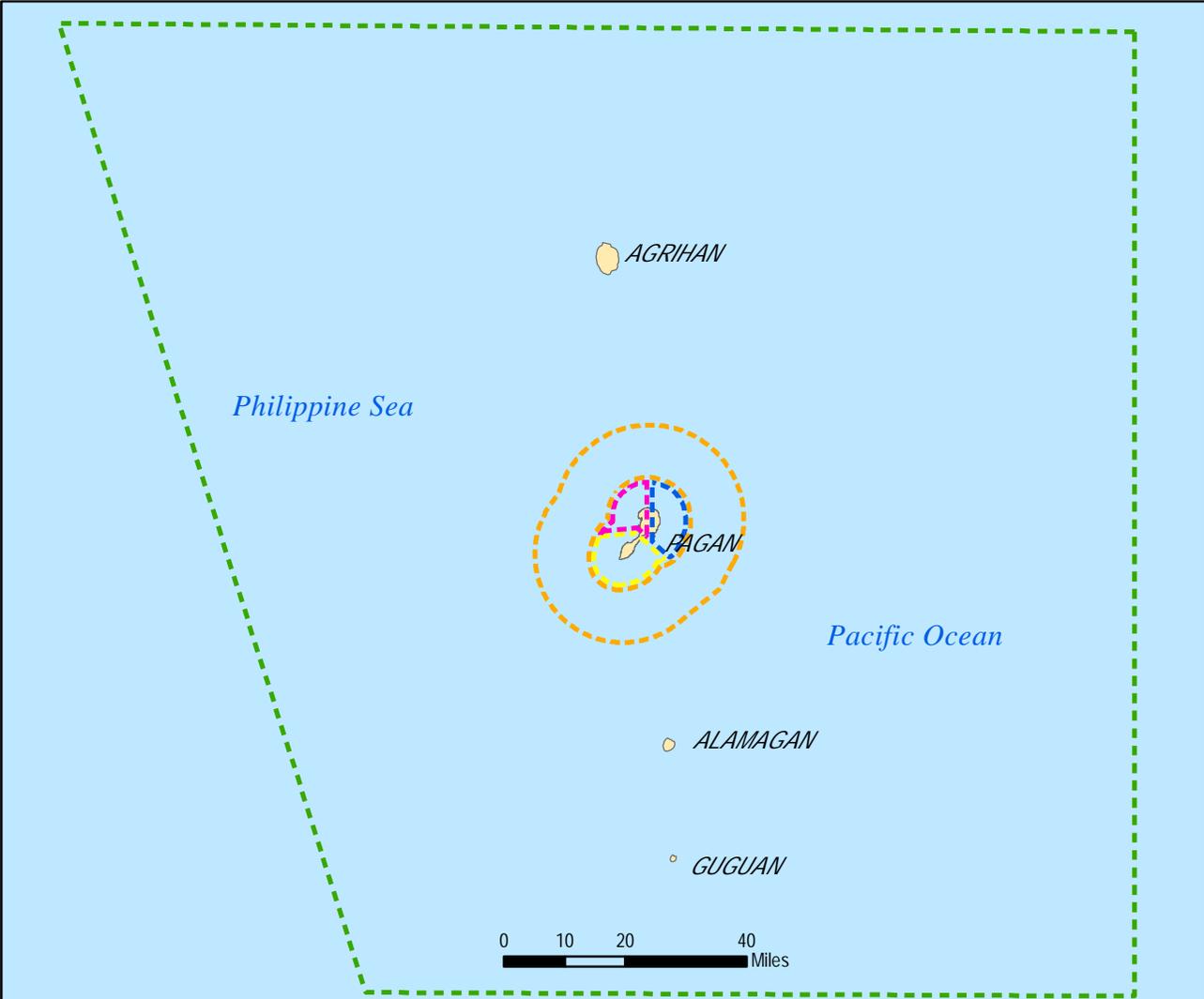


Figure 2.5-4
Pagan All Action Alternatives Surface Danger Zones



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Legend	
Proposed Special Use Airspace	
	Restricted Area 7204 A
	Restricted Area 7204 B
	Restricted Area 7204 C
	Restricted Area 7204 D
	Warning Area 14

Figure 2.5-5
 Pagan All Action Alternatives
 Special Use Airspace: **Two**-Dimensional Perspective





Figure 2.5-6
Pagan All Action Alternatives
Danger Zones

2.5.1.9 Sea Space Requirements

Sea space directly supporting and contiguous to certain potentially hazardous training activities (i.e., live-fire ranges on land) is required by 33 CFR Part 334, *Navigable Waters* (Danger Zone and Restricted Area Regulations) to be designated as a danger zone, and published for public safety. A danger zone is a defined water area (or areas) used for hazardous operations. Consistent with military safety requirements, access to danger zones is strictly prohibited while live-fire or dangerous military activities are underway, but would be open to the public when no training is occurring in that zone. Certain portions of the proposed Pagan restricted airspace (i.e., the water area under R-7204 A, B, and C) in general define the lateral boundaries of water areas to be designated as danger zones (). The U.S. Coast Guard publishes a monthly Notice to Mariners for danger zones, informing the maritime community of hazardous operations in the area.

2.5.2 Pagan Alternative 1

Proposed range complexes for Pagan Alternative 1 are shown on [Figure 2.5-7](#). Proposed training facilities for Pagan Alternative 1 are shown in [Figures 2.5-8](#) and [2.5-9](#). The composite surface danger zone for Pagan Alternative 1 is shown in [Figure 2.5-4](#). Under this alternative, construction improvements, training operations, operations and management, transportation, munitions, amphibious operations, airspace requirements, and sea space requirements (i.e., the elements common to all alternatives) would be the same as those described in [Section 2.5.1, Elements Common to All Action Alternatives](#) with the exception of a few distinctions.

2.5.2.1 Construction and Improvements

Construction and improvements under this alternative would be the same as those described in [Section 2.5.1, Elements Common to All Action Alternatives](#), with the following distinctions:

- North Range Complex would support two High Hazard Impact Areas. The northern High Hazard Impact Area, centered on Mount Pagan, would encompass approximately 4,192 acres (1,696 hectares); however, ground disturbance would be limited to eight target areas (“boxes”) totaling 384 acres (155 hectares). In general, the actual metal targets would be placed in flat areas that are free of vegetation. The target boxes, which collectively total 384 acres (155 hectares), would each be considered 100% ground disturbed once the High Hazard Impact Area is activated due to the use of high explosive munitions in the impact area. Target areas are not considered impervious surfaces. A 98-foot (30-meter) firebreak would be established along the perimeter of the High Hazard Impact Area.
- The second High Hazard Impact Area, located across the isthmus, would encompass 375 acres (152 hectares); however, 64 acres (26 hectares) would be disturbed to incorporate targets and to create a fire break. The target box would be considered 100% ground disturbed once the High Hazard Impact Area is activated because of the repeated use of high explosive munitions in the impact area. Target areas are not considered impervious surface areas.

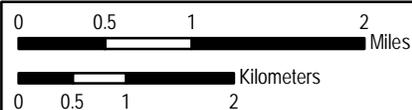


Figure 2.5-7
 Pagan Alternative 1
 Range Complexes



Terrain Flight Maneuver Area
Range located over the island

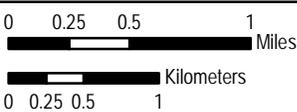
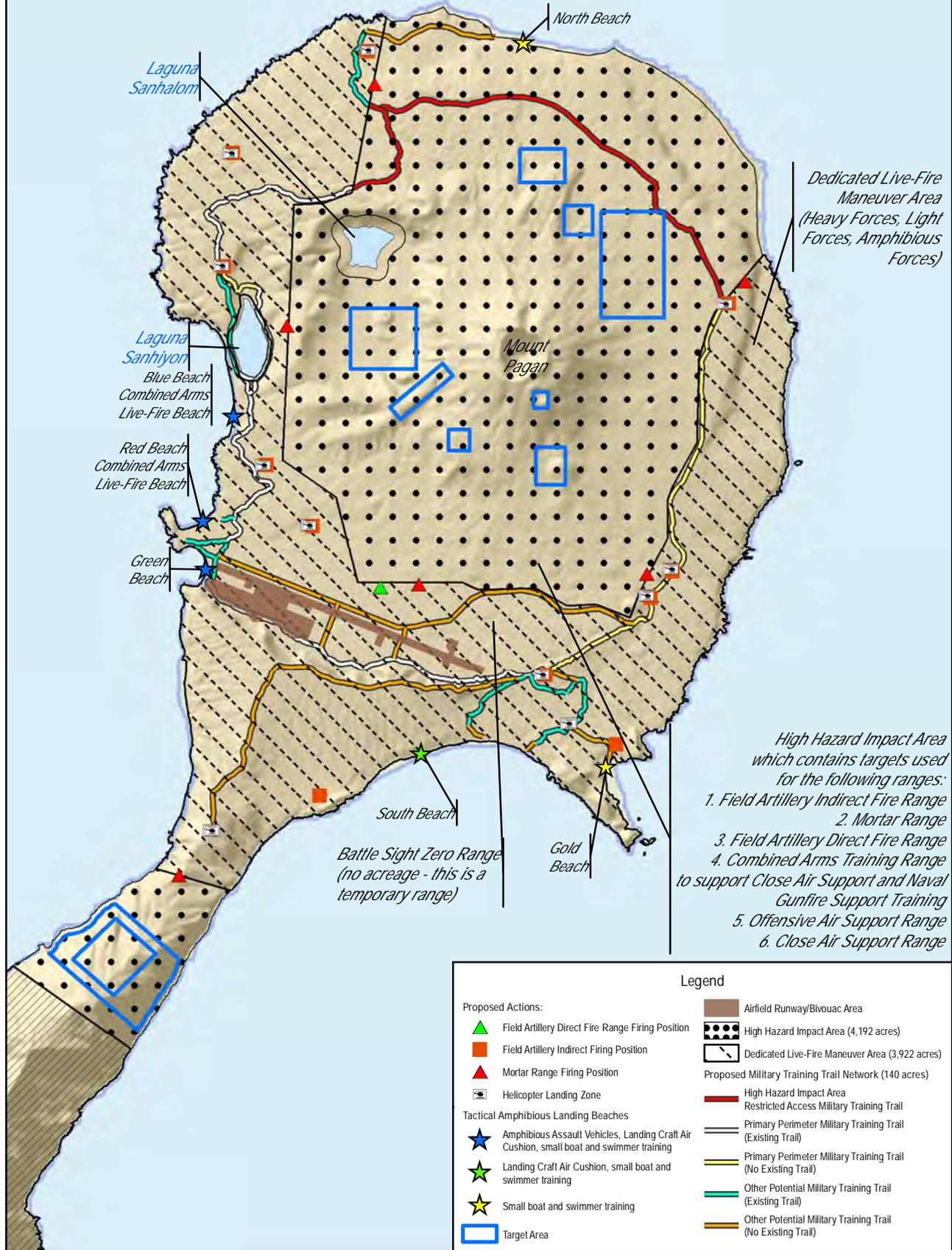


Figure 2.5-8
Pagan Alternative 1
North Range Complex



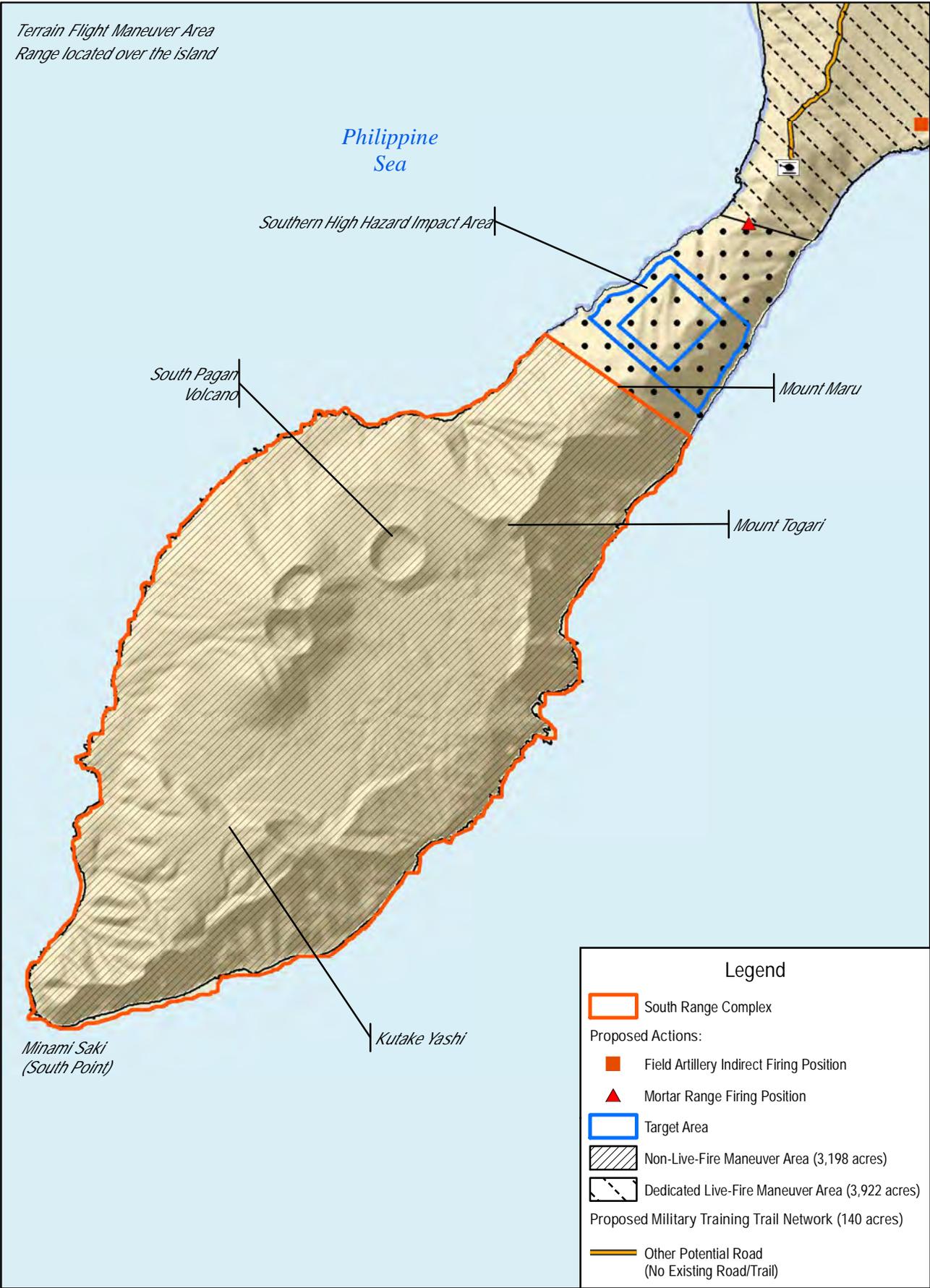


Figure 2.5-9
Pagan Alternative 1
South Range Complex



- A total of 1 firing point associated with the Field Artillery Direct Firing Range, 11 firing points associated with the Field Artillery Indirect Fire Range, and 6 firing points associated with the Mortar Range would be constructed under Pagan Alternative 1 for a total of 180 acres (73 hectares). It is assumed that through repeated use that the firing points would take on an impervious quality and is considered newly created impervious surface.
- Eleven Landing Zones would be constructed under Pagan Alternative 1. Anticipated ground disturbance associated with Landing Zones would total 36 acres (15 hectares). It is assumed that through repeated use that the additional Landing Zones would take on an impervious quality and are considered newly created impervious surface.
- The 3,921 acres (1,587 hectares) of dedicated live-fire maneuver area would not require construction.

2.5.2.2 Training

Training operations under this alternative would be the same as those described in [Section 2.5.1, Elements Common to All Action Alternatives](#), with the following distinction:

- North Range Complex would provide two High Hazard Impact Areas. The northern High Hazard impact area centered on Mount Pagan (4,192 acres [1,696 hectares]) would provide flexibility in terms of the number and types of weapons used to support live-fire combined arms training scenarios. The second High Hazard Impact Area located on the isthmus (375 acres [152 hectares]), would offer additional flexibility for ground-based training and when both High Hazard Impact Areas are used, they offer greater training scenario complexity, therefore, increasing training value. The remaining area in the North Range Complex supports live-fire maneuver area (3,921 acres [1,587 hectares]). Non-live-fire maneuver area would be limited to the South Range Complex.

Due to the larger land area encumbered by the two High Hazard Impact Areas, there would be less area available to conduct ground maneuvering under this alternative compared to Pagan Alternative (described later). The smaller maneuver area (3,921 acres [1,587 hectares]), as compared to the other alternative, provides a lower degree of training scenario flexibility. Units are more physically constrained when using this smaller maneuver area. This alternative provides greater combined arms training value but less ground maneuver flexibility as compared to Pagan Alternative 2.

2.5.3 Pagan Alternative 2

Proposed range complexes for Pagan Alternative 2 are shown on [Figure 2.5-10](#). Pagan Alternative 2 range complex configurations are depicted in Figures [2.5-11](#) and [2.5-12](#). The surface danger zone for Pagan Alternative 2 is shown in [Figure 2.5-4](#). Under Pagan Alternative 2, transportation, munitions, amphibious operations, airspace requirements, and sea space requirements (i.e., some of the elements common to all alternatives) would be the same as those described in [Section 2.5.1, Elements Common to All Action Alternatives](#). However, there are differences in construction and improvements, training operations, and range operation when compared to Pagan Alternative 1 ([Section 2.5.2](#)).

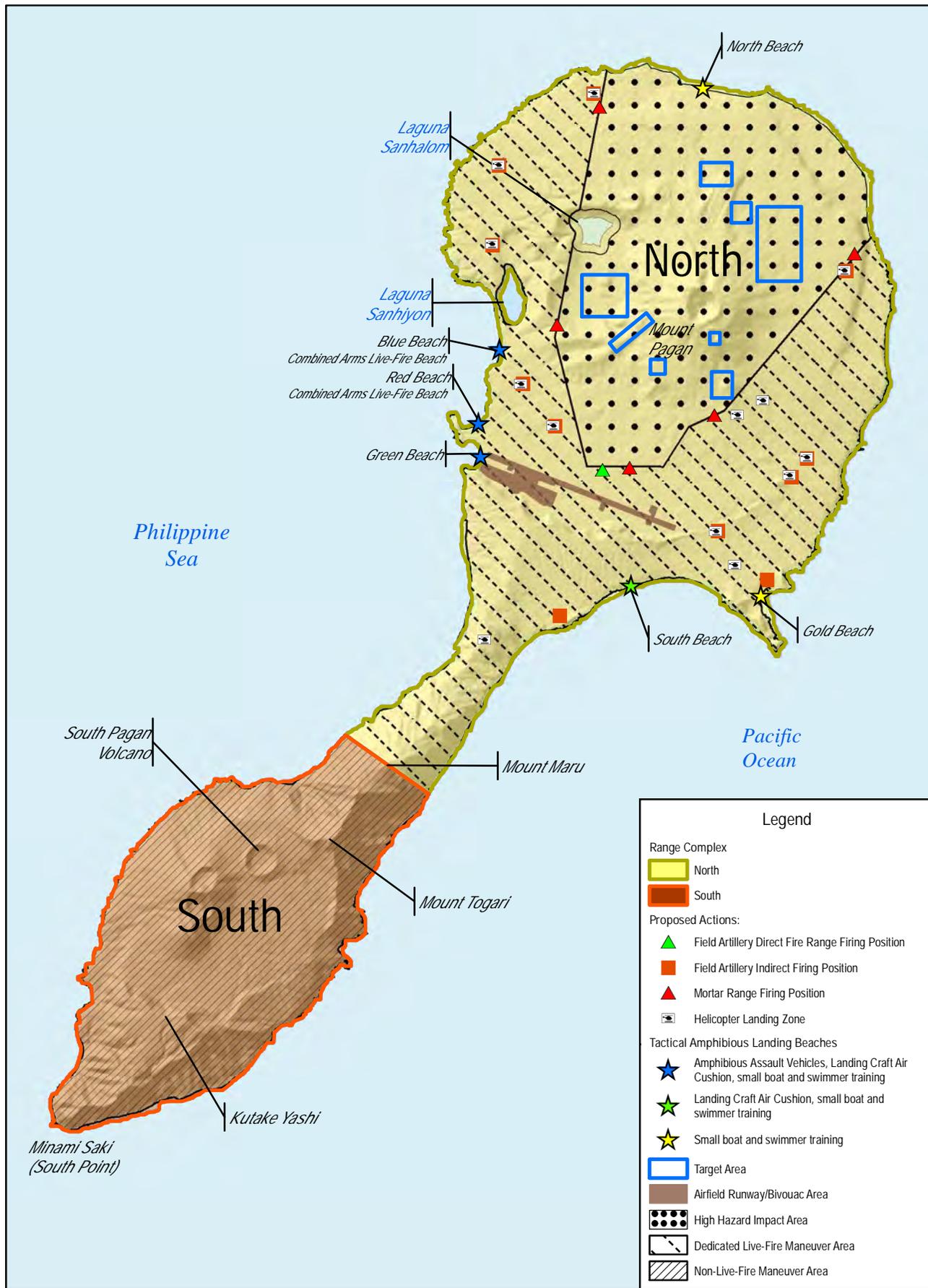


Figure 2.5-10
Pagan Alternative 2
Range Complexes

Terrain Flight Maneuver Area
Range located over the island

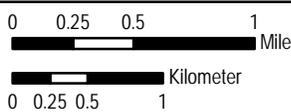
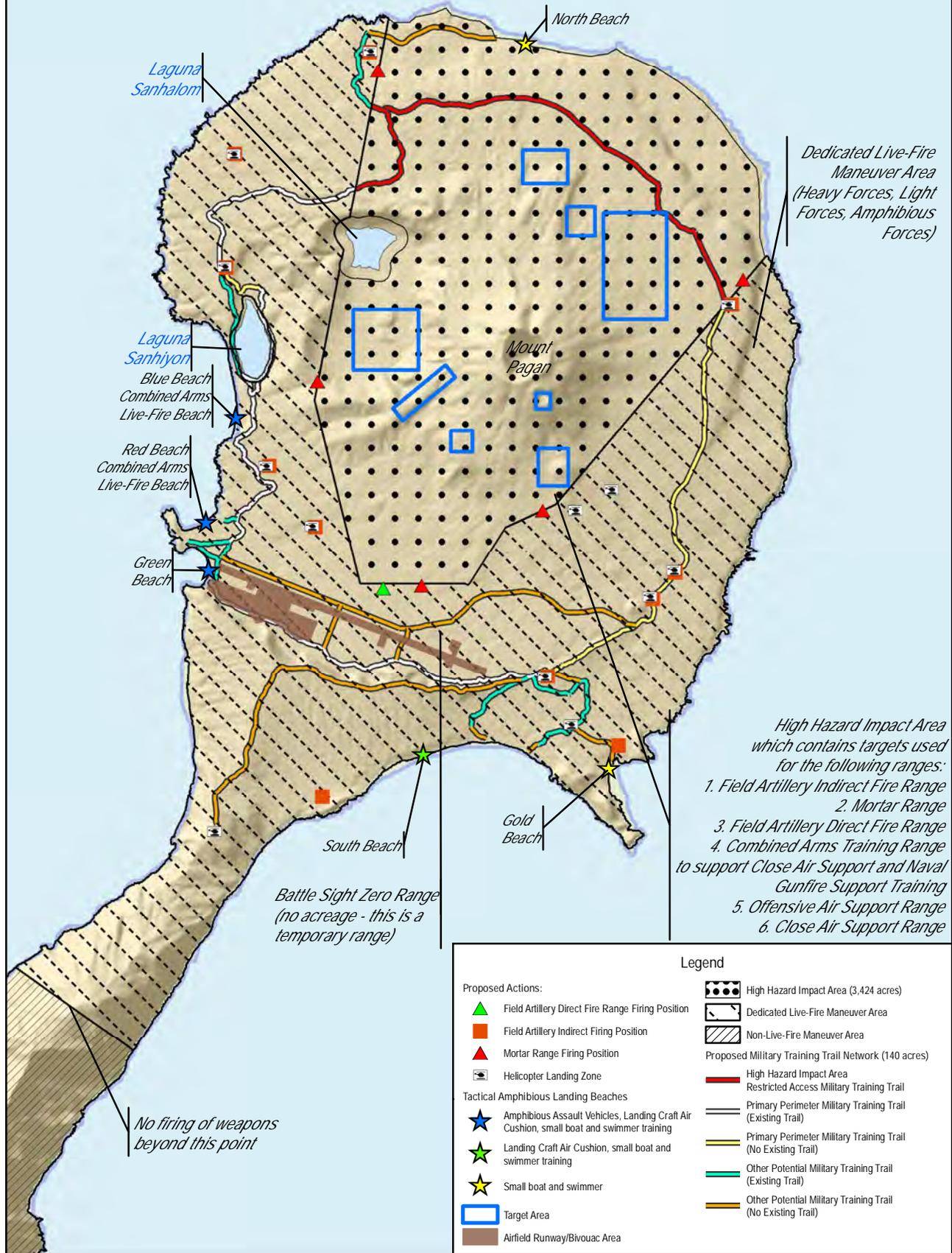


Figure 2.5-11
Pagan Alternative 2
North Range Complex



*Terrain Flight Maneuver Area
Range located over the island*

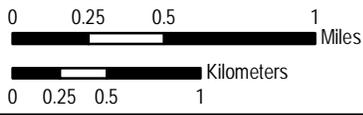
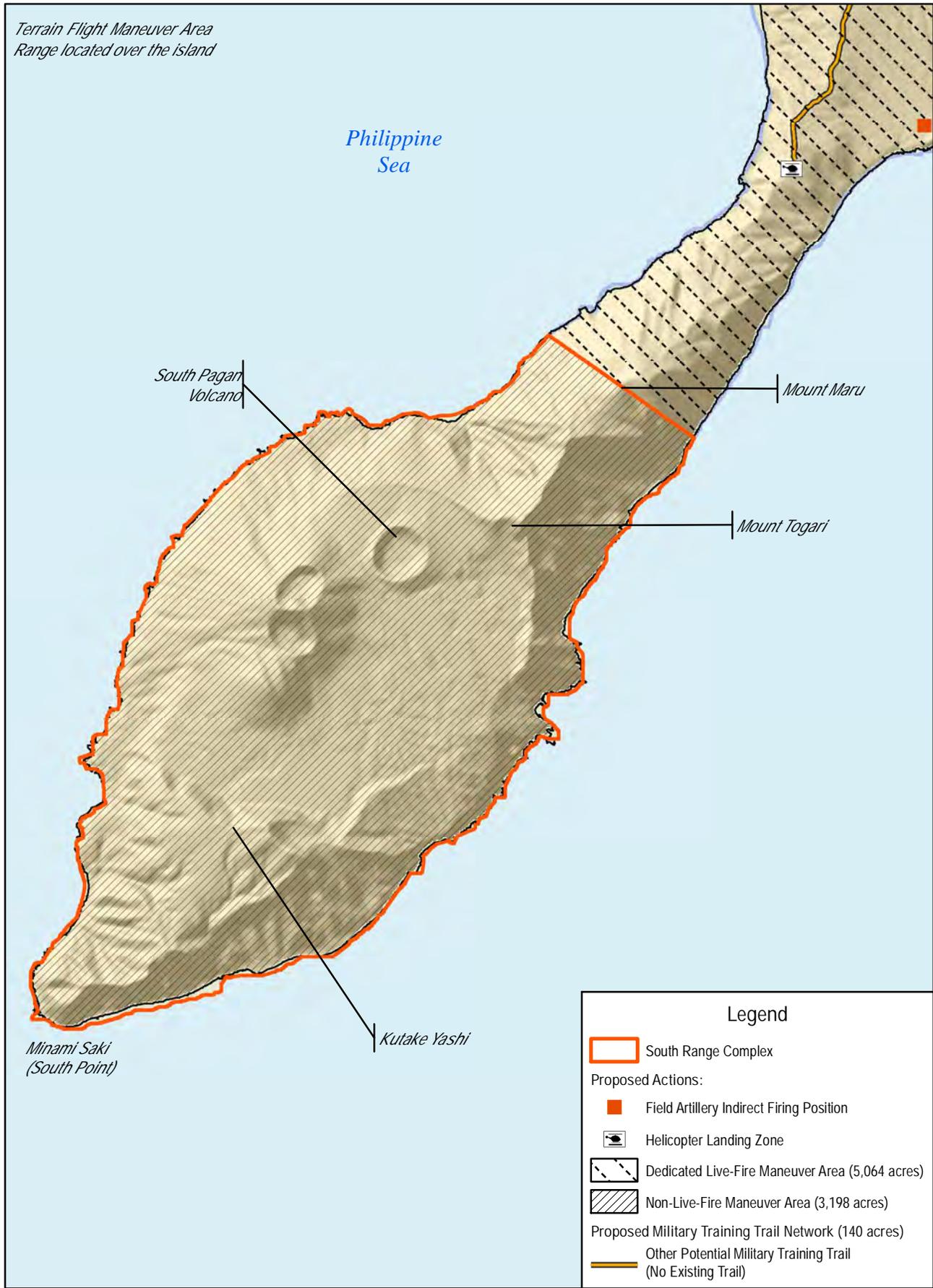


Figure 2.5-12
Pagan Alternative 2
South Range Complex



2.5.3.1 Construction and Improvements

Construction and improvements under this alternative would be the same as those described in [Section 2.5.2](#), *Pagan Alternative 1*, with the following distinctions:

- North Range Complex would support only one High Hazard Impact Area (3,424 acres [1,386 hectares]) compared to two under Pagan Alternative 1. The target placements and thus the ground disturbance on the (northern) High Hazard Impact Area would be the same as under Pagan Alternative 1. However, Pagan Alternative 2 would not have a High Hazard Impact Area on the isthmus; therefore, construction ground disturbance from target areas would be 64 acres (26 hectares) less than under Pagan Alternative.
- A total of five firing positions associated with the Mortar Range would be constructed under Pagan Alternative 2, which is one less than under Pagan Alternative 1 resulting in 10 fewer acres (4 fewer hectares) of ground disturbance from firing positions compared with Pagan Alternative 1. It is assumed that through repeated use that the firing positions would take on an impervious quality and is considered newly created impervious surface.
- Thirteen Landing Zones would be constructed under Pagan Alternative 2; this is two more than under Pagan Alternative 1. The additional ground disturbance from landing zones would be 7 acres (3 hectares). It is assumed that through repeated use that the additional Landing Zones would take on an impervious quality and are considered newly created impervious surface.
- Pagan Alternative 2 requires 67 acres (27 hectares) less total ground disturbance than Alternative 1. The 5,064 acres (2,049 hectares) of dedicated live-fire maneuver area would not require construction.

2.5.3.2 Training

Training operations under this alternative would be the same as those described in [Section 2.5.2](#), *Pagan Alternative 1*, with the following distinctions:

- North Range Complex would include a smaller High Hazard Impact Area centered on Mount Pagan (3,424 acres [1,386 hectares]), and no High Hazard impact area on the isthmus in comparison to Pagan Alternative 1. Pagan Alternative 2 would therefore include 1,144 acres (463 hectares) less area for live-fire combined arms training than found under Pagan Alternative 1, and therefore afford less area for certain naval, ground, and aircraft live-fire weapons employment. However, maneuver area would proportionally increase to 5,064 acres (2,049 hectares) thus allowing for greater ground maneuver training by providing 1,143 acres (463 hectares) more live-fire maneuver area than Pagan Alternative 1.

The smaller impact area of Pagan Alternative 2, when compared to Pagan Alternative 1, provides less flexibility for aviation munitions delivery training. Targets would be spaced closer (less target dispersion and therefore less variability of potential training scenarios), and due to the narrowing of the impact area, the direction of attack may be more limited in comparison to Pagan Alternative 1. The South Range Complex in Pagan Alternative 2 would offer the same non-live-fire training value as under Pagan Alternative 1.

2.5.4 Pagan No-Action Alternative

Since the mandate from the CNMI government about the prohibition of residents from Pagan because of the volcano eruption in 1981, the island has not been officially occupied and there is limited visitation. The no-action alternative for Pagan assumes the continuation of this occupancy prohibition and limited activity. Therefore, the no-action alternative essentially reflects existing conditions as described in Chapter 3.

The limited visitations under the no-action alternative would continue the infrequent eco-tourism cruise visits. Helicopters or small planes may transport visitors to and from the island. This would be a low impact activity with no permanent pier or wharf construction with visitation facilitated by small boat landings from a larger vessel moored offshore. It is also assumed that these would be day trips with no permanent accommodations on the island. Another probable and low impact activity on Pagan would be periodic visits for scientific or related research conducted by federal and CNMI organizations. Unlike Tinian where the military has long held training exercises on leased land, visits by the military, while not excluded, would be minimal under the no-action alternative and would entail infrequent search and rescue type training exercises following coordination and approval from the CNMI government.

2.5.5 Summary Comparison of Pagan Alternatives

The summary table below provides a comparison of Pagan combined level action alternatives. It is assumed that training throughput (total personnel) and munitions usage would be the same for both alternatives; however, the type of training and maneuvering capability would vary.

[Table 2.5-6](#) provides a summary comparison of the proposed action and no action elements.

Table 2.5-6. Summary Comparison of Pagan Alternatives

Comparison of Pagan Action Alternatives			
	Alternative 1	Alternative 2	No-Action Alternative
General Differences	<ul style="list-style-type: none"> Two High Hazard Impact Areas (on Mount Pagan and isthmus). 	<ul style="list-style-type: none"> One High Hazard Impact Area (Mount Pagan) and, as a result, smaller surface danger zones. 	<ul style="list-style-type: none"> Very limited military training and minimal human visitation and related activities
	<ul style="list-style-type: none"> Larger High Hazard Impact Area on Mount Pagan. 	<ul style="list-style-type: none"> Smaller High Hazard Impact Area on Mount Pagan. 	
	<ul style="list-style-type: none"> 11 Landing Zones 	<ul style="list-style-type: none"> 13 Landing Zones 	
	<ul style="list-style-type: none"> 6 Mortar Range Firing Positions 	<ul style="list-style-type: none"> 5 Mortar Range Firing Positions 	
Simultaneous Use	<ul style="list-style-type: none"> Both the North and South Complex Ranges could be used at the same time 	<ul style="list-style-type: none"> Same as Alternative 1, however, the North Range Complex would only have one High Hazard Impact Area 	<ul style="list-style-type: none"> Not applicable
Training Value	<ul style="list-style-type: none"> This alternative provides greater combined arms training value but less ground maneuver flexibility 	<ul style="list-style-type: none"> Lesser live-fire training options, flexibility in attack approach and more limited options for 	<ul style="list-style-type: none"> Military presence on Pagan would continue to be limited and coordinated with the CNMI government

Table 2.5-6. Summary Comparison of Pagan Alternatives

Comparison of Pagan Action Alternatives			
	Alternative 1	Alternative 2	No-Action Alternative
	as compared to Alternative 2	weapons deployment due to smaller northern High Hazard Impact Area on Mount Pagan and lack of a High Hazard Impact Area on the isthmus <ul style="list-style-type: none"> • Greater ground maneuver flexibility compared to Alternative 1 	
Elements Common to All Pagan Action Alternatives			
Training Facilities Construction	Alternatives 1 and 2		No-Action Alternative
<i>Expeditionary Base Camp/Bivouac Area</i>	Includes bivouac area for tents “housing” personnel. Staging areas for equipment and vehicles, and temporary infrastructure such as water tanks, portable toilets, and diesel generators.		Not applicable
<i>Airfield Improvements</i>	Includes extending the runway, space for aircraft turnaround and parking, refueling, and munitions loading space.		No activities
<i>Military Training Trail Network</i>	Includes a 22-mile (35 kilometer) military training trail network from the expeditionary base camp/bivouac area to the North Range Complex.		No activities
<i>South Range Complex</i>	No construction footprint.		No activities
Range Operations and Maintenance	Alternatives 1 and 2		No-Action Alternative
<i>Security</i>	As training cycles are defined in detail, an access plan will be developed and published for public information.		Not applicable
<i>Public Access</i>	Prohibition of public access at all times to the High Hazard Impact Area(s). Portions of the island and surrounding waterways may be available for public access depending on the type of training and the training scenario. Public access would be allowed when training is not occurring.		Access would be limited and coordinated with the CNMI government
<i>Biosecurity</i>	Biosecurity measures would be established to wash down and inspect equipment arriving on and upon departure from Pagan.		Biosecurity would be done as needed
<i>Emergency Services</i>	Establishing fire, safety, and medical emergency procedures for all visiting personnel.		Not applicable
<i>Munitions</i>	Total: approximately 700,298 rounds/year		Not applicable
Amphibious Training Beaches	Alternatives 1 and 2		No-Action Alternative
<i>Operations</i>	The following amphibious training would occur: <ul style="list-style-type: none"> • Red, Green, Blue (Shomshon, Palapala, Apan Beaches) – Amphibious Assault Vehicle, Landing Craft Air Cushion vessel, small boat, and combat swimmer training. • South (Regussa beach) would be used for Landing Craft Air Cushion vessel s, small boat, and combat swimmer training. • Gold (Unai Dikidiki Beach) would be used for small boat and combat swimmer training. 		Not applicable

Table 2.5-6. Summary Comparison of Pagan Alternatives

Elements Common to All Pagan Action Alternatives			
Amphibious Training Beaches	Alternatives 1 and 2		No-Action Alternative
<i>Public Access to Beaches</i>	Access allowed to Pagan beaches when no training is occurring		No limits to public access beyond those imposed by the CNMI government
Airspace Requirement	Alternatives 1 and 2		No-Action Alternative
<i>Operations</i>	Special Use Airspace would be established. <ul style="list-style-type: none"> Warning Area -14, a quadrilateral with a dimension of roughly 60 nautical miles by 80 nautical miles (111 kilometers by 148 kilometers), from the center of Pagan. The floor would start at the surface and extend to a ceiling of 59,999 feet (18,288 meters) MSL. Restricted Area -7204, extends horizontally 12 nautical miles (22 kilometers) from Pagan’s shoreline with a floor starting at the surface to a ceiling of 60,000 feet (18,300 meters) MSL. 		Not applicable
Sea Space Requirement	Alternatives 1 and 2		No-Action Alternative
<i>Operations</i>	Danger zones would be established using the Pagan Restricted Area boundaries. These danger zones would be activated when corresponding airspace is activated.		Not applicable
Comparison of Pagan All Action Alternatives: Ground Disturbance and Newly Created Impervious Surfaces			
Element	Alternative 1	Alternative 2	No-Action Alternative
Total Ground Disturbance/Newly Created Impervious Surface	Total: 764 acres (310 hectares)/350 acres (142 hectares)	Total: 697 acres (282 hectares)/347 acres (140 hectares)	Minimal disturbance/no increase in impervious surfaces
<i>Expeditionary Base Camp/Bivouac Area</i>	42 acres (17 hectares) all of which is considered newly created impervious surface		Not applicable
<i>Expeditionary Airfield</i>	41 acres (17 hectares) all of which is considered newly created impervious surface		Not applicable
<i>Munitions Storage Area and Supply Route</i>	42 acres (17 hectares)/only 12 acres (5 hectares) is considered newly created impervious surface		Not applicable
<i>Military Training Trails</i>	39 acres (16 hectares) all of which is considered newly created impervious surface		Not applicable
<i>North Range Complex (Landing Zones, Firing Positions, Target Areas)</i>	600 acres (243 hectares)/216 acres (88 hectares)	533 acres (241 hectares)/213 acres (86 hectares)	Not applicable
<i>South Range Complex</i>	0 acre (0 hectare)	0 acre (0 hectare)	Not applicable

2.6 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

In addition to the no-action alternative, the following alternatives were considered but eliminated from further analysis because they did not meet the purpose of and need for the proposed action.

2.6.1 Alternatives Outside of the CNMI

The 2012 *Training Needs Assessment: An Assessment of Current Training Ranges and Supporting Facilities in the U.S. Pacific Command Area of Responsibility* (DoN 2013b), examined the unmet training requirements of four areas that make up the majority of the Pacific region force structure: Hawaii, Japan, Korea, and the Mariana Islands. The Assessment concluded that the Mariana Islands region has significantly more unmet training requirements than the other areas (i.e., Hawaii, Japan, Korea) (see Section 1.3.5, *Training Needs Assessment*). The 2013 *CNMI Joint Military Training Requirements and Siting Study* (DoN 2013a), concluded that within the Mariana Islands, Guam training opportunities are limited to the existing activities plus future individual skills training for the Marine forces and that there is no additional capacity to address the U.S. Pacific Command's unmet training requirements. Therefore, land, sea, and airspace on and around Guam were excluded from further consideration in meeting the identified unfilled training requirements.

2.6.2 Alternatives with a Single Location within the CNMI

Both unit level and combined level training must be included in the proposed action to meet unfilled training requirements in the Mariana Islands. Combined level training brings several units (U.S. and allied nations) together working as a team towards a single objective. Combined level training also involves maneuvering and use of live-fire ranges and training areas; however, because of the greater number of troops and tasks, this training requires larger areas. Separate range complexes are required to support each type of training because of the nature of unit and combined training along with the frequency of this training. Neither Tinian nor Pagan alone can support both levels of training identified as unfilled training requirements (as detailed in [Section 2.3.1, Operational Siting Criteria](#)). Therefore, use of only one island (Tinian or Pagan) does not meet the purpose and need, and this alternative was dismissed from further analysis.

2.7 PREFERRED ALTERNATIVE

The combination of Tinian Alternative 2 and Pagan Alternative 2 is the preferred alternative.

Tinian Alternative 2 was selected as the preferred alternative for Tinian because it is operationally superior and results in similar environmental impacts as the other alternatives. The training flexibility of Tinian Alternative 2 is greater than that of the other action alternatives because it contains two Battle Area Complexes and a Convoy Course with a greater number of engagement areas. The environmental impacts for Tinian Alternative 2 are similar to those of the other two action alternatives.

Pagan Alternative 2 was selected as the preferred alternative for Pagan because it is operationally similar to Pagan Alternative 1 but results in less environmental impacts. Operationally, Pagan Alternative

2 provides a lesser degree of combined arms training than Pagan Alternative 1; however, Pagan Alternative 2 offers a larger maneuver area within the North Range Complex due to a smaller High Hazard Impact Area on Mount Pagan and lack of a second High Hazard Impact Area on the isthmus. This operational distinction for Pagan Alternative 2 results in less environmental impacts with regard to natural resources (particularly terrestrial biological resources).