3. Affected Environment

Throughout the EIS, including the analysis in **Section 4**, the affected environment on both Saipan and Tinian are referred to as the "Project Area." The term "Project Area" encompasses those locations described under Alternative 1, Alternative 2, and Alternative 3 in **Sections 2.5.1, 2.5.2**, and **2.5.3**, respectively. Specifically, the Project Area on both Saipan and Tinian includes the airport and associated infrastructure proposed for construction or improvements, and the surrounding area, when applicable. The Project Area also includes locations at the harbor proposed for construction or improvements, and the proposed truck routes and surrounding areas.

3.1 Noise

3.1.1 Differences Between the Final EIS and 2015 Revised Draft EIS

The approach to the analysis in the Noise section has not changed since the release of the 2015 Revised Draft EIS. However, the Final EIS Noise Section provides additional information on the number of residences and population counts that could be affected by the proposed action, which was presented only in the Land Use section (see **Section 4.10**) in the 2015 Revised Draft EIS.

3.1.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Some information in the Noise section in the 2015 Revised Draft EIS changed since the release of the 2012 Draft EIS based on the Modified Alternatives and provided a more thorough and in-depth analysis of impacts. These changes included updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. A summary of the changed information is presented below.

Noise Contours. The Revised Draft EIS included an additional set of noise contours based upon the Average Annual Day (AAD) methodology. The AAD noise contours were added to maintain noise analysis consistency across USAF EIS documents. Since the baseline noise analysis was estimated using 365 days per year, noise from proposed military aircraft operations was also estimated using 365 days per year to be able to compare noise impacts directly to the baseline. AAD contours and acreage under the Proposed Action scenarios were then compared to the baseline scenario. The Average Busy Day (ABD) noise contours shown in the 2012 Draft EIS remained in the Revised Draft EIS to depict the increased, temporary noise exposure that would occur during an exercise activity.

Noise Software Programs. In the 2012 Draft EIS all of the aircraft operations were modeled in NOISEMAP, the DOD software program for aircraft noise. The FAA requested that civilian operations be modeled in the Integrated Noise Model (INM). Consequently, in the Revised Draft EIS the civilian operations were modeled in INM, military operations were modeled in NOISEMAP, and the contours were combined in NMPlot to illustrate a unified set of noise contours.

Civilian Aircraft. After the 2012 Draft EIS was completed, the *Draft Aeronautical Study in the CNMI* was released. This study contained updated information about the types of civilian aircraft that operate out of Saipan and Tinian and the number of operations. Consequently, the aircraft mix and the number of operations were updated in the Revised Draft EIS. However, baseline data may differ slightly in the Aeronautical Study based on information obtained during in-person interviews; this difference is negligible and does not affect the airport operations or noise analysis in the EIS.

Proposed Civilian Aircraft Operational Increase. The projected increase in civilian aircraft operations under the Proposed Action was changed from 15 percent in the 2012 Draft EIS to 1 percent in the Revised Draft EIS. The projected 1 percent increase was estimated based upon the FAA's Terminal Area Forecast. Additionally, the noise analysis was conducted using aircraft operation data from 2011 when operations were less than more recent data from 2011-2014 which shows an increase in operations (FAA 2011). The 2011 data was used to project civilian aircraft operations to maintain a conservative estimate of future baseline operations in the event that operations level off to more historic numbers.

Military Aircraft Assumptions. Information regarding the percentage of day-night operations was revised based upon better available information than presented in the 2012 Draft EIS. The analysis in the Revised Draft EIS reflected these changes.

3.1.3 Definition of Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although individual human response to noise varies, projected noise levels and zones can be modeled to predict typical human responses. "A-weighted decibel" (dBA) is used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981b). **Table 3.1-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can

Table 3.1-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet take-off (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981a and *HDR extrapolation

become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981a).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be exposed to over a specified length of time is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits.

Sound levels, resulting from multiple single events, are used to characterize noise effects from aircraft or vehicle activity and are referred to as a Day-Night sound level (DNL). The DNL noise metric incorporates a “penalty” for nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period. To account for the perception of increased noise during normally quiet times, an additional 10-dBA is added to noise events occurring between 10 p.m. and 7 a.m. DNL is the designated noise metric of the FAA, U.S. Department of Housing and Urban Development (HUD), USEPA, and DOD for modeling airport environments.

Land use guidelines identified by the Federal Interagency Committee on Urban Noise (FICUN) and the FAA, Part 150–Airport Noise Compatibility Planning regulation (14 CFR Part 150), are used to determine compatible types of land use surrounding airports within the 65 to 80+ dBA DNL noise contours (FICUN 1980). The DOD, USEPA, FAA, and HUD use these guidelines in their noise policies and programs. For outdoor activities, the USEPA recommends 55 dBA DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise. For indoor activities, the USEPA recommends 45 dBA DNL (USEPA 1974).

Ambient Sound Levels. Noise levels vary depending on the housing density and proximity to parks and open space, major traffic areas, or airports. As shown in **Table 3.1-2**, the noise level in a normal suburban area is about 55 dBA DNL, which increases to 60 dBA for an urban residential area, and to 80 dBA in the downtown section of a city (USEPA 1974). Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis.

Table 3.1-2. Typical Outdoor Noise Levels

dBA DNL	Location
50	Residential area in a small town or quiet suburban area
55	Suburban residential area
60	Urban residential area
65	Noisy urban residential area
70	Very noisy urban residential area
80	City noise (downtown of major metropolitan area)
88	3rd floor apartment in a major city next to a freeway

Source: USEPA 1974

Construction Sound Levels. Building demolition and construction work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, pavers, and other work equipment. **Table 3.1-3** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3.1-3. Noise Levels Associated with Construction Equipment

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94

Source: USEPA 1971

3.1.4 Existing Conditions

3.1.4.1 Saipan

The majority of Saipan has a noise environment comparable to a rural setting; however, there are a few notable noise sources. These sources include vehicle traffic, a quarry adjacent to the airport, and aircraft operations. Major roadways on Saipan include Middle Road and Beach Road, with those near the airport including Flame Tree Road, Airport Road, As Perdido Road, and Naftan Road. The dominant noise sources near the airport are from quarry and airport operations. Hawaiian Rock Quarry is approximately 0.75 mile southeast of the runway and 1 mile south of Dandan. This company supplies asphalt, concrete, and aggregates. The facility near the airport includes a quarry and main concrete plant.

Annual aircraft operations at Saipan International Airport were obtained from FAA Air Traffic Activity System database to develop a noise Baseline Scenario (FAA 2011). Daily operations at Saipan International Airport are shown in **Table 3.1-4**. An operation is defined as an aircraft arrival or an aircraft departure; therefore, the landing and take-off of the same aircraft would count as two operations. It was assumed that aircraft fly out of Saipan International Airport 365 days a year. The number of annual operations from the FAA Air Traffic Activity System database was divided by the number of flying days per year to obtain the number of average daily operations.

Table 3.1-4. Baseline Scenario Aircraft Operations at Saipan International Airport

Aircraft Category[1]	Aircraft[2]	Average Daily Operations[1]
Air Carrier	A-330	2.00
	A-321	2.00
	B-757	4.00
	B-767	2.00
Air Taxi/ General Aviation[3]	ATR-42	22.00
	C-172	15.00
	SD3-60	4.00
	Piper Cherokee	88.64
Military	C-130H	0.72
	F-16C	0.35
	Total	**140.71**

Source: FAA 2011[1] and HDR[2]
[3] Air taxi flights also occasionally include operations by a Piper Navajo; differences in noise levels are negligible.

The majority of operations at Saipan International Airport are flown with single-engine aircraft, which include the Piper Cherokee and the Cessna 172 aircraft. It was estimated that approximately 40 percent (44 operations) of the air carrier and military operations occur between the hours of 10 p.m. and 7 a.m. and 1 percent (1.3 operations) of the air taxi/general aviation operations occur between those hours. Aircraft use Runway 07 approximately 85 percent of the time and Runway 25 approximately 15 percent of the time. Arrival and departure flight tracks head in various directions, with the majority of single-engine aircraft flying to Tinian

International Airport and the turboprop aircraft flying to the south. Flight tracks for air carrier and military aircraft were modeled to the north and south from the runway.

Figure 3.1-1 shows the 2011 baseline scenario noise contours at Saipan International Airport. The noise contours extend out from the runway ends. The 65 dBA DNL noise contour remains close to the airfield facilities. The 75 to 80+ dBA DNL noise contours encompass only airfield property.

Table 3.1-5 shows the acreage within the noise contours under the Baseline Scenario. The total number of acres within the 65 to 80+ dBA DNL noise contours is 353, with 17 acres encompassing non-airport property. As expected, the largest number of acres is within the 65 to 69 dBA DNL noise contours.

Table 3.1-5. Baseline Scenario Noise Contour Acreage at Saipan International Airport

Noise Contours	Baseline Scenario (in acres)		
	Off-Airport Property	**Airport Property**	**Total Acres**
65–70 dBA DNL	16	198	214
70–75 dBA DNL	1	104	105
75–80 dBA DNL	0	26	26
80+ dBA DNL	0	8	8
Total	**17**	**336**	**353**

Source: HDR

3.1.4.2 Tinian

Major sources of noise on Tinian include aviation and ground-training activities that occur at the Tinian MLA, private heliports, and the aircraft operations at Tinian International Airport. The MLA encompasses 15,353 acres and consists of two regions. The Exclusive Military Use Area (EMUA) includes 7,574 acres on the northern third of Tinian and the Leaseback Area (LBA) includes 7,779 acres of the middle of the island. The MLA supports small unit-level training up to large field exercises and expeditionary warfare training. The LBA, which is north of Tinian International Airport, is used for ground training such as military operations in urban terrain-type training, vehicle land navigation, convoy training, and other field activities (DON 2010b). Tinian International Airport is surrounded mostly by vegetation, although there are two small residential developments in the vicinity: Marpo Heights is southeast of the airfield and San Jose is south of the airfield. Major roadways on Tinian include Broadway and 8th Avenue, although traffic activity is low due to the low population density on the island.

Small arms fire occurs in the LBA used during military training on Tinian. When firing occurs, peak noise levels extend from the range in the LBA to the northern edge of Tinian International Airport property (DON 2010b). However, only a small portion of non-military land is within peak noise levels, and there are no noise-sensitive receptors in this area.

Military helicopters operate out of the MLA approximately one week per month. Populations outside of the MLA experience noise from overhead flights approximately 2 days per month when military personnel are transported to and from Tinian.

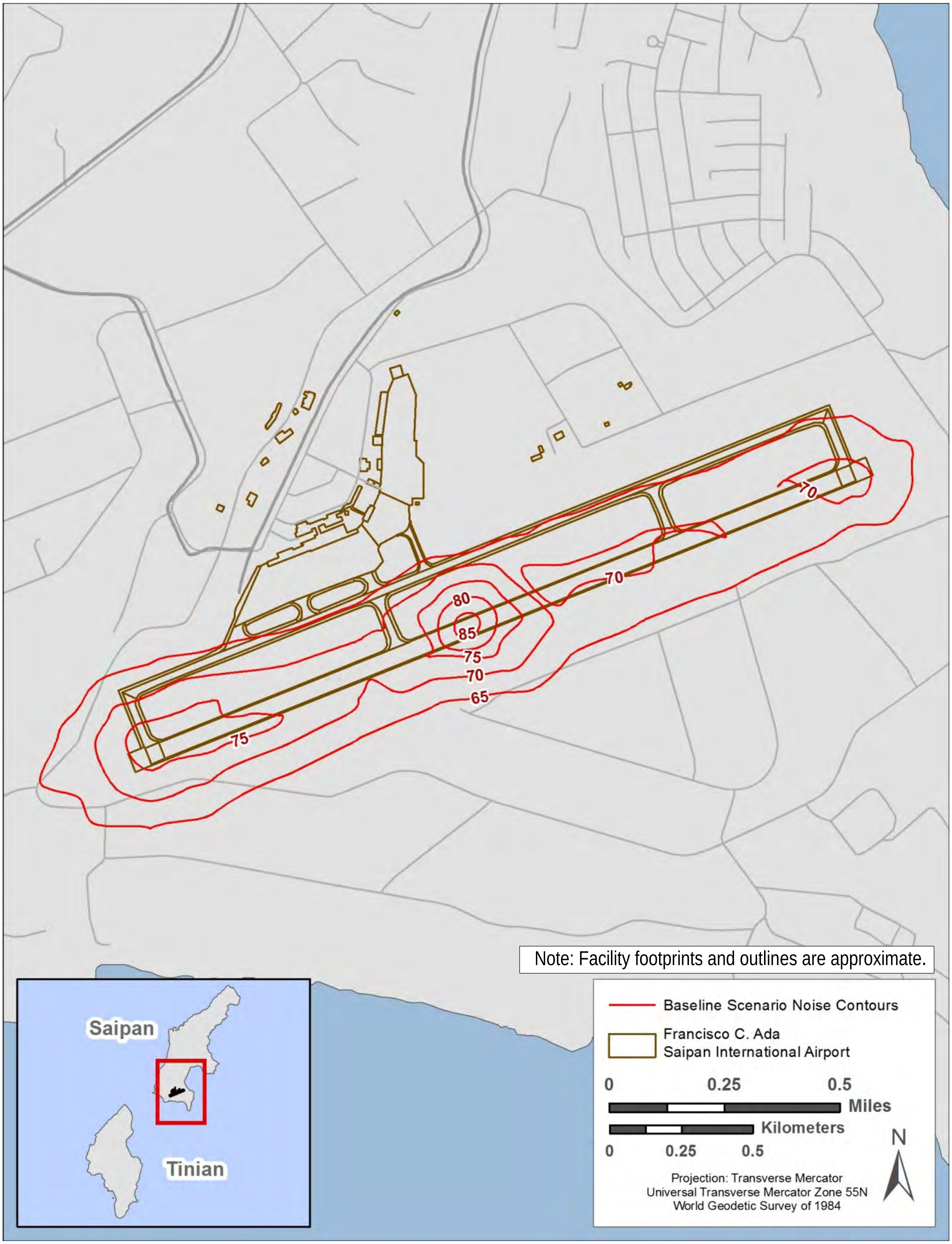


Figure 3.1-1. 2011 Baseline Scenario Noise Contours at Saipan International Airport

Daily aircraft operations for the Baseline Scenario at Tinian International Airport were estimated based on the approximate number of air taxi flights, which are the only commercial aircraft that operate at Tinian International Airport. The operations were modeled with a single-engine aircraft, the Cessna 172 and the Piper Cherokee. It was assumed that aircraft fly in and out of Tinian International Airport 365 days a year, resulting in an average of approximately 36 daily operations (FAA 2011), as shown in **Table 3.1-6.** Two of those operations were estimated to occur between the hours of 10 p.m. and 7 a.m. Aircraft use Runway 08 approximately 85 percent of the time and Runway 26 approximately 15 percent of the time. Because of the low number of operations, the result of the model does not include a mapped 65 dBA DNL noise contour under the Baseline Scenario and, therefore, does not include any affected acreage.

Table 3.1-6. Baseline Scenario Aircraft Operations at Tinian International Airport

Aircraft	Daily Operations
Piper Cherokee[1]	27.48
C-172	8.36
Total	**35.84**

Source: FAA 2011
Note: [1] Air taxi flights also occasionally include operations by a Piper Navajo; differences in noise levels are negligible.

3.2 Air Quality

3.2.1 Differences Between the Final EIS and 2015 Revised Draft EIS

The approach to the analysis in the Air Quality sections has not changed since the release of the 2015 Revised Draft EIS. However, the Final EIS Air Quality sections were revised based on better available data, as described below.

Construction Workers. In the 2015 Revised Draft EIS, the number of construction workers that could be needed to support the construction phase for each alternative was between 500 and 750 workers. However, in the Final EIS, the USAF has reduced the number of construction workers that could be needed to support construction for each alternative to between 50 and 150. Potential air emissions due to construction worker traffic during the 3-year construction phase was recalculated for each alternative in the Final EIS based on the revised number of construction workers.

KC-135 Fuel Use. Greenhouse gas (GHG) emissions were revised in the Final EIS based on updated data from PACAF for KC-135 fuel use.

3.2.2 Definition of Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these "criteria pollutants" in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu g/m^3$). The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also influenced by the surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

Ambient Air Quality Standards. The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants under 40 CFR Part 50: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. The CAA also gives the authority to states, territories, and commonwealths to establish air quality rules and regulations, including adopting the NAAQS. The CNMI has adopted the Federal NAAQS. **Table 3.2-1** presents the primary and secondary USEPA NAAQS.

Although O_3 is considered a criteria pollutant and is measureable in the atmosphere, it is not often considered a regulated pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or O_3 precursors. The O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling NO_x and VOC pollutants.

Attainment and General Conformity. The USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed the NAAQS; maintenance indicates that an area was previously designated nonattainment, but is now attainment; and an unclassified air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment. USEPA has delegated the authority for ensuring compliance with the NAAQS in the CNMI to the CNMI Bureau of Environmental and Coastal Quality (BECQ).

The CNMI BECQ’s air pollution control regulations can be found in the Federal Register (FR) (52 FR 43574). In accordance with the CAA, each state or commonwealth must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to bring the state or commonwealth into compliance with all NAAQS.

Table 3.2-1. National and Commonwealth Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	Commonwealth	
CO	8-hour (5)	9 ppm (10 mg/m^3)	Same	None
	1-hour (5)	35 ppm (40 mg/m^3)	Same	None
Pb	Rolling 3-Month Average (6)	0.15 μg/m^3 (1)	Same	Same as Primary
NO_2	Annual (7)	53 ppb (2)	Same	Same as Primary
	1-hour (8)	100 ppb	Same	None
PM_{10}	24-hour (9)	150 μg/m^3	Same	Same as Primary
$PM_{2.5}$	Annual (10)	12 μg/m^3	Same	15 μg/m^3
	24-hour (8)	35 μg/m^3	Same	Same as Primary
O_3	8-hour (11)	0.07 ppm (3)	Same	Same as Primary
SO_2	1-hour (12)	75 ppb (4)	Same	None
	3-hour (5)	--	Same	0.5 ppm

Sources: USEPA 2015, CNMI BECQ 2004a, CNMI 2012

Notes: Parenthetical values are approximate equivalent concentrations.

1. In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 μg/m^3 as a calendar quarter average) also remain in effect.
2. The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
3. Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
4. The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR Part 50.4(3)), A SIP call is an USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.
5. Not to be exceeded more than once per year.
6. Not to be exceeded.
7. Annual mean.
8. 98^{th} percentile, averaged over 3 years.
9. Not to be exceeded more than once per year on average over 3 years.
10. Annual mean, averaged over 3 years.
11. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
12. 99^{th} percentile of 1-hour daily maximum concentrations, averaged over 3 years.

Key: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; μg/m^3 = micrograms per cubic meter

The General Conformity Rule applies only to actions in nonattainment or maintenance areas. This rule requires that any Federal action meet the requirements of an existing SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones towards achieving compliance with the NAAQS.

Federal Prevention of Significant Deterioration. Federal Prevention of Significant Deterioration (PSD) regulations apply in attainment areas to major stationary sources (e.g., sources with the potential to emit 250 tons per year [tpy] of regulated pollutants) and significant modifications to major stationary sources (e.g., change that adds 0.6 tpy for Pb, or 10 tpy to 100 tpy depending on the regulated pollutant, to the facility's potential to emit). Additional PSD permitting thresholds apply to increases in stationary source GHG emissions. PSD permitting can also apply to a proposed project if all three of the following conditions exist: (1) the proposed project is a modification with a net emissions increase to an existing PSD major source, and (2) the proposed project is within 10 kilometers (km) of national parks or wilderness areas (i.e., Class I Areas), and (3) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR Part 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's Class designation (40 CFR Part 52.21[c]).

There are no Class I areas identified in the CNMI. Therefore, no Class I area is affected by the Proposed Action. Because the CNMI is not located within 10 km of a Class I area, the existing facilities are not an existing PSD major source, and there are only minor stationary source emissions increases under the Proposed Action, PSD regulations do not apply and are not discussed further in this EIS (40 CFR Part 81 2012).

Title V Requirements. Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A Title V major stationary source has the potential to emit regulated air pollutants and hazardous air pollutants (HAPs) at levels equal to or greater than Major Source Thresholds. Major Source Thresholds vary depending on the attainment status of an air quality control region. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality. Section 112 of the CAA lists HAPs and identifies stationary source categories that are subject to emissions control and/or work practice requirements.

Greenhouse Gas Emissions**.** GHGs are gaseous emissions that trap heat in the atmosphere and occur from natural processes and human activities. The most common GHGs include carbon dioxide (CO_2), methane, and nitrous oxide. On September 22, 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on CO_2 and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tonnes or more of CO_2-equivalent emissions per year but excludes mobile source emissions. The White House CEQ issued draft NEPA guidance in February 2010 regarding the inclusion of analysis of GHG emissions in NEPA documents. The guidance indicates 25,000 metric tonnes of direct CO_2-equivalent GHG emissions can provide a useful, presumptive, threshold for discussion and disclosure of GHG emissions. However, the guidance does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that might warrant some description in the appropriate NEPA analysis involving direct emissions of GHGs. GHG emissions are also factors in PSD and Title V permitting and reporting, according to a USEPA rulemaking issued on June 3, 2010 (75 FR 31514). GHG emissions thresholds of significance for permitting of stationary sources are 75,000 tons CO_2-equivalent per year and 100,000 tons CO_2-equivalent per year under these permit programs.

3.2.3 Existing Conditions

3.2.3.1 Saipan

The Island of Saipan is located in the CNMI, which is within the USEPA Pacific Southwest Region 9 (USEPA 2011). As defined in 40 CFR Part 81.354, due to lack of monitoring the CNMI is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2012a). The USEPA has not designated an AQCR that encompasses the CNMI. In addition, no emissions inventories or monitoring data are available locally or regionally for the CNMI.

The U.S. Department of Energy, Energy Information Administration, does not provide estimates for gross CO_2 emissions for the CNMI.

The CNMI BECQ regulates air quality permits for stationary air pollution sources in the CNMI. There are currently no USAF operations conducted at Saipan International Airport. The CNMI BECQ requires all air permit application submissions to include dispersion modeling (conservative or refined), which is evaluated thoroughly and compared against the NAAQS for compliance.

Over the course of a typical year, average daily wind speeds in Saipan range from 8 mph in September to 13 mph in February. Wind typically blows east to west or northeast to southwest (Weatherspark 2012a). Due to its location relative to an area of cyclonic development in the Pacific Ocean, Saipan is always under weather condition 4, which means that 40 mph winds are possible within 72 hours (Pacific RISA undated).

3.2.3.2 Tinian

The Island of Tinian is located in the CNMI, which is within the USEPA Pacific Southwest Region 9 (USEPA 2011). As defined in 40 CFR Part 81.354, due to lack of monitoring the CNMI is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2012a). The USEPA has not designated an AQCR that encompasses the CNMI. In addition, no emissions inventories or monitoring data are available locally or regionally for the CNMI.

The U.S. Department of Energy, Energy Information Administration, does not provide estimates for gross CO_2 emissions for the CNMI.

The CNMI BECQ regulates air quality air permits for stationary air pollution sources in the CNMI. The CNMI BECQ requires all air permit application submissions to include dispersion modeling (conservative or refined), which is evaluated thoroughly and compared against the NAAQS for compliance. There are currently no USAF operations conducted at Tinian International Airport.

Over the course of a typical year, average daily wind speeds in Tinian range from 7 mph in August to 15 mph in January. Wind typically blows east to west or northeast to southwest (Weatherspark 2012b). Due to its location relative to an area of cyclonic development in the Pacific Ocean, Tinian is always under weather condition 4, which means that 40 mph winds are possible within 72 hours (Pacific RISA undated).

3.3 Airspace and Airfield Environment

3.3.1 Differences Between the Final EIS and 2015 Revised Draft EIS

Some information in the Airspace and Airfield Environment sections has changed since the release of the 2015 Revised Draft EIS. These changes are based on completion of the Revised Final Aeronautical Study, presented in **Appendix F**, for the Modified Alternatives and relates to the assessment of impacts in **Section 4.1**.

3.3.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Some information in the Airspace and Airfield Environment sections changed between release of the 2012 Draft EIS and the 2015 Revised Draft EIS. These changes include updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. A summary of the changed information is presented below.

Saipan International Airport Runway. Saipan International Airport completed the reconstruction and paving of runway 7/25. In the 2012 Draft EIS, runway 6/24 was considered an alternate runway while runway 7/25 was being repaved. However, since the completion of this project, references to runway 6/24 were removed in the Revised Draft EIS. Per the ALP, former runway 6/24 is to be designated and used as a parallel taxiway.

3.3.3 Definition of Resource

The airports proposed for improvements to support divert capabilities require suitable airspace and airfields capable of handling required classes of aircraft during divert operations, joint military exercises, and humanitarian operations within the MIRC. The designated airfields should have the capabilities, services, and facilities to support the selected aircraft safely and the airspace to provide assurance of safe transition from and to the airfield.

The following airspace and airfield requirements are necessary to support the divert requirement in the western Pacific: airfield accessibility if access to Andersen AFB or other western Pacific airfields is limited or denied; ability to execute contingency operations to include humanitarian relief efforts; and ability to accommodate joint military exercises required to ensure readiness in accordance with service requirements under Title 10 U.S.C. The KC-135 aircraft has been identified as the design aircraft for cargo, tanker, or similar aircraft. PACAF has identified the following airspace and airfield criteria for the proposed location.

Class B Runway. A runway is considered a strip of level paved surface where planes can depart and land. PACAF requires a Class B runway to support KC-135 operations. Class B runways are designed for use by high-performance and large, heavy aircraft but can also be used by other aircraft requiring less stringent runway design standards. UFC 3-260-01, *Airfield and Heliport Planning and Design*, provides the design criteria for a Class B operational runway. The runway design would optimally be at least 150 feet wide with 25-foot-wide paved shoulders, for a total paved width of 200 feet; taxiways and taxi lanes connecting runways and other ground areas would optimally be at least 75 feet wide, with a minimum paved shoulder width of 25 feet, and an unpaved shoulder width of 25 feet, for a total paved and unpaved taxiway width of 125 feet. All proposed airport facilities would be constructed according to all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A, *Airport Design*.

Runway Obstacle Free Zone (OFZ). According to the September 2012 FAA Advisory Circular 150/5300-13A*, Airport Design,* the runway OFZ is the three-dimensional airspace along the runway and extended runway centerline that is required to be clear of obstacles for protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function. The runway OFZ extends 200 feet (60 meters) beyond each end of the runway. Its required width for runways serving large airplanes is 400 feet (122 meters).

Runway Safety Area (RSA). According to the September 2012 FAA Advisory Circular 150/5300-13A*, Airport Design*, an RSA is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The RSA is required to be 1,000 feet beyond the threshold of each runway end and 500 feet wide (250 feet each side of the runway centerline). The FAA defined areas function similar to areas defined in the UFC 3-260-01, *Airfield and Heliport Planning and Design*, as runway lateral clearance zone and runway overrun; however, the FAA dimensions are different than the dimensions defined in the UFC.

Runway Protection Zone (RPZ). According to the September 2012 FAA Advisory Circular 150/5300-13A*, Airport Design,* the RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. For large aircraft, the RPZ is a parallelogram shape approximately 1,700 feet long and 500 feet wide (width at end of runway) and 1,010 feet wide (outer width). The UFC does not have an exact equivalent, but the RPZ would include elements of the mandatory frangibility zone and runway overrun.

Object Free Area (OFA). The runway OFA is centered on the runway centerline. The runway OFA clearing standard requires clearing the OFA of aboveground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes must not to be placed in the OFA. This includes parked airplanes and agricultural operations. The OFA dimensions are based on the category of aircraft that use the runway.

Parking Apron. The parking apron, also known as a "ramp," is the paved or hard-surfaced area around the hangers and terminal buildings of an airport used to park aircraft. The ramp is also used to unload or load passengers and cargo, and to refuel and maintain aircraft. UFC 3-260-01, *Airfield and Heliport Planning and Design*, provides operational requirements for parking aprons, which are determined by the length and width of the design aircraft, which for this EIS is the KC-135. The KC-135 is 136.2 feet long and 130.8 feet wide. The minimum wing-tip clearance requirement between each aircraft is 50 feet, primarily to support aircraft refueling operations. All proposed airport facilities would be constructed according to all DOD, USAF, and FAA criteria, as applicable, including FAA Advisory Circular 150/5300-13A, *Airport Design*.

Hours of Operation. Hours of operation refers to the open and closed schedule that the airfield determines it is available to accept aircraft desiring to land and depart the airfield on a routine basis. The USAF is equipped to support operations 24 hours per day, 365 days a year. PACAF might require the airfield to have the capability to support potential around-the-clock operations since exercises, divert operations, and humanitarian or contingency operations could occur at any time. Generally, training would be scheduled for the daylight hours at the proposed location while other activities would be defined by the national command authority based upon the global issues that USAF is called upon to support in the western Pacific.

Instrument Flight Rules (IFR) Capabilities. IFR capability means the airfield has the ability to assist aircraft arriving and departing in bad weather using instrumentation. These capabilities include NAVAIDs, airfield lighting, terminal instrument procedures (TERPS), and air traffic control (ATC) services. DOD pilots are IFR-qualified.

NAVAIDs are any system used in aid of air navigation, including lights, equipment for disseminating weather information, signaling, radio direction finding, radio or other electronic communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing or take-off of aircraft (FAA undated). Examples of NAVAIDs are a Non-Directional Beacon (NDB) and an Instrument Landing System (ILS). An NDB is a radio beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and "home" on or track to or from the station. An ILS provides the aircraft the lateral and longitudinal (localizer) and vertical electronic guidance necessary for an instrument landing. A precision instrument approach system normally consists of the following electronic components and visual aids: a localizer which provides course guidance to the runway, a glideslope which provides vertical guidance for aircraft during approach and landing, and approach lights (FAA 2012a). TERPS is a series of predetermined maneuvers for the orderly transfer of an aircraft under IFR to initiate an approach to an airport/airfield to a landing, or to a point from which a landing can be visually made. The two main classifications of approach procedures include precision and non-precision. Precision approaches use both lateral and vertical guidance.

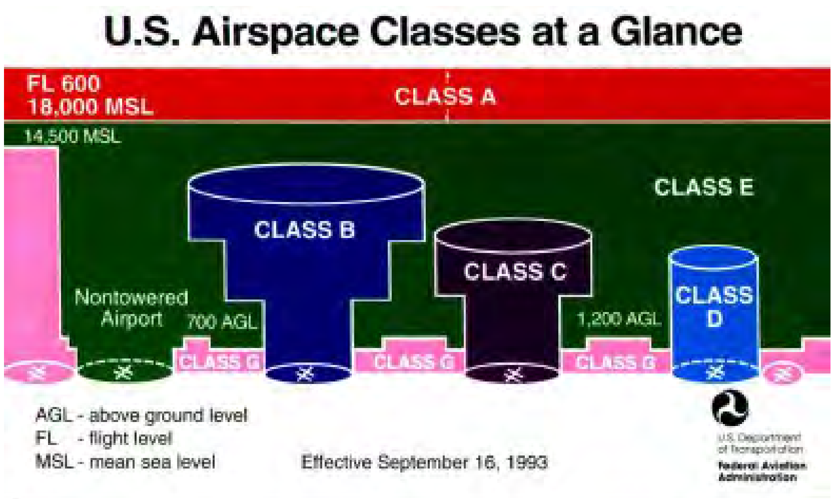
Non-precision approaches provide lateral course information only. The publications depicting instrument approach procedures are called terminal procedures, but are commonly referred to by pilots as approach plates. These documents graphically depict the specific procedure to be followed by a pilot for a particular type of approach to a given runway. They depict prescribed altitudes and headings to be flown, and obstacles, terrain, and potentially conflicting airspace (FAA 2002).

Airfield Obstructions. Airfield obstructions are objects that could affect navigable surfaces (approach/departure procedures), aircraft movement areas (runways, taxiways, and aprons), and NAVAIDs in the airfield vicinity. Airfield obstructions are considered hazards to flight safety for the purposes of FAA airfield certifications.

Cargo. Military aircraft can contain or be carrying cargo and other material, especially in support of humanitarian relief efforts. The cargo pad would be a designated space to support the loading and unloading of materials from aircraft, rather than blocking space on a parking apron or other area to conduct materials loading. The cargo pad would be used in support of divert operations, humanitarian assistance, and military exercises.

Aircraft Fueling. An aircraft fueling service is required to transfer flammable/combustible liquid fuel between a bulk storage system and the fuel tanks of an aircraft. At the proposed locations, the proposed method for transferring fuel is DOD's Hydrant Refueling System. This system provides a means to transfer safely a large volume of flammable fuel. Fuel trucks and a FORCE system would also be used to refuel aircraft in areas not served by the hydrant system.

ATC Services. ATC services are provided by an approved authority for the purpose of safely transiting aircraft to and from airfields, through controlled airspace, maneuvering aircraft within close proximity to each other and obstructions, and maintaining an orderly flow of air traffic (FAA 2012a). ATC services within the MIRC are provided by FAA Center Radar Approach Control (CERAP) and contract ground-control activities in Guam and Saipan. The MIRC contains more than 500,000 square miles (mi^2) of airspace used either exclusively by the military or by both civilian and commercial aircraft. Some of this airspace is SUA designated by FAA as Warning Area, Restricted Area, or ATCAA. Specifically, the MIRC contains 14,000 NM^2 of Warning Area; 28 NM^2 of Restricted Area; and 63,000 NM^2 of ATCAA. The remainder of the airspace within the MIRC is uncontrolled airspace but contains transoceanic routes, most of which are more than 30,000 feet above ground level (AGL). Controlled airspace within the MIRC includes Class A, B, C, D, and E airspace within which the FAA, military, or designated contractors provide ATC services. The U.S. airspace system's classification scheme is designed to provide maximum pilot flexibility within acceptable levels of risk appropriate to the type of operation and traffic density within that class of airspace. In particular, the U.S. airspace system provides separation and active control in areas of dense or high-speed flight operations. All airspace classes except Class G require ATC clearance for IFR operations. For example, two-way communication with ATC must be established before entering Class D airspace. Aircraft can also operate in Class E airspace without contacting ATC provided the weather meets visual flight rules criteria. ATC will provide separation services between IFR aircraft in Class E airspace, but IFR and VFR aircraft within Class E airspace (when the weather meets VFR criterion) must provide their own separation through see and avoid procedures. Controlled airspace within the MIRC exists in the immediate vicinity of airports where aircraft used in commercial air transport flights are climbing out from or making an approach to the airport, at higher levels where air transport flights would cruise, and in areas where hazardous activities could occur including some military exercises and live fire air-to-ground bombing at the FDM range. All air activities must be approved by the controlling agency. **Figure 3.3-1** provides a graphic summary of U.S. airspace classifications.



Airspace Classes	Communications	Entry Requirements	Separation	Special VFR in Surface Area
A	Required	ATC clearance	All	N/A
B	Required	ATC clearance	All	Yes
C	Required	Two-way communications prior to entry	VFR/IFR	Yes
D	Required	Two-way communication prior to entry	Runway operations	Yes
E	Not required for VFR	None for VFR	None for VFR	Yes
G	Not required	None	None	N/A

Source: FAA 2012a

Figure 3.3-1. FAA Airspace Classification

3.3.4 Existing Conditions

3.3.4.1 Saipan

Saipan International Airport is a public airport located on the Island of Saipan within CNMI (see **Figure 3.3-2**) and is owned by the CPA. Though the islands of Rota, Tinian, and Saipan are all considered immigration ports-of-entry into the United States, Saipan is considered the gateway to the CNMI because of its infrastructure. Saipan International Airport is also designated as the commercial aviation divert airfield location for eastbound flights originating in western Asia and for all flights bound for Guam. The Saipan International Airport main terminal accommodates

Figure 3.3-2. Aerial View of Saipan International Airport

international passengers with six jetways that lead to immigration and customs processing. There are seven major airlines operating at Saipan International Airport: Delta Airlines, Asiana Airlines, Shanghai Airlines, Sichuan Airlines, China Eastern, United Airlines, and Fly Guam. Saipan International Airport has scheduled flights from cities in Russia, Japan, Korea, China, and Guam with the capability to increase direct flights to Republic of Palau, Federated States of Micronesia, Australia, and other Oceanic destinations. The commuter terminal at Saipan International Airport serves as a general aviation terminal and as the terminal for one feeder or air taxi service, Star Marianas. Star Marianas services Tinian and Rota using single-engine aircraft and dual-engine, short take-off aircraft. Artic Circle Air provides charter and cargo flights between Saipan and Rota.

Saipan International Airport has one IFR runway, Runway (RWY) 7/25, which is 8,700 feet long, 150 feet wide, and has 25-foot-wide paved shoulders (see **Table 3.3-1**). The runway is designed to accommodate aircraft up to the size and dimensions of a Boeing 747-400. The lighting along the runway consists of a Medium Intensity Approach Lighting System With Runway Alignment Indicator Lights (MALSR), distance remaining markers, Runway End Indicator Lights (REIL), Visual Approach Slope Indicator (VASI) systems, a middle marker, a Non-Directional Beacon (NDB), a glideslope, a localizer, and high intensity runway edge lights (AFCEE/PACAF 2010).

Saipan International Airport has eight taxiways located throughout the airfield. The taxiways are 70 feet wide with 35-foot wide shoulders. The design criteria for a Class B runway requires 75-foot-wide taxiways but only 25-foot-wide shoulders; therefore, there is ample room to improve the width of the taxiway onto the existing shoulders and meet UFC and FAA criteria for

Table 3.3-1. Saipan International Airport Capabilities

Runway	Length and Width	Lights	Hours of Operation	IFR Capability (NAVAIDs/TERPS)	Aircraft Fueling	ATC Services
RWY 7/25	8,700 feet x 150 feet	VASI, REILS on RWY 25 and MALSR in first 1,400 feet of RWY 07	Open 24/7	NAVAIDs: NDB and ILS with associated localizer. TERPS: ILS or LOC/DME RWY 07, RNAV (GPS) RWY 07, NDB/DME RWY 07, NDB RWY 07, RNAV (GPS) RWY 25, and NDB/DME RWY 25	AVGAS 100LL (blue), and Jet A-1+	FAA Air Traffic Control Tower (ATCT) and Guam Air Route Traffic Control Center (ARTCC)

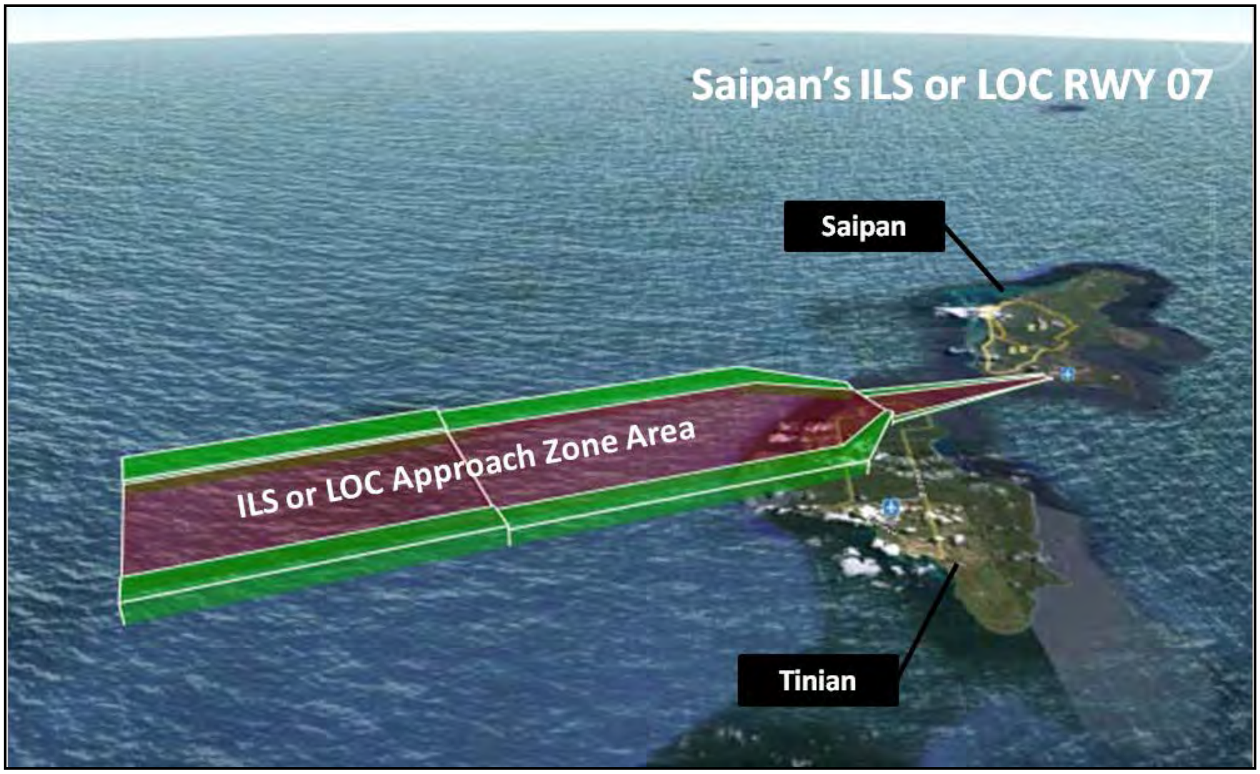
Source: HDR
Key: DME = Distance Measuring Equipment, LOC = Localizer

the taxiways without interference into other airport ground operations if required; however, no proposals to widen the taxiways to UFC standards are included in this analysis. The existing Saipan International Airport 1,498,464-ft^2 parking apron has a commercial hydrant fueling system and parking capacity for six 747 size aircraft. The concrete hardstand portion of the parking apron is adjacent to the main terminal building. The asphalt portion of the existing parking apron is adjacent to the cargo-handling area and does not have adequate width for most large-frame aircraft.

RWY 7/25. Saipan has one runway, RWY 7/25 which is surfaced with asphalt. A structure parallel to runway 7/25, formerly called RWY 6/24 was used as a temporary runway that was 7,001 feet long and 100 feet wide but has been turned into a parallel taxiway. RWY 7/25 has four connecting taxiways on which aircraft can transit to and from the parking aprons. RWY 7/25 is also equipped with High Intensity Runway Edge lights (HIRL) that outline the edges of runways during periods of darkness or restricted visibility conditions. RWY 7 has a REILs, which consists of two lighting units located on the corners of the runway end that flash simultaneously. RWY 25 is also equipped with a MALSR, which consists of a combination of threshold lamps, and steady burning light bars and flashers. The MALSR provides visual information to pilots on runway alignment, height perception, roll guidance, and horizontal references for Category I Precision Approaches (FAA 2012a). RWY 7/25 has a VASI on each end, which is a system of lights arranged to provide visual descent guidance information during the approach to a runway (FAA 2012a).

Hours of Operation. RWY 7/25 is open 24 hours per day, 7 days per week.

Instrument Flight Rules Capabilities. There are two NAVAIDs located on Saipan International Airport's airfield, an NDB and an ILS. The following instrument approach procedures are published to Runway 7/25: ILS or LOC/DME RWY 7 (see **Figure 3.3-3**); Area Navigation (RNAV) (GPS) RWY 7; NDB/DME RWY 7; NDB RWY 7; RNAV (GPS) RWY 25; and NDB/DME RWY 25. The published instrument approach procedures for Saipan International Airport are provided in the Aeronautical Study in **Appendix F**.



Source: HDR

Figure 3.3-3. Depiction of Saipan's ILS or LOC Approach Zone Area

Airfield Obstructions. There are no obstructions within Saipan International Airport's approach surfaces. According to Federal Aviation Regulation (FAR) Part 77.25(d), the approach surface is longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

Aircraft Fueling. All fueling and defueling of aircraft is conducted from fuel systems and fuel trucks approved by the CPA. Due to 14 CFR Part 139 requirements, only airlines, the fuel system operator, and fixed-based operators are authorized to perform into-plane fueling services. Fueling and refueling operators are responsible for compliance with all codes, regulations, and laws associated with the process. Saipan International Airport provides two types of aviation fuel Avgas 100LL (blue) and Jet A-1+. Avgas 100 (green) is still listed on the airport master record, but is not longer distributed. Avgas 100LL (blue) is gasoline fuel for reciprocating piston engine aircraft. Jet A-1 is a kerosene grade of fuel suitable for most turbine engine aircraft.

ATC Services. An FAA contractor (SERCO) operates the ATCT at Saipan International Airport. The ATCT is responsible for the separation and efficient movement of aircraft and vehicles operating on the taxiways and runways of the airport itself, and the aircraft within Saipan's Class D airspace. Class D airspace is generally a 5-NM radius from the airport reference point, surface to 2,500 feet AGL. However, Class D airspace is also tailored to meet the needs of the airport. Saipan International Airport's Class D airspace encompasses a 4.3-NM radius, surface to 2,700 feet AGL as shown in **Figure 3.3-4**. Class D airspace only surrounds airports that have

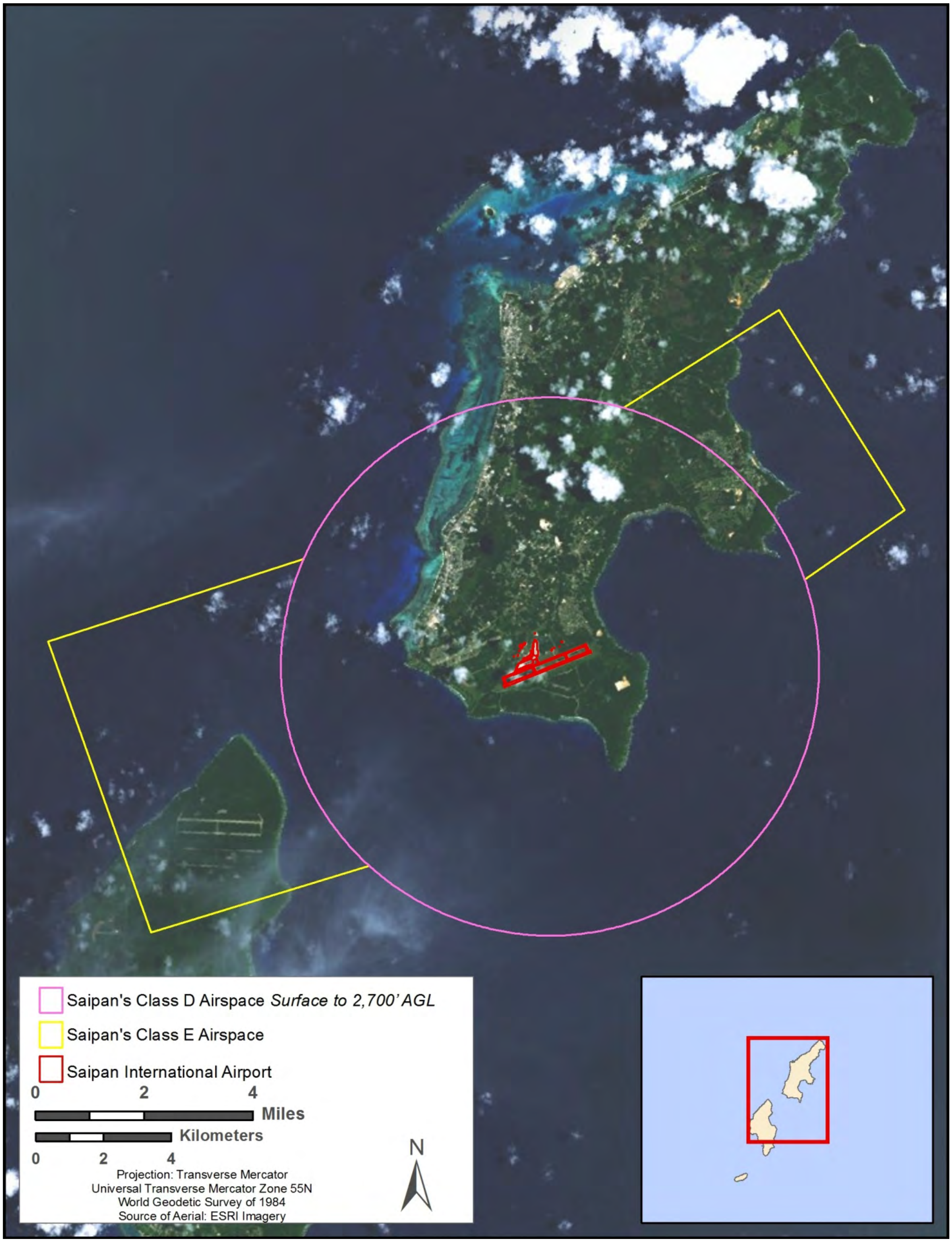


Figure 3.3-4. Saipan's Class D and E Extension Airspace

an operational control tower. Class E airspace becomes effective when the weather is below basic VFR conditions and extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace and is used by aircraft transiting to and from the terminal or en route environment. Saipan International Airport Class E Airspace extends upward from the surface within a 4.3-NM radius of Saipan International Airport and within 2.6 NMs on each side of the Saipan NDB 264 degree bearing, extending from the 4.3-NM radius to 7.4 NMs west of the Saipan NDB and within 1.8 NMs on each side of the Saipan NDB 248 degree radial, extending from the 4.3-NM radius to 7.4 NMs west of the Saipan NDB and within 1.8 NMs on each side of the Saipan NDB 068 degree radial, and extending from the 4.3-NM radius to 6.5 NMs east of Saipan International Airport (Federal Register Volume 74, Number 37, February 26, 2009). Pilots are required to establish and maintain two-way radio communications with Saipan International Airport's ATCT prior to entering their Class D airspace.

The Island of Saipan is within FAA's Guam Center ARTCC Flight Information Region (FIR). Guam ARTCC is responsible for controlling aircraft en route to, transiting within, and arriving at or departing from the airports within their FIR. Guam ARTCC radar coverage and service begins at 3,500 feet above mean sea level (AMSL) above the airport. Guam ARTCC provides approach and departure service for Saipan International Airport. Between Saipan's Class D Airspace and Guam ARTCC FIR is Class G Airspace. Class G Airspace is uncontrolled airspace.

Commonwealth Ports Authority Services. Saipan International Airport has an ARFF department with approximately 35 personnel. The department manages two 24-hour shifts with approximately 15 personnel assigned to each shift, and an average of 8 personnel on duty per shift daily. A fire captain is in charge of each shift. The fire department has six vehicles: a Striker 1500, an Oshkosh 1500, an Oshkosh 3000, a rapid intervention vehicle, a tanker, and a command vehicle. Saipan's ARFF assets include a 500,000-gallon water tank on their premises. The CPA Police Department is responsible for airport security.

Commercial Aircraft Usage. A summary of commercial aircraft usage at Saipan International Airport is presented in **Table 3.3-2**. The combination of air carrier, air taxi, and general aviation operations compose the majority of air traffic using Saipan International Airport. Approximately 341 annual military operations occur at Saipan International Airport per year, or less than 1 percent of all annual operations according to available data.

Table 3.3-2. Saipan International Airport Air Traffic Activity System: Standard Report from January through December 2014

Itinerant Air Carrier	Itinerant Air Taxi	Itinerant General Aviation	Itinerant Military	Local Civil	Local Military	Total Operations
5,095	37,984	26,540	324	18	17	69,9788

Source: FAA 2015c

Bird/Wildlife Aircraft Strike Hazard (BASH) Plan. A BASH Plan is a DOD plan implemented on DOD installations that is used to help prevent or reduce bird strikes by aircraft. FAA-certified airports refer to this type of initiative and plan as a Wildlife Hazard Management Plan (WHMP). The plan typically includes defining the nature and extent of wildlife hazards and procedures for implementing the plan. Plan implementation might require environmental controls and changes to bird/wildlife dispersal/removal techniques and operational procedures. Cooperative agreements for managing fish and wildlife resources require coordination with the CNMI Department of Lands and Natural Resources (DLNR) and Federal conservation agencies prior to implementation. The plan must identify local procedures and permits for the proper collection, handling, and disposal of wildlife carcasses and biological material discovered on the airfield and aircraft (USAF 2011).

According to the FAA Wildlife Strike Database, there have been 29 strikes of birds at Saipan International Airport from January 2010 through July 2015 documented (FAA 2015a). The species of birds that were struck by aircraft include Pacific golden plover (3 events); black noddy (3 events); cattle egret (1 event). Other birds identified include “terns, sandpipers, curlews, phalaropes, and sparrows.” It is important to note that not all bird/aircraft strikes are reported. None of the reported strikes resulted in damage to the aircraft. Given the number of movements at Saipan International Airport and the density of birds at the airfield, it is likely the strike frequency is substantially greater than the documented events. The majority of movements at Saipan International Airport are air taxis that primarily service the Island of Tinian, with turboprop aircraft, larger jet aircraft, and general aviation constituting the remaining movements. Military aircraft occasionally use Saipan International Airport for training operations. A fairy tern was identified in one of the strikes; species identification was not reported for any other incident. Birds seen and subsequently struck involved individual birds or small flocks (2 to 10 individuals). Strikes occurred in various phases of the flight including take-off, climb, approach, and landing roll, and in both clear and overcast/rainy weather conditions. **Section 4.3** analyzes BASH from the airspace/airfield safety perspective. Additional information regarding BASH impacts on wildlife can be found in **Sections 3.6** and **4.6**.

3.3.4.2 Tinian

Tinian International Airport is primarily used for inter-island passenger traffic between the islands of Saipan, Rota, and Guam. The airport is equipped for night operation and there are chartered night flights from Saipan and Guam that primarily service the Tinian Dynasty hotel and casino. Charter flights are available through Star Marianas (CPA 2005).

Runway 8/26. Tinian International Airport has one runway, RWY 8/26, which is 8,600 feet long and 150 feet wide (see **Table 3.3-3**). RWY 8/26 has two connecting taxiways, one at each end of the runway, and a parallel taxiway upon which aircraft can transit to and from the parking aprons. RWY 8/26 is equipped with Medium Intensity Runway Edge Lights (MIRL), which are used to outline the edges of the runway during periods of darkness or restricted visibility conditions. Tinian International Airport also uses a precision approach path indicator (PAPI) system on each runway end to provide visual descent information to pilots. This system is similar to the VASI but is installed in a single row of either two or four light units. In addition, Tinian International Airport uses a REIL on each runway end, which consists of two light units flashing simultaneously (FAA 2012a).

Table 3.3-3. Tinian International Airport Capabilities

Runway	Length and Width	Lights	Hours of Operation	IFR Capability (NAVAIDs/TERPS)	Aircraft Fueling	ATC Services
RWY 8/26	8,600 feet x 150 feet	MIRL, REILS, and PAPIs	Open 0600–2000L. Prior Permission Required from CPA outside scheduled hours.	NAVAIDs: None. TERPS: RNAV (GPS) RWY 08, 10 RNAV (GPS) RWY 26, and NDB/DME A	None	Guam ARTCC

Source: HDR

Hours of Operations. RWY 8/26 is open between the hours of 0600 and 2000 ChST. Aircraft operating outside of the designated hours require prior permission from the CPA.

Instrument Flight Rules Capabilities. Navigation guidance approaching Tinian International Airport is based on Saipan International Airport's NDB. The following instrument approach procedures are published to Runway 8/26: RNAV (GPS) RWY 8; 10 RNAV (GPS) RWY 26; and NDB/DME A. The published instrument approach procedures for Tinian International Airport are provided in the Aeronautical Study in **Appendix F**.

Airfield Obstructions. There is a 30-foot hill at the west end of the CPA property approximately 1,300 feet from the end of RWY 8 within the approach surface. Broadway Avenue, the main north-south thoroughfare on Tinian, is at the east end of CPA property approximately 1,500 feet from the end of the runway. According to FAR Part 77.25(d), the approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. The approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end. There are no obstructions within approach surfaces with the existing conditions at Tinian International Airport.

Air Traffic Control Services. The airspace surrounding Tinian International Airport is designated Class G Airspace. Class G Airspace is uncontrolled airspace when the weather is at or above visual meteorological conditions. It becomes Class E controlled airspace when the weather is below visual meteorological conditions to protect aircraft using the instrument approaches to the airport. Tinian International Airport operates without an ATCT, Class D Airspace, or ground control. Aircraft provide courtesy notification to CPA operations and ATC in Saipan for approach and departure clearance. Tinian International Airport is considered an uncontrolled airfield and pilots are responsible for their own separation, take-offs, and landings. Uncontrolled airports use a universal communication system or Common Traffic Advisory Frequency that pilots can use to transmit their intentions to other aircraft using the airport (FAA 2010).

Like Saipan, the Island of Tinian is within FAA's Guam ARTCC FIR. Guam ARTCC is responsible for controlling aircraft en route to, transiting within, and arriving or departing airports within their FIR. FIR is a region of airspace with specific dimensions, in which ATC and flight information services are provided. Guam ARTCC radar coverage and service begins 3,500 feet

AMSL above the Island of Tinian. Air taxi service to and from Saipan and Tinian generally remain under 3,000 feet so these aircraft are not able to receive ATC radar service.

Commonwealth Ports Authority Services. Tinian International Airport ARFF department consists of approximately 10 personnel. Personnel have dual roles as ARFF and port police officers. The ARFF Operations run three 8-hour shifts per day with an average of two to three personnel on duty per shift daily. A fire/police captain runs the daily operations for both law enforcement and ARFF protection for the airport. The fire department has three vehicles; an Oshkosh 1500, a Striker 1500, and a hazardous materials full-size pickup. Tinian's ARFF possesses a 60,000-gallon reserve water tank on their premises. Existing military operations require the military services to provide their own expeditionary airfield support requirements when using Tinian International Airport for exercises, including bulk water carriers/tankers and crash-and-rescue equipment.

Commercial Aircraft Usage. Daily aircraft operations for Tinian International Airport are based on the number of air taxi flights, which are the only commercial aircraft that operate at Tinian International Airport. It was assumed that aircraft fly in and out of Tinian International Airport 365 days a year, resulting in an average of approximately 36 daily operations, based on FAA data (FAA 2011).

Bird/Wildlife Aircraft Strike Hazard Plan. A BASH Plan is a DOD plan implemented on DOD installations that is used to help prevent or reduce bird strikes by aircraft. FAA-certified airports refer to this type of initiative and plans as a WHMP. The plan typically includes defining the nature and extent of wildlife hazards and procedures for implementing the plan. Tinian International Airport does not have a WHMP but does have a Wildlife Hazard Assessment (WHA). The development of a WHMP from the WHA could require environmental controls and changes to bird/wildlife dispersal/removal techniques and operational procedures. Cooperative agreements for managing fish and wildlife resources require coordination with DLNR and Federal conservation agencies prior to implementation. The plan must identify local procedures and permits for the proper collection, handling, and disposal of wildlife carcasses and biological material discovered on the airfield and aircraft (USAF 2011). Three wildlife strikes at Tinian International Airport from January 2010 through July 2015 are documented in the FAA's National Wildlife Strike Database, as of August 2015. Two are of unknown birds of small to medium size, and one is for a domestic dog (FAA 2015b). One of the incidents, involving a medium-sized bird, resulted in substantial damage. Additional information regarding BASH impacts on wildlife can be found in **Sections 3.6** and **4.6**.

Table 3.3-4 presents a brief summary of existing conditions at the two airfields analyzed in this EIS. These existing conditions are specific to USAF criteria that would be required if the Proposed Action were implemented.

Table 3.3-4. Existing Capabilities at Saipan International Airport/Tinian International Airport Existing Capabilities

PACAF Criteria	Saipan International Airport Alternative 1	Tinian International Airport Alternative 2
Parking Apron capable of supporting 12 KC-135s	Due to civilian commercial operations, there is not sufficient parking; apron construction needed to meet requirement	Parking Apron size cannot support requirement; construction required
Airfield capable to support 24/7 operations	Open 24 hours per day, 7 days per week	Airfield open 0600–2000 ChST daily, agreement with CPA required for operations outside this time
IFR capable airfield to support operations in inclement weather	NDB and ILS on airfield; Instrument approach procedures minimums RWY 07 = 415 feet AGL – ½ mile minimum visibility, RWY 25 = 600 feet AGL – 1 1/8 miles minimum visibility	No NAVAIDs on airfield; Instrument approach procedures minimums RWY 08 = 660 feet AGL – 1 ¼ miles minimum visibility, RWY 26 = 760 feet AGL – 1 ½ miles minimum visibility
Airfield Obstructions	None within approach/departure corridor	30-foot hill located 1,300 feet from the end of RWY 8/26 within approach/departure corridor
Cargo Pad	Not on airfield; location must be determined or constructed	Not on airfield; location must be determined or constructed
Jet Aircraft Hydrant Refueling System	Jet aircraft fueling available via fuel trucks; construction required for Hydrant Refueling System	No jet aircraft fueling capability; construction required for Hydrant Refueling System
ATC service for maintaining an orderly flow of air traffic	Terminal service available via Saipan's ATCT; IFR service available from 3,500 feet AMSL and above	IFR service available from 3,500 feet AMSL and above; procedural control below 3,500 feet above AMSL; no terminal service available

Source: HDR

3.4 Geological Resources and Soils

3.4.1 Definition of Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards and paleontology.

Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Physiography and topography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981 and is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water.

Geologic hazards are defined as natural geologic events that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, volcanoes, landslides, rock falls, ground subsidence, and avalanches.

Per the Northern Mariana Islands Administrative Code Chapter 65-30, Earthmoving and Erosion Control Regulations, no person will commence or continue grading, filling, or vegetation-clearing without first obtaining a permit from the CNMI BECQ. All permits expire in 1 year unless otherwise specified in the permit; and permits are not granted for longer than a 2-year period. Extensions may be granted 30 days prior to permit expiration. The application for this permit must include an erosion-and-sediment-control plan (ESCP) that meets the following requirements:

- Plans must be based on the 25-year, 24-hour duration storm event.
- Conveyance structures must be based on the 25-year, 24-hour duration storm event peak discharge.
- Sediment-control structures (e.g., ponding basins, sediment basins/traps) must be designed for the 25-year, 24-hour storm event. Designs can be based on either (1) minimum of 24-hour detention time including sediment storage volume or (2) sediment removal rate of not less than 75 percent.
- All earth-moving activities shall cease during storms. Extra measures and precautions must be taken to eliminate erosion during these periods.
- Extra measures and precautions must be taken to eliminate erosion during a 3-week period surrounding the annual coral spawning event (typically in June or July). These extra measures might include ceasing earth-moving activities in areas that are either highly erodible or near the coast. The actual date will be determined by the Chief of CNMI BECQ.
- A slope stabilization and revegetation plan.
- A storm water-control plan for the project after construction is complete.

Additional details are provided in **Section 3.5** on the CNMI BECQ and Guam Environmental Protection Agency (GEPA) guidance manual on developing and implementing storm water- and erosion-control plans that adequately address nonpoint source pollution through the use of currently accepted BMPs.

3.4.2 Existing Conditions

3.4.2.1 Saipan

Regional Geology

The Mariana Islands formed from a curved line of stratovolcanoes that rise up from the ocean floor. These stratovolcanoes were created by subduction of the Pacific Plate beneath the Philippine Plate, which caused magma to rise up beneath the ocean's crust to form volcanoes that compose the islands. The volcanic activity that created these islands occurred approximately 45 to 10 million years ago, and volcanism is still active in the Northern Mariana Islands (NPS 2006).

Geology of the islands in the CNMI is largely dependent on the degree of recent volcanism. The older (southern) islands, including Saipan and Tinian, are composed of a volcanic core covered by coralline limestone up to several hundred meters thick. When the original volcanoes subsided beneath the ocean surface, coral formations grew, which ultimately formed limestone caps. Limestone plateaus were elevated several hundred meters above sea level when the Philippine Plate was uplifted due to tectonic activity (DON 2010a, University of Hawai'i 2010). Volcanic activity now only occurs in the northern islands (DON 2010b).

Island of Saipan. Limestones and calcareous deposits compose about 90 percent of the surficial geology on Saipan, with volcanic rocks exposed on 10 percent of the land surface (from erosion and weathering). The limestones are considered to be very porous and with good permeability, which limits erosion potential (NPS 2006). Porosity (i.e., the volume of pore spaces in a rock) in the limestones is both primary and secondary. Primary porosity occurs during rock formation and is affected by the size, shape, and sorting of grains and particles. Secondary porosity can occur during alteration of rock, such as dissolution of limestone with rainwater or faulting (DON 2010b).

Limestones in Saipan are also highly permeable, which indicates the connectivity of pores within the rock. A rock with a higher permeability has a greater ability to transmit the flow of groundwater. Volcanic rocks on Saipan typically are poorly sorted and have undergone secondary alteration that inhibits the flow of groundwater. However, faults transect the island in a north-northeast direction, complicating the sequence and porosities/permeabilities of rock units (DON 2010b).

Saipan International Airport. Surficial geology at the Saipan International Airport is mapped as Mariana limestone. The Mariana limestone is composed of clastic and reef limestone with argillaceous (clayey) rubbly sedimentary facies (USGS 2003). Based on the surficial geologic cross-section from Cloud et al. (1956) and modified by the U.S. Geological Survey (USGS) in 2003, the Mariana limestone is approximately 400 to 500 feet thick at Saipan International Airport and is underlain by approximately 100 feet of the Tagpochau limestone.

Bedrock geology underlying Saipan International Airport is primarily composed of bioclastic to reefy limestone and granular clastic limestone (PACAF undated b).

Port of Saipan. Surficial geology at the Port of Saipan is mapped as Pleistocene- and Holocene-aged emerged limey sand, beach, wetland, fill, and volcanic outwash materials. The truck routes would traverse through Mariana limestone, outwash deposits along the coast, and potentially pockets of Tagpochau or Tanapag limestones.

Physiography and Topography

Island of Saipan. The surface terrain of Saipan is dominated by horizontal to gently undulating limestone plateaus and terraces separated by steep scarps. Limestone cliffs of varying relief are separated intermittently by small beaches and coves along the eastern, southern, and northern coasts. The western coast is formed by a narrow coastal plain of limestone-derived, sand-sized particles. Towards the southern end of the coastal plain is a small brackish lake, Lake Susupe, surrounded by an extensive marshy area (Susupe Marsh). Seaward of the western coast are three shallow lagoons bordered by a barrier reef (USGS 2003).

Saipan International Airport. Saipan International Airport occurs within the low limestone platforms physiographic province. The low limestone platforms physiographic province is bordered on the east and west by the low terraced benches physiographic province.

At the site of the proposed development within the airfield, land is generally flat. To the east and west of the airstrip, terrain is rough and the land slopes steeply towards the sea. The land proposed for the fuel tanks has been graded, and some asphalt exists. An operational limestone quarry exists to the southeast of the airstrip.

Port of Saipan. The seaport lies in the western coastal plain physiographic province. The fuel truck route would traverse through the low limestone platforms, western coastal plain, and the central uplands (USGS 2003). The central uplands are bordered by low limestone platforms to the north and south and terraced benches to the east that form a terraced pattern downward to the sea. The limestone platforms are broad, flat areas at the southern, southeast-central, and northern margins of the central uplands (USGS 2003).

The western coastal plain is a narrow plain to the west of the central uplands, extending continuously from the beaches at San Roque in the north to Agingan Point in the south. The western coastal plain ranges in width from 650 feet to more than 1 mile. The western coastal plain rises gradually inland to elevations generally not more than 15 to 20 feet above sea level and is predominately composed of emerged calcium carbonate sands. Part of the coastal plain contains wetland areas, including the brackish-water Lake Susupe in the south (see **Section 3.5**). Three shallow lagoons and barrier reefs exist along the west coast, which separate the island from the Philippine Sea (USGS 2003).

Soils

Island of Saipan. Soils on Saipan developed on volcanic rock tend to be poorly drained clays, while soils developed on limestone are usually shallow and highly porous. The Island of Saipan consists of six soil orders with Mollisols dominating the limestone plateaus and uplands. Mollisols are the dominant soil order on Saipan, and are soft, fertile soils rich in organic matter and nonacid cations (e.g., calcium, magnesium, potassium, and sodium) that develop under grassland landscapes. These soils are classified as very productive (University of Hawai’i 2010).

Saipan International Airport. Soils mapped within Saipan International Airport are Chinen-Urban Land and soils mapped to the southeast of the airstrip and the truck routes are Chinen-Takpochao.

Port of Saipan. Soils mapped within the seaport area and within the truck routes include the Shioya sandy loam and the Mesei Variant.

Prime Farmland

There is no prime and unique farmland in the areas proposed for development. All soils underlying sites proposed for development activities are previously disturbed. **Table 3.4-1** lists the soils associated with the Proposed Action on Saipan. These soils are considered to be highly erodible (CNMI SWARS 2010).

Table 3.4-1. Characteristics of Soils Mapped on Saipan

Mapping Unit	Texture	Location	Characteristics
Chinen-Urban Land	Urban land	Airstrip development and adjacent to airstrip	Shallow, well-drained, nearly level, and Urban land
Chinen-Takpochao	Clay	Southeast of airstrip, truck routes	Very shallow and shallow, well-drained, nearly level to strongly sloping
Shioya	Loamy sand	Truck routes, port	Very deep, excessively drained, level to nearly level soils
Mesei Variant	Peat	Truck routes, port	Moderately deep, very poorly drained, level

Source: USDA NRCS 1988

Geologic Hazards

On Saipan, the geologic hazards that could endanger lives or threaten property include tsunamis, earthquakes, mass wasting, sinkholes, and volcanoes. Erosion is another hazard that occurs on Saipan (CNMI CRMO 2011).

Because of the prominence of tectonic activity, the coastal areas of Saipan are considered to be at a high risk for earthquakes, tsunamis, and volcanic eruptions. Seismic zones range from 0 (no chance of severe ground shaking) to 4 (10 percent chance of severe shaking in a 50-year interval). The CNMI is located within Seismic Zone 3 (CNMI 1988).

Earthquakes often precede volcanic eruptions in the Mariana Islands. Geologic hazards associated with earthquakes and volcanic activity include the generation of tsunamis, ash and steam, ejection of pyroclastic materials, and lahars (ash flows). Only a few tsunamis have hit the CNMI in the past 200 years. It is suggested by Lander et al. (2002) that because of the nature of the subsidence occurring within the Mariana Trench (referred to as decoupled), earthquakes with a magnitude range of 6 to 7 occur on average once every 10 years and earthquakes greater than 7 occur about once in 100 years. Earthquakes ranging from 5 to 6 magnitude occur approximately 5 to 8 times a year within 250 miles of Guam (DON 2010b).

However, four earthquakes with a magnitude greater than 6.5 on the Richter scale have occurred within 400 miles of CNMI within the past 20 years, including a 7.8-magnitude earthquake in 1993, a 7.1-magnitude earthquake in 2002, a 7.4-magnitude earthquake in 2007, and a 6.9-magnitude earthquake in 2010 (DON 2010a, DON 2010b). These earthquakes tend to precipitate from the shallower, southern region of the Mariana Trench.

In concert with earthquakes is the potential for tsunami generation. Three tsunamis, in 1849, 1892, and 1993, have caused damage. Due to the eastern location of the Mariana Trench, it is suggested by Lander et al. (2002) that the impacts of a local tsunami would most likely occur on Guam's east coast. Therefore, it can be extrapolated that tsunamis would generally impact the east coast of Saipan as well. If a tsunami has a southern origin, it could impact both the west and east coast of Saipan (USGS 2010).

Earthquakes can also affect areas beyond their origin, by inducing mass wasting or landslides. Slope failures and landslides on Saipan do occur, predominantly in limestone terrain. Slope destabilization and landslides occur when a slope is destabilized, such as during a seismic event. When destabilization is followed by heavy rainfall, the destabilized slope is saturated, and mudflows can result (PACAF undated b).

Because landslide hazards are dependent upon local surficial geologic factors, vulnerability can be assessed by analyzing the local geology, slope angle, groundwater elevations, rainfall, and geologic structures such as faults and joints. The overall likelihood for landslides to occur on Saipan is generally low because the consolidated nature of the limestone and volcanic units reduce the potential for slope failure. Areas with steeper slopes are at a higher risk for landslides (PACAF undated b). The Proposed Action on Saipan would be in relatively flat areas and would not be anticipated to be impacted by landslides.

Another effect associated with seismic activity is liquefaction. Liquefaction can occur when water-saturated sandy soils are subjected to ground shaking. In order for liquefaction to occur, two conditions must exist: the soil must be susceptible (loose, water-saturated, sandy soil, typically between 0 and 30 feet below the ground surface) and ground shaking must be strong enough to cause susceptible soils to liquefy. When soil liquefies, it loses strength and behaves as a liquid and begins to flow. This can cause structures to sink into the ground or tilt, empty buried tanks to rise to the ground surface, slopes to fail, nearly level ground to shift laterally tens of feet (lateral spreading), surface to subside, and ground to crack. Consolidated limestone and volcanic geologic units are not usually susceptible to liquefaction.

3.4.2.2 Tinian

Regional Geology

Regional geology of Tinian is similar to that of Saipan (described in **Section 3.4.2.1**) as they are both in the southern Mariana Islands, and are both volcanic rock (tuff and breccias) covered in coralline and algal limestone. Limestone rock predominates, while volcanic rock is only exposed in two small, isolated areas due to extensive weathering (DON 2010a).

Island of Tinian. Tinian has more than 95 percent carbonate rocks at the surface (University of Guam 2002). There are two main limestone formations on Tinian: the Mariana and Tagpochau limestones (see **Section 3.4.2.1**). The Mariana limestone was deposited in Pliocene and Pleistocene time and covers approximately 83 percent of Tinian's surface. The Mariana limestone is composed of seven rock types, differentiated by the type of carbonate material contained within the limestone, which is, in general, either derived from coralline or algal materials. Argillaceous (clayey) and massive limestones are also present within the Mariana limestone formation (USGS 2003).

The Tagpochau limestone covers approximately 16 percent of Tinian's surface and is composed of three rock types: detritus (majority of the formation), clays, and sands. The limestone is primarily biogenic calcium carbonate fragments and calcite cement derived from corals.

In the coastal regions, these deposits are overlain by Holocene limestone, developing sands and gravels, and reefs. Most of the shoreline on Tinian consists of limestone cliffs with sea-level caverns, cuts, notches, and slumped borders. Beach deposits are composed of medium- to coarse-grained calcareous sands, gravel, and rubble interspersed in exposed limestone. Reef development occurs primarily on the western coast, with minor fringing or apron reef development on the northern, eastern, and southern coasts (DON 2010a). There are no permanent streams for surface drainage on Tinian because all water evaporates or percolates through the highly permeable limestone. Water resources on Tinian are discussed in detail in **Section 3.5**.

The presence of limestone indicates that karst topography could be present. Limestone is a soluble rock primarily composed of calcium carbonate; on Tinian, the source of calcium carbonate is primarily from coral reef. Karst is a distinctive topography formed by dissolution of underlying soluble rocks by surface water or groundwater. Karst is characterized by caves, sinkholes, and subsurface drainage. These dissolution features are created when rainwater, which is slightly acidic, dissolves carbonate rocks, such as limestone. Although karst topography does exist on Tinian, no karst features were detected during site investigations for the Proposed Action on Tinian or were noted during geologic investigations by Gingerich and Yeatts in 2000 (University of Guam 2002).

Tinian International Airport. Geology at Tinian International Airport consists of the Mariana limestone (DON 2010b). In some areas, soils are very thin and a very hard limestone outcrops or is close to the ground surface.

Physiography and Topography

Island of Tinian. Tinian is composed of five limestone plateaus at varying elevations, separated by steep slopes and escarpments.

Tinian International Airport. Tinian International Airport occurs within the Central Plateau physiographic province. The Central Plateau, found within the central portion of the island, is isolated by steep slopes and scarps associated with north-south trending faults.

At Tinian International Airport, topography is relatively flat, and elevations range from approximately 61 to 100 feet above sea level (DON 2010b, USGS 1999). Elevation surrounding the airstrip drops towards the sea to the east and west. A depression exists between the taxiway and airstrip west of the terminal/apron area. The area is believed to have been excavated and used as a borrow pit.

Port of Tinian. The fuel truck route would occur within the Central Plateau and Median Valley physiographic provinces. Work at the Port of Tinian would occur in the Median Valley. In the south- and east-central regions, the Median Valley is a broad depression with little relief that is bounded by faults (University of Guam 2002).

Soils

Soil profiles on limestone regions are shallow and highly porous, and soils are similar to those described in **Section 3.4.2.1** for Saipan, as the soils formed under similar conditions (University of Guam 2002).

Island of Tinian. In addition to the Chinen-Urban Land, Chinen-Takpochao and Shioya described for Saipan, Tinian also has Chinen, Chinen-Rock, and Dandan-Saipan. The Dandan-Saipan soil is a moderately deep to very deep clayey loam that is slightly acidic (McCraken undated).

Tinian International Airport. Soils mapped at the airport are Chinen, Chinen-Rock, Dandan-Saipan, and Chinen-Urban Land.

Port of Tinian. Soils mapped within the port area are Shioya loamy sands, and soils mapped within the truck routes include the Shioya sandy loam and the Chinen-Takpochao (described in **Section 3.4.2.1**).

All soils within areas to be developed by the Proposed Action are previously disturbed and considered to be moderately to highly erodible (CNMI SWARS 2010). Soils at the sites of the Proposed Action on Tinian are shown in **Table 3.4-2**.

Table 3.4-2. Characteristics of Soils Mapped on Tinian

Mapping Unit	Texture	Location	Characteristics
Chinen-Takpochao	Clay	Truck routes	Very shallow to shallow, well-drained, nearly level to steeply sloping
Chinen	Clay loam, Sandy loam	Tinian South	
Chinen-Rock	Rock	Tinian South	
Shioya	Loamy sand	Truck routes, port	Very deep, excessively drained, level to nearly level soils
Dandan-Saipan-	Loam	Tinian North	Moderately deep and very deep, well-drained, nearly level to gently sloping
Chinen-Urban Land	Urban land	Tinian North	Shallow, well-drained, nearly level, and Urban land

Sources: USDA NRCS 2015, DON 2010b

Prime Farmland

Soils are shallow in many places, and, as a result, productive areas for farming are limited (CNMI SWARS 2010). Erosion can be a problem in limestone areas, especially near roads or on recently cleared lands (CNMI SWARS 2010).

No prime farmland soils exist at the sites of the Proposed Action on Tinian (USDA NRCS 1989).

Geologic Hazards

Tinian has similar geologic hazards as Saipan (see **Section 3.4.2.1**), with the potential for earthquake activity, impacts from volcanoes, and tsunamis. Tinian is susceptible to tsunamis because of seismic activity associated with the active volcanoes to the north and the Marianas Trench to the east. The band of coral reef that surrounds Tinian provides protection from tsunamis, and the steep slope of the ocean floor surrounding the island lowers the risk of significant wave run-up.

Tinian International Airport is listed as an evacuation safe zone as designated by the CNMI Emergency Management Office (CNMI HS&EM 2012). The Pacific Tsunami Warning Center considers the tsunami evacuation safety zone to be above 30 feet above sea level and more than 100 feet inland. In addition, the National Weather Service has recognized Tinian as "Tsunami Ready" and "Storm Ready" because it has a 24-hour warning point and emergency operations center, monitors local weather and ocean conditions, has developed multiple methods to receive tsunami and severe warnings to alert the public quickly, has developed a hazard plan, and promotes public readiness through education (PACAF undated b).

The potential for landslides and liquefaction to occur within the site of the Proposed Action is considered to be low because rock is consolidated and no steep slopes are present.

3.5 Water Resources

3.5.1 Definition of Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Hydrology encompasses the occurrence, distribution, movement, and properties of the Earth's waters through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine evapotranspiration rates, topography that determines rate and direction of surface flow, and soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir. Water resources relevant to Saipan and Tinian include groundwater, surface water, and floodplains.

Groundwater. Groundwater is water that exists in the pore spaces and fractures in rock and sediment beneath the Earth's surface within the zone of saturation. Groundwater features include depth from the surface, aquifer or well capacity, quality, recharge rate, and surrounding geologic formations. Most of the available fresh groundwater on small oceanic islands is in a freshwater-saltwater coastal aquifer system where a lens-shaped body of fresh and brackish groundwater floats on denser salt water within the island (i.e., beneath the ground's surface). Fresh water is separated from salt water by a transition zone in which salinity grades from fresh water to salt water. Rainfall infiltrates and recharges the aquifer, where frictional resistance to flow causes the water to accumulate and form a lens. Fresh water flows by gravity to the shore, where it discharges as diffuse seepage and as springflow at shoreline and submarine springs. On small islands such as Saipan and Tinian, mixing in the transition zone results mainly from tidal fluctuations superimposed on the gravity-driven flow of fresh water towards the shore. Rainfall (i.e., recharge) is episodic and seasonal, causing the lens volume to fluctuate. The lens discharges continuously throughout the year, but shrinks during dry periods when recharge diminishes or ceases. The lens expands during high recharge episodes, which commonly occur within a definable wet season.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. The 1986 amendments to the SDWA required the USEPA to establish maximum contaminant levels, maximum contaminant level goals, and best available technology treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity in drinking water sources. The Federal Sole Source Aquifer regulations authorized under the SDWA protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of streams, rivers, lakes, and wetlands. The CWA of 1977 is administered by the USEPA and sets the basic structure for regulating discharges of pollutants into U.S. waters. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA requires the USEPA to establish water quality standards for specified contaminants in surface water. Section 402 of the CWA forbids the discharge of pollutants from a point source into navigable waters without an NPDES permit. The NPDES storm water program requires construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more to obtain coverage under an NPDES permit for their storm water discharges. NPDES permits in the CNMI are issued by USEPA Region 9. Where the USEPA is the permitting authority, construction storm water discharges are almost all permitted under the USEPA's Construction General Permit (CGP). The CGP requires compliance with effluent limits and other permit requirements, such as the development of a site-specific Storm Water Pollution Prevention Plan (SWPPP). Construction or demolition that requires permit coverage requires preparation of an NOI certifying that the permit's eligibility conditions have been met and all activities will comply with the permit's effluent limits and other requirements.

The USEPA published the technology-based Final Effluent Limitations Guidelines (ELGs) and New Source Performance Standards for the Construction and Development point sources, known as the "Construction and Development (C&D) Rule," on December 1, 2009, to control the discharge of pollutants from construction sites. The C&D Rule became effective on February 1, 2010, and requires construction site operators to meet erosion and sediment control, pollution prevention, and stabilization requirements. The C&D Rule also included a numeric turbidity limit for certain larger construction sites, but effective January 4, 2011, the USEPA has suspended the numeric limitation for further evaluation. Therefore, the numeric turbidity limitation and monitoring requirements do not currently have to be incorporated into construction permits. The USEPA currently regulates large and small (greater than 1 acre) construction activities through the final 2012 CGP (February 16, 2012). The 2012 CGP includes a number of modifications to the 2008 CGP, many of which are necessary to implement the new ELGs and New Source Performance Standards for C&D point sources. Permittees must select, install, and maintain effective erosion- and sedimentation-control measures as identified and as necessary to comply with the 2012 CGP, including the following:

- Minimize exposure of soils and control discharges from stockpiled sediment or soil

- Design storm water controls according to the amount, frequency, intensity, and duration of precipitation; the nature of storm water runoff and run-on at the site; and the range of soil particle sizes expected to be present on the site
- Direct discharges from storm water controls to vegetated areas to increase sediment removal and maximize storm water infiltration
- Complete installation of storm water controls by the time each phase of earth-disturbance has begun, unless infeasible
- Install sediment controls (e.g., sediment basins, sediment traps, silt fences, and vegetative buffer strips) along the perimeter of the construction site
- Regularly inspect and maintain all erosion and sediment controls
- Prevent discharges of petroleum products; soaps, solvents, or detergents used in equipment washing; or other toxic or hazardous substances from a spill or other release
- Minimize sediment track-out and implement dust controls
- Minimize disturbance of steep slopes
- Preserve topsoil
- Minimize soil compaction
- Design storm water conveyance channels to avoid unstabilized areas on the site and to reduce erosion; minimize erosion of channels and their embankments, outlets, and downstream waters.

Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the USACE. Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility operation.

The CNMI BECQ is the administrative authority for CWA Section 401 Water Quality Certifications required for validation of CWA Section 402 NPDES permits. The CNMI administers a CWA Section 401 Water Quality Certification Program through provisions contained within the CNMI Water Quality Standards. Section 401 certification by the CNMI is required for every Federal permit that could result in a discharge of pollutants to waters of the CNMI, including the USEPA CGP.

Section 303(d) of the CWA requires states, territories, or commonwealths and the USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states, territories, and commonwealths are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state, territory, or commonwealth standards. Impaired (Category 5) waters are defined as those waters where available data or information indicate that at least one designated use (e.g., recreation, support of aquatic life and coral reef conservation, fishing and the consumption of fish and shellfish, aesthetic enjoyment, and as potable water in the case of fresh water) is not being supported or is threatened, and a TMDL is needed.

Section 438 of the Energy Independence and Security Act (EISA) (42 U.S.C. 17094) established new storm water design requirements for Federal construction projects that disturb a footprint greater than 5,000 ft^2 of land. The project footprint consists of all horizontal hard surfaces and disturbed areas associated with the project development, including both building area and pavements such as roads, parking lots, and sidewalks. These requirements do not apply to resurfacing of existing pavements. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology will be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design will incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water-reduction features. As stated in a January 2010 DOD memorandum, these regulations will be incorporated into applicable DOD UFC (DOD 2010b). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Storm Water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

The CNMI BECQ has developed its own Water Quality Standards, which are promulgated in accordance with the Federal CWA, the Commonwealth Environmental Protection Act of 1982 (2 Commonwealth Code [CMC] §§3101 to 3134, P.L. 3-23), the Commonwealth Environmental Amendments Act of 1999 (P.L. 11-103), and the Commonwealth Groundwater Management and Protection Act of 1988 (2 CMC §§3311 to 3333, P.L. 6-12). The purpose of these authorities is to establish standards for water quality for all CNMI waters and groundwater to protect their use and value for propagation of fish and wildlife, recreation, public water supply use, and commerce.

The CNMI Water Quality Standards define two classes (AA and A) of marine water uses. The majority of the coastal marine waters are Class AA, meaning that these waters should remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-related source or actions. The uses protected in these waters are the support and propagation of marine life, conservation of coral reefs and wilderness areas, oceanographic research, and aesthetic enjoyment and compatible recreation inclusive of whole body contact and related activities. Class A waters are protected for their recreational use and aesthetic enjoyment; other uses are allowed as long as they are compatible with the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water is of a limited body contact nature.

As described in **Section 3.4**, per the Northern Mariana Islands Administrative Code Chapter 65-30, Earthmoving and Erosion Control Regulations, no person shall commence or continue grading, filling, or vegetation-clearing activities without first obtaining a permit from the CNMI BECQ. Additional details on this permit are provided in **Section 3.4**.

The CNMI BECQ in coordination with the GEPA developed a guidance manual in 2006 to assist the local engineering and development communities and local government agencies of Guam and CNMI in developing and implementing storm water- and erosion-control plans that adequately address nonpoint source pollution through the use of currently accepted BMPs. Volume I of the *Storm Water Management Manual* provides designers a general overview of local storm water issues, lists the storm water performance standards for the islands, and describes how to size and design BMPs to comply with those standards. Volume II of the Manual contains more detailed information on how to select, site, and construct BMP specifications (CNMI BECQ and GEPA 2006).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. Floodplains are subject to periodic or infrequent inundation from rainfall. Risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain as an area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in a 100-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities to reduce the risks to human health and safety.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. New construction in a floodplain must apply accepted flood proofing and flood protection to include elevating structures above the base flood level rather than filling in land. EO 13690 (January 30, 2015) amends EO 11988 and provides additional approaches agencies can use to establish the flood elevation and hazard area in their decisionmaking, climate-informed science approach.

All baseline conditions related to the existing water supply and water infrastructure are provided in **Section 3.13**.

3.5.2 Existing Conditions

3.5.2.1 Saipan

Groundwater. Groundwater is the major source of water on Saipan. All fresh groundwater on Saipan originates as rainfall (USGS 2003). Saipan receives an average of 80 inches of rainfall per year and has distinct wet and dry seasons. The months of July through November (the wet season) receive approximately 67 percent (53 inches) of the annual rainfall; January through

May (the dry season) receive 21 percent (17 inches); and December and June (transitional months) receive 12 percent (10 inches) (CNMI BECQ and GEPA 2006). A significant portion of rainfall on Saipan is lost to evapotranspiration and a minor component is lost to surface runoff. The remaining portion is available as recharge to groundwater (CNMI BECQ and GEPA 2006).

Saipan has an average groundwater recharge rate of 23 inches per year, which is approximately 28 percent of the annual rainfall of 80 inches (USGS 2003). The position of the volcanic basement rocks on Saipan relative to sea level and the overlying limestone affects the occurrence of groundwater. Most of the available fresh groundwater in Saipan is within the Mariana Limestone Aquifer, which is a freshwater-saltwater coastal aquifer system where a lens-shaped body of fresh and brackish groundwater floats on denser salt water within limestone extending from the land surface to some distance below sea level. Rainwater infiltrates the highly permeable limestone and maintains a freshwater body within the island (i.e., beneath the ground's surface).

Some fraction of the fresh groundwater can be withdrawn by wells; however, fresh groundwater quality and availability can be affected by overpumping or sustained periods of dry weather (USGS 2003). The thickness of the freshwater lens in the coastal aquifer system on Saipan ranges from approximately 20 to 60 feet. Vertical sections through central and southern Saipan show that the freshwater lens is thicker towards the interior of the island and thins considerably towards the coasts (USGS 2003).

The elevations of the top of the water table beneath Saipan International Airport range from approximately 2 to 3 feet above sea level and the slope of the water table is nearly flat (USGS 2003). Groundwater flows from the central uplands, where the water table elevation is highest, towards the coast, where the water table elevation is lowest. Groundwater generally flows south across Saipan International Airport; however, a large water table depression at the Saipan International Airport well field indicates that groundwater withdrawal is causing groundwater flow patterns to change near some production wells on Saipan International Airport. Drawdown from pumping diverts some of the oceanward groundwater flow to these wells (USGS 2003). The Saipan International Airport area (Isley Field) has 35 pumped wells (USGS 2003). Groundwater management zones have been designated on the basis of groundwater quality for Saipan. Saipan International Airport is within a Class I groundwater management zone, which is an area deemed as having the highest quality, most valuable, and most vulnerable groundwater resources (CNMI BECQ and GEPA 2006).

The proposed seaport fuel tank area is located in a Class III groundwater management zone (lowest water quality), and the fuel and personnel transport routes are located in Class II and Class III groundwater management zones.

Surface Water. Surface water on Saipan includes canyon drainages throughout the island. No natural streams occur on or within the vicinity of Saipan International Airport (CNMI BECQ and GEPA 2006). All surface water features at Saipan International Airport are man-made and consist of storm water drainage ditches and swales and a large (approximately 100,000-ft^2) storm water retention basin that occurs approximately 1,000 feet north of the runway. The catchment water is mixed with well water from the wells at Saipan International Airport and is used as an emergency backup water supply during power outages at Saipan International Airport.

Storm water sheet flow conditions that occur at Saipan International Airport during rainfall events result in ponding in some areas. However, the standing water percolates quickly following the cessation of runoff. The sloping perimeter areas of the airport property direct sheet flow off site to the south, east, and west. Storm water drainage ditches and swales and small pipe culverts are used, which empty into the 20-million-gallon storm water retention basin to the north of the runway. Most storm water is directed away from the airport runway and airfield or naturally percolates into the porous limestone. However, localized flooding is reported to occur during periods of heavy rains within the developed areas, particularly around the terminal parking lot (CPA 2002).

No natural streams occur on or within the vicinity of the proposed seaport fuel site (CNMI BECQ and GEPA 2006). A man-made, shallow drainage ditch occurs along the northern side of the proposed fuel site.

Flood Zones. None of the proposed construction areas at Saipan International Airport or the proposed Port of Saipan fuel site occur within flood zones.

Nearshore Waters. Coastal waters surrounding Saipan serve as the ultimate discharge area for all surface runoff from the island. Coastal water quality issues include eutrophication, damage to coral reefs (including sedimentation), and bacterial/viral pollution of swimming beaches. According to the CWA 305(b) reports for CNMI, coastal waters are most significantly impacted by sedimentation and nutrients (CNMI BECQ 2010a). Sediments cause physical damage including decreased water clarity and smothering of coral and other marine resources. Nutrients (typically nitrogen for coastal environments) cause eutrophication, which results in excessive algae and weed growth, and depleted dissolved oxygen levels that support aquatic life.

Saipan International Airport spans across two watersheds. The majority of Saipan International Airport occurs in the Isley Watershed, which drains southwest and south into the Philippine Sea. The easternmost portion of Saipan International Airport occurs within the Dandan Watershed, which drains east into the Pacific Ocean (CNMI BECQ 2010a).

Class A waters include the coastal waters of the Isley (West) watershed in the area centered on the outfall for the Agingan Point Wastewater Treatment Plant. These Class A waters are downgradient of the western portion of Saipan International Airport. All other marine waters downgradient of Saipan International Airport are classified as Class AA waters (CNMI BECQ 2010a).

The Port of Saipan occurs within the West Takpochau Watershed, which drains northwest into the Philippine Sea (CNMI BECQ 2010a). The coastal waters of the Isley Watershed are impaired (Category 5) due to enterococci (bacteria) and orthophosphate (nutrient) pollution, the sources of which include a municipal point source (Agingan Point Wastewater Treatment Plant outfall), sedimentation, and other unknown sources. The Dandan Watershed does not have available water quality monitoring data of any type. The coastal waters of the West Takpochau

(North) Watershed are impaired (Category 5) due to low dissolved oxygen levels, enterococci, biocriteria, and orthophosphate pollution caused by sanitary sewer overflows, urban runoff, sedimentation, landfills (the Puerto Rico Dump), and a municipal point source (Sadog Tasi Wastewater Treatment Plant outfall) (CNMI BECQ 2010a). TMDLs for these impaired waters have not yet been developed (CNMI BECQ 2010a).

Class A waters include the coastal waters of the West Takpochau (North) watershed in the area around the commercial Port of Saipan. These Class A waters are downgradient of the proposed Port of Saipan fuel site.

3.5.2.2 Tinian

Groundwater. Groundwater is the major source of water on Tinian. All fresh groundwater on Tinian originates as rainfall. Tinian receives approximately 80 inches of annual rainfall with distinct wet (July through September) and dry (February through March) seasons (CNMI BECQ and GEPA 2006). On average, 58 percent of the rainfall occurs during the wet season between the months of July and November and 14 percent of the annual rainfall occurs during the dry season from January through April. The remainder is distributed in the transition months between wet and dry season (AECOS and Wil-Chee 2009). Approximately 7 percent of the annual rainfall becomes runoff, approximately 37 percent recharges the groundwater, and approximately 56 percent is evapotranspirated. Thus, most of the precipitation on Tinian either evaporates or percolates into the limestone substrata (Gingerich 2002).

Tinian is composed of permeable limestone that overlies a relatively impermeable volcanic foundation. The main source of drinking water on Tinian is the basal freshwater lens aquifer in the high-permeability limestone (Takpochao Limestone) overlying low-permeability volcanic rock (Gingerich 2002). The basal freshwater lens extends from 2 to 4 feet AMSL to about 80 to 160 feet below sea level at its deepest point (DON 2010c).

Surface Water. There are no perennial or intermittent streams on Tinian. The limestone plateaus of Tinian are generally far too porous to support stream or wetland development and most precipitation either evaporates or percolates into the highly permeable limestone substrata. During periods of intense rainfall, runoff approximates 6 to 12 percent of total rainfall and flows towards the low-lying coastal areas (Gingerich 2002). Surface water on Tinian is restricted to wetlands that occur on areas of impermeable clay that impound rainwater. These wetlands are entirely dependent on precipitation as a water source. In periods of drought, the water level in these wetlands drops and open water dramatically decreases. There are several wetland areas on Tinian, the largest of which is Hagoi (36 acres) in the northern part of the island. Other Tinian wetlands are smaller than Hagoi and considered ephemeral because they are not large enough to sustain during periods of low rainfall. The Sisoyan Makpo wetland once supported open water, but municipal groundwater pumping significantly altered the water levels (DON 2010a).

None of the wetlands on Tinian are in close proximity to Tinian International Airport or the Port of Tinian. The closest wetland that is downgradient of the Project Area is the Makpo wetland, which is more than 1.5 miles southeast of the site (AECOS and Wil-Chee 2009). See **Section 3.6.3.2** for more information regarding wetlands on Tinian.

A very large depression occurs between the taxiway and runway of Tinian International Airport and was previously used for excavation of fill material. In addition, another large depression occurs south of the taxiway. These depressions do not permanently hold water, but likely temporarily hold water during heavy rainfall events. These depressions are designated by FEMA as Flood Zone A and are discussed in the following Flood Zones section. A storm water retention area is in place at the west end of the Tinian International Airport runway. Storm water drainage ditches and swales direct water off the runway and airfield into the storm water retention area and the large, excavated depressions in between the runway and taxiway.

Flood Zones. Since the elevation of the island is relatively uniform and there is little surface water runoff, flooding is not an important natural hazard on Tinian. FEMA has designated several isolated flood hazard areas on Tinian as Flood Zone A, which are areas with a 1 percent annual chance of flooding. Zone A areas on Tinian are unpopulated areas and include the Hagoi wetland and portions of North Field, Tinian International Airport, and the Makpo wetland (DON 2010a).

According to FEMA Flood Insurance Rate Map (FIRM) Historic Community Panel Number 750001 0040 B (Effective Date May 15, 1991), three areas designated as Flood Zone A occur near the Tinian International Airport runway and two areas occur north of the runway (see **Figures 3.5-1** and **3.5-2**) (FEMA 1991). These flood zones are associated with depressions created by former excavation activities described in the previous section. However, because these flood zones are only designated as such due to their potential to hold water during heavy rain events and because they are not associated with floodplains of surface water bodies, these flood zones would not be protected under EO 11988, *Floodplain Management*.

Nearshore Waters. As with Saipan, coastal waters surrounding Tinian serve as the ultimate discharge area for all surface runoff from the island. Tinian International Airport spans across two watersheds. The western portion of Tinian International Airport occurs in the Puntan Daiplolamanibot Watershed, which drains west into the Philippine Sea. The eastern portion of Tinian International Airport occurs within the Masalok Watershed, which drains northeast into the Pacific Ocean (CNMI BECQ 2010a).

The proposed Port of Tinian fuel site occurs within the Makpo Watershed, which drains west-southwest into the Philippine Sea (CNMI BECQ 2010a). The coastal waters of the Puntan Daiplolamanibot and Masalok watersheds are impaired (Category 5) due to orthophosphate pollution, the source of which is unknown. The coastal waters of the Makpo Watershed are impaired (Category 5) due to low dissolved oxygen levels, biocriteria, and orthophosphate pollution caused by onsite treatment systems and urban runoff (CNMI BECQ 2010a). TMDLs for these impaired waters have not yet been developed (CNMI BECQ 2010a).

All the nearshore waters surrounding Tinian are designated Class AA, except for the nearshore waters of Tinian Harbor that are designated Class A. The coastal waters of the Puntan Daiplolamanibot and Masalok watersheds are designated as Class AA marine waters. The coastal waters of the Makpo Watershed, the location of the proposed fuel site at the Port of Tinian, are designated as Class A marine waters (CNMI BECQ 2010a).

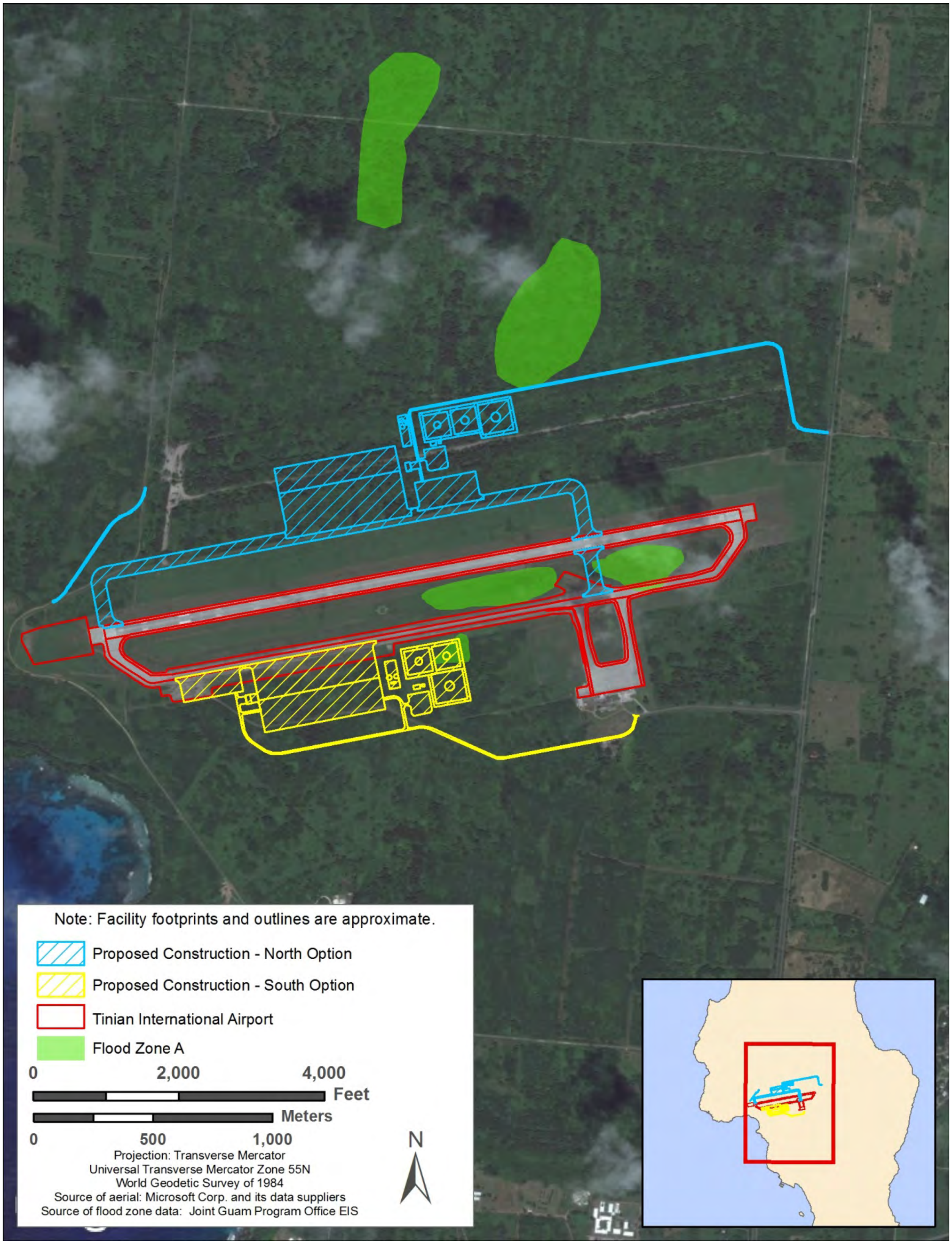


Figure 3.5-1. Areas Mapped as Flood Zone A on Tinian under Alternative 2

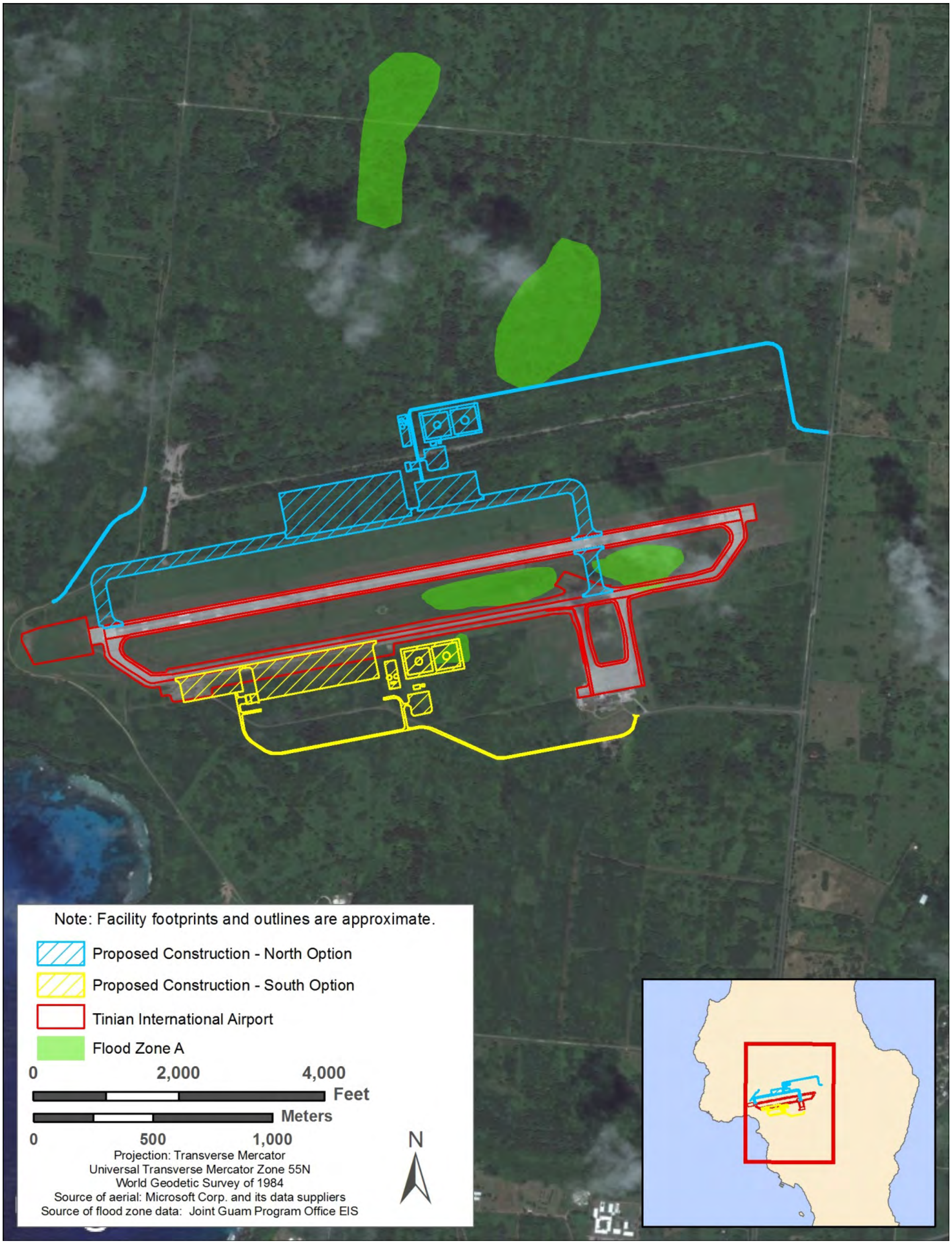


Figure 3.5-2. Areas Mapped as Flood Zone A on Tinian under Alternative 3

3.6 Terrestrial Biological Resources

3.6.1 Differences Between the Final EIS and 2015 Revised Draft EIS

Some information in the Terrestrial Biological Resources sections has changed since the release of the 2015 Revised Draft EIS. Specifically, the USFWS has listed an additional 23 plant and animal species in the Mariana Islands as threatened or endangered; information has been added to this section to describe those recently listed species that occur on Saipan and Tinian. Additional information on the biological surveys conducted to support the Proposed Action has also been included. The Terrestrial Biological section was also revised based on better available data on total land requirements, which is included in the analysis in **Section 4.6**.

ESA Consultation. The USFWS issued the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* in 2013 (USFWS 2013). However, since the release of the Revised Draft EIS, the USFWS issued an amendment to the Biological Opinion in 2015 that confirmed that the Modified Saipan Alternative is within the scope of the project considered in the Biological Opinion and the effects of this alternative are consistent with those analyzed in the Biological Opinion. The amendment to the Biological Opinion also included concurrence that proposed activities on Tinian are not likely to adversely affect nesting sea turtles and documented the USAF's commitment to conduct invasive species control on Tinian, as provided in **Appendix B** (USFWS 2015e).

3.6.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Information made available since the release of the 2012 Draft EIS that relates to effects on biological resources in the Project Area, as described in **Section 4.6**, was added to this section in the 2015 Revised Draft EIS.

3.6.3 Definition of Resource

Terrestrial biological resources include vegetation, wildlife, and the ecosystems in which these resources occur. Specific concerns relating to terrestrial biological resources considered in this EIS include declines in species diversity and impacts on threatened and endangered species. Biological resources are protected by Federal or Commonwealth regulations.

***Migratory Bird Treaty Act*.** The MBTA provides the USFWS regulatory authority to protect birds that migrate. The MBTA prohibits any “take” of these species, except as permitted by the USFWS. “Take” is defined per 50 CFR Part 10.12 as to “hunt, shoot, wound, kill, trap, capture, or collect.”

Endangered Species Act. The ESA requires that all Federal agencies shall seek to conserve threatened and endangered species and shall utilize their authorities in furtherance of the purposes of the ESA (Sec. 2(c)). Section 7 consultations with the USFWS ensure that “any action authorized, funded, or carried out by such an agency...is not likely to jeopardize the continued existence of any endangered or threatened species...” (Sec. 7(a)(2)).

Fish, Game, and Endangered Species Act. The Government of the CNMI has concurrent jurisdiction over all federally protected wildlife and has the authority to list non-federally protected species as endangered under P.L. #2-51, the "Fish, Game, and Endangered Species Act." The CNMI Government maintains a separate listing of locally endangered plant and animal species that is more extensive than the list of species protected under the ESA.

3.6.4 Existing Conditions

Following is a summary of the terrestrial vegetation, common wildlife species, and protected and sensitive resources for Saipan and Tinian, including Saipan International Airport and Tinian International Airport.

3.6.4.1 Saipan

3.6.4.1.1 Terrestrial Vegetation

This section presents a characterization of flora occurring within the Project Area, including at Saipan International Airport and the Port of Saipan. A survey was conducted in October 2011 to characterize and map vegetation community types at and surrounding Saipan International Airport. Biologists from HDR, Inc. familiar with vegetation and animals in the Mariana Islands classified and mapped vegetation communities on and surrounding the airport, documented dominant plant species within the vegetation communities, and recorded animals incidentally observed. The following vegetation communities were identified at and surrounding the sites of proposed construction and improvements: mowed field, tangantangan forest, park, disturbed/unmowed areas, and agriculture/grazing (see **Table 3.6-1**).

Table 3.6-1. Vegetation Communities at Proposed Facilities on Saipan

Proposed Facilities	Vegetation Community
Parking apron	Mowed Field
Cargo pad	Mowed Field Tangantangan Forest
Maintenance facility	Tangantangan Forest
Hydrant system	Park Disturbed/Unmowed
Airport fuel storage	Tangantangan Forest Disturbed/Unmowed
Seaport fuel site	Disturbed/Unmowed

Source: HDR

The following is a description of the vegetation communities, including characteristic species, at Saipan International Airport and the Port of Saipan (see **Figure 3.6-1**). This information is based on the survey conducted in 2011.

Second-growth tangantangan forest covers much of the area around the perimeter of Saipan International Airport (**Figure 3.6-1**). Canopy vegetation in that forest is characterized by a near monoculture of nonnative tangantangan (*Leucaena leucocephala*), with occasional native forest tree species such as ahgao (*Premna obtusifolia*), hodda (*Ficus tinctoria*), pago (*Hibiscus tiliaceus*), sumak (*Aidia cochichinensis*), and Indian mulberry *(Morinda citrifolia*). Papaya

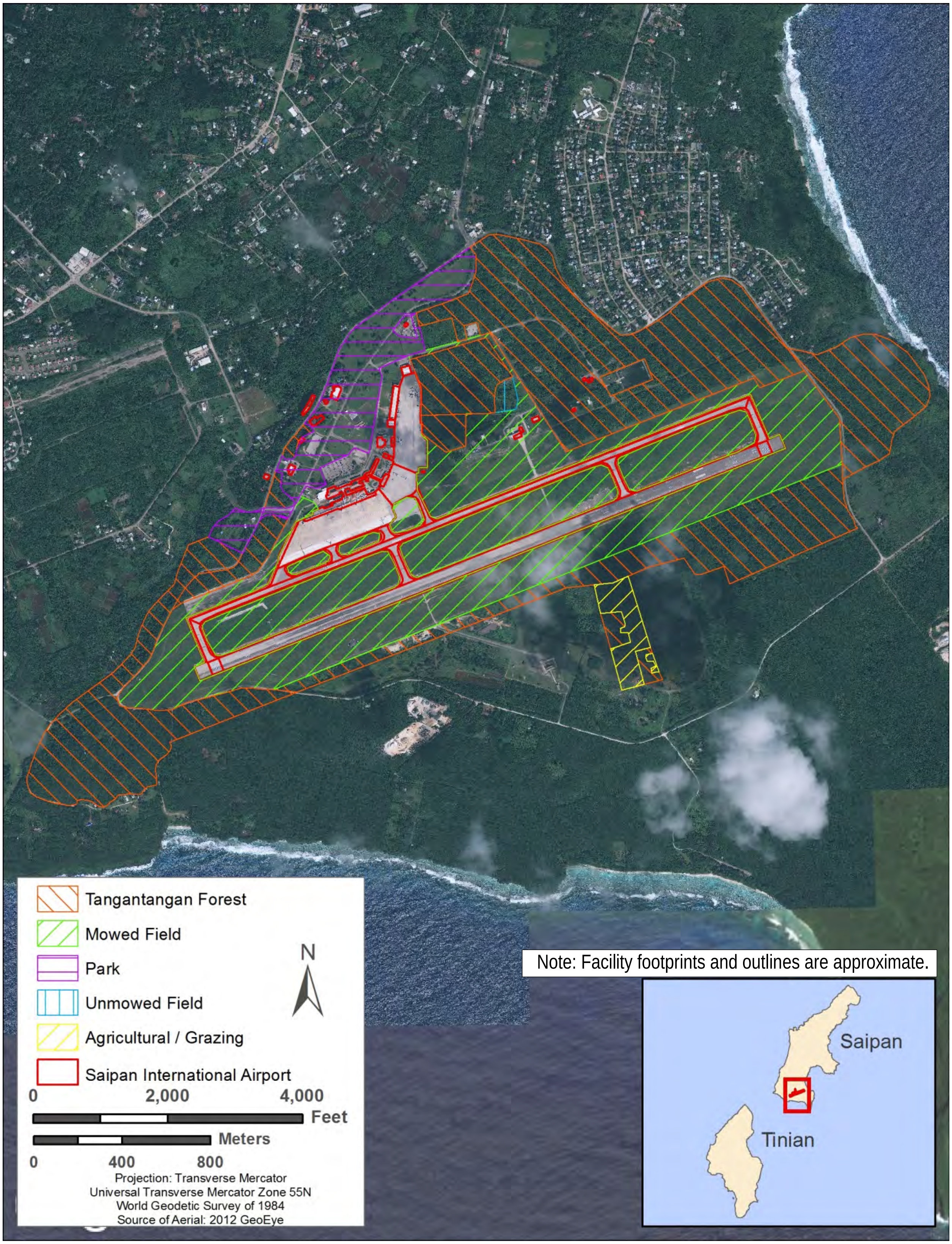


Figure 3.6-1. Vegetation Communities at Saipan International Airport

(*Carica papaya*) also occurs in the forest along with the nonnative siris tree (*Albizia lebbeck*) and flame tree (*Delonix regia*). The understory consists largely of nonnative herbaceous weeds. Common species include coral berry (*Rivina humilis*), rosary pea (*Abrus precatorius*), Chinese violet (*Asystasia gangetica*), and achyranthes (*Achyranthes canescens*). Gaps in the tangantangan forest and some areas of canopy are blanketed by a layer of vines. These vines include the native akankang tasi (*Canavalia rosea*); and the nonnative bittervine (*Mikania micrantha*), abubo (*Stictocardia tiliifolia*), coral vine (*Antigonon leptopus*), and ivy gourd (*Coccinia grandis*). Vines present in the Project Area can be stimulated by the opening up of the canopy after storm disturbance and can form oppressive vine mats that retard native vegetation growth or kill it outright. In addition, there are small, previously disturbed areas surrounding Saipan International Airport facilities that are naturally revegetating with tangantangan and common nonnative herbaceous weeds and vines.

Mowed fields are maintained around the airfield tarmac, runway, taxiway, and terminal at Saipan International Airport (**Figure 3.6-1**). Those fields consist mainly of grasses, including Bermuda grass (*Cynodon dactylon*), crowfoot grass (*Dactyloctenium aegyptium*), broadleaf carpetgrass (*Axonopus compressus*), golden beardgrass (*Chrysopogon aciculatus*), guinea grass (*Panicum maximum*), and windmill grass (*Chloris* sp.); and herbaceous weeds, including sensitive plant (*Mimosa pudica*), tropical Lucerne (*Stylosanthes guianensis*), and white moneywort (*Alysicarpus vaginalis*).

Park-like areas are maintained to the north of the terminal. Those areas are mowed close to ground level and have a narrow border of ornamental trees and shrubs primarily along road edges. Grasses in the park areas are characterized by Bermuda grass and golden beardgrass. Ornamental trees that have been planted along road edges are characterized by flame tree and several species of plumeria (*Plumeria* spp.). Hodda also occurs at several locations in the park areas. Shrub species planted along road edges are characterized by bougainvillea (*Bougainvillea* sp.), lantana (*Lantana camara*), and several species of hibiscus (*Hibiscus* spp.).

There are agriculture/grazing areas south of Saipan International Airport. These highly disturbed areas are characterized by scrub habitat with sparse trees. Agricultural plots in the area are planted with local crops or are fallow. Grazed areas have a sparse cover of trees including flame tree and papaya with a minor occurrence of ahgao. The scrub habitat is a mix of shrub and herbaceous species dominated by lantana, Jack-in-the-bush (*Chromolaena odorata*), nettleleaf velvetberry (*Stachytarpheta urticifolia*), and romerillo (*Bidens alba*). Tangantangan occurs as short saplings scattered through the scrub habitat.

The proposed location for the fuel tank adjacent to the Port of Saipan is a flat disturbed area with a deteriorating asphalt surface over much of the site and fine limestone gravel across most of the remainder. Dense, weedy vegetation occurs around the perimeter of the site and there are sparse patches of vegetation within the asphalt and gravel surface. Several coconut palms (*Cocos nucifera*) occur around the boundaries of the site. Tangantangan is the dominant tree and sapling species occurring on the site. Romerillo, Jack-in-the-bush, and golden beardgrass compose the dominant herbaceous species occurring on the site.

3.6.4.1.2 Wildlife

Wildlife on the island consists primarily of birds and other terrestrial animals, including many introduced species. Characterization of fauna occurring in the Project Area at Saipan International Airport and the harbor was based on incidental observation of species during the site reconnaissance surveys conducted from October 4 to 6, 2011, surveys conducted for nightingale reed-warblers (*Acrocephalus lusinius*) and other avian species from January through April 2012 (MES 2012) (see **Table 3.6-2**), information available in publications and other documents on wildlife in the CNMI, and information obtained during consultation and communications with the U.S. Fish and Wildlife Service and other government agencies.

Surveys conducted for nightingale reed-warblers (*Acrocephalus lusinius*) and other avian species from January through April 2012 were conducted by biologists from Micronesian Environmental Services (MES) trained and experienced in the Mariana Islands using USFWS protocols. The methods and results of these surveys were coordinated with USFWS and can be found in the 2012 MES Biological Report: Saipan International Airport Project Site, Saipan, CNMI.

MAMMALS

The only mammals observed during the surveys were rats (*Rattus* spp.), house shrews (*Suncus murinus*), and feral cats (*Felis catus*).

BIRDS

Saipan supports a diverse variety of migratory shorebirds, with most species occurring in limited abundance annually. This shorebird assemblage is dynamic, with species diversity varying greatly every year. Shorebirds can be found anywhere on the airfield, although most are associated with small spots of wet grass or puddles that develop following rainfall. Native migratory bird species include Pacific golden plover (*Pluvialis fulva*), ruddy turnstone (*Arenaria interpres*), and whimbrel (*Numenius phaeopus*). Three nonnative species, the island collared dove (*Streptopelia bitorquata*), Eurasian tree sparrow (*Passer montanus*), and orange cheeked waxbill (*Estrilda melpoda*) were frequently observed during the 2011 reconnaissance surveys. Yellow bitterns (*Ixobrychus sinensis*) were also commonly observed (see **Table 3.6-2**).

During the nightingale reed-warbler surveys conducted in 2012, biologists located a black noddy (*Anous minutus*) rookery approximately 650 feet east of the parking apron at Saipan International Airport (see **Figure 3.6-2**). The black noddy rookery would be approximately 675 feet south of the proposed bulk fuel storage area, 640 feet south of the proposed operational fuel tanks and hydrant system, 1,115 feet northwest of the proposed maintenance facility, and 1,000 feet north of the proposed west parking apron. There were in excess of 60 noddy nests found mostly in a large ironwood (*Casuarina equisetifolia*) tree and some in an adjacent flame tree. Most of the nests were active at the time of the surveys. There were also numerous white terns (*Gygis alba*) flying around the rookery. It was not determined whether the terns were also nesting in the area. Terns place their eggs in crooks on the branches, so it's difficult to determine if they are nesting from the ground.

Table 3.6-2. Incidental Observations of Terrestrial Fauna on Saipan during the Surveys, October 4 to 6, 2011, and Avian Surveys, January through April 2012

Common name	Chamorro Name	Species Name	Occurrence
Mammals			
Musk shrew	Cha'ka akaleha'	*Suncus murinus*	R
Cat	catu	*Felis catus*	R
Rat	Cha'ka	*Rattus* sp.	R
Birds			
Black noddy	Fahang dikike'	*Anous minutus*	R
Brown noddy	Fahang dankolo	*Anous stolidus*	R
Micronesian starling	Sali	*Aplonis opaca*	R
Ruddy turnstone	Dulili	*Arenaria interpres*	W
Golden white-eye	canario	*Cleptornis marchei*	R
Orange cheeked waxbill	no Chamorro name found	*Estrilda melpoda*	R
White-throated ground-dove	Paluman apaka, male; paluman fachi, female	*Gallicolumba xanthonura*	R
Mariana common moorhen	Pulattat	*Gallinula chloropus guami*	R
White tern	Chunge'	*Gygis alba*	R
Collared kingfisher	Sihek	*Todiramphus chloris*	R
Black-winged stilt	no Chamorro name found	*Himantopus himantopus*	M
Yellow bittern	Kakkak	*Ixobrychus sinensis*	R
Micronesian honeyeater	Egigi	*Myzomela rubratra*	R
Whimbrel	Kalalang	*Numenius phaepous*	M/W
Eurasian tree sparrow	Ga'ga' pale'	*Passer montanus*	R
Pacific golden plover	Dulili	*Pluvialis fulva*	W
Mariana fruit dove	paluman totut	*Ptilinopus roseicapilla*	R
Nightingale reed-warbler	Gaga karisu	*Acrocephalus lusinius*	R
Rufous fantail	na'abak	*Rhipidura rufifrons saipanensis*	R
Island collared dove	Paluman senesa	*Streptopelia bitorquata bitorquata*	R
Bridled white-eye	Nosa	*Zosterops conspicillatus*	R
Reptiles and Amphibians			
Green anole	no Chamorro name found	*Anolis carolinensis*	R
Curious skink	Guali'ek halom tano'	*Carlia fusca*	R
Pacific blue-tailed skink	Guali'ek halom tano'	*Emoia caeruleocauda*	R
Emerald skink	Guali'ek	*Lamprolipis smaragdina*	R
Marine toad	Kairo	*Rhinella marina*	R

Common name	Chamorro Name	Species Name	Occurrence
Crustaceans and Mollusks			
Giant African snail	Akaleha'	*Achatina fulica*	R
Insects			
Lemon migrant	Ababang	*Catopsilia pomona*	R
Cycad blue butterfly	no Chamorro name found	*Chilades pandava*	R
Blue-banded king crow	Ababang	*Euploea eunice*	R
Large grass yellow	Ababang	*Eurema blanda*	R
Guardian	Ababang	*Hypolimnas anomala*	R
Blue moon	Ababang	*Hypolimnas bolina*	R
Common mormon	Ababang	*Papilio polytes*	R
Tiny grass blue	Ababang	*Zizina hylax*	R

Key: R = Year-round Resident; M = Passage migrant, generally seen in small numbers during fall and spring; W = Spends winter on the island

Source: HDR

Figure 3.6-2. Photograph of a Black Noddy Rookery at Saipan International Airport

In March 2005, U.S. Department of Agriculture-Wildlife Services (USDA-WS) entered into a cooperative agreement with the CPA to conduct WHAs at Saipan International Airport, Tinian International Airport, and Rota International Airport (USDA-WS 2008a). A WHA is an ecological report that describes and determines the potential for wildlife strike at an airport. The following sections provide details on individual bird species that were found at Saipan International Airport during the WHA; accounts are ordered based generally upon relative abundance. Supplemental information for each bird species is also provided, if available, from the site reconnaissance surveys from October 4 to 6, 2011, and the surveys conducted for nightingale reed-warblers (*Acrocephalus lusinius*) and other avian species from January through April 2012 (MES 2012).

Pacific Golden Plover. Migrant Pacific golden plovers are the most abundant birds on the airfield between August and March. The first plovers usually arrive on Saipan in late August and are solitary, territorial adults. In September, larger flocks of juvenile plovers begin arriving on the wintering grounds. These flocks are nomadic and settle in open areas throughout Saipan, including Saipan International Airport. By mid-winter, flocks of juvenile birds are generally smaller and less mobile; by early March, birds reassemble into flocks for pre-migration staging. Most plovers have left Saipan for their arctic breeding grounds by May 1, although a small number of non-breeding birds might be on the island all year; this residual population is reflected in low plover count numbers between May and July.

Ruddy Turnstone. The ruddy turnstone is the second most abundant wintering shorebird found on Saipan and the second most abundant shorebird at Saipan International Airport. Turnstones use similar habitat as Pacific golden plovers and, when observed on the airfield, are usually found in mixed flocks. The single highest maximum count of turnstones on Saipan International Airport property was approximately 40 birds; generally, turnstones are encountered in flocks of 10 to 15 individuals. Most birds were observed near the approach end along Taxiway Alpha and near the ponding basin, which has been filled since the WHAs were conducted. Given the number of turnstones on the airfield, it is likely that turnstone strikes have previously occurred and will in the future.

Whimbrel. Whimbrel are large shorebirds that are common migrants in the Mariana Islands. A smaller number of whimbrel winter in the region, and a few non-breeding birds might spend the entire year in the islands. Whimbrel were most commonly observed at Saipan International Airport between August and November, generally seen alone or in small loose flocks up to 10 birds.

Other Shorebirds. Saipan supports a diverse variety of transient migratory shorebird species, with most species occurring in limited abundance annually. This shorebird assemblage is quite dynamic, with species diversity varying greatly every year. Rufous-necked stint (*Calidris ruficollis*), black-bellied plover (*Pluvialis squatarola*), and black-winged stilt (*Himantopus himantopus*) are found throughout the fall and winter on Saipan, and individuals of these species can be observed in small numbers at Saipan International Airport during September through April. Several other species are regular migrants around the island, including wood sandpiper (*Tringa glareola*), sharp-tailed sandpiper (*Calidris ferruginea*), and Mongolian plover (*Charadrius mongolus*). These shorebirds are observed every year at Saipan International

Airport, generally in very low numbers (1–10 individuals) for very short times during the months of September, October, November, and December.

Egrets. Egrets, including cattle (*Bubulcus ibis*), intermediate (*Mesophoyx intermedia* [*Egretta intermedia*]), great (*Egretta alba*), and little egrets (*Egretta garzetta*), are seasonal migrants through the Mariana Islands. Worldwide egret populations appear to be increasing, and the annual population of migrant birds on Saipan appears to be increasing as well. Egrets generally arrive at Saipan International Airport in mid-September to early October, and can be present throughout the winter months. Although a few individual birds can be observed all year, most egrets depart Saipan by April or May each year. The total number of arrivals varies annually; roughly 100 birds might winter on Saipan during a typical season. Mixed flocks, consisting of cattle, intermediate, and great egrets totaling 10 to 25 individuals regularly appear at Saipan International Airport between October and December. Egrets were generally observed in the open grass on the south side of the airfield, but occurred throughout the airport operating environment. Flocks were frequently observed making flights across the runway.

White Tern. White terns are the most common breeding seabird found inland on Saipan. When inland, they are often associated with stands of ironwood, several of which are found adjacent to the airfield. White terns are generally observed in small groups (2–6 individuals) around the airfield, generally flying 50 to 200 feet off the ground. Terns were occasionally observed making runway crossings, usually near either end of the runway.

Island Collared Dove. The island collared dove (formerly Philippine turtle dove), native to the Philippine Islands, was introduced to the Mariana Islands, including Saipan, in the late 1700s and is now a common year-round breeding resident species. On Saipan, the doves are commonly seen in all habitats, including urban environments, throughout the island. Although island collared doves are relatively small, their flocking behavior and dense body mass present opportunities for damaging strikes. Small groups of doves were frequently observed foraging on waste grain associated with brown treesnake (*Boiga irregularis*) traps located near the terminal and adjacent areas. Loose flocks of doves numbering 50 or more were observed on the airfield, particularly near the departure end of the runway.

Eurasian Tree Sparrow. The Eurasian tree sparrow is the most abundant resident passerine found at Saipan International Airport. The bird's small size and its propensity to avoid wide-open grassy habitat limit the safety risk presented by sparrows. Most sparrows at Saipan International Airport are associated with shrubby vegetation along the perimeter fence of the airport and locations where grains falling from brown treesnake traps provide a food source. The introduced sparrow is listed by the Government of Saipan as unprotected.

Native Forest Birds. A number of native forest birds have been documented in and around Saipan International Airport throughout the year. Most common were Micronesian starling (*Aplonis opaca*), collared kingfisher (*Halcyon chloris*), and white-throated ground dove (*Gallicolumba xanthonura*). Other native birds found in tangantangan and other forested areas on Saipan include Mariana fruit doves (*Ptilinopus roseicapilla*), nightingale reed-warblers, golden white-eyes (*Zosterops cinereus*), bridled white-eyes (*Zosterops conspicillatus*), rufous fantails (*Rhipidura rufifrons*), and Micronesian honeyeaters (*Myzomela rubratra).*

Ducks. Ducks generally arrive in the Mariana Islands in October and depart the islands by early April. At Saipan International Airport, tufted ducks (*Aythya fuligula*), northern pintail (*Anas acuta*), northern shoveler (*Anas clypeata*), and green-winged teal (*Anas crecca*) were often observed loafing in the airfield ponding basin, which has been filled since the WHAs were conducted. A green-winged teal was observed in the storm water retention basin in the northeast section of the Saipan International Airport during the nightingale reed-warbler surveys conducted in February 2012.

Black and Brown Noddy. Noddies are the most common breeding seabirds in Saipan, with large colonies of black noddies distributed around the island's shorelines and smaller colonies of brown noddies (*Anous stolidus*) found inland and on offshore islets. Noddies at Saipan International Airport are essentially transiting the airspace, moving between nesting/roosting sites on land and feeding sites off shore. Noddy activity was highest at Saipan International Airport during summer months.

Rock Dove. Rock doves (*Columba livia*) are resident on Saipan and can occupy hangar facilities inside the airport.

Bird/Wildlife Aircraft Strike Hazard. Aircraft collisions with wildlife have the potential to cause significant structural damage to the aircraft and could result in catastrophic loss. Strikes that do not cause physical damage to aircraft often result in costs related to aircraft downtime while structural inspections are completed. Despite increased awareness of the hazards wildlife presents to aircraft, strikes occur often and occasionally have catastrophic results. Threats to human safety and the potential for damage to aircraft has prompted the FAA to require all airfields handling commercial aircraft with 30 or more passenger seats to address wildlife hazards if a real or potential wildlife problem is present (Title 14, CFR Part 139). Detailed information regarding threats posed to aviation safety is included in **Section 3.3.3**.

The industry standard definition of a wildlife strike includes any pilot- or crew-reported collision with wildlife, or any dead or injured animal found on or within 250 feet of an active runway for which an alternate cause of death cannot be determined.

In November 2005, a biologist from USDA-WS conducted an initial onsite assessment of wildlife hazards at Saipan International Airport. This request was precipitated by several reported bird strikes in the preceding weeks and a request by the FAA. During the duration of data collection in support of the WHA, operations staff documented two strikes, both detected when carcasses were found on Runway 7/25. The strikes involved a Pacific golden plover and a whimbrel; both occurred during November 2005 (USDA-WS 2008a). USDA-WS personnel determined the primary threats to aviation safety at Saipan International Airport included cattle egrets, intermediate egrets, Pacific golden plovers, whimbrel, ruddy turnstones, island collared doves, white tern, black noddy, and brown noddy. Other birds present that could pose a slightly lower risk to aviation safety included feral pigeons, yellow bitterns, black-winged stilts, collared kingfisher, Micronesian starling, and Eurasian tree sparrows (USDA-WS 2008a). The previous section provides details on individual wildlife species that are found at Saipan International Airport.

The following are wildlife attractants located on and in the vicinity of Saipan International Airport based on the WHA (USDA-WS 2008a).

- *Airfield Sheet Water.* Several areas on the airfield temporarily hold sheet water following heavy rainfall. The airfield appears to have adequate drainage across most areas, and the standing sheet water is usually an ephemeral event. Although shorebird flocks generally disperse as the water dries, large congregations can create substantial short-term safety hazards, and aggressive harassment is necessary to move birds out of these environments.
- *Storm Water Retention Basin.* A concrete storm water retention basin is located in in the northeastern section of the Saipan International Airport.
- *Heavily Vegetated Infield Areas.* Current airfield mowing regimes allow substantial grass growth on many parts of the airfield, particularly on the south side of the infield, near the windsock. As grass height increases, territorial adult Pacific golden plovers that occupy the normally short grass environment could be displaced into the nearest open space, which is often on runways or taxiways. Territorial adult plovers appear to be less likely to be struck by aircraft than juvenile birds, as they become acclimated to aircraft disturbance and do not flee as readily as juvenile birds. However, displacing territorial birds to runway and taxiway environments likely increases their probability of being struck by aircraft. Consistent, regular mowing will create more space for plovers to occupy, and will result in fewer birds establishing territories on tarmac inside the operating environment. It is important to recognize the response that egrets show to grass cutting and have active management in place to discourage their use of freshly mowed turf.
- *Flores Pond.* Flores Pond is approximately 0.5 mile north of Saipan International Airport on private property west of Chalan Tun Herman Pan. The pond occupies about 2 acres during the height of the wet season (early autumn) and shrinks to nearly dry during the late winter and early spring months. This basin intermittently supports large numbers of ducks, shorebirds, and wading birds (egrets); it appears birds move between Saipan International Airport and Flores Pond on a routine basis. Flocks of egrets often use trees surrounding this wetland for roosting.
- *Dandan Driving Range Pond.* A small wetland is adjacent to the Dandan Driving Range along Chalan Tun Herman Pan. Like Flores Pond, this wetland supports ducks, shorebirds, and wading birds, but in smaller numbers. There is likely movement between Saipan International Airport and the Dandan pond.
- *Black Noddy Breeding Colonies.* Two breeding colonies of black noddies (and presumably smaller numbers of brown noddies) were located to the east of the Saipan International Airport operations area during the WHA; one along the south shore of Laulau Bay and another along the cliff line in Naftan. Noddies frequently travel along the airfield perimeter as they move between nesting and feeding sites. This activity was most pronounced during summer months. Transiting noddies were observed crossing Runway 7/25 several times during point counts. During the 2012 nightingale

reed-warbler surveys, a black noddy rookery, consisting of approximately 60 nests, was observed at Saipan International Airport (**Figure 3.6-2**).

- *Adjacent Agricultural Fields.* Several farms surrounding Saipan International Airport support small-scale cattle grazing; cattle egrets were occasionally observed using pasture areas for feeding and loafing.
- *Lake Susupe.* Lake Susupe is the largest permanent freshwater body on Saipan, about 1.5 miles northwest of Saipan International Airport. Although the lake is used by some waterfowl and wading birds, it is a relatively deep and open waterbody that provides limited habitat for most migrant and wintering species on Saipan. Dense grassy wetlands south of the lake are habitat for water birds.
- *Golf courses.* There are five golf courses on Saipan, with two courses (Laulau Bay Golf Course and Coral Ocean Point Resort) providing habitat for birds near Saipan International Airport. Laulau Bay often hosts large flocks of plovers and some ducks. There is limited information available on plover movements around Saipan, but it is likely that the plover flocks that frequent Laulau Bay Golf Course also use Saipan International Airport. Two lined golf course ponds are located on the Coral Ocean Point Golf Course west of the Saipan International Airport. The closest and smaller of the two ponds is approximately 0.9 acres and is approximately 0.63 mile west of the end of the runway. The larger pond is approximately 2.9 acres and is approximately 1.5 miles northwest of the end of the runway.
- *Surrounding Tidal Flats and Beaches.* Reef margins and beaches surrounding Saipan International Airport support small flocks of shorebirds, particularly plovers and ruddy turnstones, which might frequent the operating environment, particularly as tides change and daytime beach activities disturb birds from beaches.

Twenty-nine strikes of birds from January 2010 through July 2015 are documented in the FAA Wildlife Strike Database (FAA 2015a). The species of birds that were struck by aircraft include Pacific golden plover (3 events), black noddy (3 events), and cattle egret (1 event). Other birds identified as strikes in the FAA Wildlife Strike Database include “terns, sandpipers, curlews, phalaropes, and sparrows.” It is important to note that not all bird/aircraft strikes are reported. Southwest of the Saipan International Airport airfield is a series of man-made ponds (golf course water hazards) that increase the likelihood of birds foraging at Saipan International Airport, thereby increasing the total number of birds at Saipan International Airport. Given the number of movements at Saipan International Airport and the density of birds at the airfield, it is likely the strike frequency is substantially greater than the documented events. The majority of movements at Saipan International Airport are air taxis that primarily service the Island of Tinian, with turboprop aircraft, larger jet aircraft, and general aviation constituting the remaining movements. Military aircraft occasionally use Saipan International Airport for regular and training operations. In 2014, there were 341 military aircraft operations at Saipan International Airport (FAA 2015a).

REPTILES AND AMPHIBIANS

One native reptile, the Pacific blue-tailed skink (*Emoia caeruleocauda*) was observed during surveys in the Project Area. In addition, three introduced species, green anoles (*Anolis* *carolinensis*), emerald skinks (*Lamprolipis smaragdina*), and curious skinks (*Carlia fusca*), were observed on the site. One amphibian, the marine toad (*Rhinella marina*), was also observed during surveys in the Project Area. Focused reptile surveys were not conducted and it is likely that additional native and nonnative gecko and skink species occur in the Project Area.

FISH

There are no surface water features other than a concrete storm water retention basin located in the northeast section of the Project Area.

INVERTEBRATES

Several species of butterfly were noted during surveys. Eggflies (*Hypolimnas* sp.), including blue moon and guardian, were frequently observed flying within and along the edge of tangantangan forest. The blue-banded king crow (*Euploea eunice*), common grass blue (*Zizina hylax*), large grass yellow (*Eurema blanda*), lemon migrant (*Catopsilia pomona*), cycad blue butterfly (*Chilades pandava*), and common mormon (*Papilio polytes*) were also observed on mowed edges of the tangantangan forest.

3.6.4.1.3 Threatened and Endangered Species

There are five terrestrial threatened and endangered species with the potential to occur in the Saipan Project Area (PACAF 2012, USFWS 2015b) (**Table 3.6-3**). They are the Mariana fruit bat (*Pteropus mariannus mariannus*), Micronesian megapode (*Megapodius laperouse*), Mariana swiftlet (*Aerodramus bartschi*), nightingale reed-warbler, and Mariana common moorhen (*Gallinula chloropus guami*). No critical habitat has been designated or proposed for those species on Saipan.

On Saipan, Mariana fruit bats and Micronesian megapodes are restricted to native limestone forests, primarily on the northern part of the island (USFWS 1998b, 2009b). There is no suitable habitat for these species within the Project Area, as land at Saipan International Airport where facilities would be developed and divert activities and exercises would occur has been cleared of native vegetation, or is vegetated with second-growth forests dominated by tangantangan.

Mariana swiftlets nest in caves located in central Saipan (Cruz et al. 2008) and favor ridge crests and open, grassy areas for foraging (USFWS 1991). No swiftlets were detected during bird surveys conducted at Saipan International Airport during 2012, and the nearest cave used by these birds for roosting and nesting is more than 2 miles north of Saipan International Airport (MES 2012).

The nightingale reed-warbler, known in Chamorro as *ga'ga'karisu*, is approximately 7 inches (17 centimeters [cm]) long, and is grayish olive-brown above with a pale-yellow underside. It inhabits wetlands, thickets, and the margins of forests on Saipan and Alamagan; historically, it also occurred on four other islands in the region (USFWS 2015a). Nightingale reed-warblers commonly use tangantangan on Saipan. On that island, this species is distributed islandwide, and was estimated to number 4,225 individuals in 1997 (USFWS 1998a). Forest bird surveys conducted in 2007 resulted in an abundance estimate of 2,742 nightingale reed-warblers on Saipan (Camp et al. 2009).

Table 3.6-3. Terrestrial Federally Classified Threatened, Endangered, and Proposed Species with the Potential to Occur in the Saipan Project Area

Common Name	*Scientific Name*	Federal Status	Presence in Project Area	Comments
Mariana fruit bat	*Pteropus mariannus mariannus*	T	No	Lack of forested areas and roosting or foraging trees.
Pacific sheath-tailed bat	*Emballonura semicaudata rotensis*	E	No	Extirpated from Saipan.
Nightingale reed-warbler	*Acrocephalus luscinia*	E	Present	Present in tangantangan forest.
Mariana swiftlet	*Aerodramus bartschi*	E	Unlikely	Distant from roosting caves.
Mariana common moorhen	*Gallinula chloropus guami*	E	Unlikely	Not found at Saipan International Airport concrete detention basin. Seen at golf course pond 0.6 mile from runway.
Micronesian megapode	*Megapodius laperouse*	E	No	No limestone forest habitat in Project Area.
Mariana eight-spot butterfly	*Hypolimnas octucula mariannensis*	E	No	Extirpated from Saipan.
Humped tree snail	*Partula gibba*	E	No	No limestone forest habitat in Project Area.
Cebello halumtano	*Bulbophullum guamense*	T	No	Extirpated from Saipan.
	Dendrobium guamense	T	No	No suitable limestone forest habitat in Project Area.
Berenghenas halomtano	*Solanum guamense*	E	No	Extirpated from Saipan.

Key: E = Endangered, T = Threatened,
Source: USFWS 2015b, 2015d

Although breeding might occur year-round, Mosher and Fancy (2002) identified two peaks in breeding activity on Saipan: January through March and July through September. Tangantangan are commonly used nest trees, although nests have also been observed in ironwood, achiote (*Bixia orellana*), large-leafed mangrove (*Brufuiera gymnorrhiza)*, hibiscus, and kamachilie (*Pithecellobium dulce*).

Surveys for threatened and endangered species and other wildlife were conducted during January through April 2012 in areas proposed to be disturbed or otherwise directly affected, with focused surveys conducted in March 2012 following USFWS (USFWS 2009a) protocols to identify nightingale reed-warbler territories in areas where facilities might be developed (MES 2012). Eight reed-warbler territories were identified in tangantangan forest to the north of the airfield. No territories were identified south of the airfield. The methods and results of the surveys are described in more detail in **Appendix B**.

Mariana common moorhens inhabit emergent vegetation of natural and man-made freshwater lakes, marshes and swamps. The only ponds or other potentially suitable habitat for moorhens within or near Saipan International Airport are the water catchment basin located north of the Saipan International Airport runway and two artificial ponds west and northwest of the runway on the Coral Ocean Point golf course. Nine surveys for moorhens and other avian surveys were conducted around the perimeter of the water catchment basin and golf course ponds during January–April 2012 (MES 2012). No moorhens were detected at the Saipan International Airport water catchment basin or the golf course pond to the northwest of Saipan International Airport. A single adult moorhen was seen at the east golf course pond during four of the nine surveys. Moorhens have been detected at the east golf course pond since about 2001 during surveys conducted by or for the CNMI Division of Fish and Wildlife (PACAF 2012). That pond has an impervious lining that inhibits the growth of shoreline emergent vegetation.

In addition to these listed species, in October 2015 the USFWS listed six other plant and animal species that occur or have occurred on Saipan as threatened or endangered (USFWS 2015d, 2016). According to the proposed rule, one of those species, the humped tree snail (*Partula gibba*) occurs in native, and possibly secondary, limestone forests on Saipan, but is not known to occur in more xeric tangantangan thickets such as those found near the airport. A second species, the orchid *Dendrobium guamense*, also has been documented in moist limestone forests on Saipan (D. Janake, HDR, personal communication). The four other species, Pacific sheath-tailed bat (*Emballonura semicaudata rotensis*), Mariana eight-spot butterfly (*Hypolimnas octucula mariannensis*), Cebello halumtano (*Bulbophullum guamense*), and Berenghenas halomtano (*Solanum guamense*), occurred there historically (**Table 3.6-3**). None of those species would occur in the mowed field, tangantangan forest, park, disturbed, or agricultural vegetation communities found at and surrounding Saipan International Airport (Rounds 2015).

3.6.4.1.4 Wetlands

Site reconnaissance was conducted between October 4 and 6, 2011, to determine the extent of jurisdictional wetlands and other waters of the United States in the Project Area. Determination of the extent of jurisdictional wetlands and other waters of the United States was based on the application of protocols and procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the 2010 *Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region* (2010 Regional Supplement). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Based on the site investigations there are no jurisdictional wetlands in the Project Area.

3.6.4.2 Tinian

3.6.4.2.1 Terrestrial Vegetation

This section presents a characterization of flora occurring within the Project Area, including at Tinian International Airport and the Port of Tinian. A survey was conducted in October 2011 to characterize and map vegetation community types at and surrounding the Project Area. Biologists from HDR, Inc familiar with vegetation and animals in the Mariana Islands classified and mapped vegetation communities on and surrounding the airport, documented dominant plant species within the vegetation communities, and recorded animals incidentally observed.

Vegetation community types observed at the site of the proposed additions include mowed field, semi-disturbed tangantangan forest, tangantangan/ironwood scrub, and agriculture/grazing (see **Table 3.6-4**).

Table 3.6-4. Vegetation Communities at Locations of Proposed Facilities and Improvements on Tinian

Proposed Additions / New Areas	Vegetation Community
Cargo pad	Mowed field Developed
Fire pump building, tanks, and wells	Tangantangan forest
Fuel pump buildings, tanks, and fill stands	Tangantangan forest
Maintenance facility	Tangantangan forest
Parking apron	Tangantangan forest Mowed field Developed
Fuel tanks at Tinian International Airport	Tangantangan forest Mowed field
Fuel tanks at Port of Tinian	Developed/Disturbed

Source: HDR

The following is a description of the vegetation communities, including characteristic species, within the Project Area (see **Figure 3.6-3**).

The primary vegetation type surrounding the runway, taxiway, apron, airport facility buildings, and vehicle parking is mowed field. Vegetation there is characterized by introduced grasses and herbs maintained by periodic mowing. Common grass species found in mowed field habitat on Tinian include Bermuda grass and Australian beadgrass (*Dichanthium bladhii*), and common herbs include white moneywort, romerillo, sensitive plant, and tropical lucerne. In areas outside of airfield operations, mowed fields often contain landscape trees and shrubs.

There is an excavated depression between the runway and taxiway at Tinian International Airport. The excavated area is characterized by a trench with steep near-vertical banks that are up to 40 feet in height. The north end has a ditch that directs runoff into the trench. Vegetation associated with upper edge and side slopes in the excavated area between the taxiway and runway is characterized by unmowed grasses intermixed with herbaceous species that are covered by a dense layer of vines. The central area of the trench is characterized by forested habitat that is covered by dense vines. Sapling and shrub species in the unmowed areas are characterized by tangantangan in the sapling layer and lantana in the shrub layer. Grasses occurring in the unmowed areas are dominated by elephant grass (*Pennisetum purpureum*) and golden beard grass. Other herbaceous species in the area include romerillo and jack-in-the-bush. Vines cover most of the unmowed areas. The dominant vine species in the area is Alaglag (*Operculina ventricosa*). Other common vines occurring in the area include little bell (*Ipomoea triloba*), ocean-blue morning glory (*Ipomea indica*), and akangkang (*Canavalia megalantha*). Forested habitat in the central area of the trench is dominated by tangantangan, with common papaya and occasional lada. Alaglag covers most of the forested area.

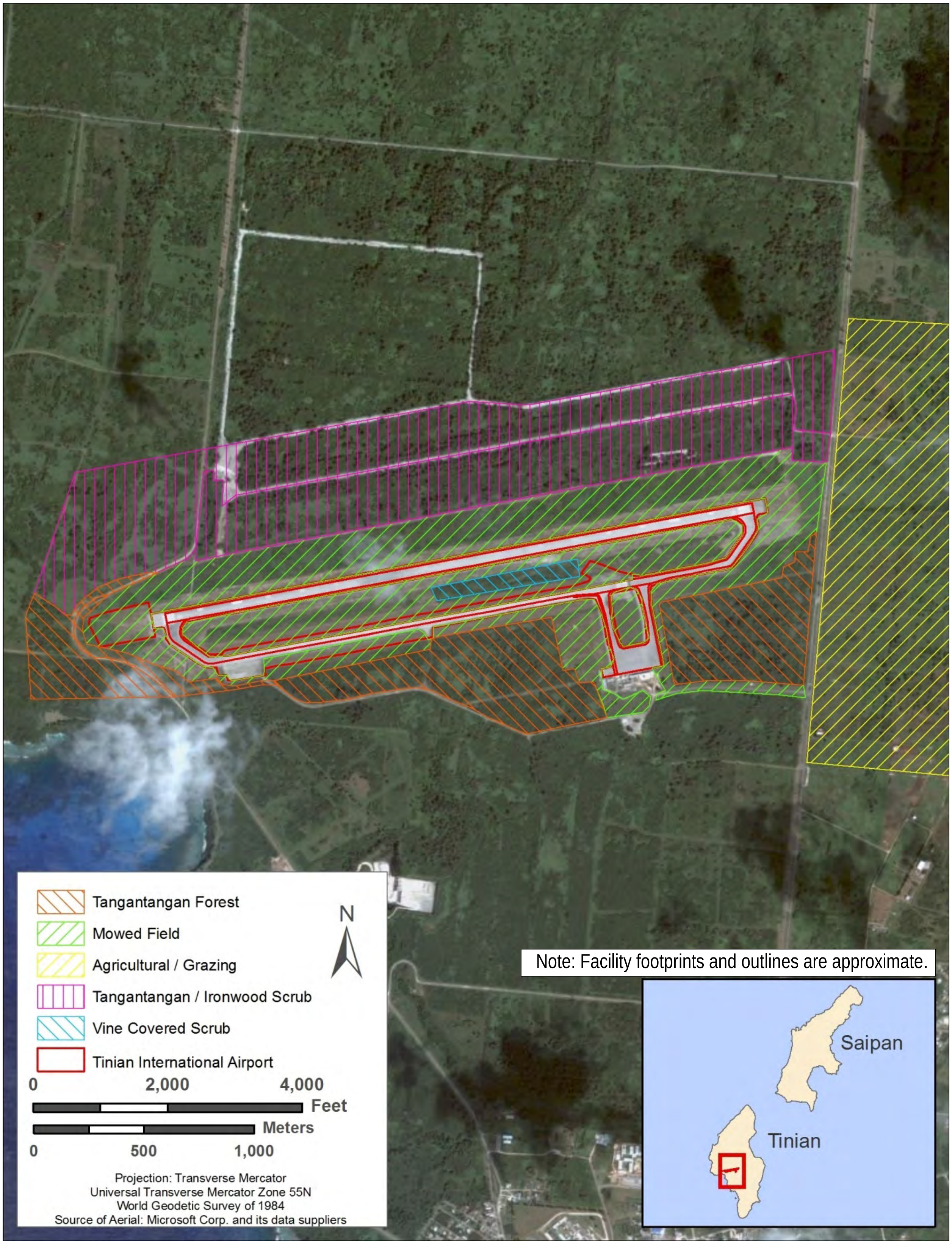


Figure 3.6-3. Vegetation Communities at Tinian International Airport

Vegetation south and west of Tinian International Airport consists of semi-disturbed tangantangan forest. Canopy tree species in this vegetation type consist of a near monoculture of tangantangan with ironwood, flame tree, kamachilie, and papaya occasionally rising above the tangantangan. Much of the canopy in this area is covered by vines, including coral vine, ocean-blue morning glory, and spotted heart, creating a dimly lit understory. The understory is dominated by monarch fern (*Phymatosorus scolopendria*) in most areas. A variety of nonnative grasses were noted under thinner canopy and along tangantangan forest edges. Several native forest tree species were commonly observed under the tangantangan canopy, the most common of which were sumak, alom (*Melanolepis multiglandulosa*), and lada.

Vegetation north of Tinian International Airport consists of semi-disturbed tangantangan/ironwood scrub with an open canopy. Ironwood forms the tallest canopy component and occurs primarily around the edges of the area where the vegetation encroaches onto an old asphalt surface. Tangantangan forms a shorter open canopy around the ironwood. Native tree species, including amahadyan (*Pipturus argenteus*), ahago, lada, alom, and papaya were observed within the community. Vines, including ocean-blue morning glory, coral vine, corky stem passionflower (*Passiflora suberosa*), spottedheart, and bittervine, occur and form dense mats on the ground or over the tangantangan canopy. The understory in the tangantangan forest is composed of nonnative grasses and monarch ferns as observed. In gaps or along edges where sunlight is sufficient, additional herbs were observed including romerillo, achyranthes, jack-in-the-bush, lantana, light-blue snake weed (*Stachytarpheta jamaicensis*), and nettleleaf velvetberry.

East of Tinian International Airport and the adjacent road is an area of fenced cattle pasture identified as Agriculture/Grazing vegetation type. This area is open with little to no canopy cover and contains scattered clusters of tree. The ground cover consists of nonnative forage grasses, including guinea grass and Australian beadgrass, and the noxious giant sensitive plant (*Mimosa invisa*), an herb that might have been introduced as a cover crop. Scattered tree species include small Philippine acacia (*Acacia confusa*), atbut, kamachile, and tangantangan.

3.6.4.2.2 Wildlife

Characterization of fauna occurring in the Project Area was based on incidental observation of species during the site reconnaissance surveys conducted from October 7 to 8, 2011 (see **Table 3.6-5**).

MAMMALS

No mammals were observed in the Project Area during the site reconnaissance surveys conducted during October 2011.

BIRDS

Tinian is an important stopover location for migratory birds, including a number of shorebirds, waterfowl, waterbirds, and seabirds. Several areas on the airfield temporarily hold sheet water following heavy rainfall, which in turn attracts flocks of shorebirds. Additionally, Tinian International Airport is close to coastal environments. Shorebirds, particularly Pacific golden plovers, ruddy turnstones, and whimbrels make daily movements between tidal and upland environments, as tides fluctuate. During periods of exceptionally high tides, many shorebirds

Table 3.6-5. Incidental Observations of Terrestrial Fauna on Tinian during the Reconnaissance Surveys, October 7 to 8, 2011

Common name	Chamorro Name	Species Name	Occurrence
Birds			
Common sandpiper	Dulili	*Actitis hypoleucos*	M
Brown noddy	Fahang dankolo	*Anous stolidus*	R
Micronesian starling	Sali	*Aplonis opaca*	R
Ruddy turnstone	Dulili	*Arenaria interpres*	W
Sharp-tailed sandpiper	Dulili	*Calidris acuminata*	M
Collared kingfisher	Sihek	*Halcyon chloris*	R
Yellow bittern	Kakkak	*Ixobrychus sinensis*	R
Tinian monarch	Chuchurikan	*Monarcha takatsukasae*	R
Micronesian honeyeater	Egigi	*Myzomela rubrata saffordi*	R
Whimbrel	Kalalang	*Numenius phaepous*	W
Eurasian tree sparrow	Ga'ga' pale'	*Passer montanus*	R
Pacific golden plover	Dulili	*Pluvialis fulva*	W
Mariana fruit dove	Paluman totut	*Ptilinopus roseicapilla*	R
Rufous fantail	Naabak	*Rhipidura rufifrons saipanensis*	R
Island collared dove	Paluman senesa	*Streptopelia bitorquata bitorquata*	R
Collared kingfisher	Sihek	*Todiramphus chloris*	R
Tattler sp.	Dulili	*Tringa sp.*	M
Bridled white eye	Nossa	*Zosterops conspicillatus*	R
Reptiles and Amphibians			
Curious skink	Guali'ek halom tano'	*Carlia fusca*	R
Marine toad	Kairo	*Rhinella marina*	R
Monitor lizard	Hilatai	*Varanus indicus*	R
Crustaceans and Mollusks			
Giant African snail	Akaleha'	*Achatina fulica*	R
Insects			
Lemon migrant	Ababang	*Catopsilia pomona*	R
Cycad blue butterfly	no Chamorro name found	*Chilades pandava*	R
Large grass yellow	Ababang	*Eurema blanda*	R
Guardian	Ababang	*Hypolimnas anomala*	R
Blue moon	Ababang	*Hypolimnas bolina*	R
Common mormon	Ababang	*Papilio polytes*	R
Blue-banded king crow	Ababang	*Euploea eunice*	R

Source: HDR

Key: R = Year-round Resident; M = Passage migrant, generally seen in small numbers during fall and spring; W = Spends winter on the island are displaced from the coast and move to inland locations, including Tinian International Airport (USDA-WS 2008b). Eurasian tree sparrows were frequently observed during the 2011 reconnaissance surveys (see **Table 3.6-5**). Native resident bird species observed include rufous fantail and Micronesian starling.

In March 2005, USDA-WS entered into a cooperative agreement with the CPA to conduct WHAs at the Saipan, Tinian, and Rota International Airports (USDA-WS 2008b). The following sections provide details on individual bird species that were found at Tinian International Airport; accounts are ordered based generally upon relative abundance.

Pacific golden plovers and ruddy turnstones constituted more than 80 percent of the observed birds over the entire duration of the surveys. Other species detected in the counts included island collared doves, white terns, whimbrel, egrets, and Eurasian tree sparrows. Most migrant bird species (primarily shorebirds) present at Tinian International Airport occur in very low abundance, and were not documented during point counts. Overall bird abundance was highest between August and April, which coincides with the presence of migrant species and wintering shorebirds in the region.

Pacific Golden Plover. Migrant and wintering Pacific golden plovers are the most abundant birds on the airfield between September and April and are the single greatest risk to aviation at Tinian International Airport. The first plovers arrive on Tinian in late August and are usually solitary, territorial adults. In September, larger flocks of juvenile plovers begin arriving on the wintering grounds. These flocks are somewhat nomadic and settle in open areas throughout Tinian, including Tinian International Airport. By mid-winter, the large flocks of juvenile birds are generally smaller and less mobile; beginning in early March, birds reassemble into flocks for pre-migration staging. Most plovers have left the Mariana Islands for their arctic breeding grounds by May 1, although a small number of non-breeding birds might be present on the island for the entire year.

Whimbrel. Whimbrels are large shorebirds that occur in loose flocks at Tinian International Airport during the fall and winter months. Whimbrels were observed throughout the operations area at Tinian International Airport, generally on infield turf, in flocks of up to 10 birds. A small number of non-breeding whimbrels might spend the summer months on Tinian.

Island Collared Dove. The island collared dove (formerly Philippine turtle dove), native to the Philippine Islands, was introduced to the Mariana Islands, including Tinian, in the late 1700s. On Tinian, doves are year-round residents and are commonly seen in all habitats, including urban environments, throughout the island. Doves actively forage on waste grain associated with snake traps around the airfield. Loose flocks of doves numbering 15 or more were occasionally observed on the airfield.

Egrets. Four species of white egrets were observed at Tinian International Airport, with cattle egrets the most common. Intermediate, great, and little egrets were also documented at Tinian International Airport, generally in mixed flocks of two or more species. Egrets feed in short grass, capturing lizards and insects; mowing operations kill and injure potential egret prey items, and flocks of cattle egrets often follow mowers to exploit this food source. All egret species are seasonal migrants or wintering residents in Tinian, with a small number of nonbreeding birds spending the summer months on the island. Cattle and great egret populations are increasing worldwide, and the annual population of migrant birds on Tinian appears to be increasing as well. Egrets generally arrive at Tinian International Airport in mid-September to early October, and most egrets depart Tinian by April or May each year. Egrets were not detected during most daily point counts; however, flocks of 10 to 25 individuals regularly appear at Tinian International Airport between September and December each year. Egrets were observed using a variety of locations on the airfield and often occupied infield grass just north of the terminal, adjacent to the tarmac.

White Tern. The white tern is the most common breeding seabird found inland on Tinian. When inland, they are usually associated with stands of ironwood, including stands adjacent to the perimeter of the airport operating area. White terns are generally observed in small groups (2–6 individuals) on and around the airfield, usually flying 50 to 200 feet AGL. White terns do not spend time on the ground, but instead roost in trees adjacent to the airfield.

Ruddy Turnstone. The ruddy turnstone is the second most abundant wintering shorebird found on Tinian and the second most abundant shorebird at Tinian International Airport. Turnstones use similar habitat as Pacific golden plovers and when observed on the airfield, were usually found in mixed flocks of 5 to 20 individuals. Unlike plovers, wintering turnstones are not territorial. Turnstones were observed in every month at Tinian International Airport, with abundance highest between August and April. Most turnstones depart for their arctic nesting grounds by May.

Eurasian Tree Sparrow. The Eurasian tree sparrow is the most abundant resident passerine found at Tinian International Airport, but was infrequently observed around movement areas. Most sparrows at Tinian International Airport are associated with shrubby vegetation along the perimeter fence of the airport operating area and near the terminal. Sparrows can inadvertently receive supplemental feeding through the deposition of waste grain dropped from the approximately 50 brown treesnake traps that are found on Tinian International Airport property. The introduced sparrow is listed by the Government of the CNMI as unprotected.

Native Forest Birds. A number of native forest birds occur year round in the tangantangan thickets and other secondary forests adjacent to the Tinian Airport, including the Micronesian starling, collared kingfisher, white-throated ground dove, Tinian monarch (*Monarcha takatsukasae*), bridled white-eye, rufous fantail, and Micronesian honeyeater.

BASH. Three wildlife strikes at Tinian International Airport from January 2010 through July 2015 are documented in the FAA's National Wildlife Strike Database, as of August 2015. Two are of unknown birds of small to medium size, and one is of a domestic dog (FAA 2015b). One of the incidents, involving a medium-sized bird, resulted in substantial damage.

In November 2005, a biologist from USDA-WS conducted an initial onsite assessment of wildlife hazards at Tinian International Airport. This assessment was requested by FAA and was precipitated by several reported, but undocumented, bird strikes in the preceding weeks. USDA-WS personnel determined the primary threats to aviation safety at Tinian International Airport included cattle egrets, intermediate egrets, Pacific golden plovers, whimbrel, ruddy turnstones, white tern, black noddy, and brown noddy. Other birds present included feral pigeons, island collared doves, yellow bitterns, collared kingfisher, Micronesian starling, and Eurasian tree sparrows (USDA-WS 2008b). The previous section provides details on individual wildlife species that are found at Tinian International Airport.

The following are wildlife attractants located on and in the vicinity of Tinian International Airport based on the WHA (USDA-WS 2008b).

- *Airfield Sheet Water.* Several areas on the airfield temporarily hold sheet water following heavy rainfall, which, in turn, attracts flocks of loafing shorebirds. The airfield appears to have adequate drainage across most of the area, and the standing sheet water is usually an ephemeral event. Shorebird flocks generally disperse as the water dries, but often this dispersal is to other locations around the airport.
- *Airfield Instruments.* Airfield signage and instruments were occasionally used by egrets and doves as perch sites. Usage was not significant enough to recommend specific management activities to eliminate their use, but warrant attention when harassing birds from the airfield. A single black kite (*Milvus migrans*) observed on Tinian multiple times during the assessment occasionally perched on airfield instrumentation.
- *Tarmac.* Wintering shorebirds, particularly plovers and turnstones, spend extensive amounts of time loafing on asphalt. It is believed birds use the warming conditions of sun-exposed asphalt to increase body temperatures, which subsequently increases digestion rates while conserving their energy. The airport area provides substantial asphalt surfaces, including runways and taxiways, which brings birds into direct contact with aircraft movements.
- *Heavily Vegetated Infield Areas.* Several locations inside the airfield are heavily vegetated, particularly the infield between the runway and old runway and the hill on the northeast end of the airfield. Although most migratory shorebirds and wading birds are not attracted to heavy grass or woody vegetation, resident forest birds, including island collared doves, might use such areas for feeding, loafing, and nesting. As vegetation growth matures, other native forest birds might begin to use the same areas.
- *Lake Hagoi.* Lake Hagoi is the largest wetland on Tinian, approximately 3 miles north of Tinian International Airport. Lake Hagoi holds water all year during normal weather patterns, but can dry up during dry seasons with below normal precipitation. A variety of migratory and resident birds use Lake Hagoi, including endangered Mariana moorhens, egrets, ducks, and shorebirds. There is likely some movement of migrant species (shorebirds and egrets) between Lake Hagoi and Tinian International Airport; a flock of 10 tundra swans (*Cygnus columbianus*) seen in Tinian during January 2006 spent most of their time on Lake Hagoi. This flock was observed at Tinian International Airport for short durations several times over a 2-week period. Although their presence was only for 2 weeks, the massive size of these birds created a substantial hazard to aircraft.
- *Tinian Municipal Dump.* The Tinian Municipal Dump is immediately west of Tinian International Airport. Although the current waste management operations do not limit the accessibility of waste to scavenging animals, the Mariana Islands do not support flocking birds (e.g., gulls, crows, starlings) that typically occupy landfill or dump

environments. Therefore, the Tinian Municipal Landfill does not appear to present any increased risk of wildlife strikes to aviation traffic using Tinian International Airport.

- *Coastal and Shoreline Habitat.* As Tinian is a relatively small island, Tinian International Airport is situated in close proximity to significant coastal environments. During the migratory and wintering season, shorebirds, particularly Pacific golden plovers, ruddy turnstones, and whimbrels frequent the saltwater tidal regions throughout the island. Shorebirds make daily movements between tidal environments and upland environments, as tides fluctuate. During periods of exceptionally high tides, many shorebirds are displaced from the coastal environment and move to inland locations, including Tinian International Airport. As tidal water recedes, many transient shorebirds move back to the tidal flats and beaches found around Tinian. This daily movement of birds is likely impacted by daily rainfall, as birds might remain on and around the airfield through low tides if adequate standing or sheet water is present.
- *Surrounding Livestock Production.* Much land surrounding Tinian International Airport, particularly to the east of the airport, is used in production of livestock. Wintering flocks of cattle egrets were occasionally observed loafing, feeding, and roosting near cattle herds. It is likely these flocks moved between Tinian International Airport property and the surrounding area on a daily basis.

REPTILES AND AMPHIBIANS

Monitor lizards and curious skinks were the most common reptiles observed. Only one amphibian, the marine toad, was observed during surveys in the Project Area. Focused reptile surveys were not conducted and it is likely that additional native and nonnative gecko and skink species might be present in the area.

FISH

There are no surface water features containing fish in the Project Area.

INVERTEBRATES

Several species of butterfly were noted during surveys. Eggflies, including blue moon and guardian, were frequently observed flying within and along the edge of tangantangan forest. The large grass yellow, lemon migrant, cycad blue butterfly, and common mormon were also observed on mowed edges of the tangantangan forest.

3.6.4.2.3 Threatened and Endangered Species.

Six terrestrial threatened and endangered species occur or have been documented recently on Tinian: the Mariana common moorhen, Micronesian megapode, Mariana fruit bat, humped tree snail, *Heritiera longipetiolata*, and *Dendrobium guamense* (USFWS 2015c, 2016) (**Table 3.6-6**). Two other listed species, the Mariana swiftlet and nightingale reed-warbler, no longer occur on Tinian (USFWS 1998a, Cruz et al. 2008, USFWS 2010b). Two other endangered species the Pacific sheath-tailed bat and the orchid *Tuberolabium guamense*, no longer occur on Tinian.

Mariana common moorhen is limited to the Mariana archipelago and is presently found on Guam, Saipan, Rota, and Tinian. There are no wetlands within or near areas that would be disturbed for construction of facilities at Tinian International Airport and no wetlands occur within

Table 3.6-6. Terrestrial Federally Classified Threatened and Endangered Species with Potential to Occur in the Tinian Project Area

Common Name	Scientific Name	USFWS Status	Presence in Project Area	Comments
Mariana fruit bat	*Pteropus mariannus mariannus*	T	No	Extirpated from or very rare on Tinian (USFWS 2014). No suitable habitat near Tinian International Airport
Mariana common moorhen	*Gallinula chloropus guami*	E	No	No suitable wetland habitat at Tinian International Airport.
Micronesian megapode	*Megapodius laperouse*	E	Unlikely	Rare on Tinian. Absence of suitable forest habitat in Project Area.
Humped Tree Snail	*Partula langfordi*	E	Unlikely	Rare on Tinian. No suitable forest habitat near Tinian International Airport.
	Heritiera longipetiolata	E	Unlikely	Rare on Tinian. No suitable native forest habitat near Tinian International Airport.
	Dendrobium guamense	T	Unlikely	Rare on Tinian. No suitable native forest habitat near Tinian International Airport.

Source USFWS 2015c, 2015d
Key: E = Endangered, T = Threatened

one mile of the flight path to that airport (NAVFAC 2015a). The closest wetlands to Tinian International Airport that are used by Mariana common moorhens are the Bateha and Mahalang wetland complexes (NAVFAC 2014a), located about 1.5 to 3 miles north of Tinian International Airport. Moorhens also occur on perennial Lake Hagoi, located about 4 miles north of Tinian International Airport (Takano and Haig 2004, NAVFAC 2014a).

Micronesian megapodes have been seen very infrequently on Tinian in recent years (USFWS 1998b, Kessler and Amidon 2009). None were detected during an extensive survey of potential habitat in 2008 (Kessler and Amidon 2009) and 2013 (NAVFAC 2014a), and they either have been extirpated from that island (USFWS 2010a) or occur there only incidentally. In the past, megapodes have been found on Tinian primarily within and near limestone forests in the Maga and Mt. Laso areas (USFWS 1998b, Kessler and Amidon 2009, NAVFAC 2014a).

Mariana fruit bats have rarely been seen on Tinian within the past 30 years (Brooke 2009, USFWS 2009b) and now appear to be extirpated from that island (USFWS 2014) or occur there only incidentally. No fruit bats were detected during extensive surveys of Tinian in 1994, 1995, 2000, or 2008, but they have been observed there incidentally (Cruz et al. 2000, Brooke 2009).

The tree *Heritiera longipetiolata* is endemic to the Mariana Islands and historically was found in forests on Guam, Rota, Saipan, and Tinian. *H. longipetiolata* occurs in moist forests on limestone cliffs and in coastal sites with windy conditions (NAVFAC 2015b, USFWS 2015d). On Tinian it has been found near Unai Masalok on the eastern coast, along the Lamanibot Bay escarpment on the northwestern coast, and along the southeastern coast between Puntan

Barangka and Puntan Kastiyu. There were fewer than 10 individuals known on Tinian during or before 2013 (USFWS 2015d).

The orchid *Dendrobium guamense* is known from forests of Guam, Rota, Saipan, and Tinian. There is only one known occurrence on Tinian as reported by the USFWS (USFWS 2015d); over 1.8 miles from Tinian International Airport in native forest habitat (NAVFAC 2014a).

The humped tree snail is endemic to the Mariana Islands and is found in cool, shaded forests. Live humped tree snails were found in native limestone forest adjacent to Lamanibot Bay on the northwestern coast of Tinian during extensive surveys of potential habitat on the island in 2013 (NAVFAC 2014a). That site is about 2.8 miles from Tinian International Airport. Old shells, but no live snails, were found in other stands of native limestone forest, the closest of which was near the eastern shore of Tinian about 1.8 miles from Tinian International Airport.

3.6.4.2.4 Wetlands

Site reconnaissance was conducted between October 7 to 8, 2011, to determine the extent of jurisdictional wetlands and other waters of the United States in the Project Area. Determination of the extent of jurisdictional wetlands and other waters of the United States was based on the application of protocols and procedures established in the USACE *Wetlands Delineation Manual*, Technical Report Y-87-1 (USACE 1987) and the 2010 *Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region*, (2010 Regional Supplement). Determination of the occurrence of jurisdictional wetlands was based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three of the criteria is necessary for an area to be designated as a jurisdictional wetland under normal conditions.

Based on the site investigations, there are no jurisdictional wetlands in the Project Area.

Although there are no wetlands in the Project Area, several areas on the airfield temporarily hold runoff following heavy rainfall. The airfield appears to have adequate drainage across most of the area, and the standing sheet water is usually an ephemeral event. Lake Hagoi is the largest wetland on Tinian, located approximately 3 miles north of Tinian International Airport. Lake Hagoi holds water all year during normal weather patterns, but can dry up during dry seasons with below normal rainfall.

3.7 Marine Biological Resources

3.7.1 Differences Between the Final EIS and 2015 Revised Draft EIS

Some information in the Marine Biological Resources sections has changed since the release of the 2015 Revised Draft EIS based on ongoing coordination with Federal agencies. These changes include updates on information presented in the 2015 Revised Draft EIS and relates to the assessment of impacts in **Section 4.7**. Since release of the 2015 Revised Draft EIS, the USAF completed ESA consultation with the USFWS for nesting sea turtles on Tinian, ESA consultation with NMFS for newly listed species that could occur in nearshore waters of Tinian under the Preferred Alternative, and EFH consultation with NMFS for the Preferred Alternative. Specific details about all marine resources consultations are provided by alternative in **Section 4.7**.

3.7.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Consultation with NMFS. After the 2012 Draft EIS was released, the USAF completed informal consultation with NMFS as required by the ESA for marine species. The USAF sent correspondence to NMFS informing them of the USAF determination that development of facilities on Saipan and Tinian, and conducting divert activities and exercises from those islands, is not likely to adversely affect marine species. After the 2012 Draft EIS was released, NMFS provided an official concurrence with the USAF position on this issue. This additional information validates the analysis that was presented in the 2012 Draft EIS. The analysis for potential effects on marine species in provided in **Section 4.7** and correspondence is presented in **Appendix B**.

3.7.3 Definition of Resource

This section describes existing environmental conditions for marine biological resources potentially affected by the alternatives described in **Section 2.5.** Marine biological resources include those marine species and habitats that could be affected by the Construction or Implementation Phases of the alternatives. No construction would occur in the marine waters surrounding Saipan or Tinian (see **Sections 2.5.1, 2.5.2** and **2.5.3**). As discussed in **Sections 4.5.1.1** and **4.5.2.1**, DOD policies, compliant with Federal and CNMI regulations, would be followed to minimize erosion and sedimentation during construction and to manage storm water runoff after construction. By implementing those policies, adverse impacts of sedimentation and runoff would be minor. EFH, coral species, and other nearshore resources are considered in the context of these potential indirect effects. Marine biological resources considered also include sea turtles and marine mammals potentially affected by take-offs and landings during unit-level training exercises (i.e., below 10,000 feet). Systematic literature and data review and Internet searches were conducted to determine that these were the only species potentially affected by the Proposed Action.

3.7.4 Existing Conditions

Essential Fish Habitat. The MSFCMA calls for direct actions to stop or reverse the continued loss of fish habitats. Section 305(b) of the MSFCMA mandates that Federal agencies consult with the Secretary of Commerce on all proposed activities authorized, funded, or undertaken by the agency that might adversely affect EFH. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Within the EFH, Habitat Areas of Particular Concern (HAPCs) are specific areas that are essential to the life cycle of important coral reef species.

The Mariana Islands are within the jurisdiction of the Western Pacific Region Fishery Management Council (WPRFMC), which has designated the marine waters around Mariana Archipelago as EFH based on a precautionary approach due to the lack of scientific data (WPRFMC 2009a, 2009b). WPRFMC currently manages fisheries in the Western Pacific as five assemblages (or management units) under two fishery ecosystem plans (WPRFMC 2009a, 2009). These assemblages include (1) bottomfish, (2) crustaceans, (3) precious corals, (4) coral reef ecosystems, and (5) pelagic species. Because all proposed activities will occur on land there is no EFH in the project area. However, EFH is designated adjacent to the project area. **Table 3.7-1** presents the fishery assemblages and lifestages with EFH adjacent to the project area on Saipan and Tinian.

Table 3.7-1. Fishery Assemblages and Lifestages with EFH Designated Adjacent to the Project Area on Saipan and Tinian

Fishery Assemblage	Lifestage				
	Eggs	**Larvae**	**Juveniles**	**Adults**	**Spawning Adults**
Bottomfish[1]	Water column	Water column	Water column, bottom habitat	Water column, bottom habitat	None Designated
Crustaceans[1,2]	None designated	Water column	Bottom habitat	Bottom habitat	None Designated
Precious Corals[1,3]	None designated adjacent to the project area.				
Coral Reef Ecosystems[1,3]	Water column, bottom habitat (HAPC is designated in Saipan Lagoon)				
Pelagic Species[4]	Epipelagic zone (water surface to depths of approximately 200 m)	Epipelagic zone (water surface to depths of approximately 200 m)	Water column	Water column	None Designated

Notes:
[1] WPRFMC 2009a.
[2] Spiny lobster (*Family Palinuridae*), slipper lobsters (Family Scyllaridae), Kona crab (*Ranina ranina*) are the only group of crustaceans with EFH designated adjacent to the project area.
[3] EFH is not designated by lifestage for precious corals and coral ecosystems.
[4] WPRFMC 2009b

Federally Listed Corals. Twenty species of coral were listed as threatened under the ESA on November 13, 2014 (NMFS 2014). Four of these have the potential to occur in the nearshore waters of CNMI, *Acropora globiceps, A. retusa, Pavona diffluens*, and *Seriatopora aculeata* (DON 2015a). However, the taxonomy and distribution of these coral species is uncertain. *Acropora globiceps* colonies occur in the intertidal zone, upper reef slopes, and reef flats in water shallower than 26 feet (8 meters) (DON 2015a). *Acropora retusa* colonies are generally found on shallow reef slopes; back-reef areas, including upper reef slopes reef flats; and shallow lagoons ocurring at water depths of 1 to 15 feet (0.3 to 5 meters) (NMFS 2014). *Seriatopora aculeata* is found in shallow reef environments in waters 10 to 130 feet (3 to 40 meters) deep occur around Australia, Fiji, Indonesia, Japan, Papua New Guinea, and Madagascar to the Marshall Islands (DON 2015a). Guam and the Northen Mariana Islands are also included in the range for *Seriatopora aculeata* (NMFS 2014). *Pavona diffluens* are found in upper reef slopes, mid-slopes, lower reef crests, reef flats, and lagoons (NMFS 2014) in water depths from 16 to 67 feet (5 to 20 meters) (DON 2015a). *Pavona diffluens* are found in the Red Sea, and Arabian Gulf, as well as the Northern Mariana Islands and America Samoa, but is uncommon in the CNMI (NMFS 2014).

Sea Turtles. All sea turtle species are protected under the ESA. NMFS has jurisdiction over sea turtles while they are in the water and the USFWS has jurisdiction over sea turtles on land, including sea turtle eggs, nesting females, and hatchlings on the beach. Green sea turtles *(Chelonia mydas)* are the most common sea turtle in the Mariana Archipelago, although hawksbill *(Eretmochelys imbricate)*, leatherback *(Dermochelys coricea)*, and olive ridley *(Lepidochelys olivacea)* have also been observed there (Kolinski et al. 2004, NAVFAC 2014b). A comparison of observed turtle activities within the region suggests that the Mariana Archipelago should presently be classified as primary resident green turtle habitat with a minor green turtle nesting component (Kolinski 2001). Green turtle nesting in CNMI occurs from March through August with some year-round nesting documented.

Marine Mammals. All marine mammals are protected under the MMPA as amended in 1994. In addition to the MMPA, the ESA provides protection to marine mammals that have been federally listed as endangered or threatened. Federal agency actions that reasonably have the potential to "take" a marine mammal require an IHA from the NMFS. Takes of marine mammals include harassment or mortality. Two levels of harassment were defined in the 1994 amendments to the MMPA: Level A and Level B. Level A harassment is defined in the MMPA as any act of pursuit, torment, or annoyance that has the potential to injure marine mammal stock in the wild. Level B has the potential to disturb marine mammal stock in the wild by disrupting behavioral patterns, including migration, breathing, nursing, breeding, feeding, or sheltering.

Table 3.7-2 lists 26 marine mammals that occur in the waters around the Mariana Islands (NMFS 2012). These include the ESA-listed blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), and dugong (*Dugong dugon*). The ESA-listed large whale species generally have a seasonal occurrence (mid-November thru mid-May) in the Mariana Archipelago, making migrations to feeding areas in higher latitudes (DON 2005, DON 2007, NMFS 2012). Since deep waters come close to shore around the Mariana Archipelago, it is possible that deepwater marine mammal species (those occurring along and seaward of the shelf break) could make their way into waters within a few kilometers of shore (e.g., sperm whales) (DON 2007, Fulling et al. 2011).

3.7.4.1 Saipan

Essential Fish Habitat. **Table 3.7-1** presents the fishery assemblages and lifestages with EFH adjacent to the Saipan project area. An HAPC is designated for the coral reef ecosystem management unit in Saipan Harbor. Saipan Harbor is near, but not adjacent to the proposed cement truck route for the construction phase and the proposed fuel truck route of the implementation phase of Alternative 1.

Federally Listed Corals. *A. globiceps, A. retusa, Pavona diffluens*, and *Seriatopora aculeata* have the potetnial to occur in suitable habitat within the nearshore waters surrounding Saipan. *Pavona diffluens* is uncommon in the waters of CNMI, therefore unlikely to occur in Saipan.

Sea Turtles. The resident population of green sea turtles on Saipan's nearshore environment was estimated to be 574 sea turtles in 1999 (Kolinski et al. 2001). Most are located along

Table 3.7-2. Marine Mammals of the Mariana Islands

Common Name	*Scientific Name*	ESA Status	Occurrence	
			July–November	December–June
Mysticetes				
Blue whale	*Balaenoptera musculus*	Endangered	Rare	Rare
Bryde's whale	*Balaenoptera edeni*	--	Regular	Regular
Fin whale	*Balaenoptera physalus*	Endangered	Rare	Regular
Humpback whale	*Megaptera novaeangliae*	Endangered	Rare	Regular
Minke whale	*Balaenoptera acutorostrata*	--	Rare	Regular
North Pacific right whale	*Eubalaena japonica*	Endangered	Extralimital	Extralimital
Sei whale	*Balaenoptera borealis*	Endangered	Rare	Regular
Odonotocetes				
Blainville's beaked whale	*Mesoplodon densirostris*	--	Regular	Regular
Bottlenose dolphin	*Tursiops truncatus*	--	Regular	Regular
Cuvier's beaked whale	*Ziphius cavirostris*	--	Regular	Regular
Dwarf sperm whale	*Kogia simus*	--	Regular	Regular
False killer whale	*Pseudorca crassidens*	--	Regular	Regular
Fraser's dolphin	*Lagenodelphis hosei*	--	Regular	Regular
Ginkgo-toothed beaked whale	*Mesoplodon ginkgodens*	--	Rare	Rare
Hubbs beaked whale	*Mesoplodon carlhubbsi*	--	Extralimital	Extralimital
Indo-Pacific bottlenose	*Tursiops aduncus*	--	Extralimital	Extralimital
Killer whale	*Orcinus orca*	--	Regular	Regular
Longman's beaked whale	*Indopacetus pacificus*	--	Regular	Rare
Melon-headed whale	*Peponocephala electra*	--	Regular	Regular
Pantropical spotted dolphin	*Stenella attenuata*	--	Regular	Regular
Pygmy killer whale	*Feresa attenuata*	--	Regular	Regular
Pygmy sperm whale	*Kogia breviceps*	--	Regular	Regular
Risso's dolphin	*Grampus griseus*	--	Regular	Regular
Rough-toothed dolphin	*Steno bredanensis*	--	Regular	Regular
Short-beaked common dolphin	*Delphinus delphis*	--	Rare	Rare
Short-finned pilot whale	*Globicephala macrorhynchus*	--	Regular	Regular
Sperm whale	*Physeter macrocephalus*	Endangered	Regular	Regular
Spinner dolphin	*Stenella longirostris*	--	Regular	Regular
Striped dolphin	*Stenella coeruleoalba*	--	Regular	Regular
Pinnipeds				
Hawaiian monk seal	*Monachus shauinslani*	Endangered	Extralimital	Extralimital
Northern elephant seal	*Mirounga angustirostris*	--	Extralimital	Extralimital
Sirenia				
Dugong	*Dugong dugon*	Endangered	Extralimital	Extralimital

Source: NMFS 2012

relatively uninhabited east coast sites with limited human access. This area has complex benthic habitat and forage species, including 2 species of seagrass and at least 29 species of algae forage species for green sea turtles in other surveys around the world. Nesting activity was limited, with 15 nesting attempts and 6 nests recorded throughout the 1999 nesting season. Nests were documented at Unai Fanonchuluyan (Bird Island Beach) and Unai Halaihai (Tang Beach), both north of the Saipan International Airport airfield, and at Unai Obyan, just south of the Saipan International Airport airfield. A nesting attempt was also made at Unai Agingan (Sisters Beach), which is also just south of the Saipan International Airport airfield (Kolinski et al. 2001). No other sea turtle species were sighted during the 1999 survey (Kolinski et al. 2001). Sixty percent of the turtles (101 turtles) were observed along the east coast sites, which is relatively uninhabited. Eighteen percent (30 turtles) were noted along the west coast, 14 percent (23 turtles) along the north coast, and 9 percent (15 turtles) along the south coast. Immature turtles predominated along all coastlines (Kolinski et al. 2001). The CNMI Division of Fish and Wildlife (DFW) continues to monitor nesting activity on Saipan and has documented 4 to 18 nests per year. Five beaches that have been used are Bird Island, Unai Makpe (Wing Beach), Unai Laulau Kattan (Tank Beach, Laulau Bay, and Unai Obyan) (Maison et al. 2010).

Marine Mammals. Fourteen species of marine mammals were documented during surveys of the southern Mariana Islands during 2010–2014 (Hill et al. 2014). The most common species were spinner dolphins (*Stenella longirostris*), pantropical spotted dolphins (*Stenella attenuata*), bottlenose dolphins (*Tursiops truncatus*), and short-finned pilot whales (*Globicephala macrorhynchus*). Other species reported include melon-headed whales (*Peponocephala electra*), rough-toothed dolphins (*Steno bredanensis*), pygmy killer whales (*Feresa attenuata*), false killer whales (*Pseudorca crassidens*), sperm whales, and a dwarf sperm whale (*Kogia sima*). Spinner dolphins, bottlenose dolphins, and short-finned pilot whales were often found near shore and in shallow waters.

During a winter (January to April) survey in 2007, humpback whales (endangered), sperm whales (endangered), pantropical spotted dolphins (*Stenella attenuata*), and unidentified small delphinids were sighted north and west of Saipan. Spinner dolphins were also sighted east of Saipan during a small vessel winter survey (Ligon et al. 2011). The behavior of the humpback whales observed during the survey suggests that the waters around Saipan could be a small active breeding site (DON 2007, Fulling et al. 2011).

3.7.4.2 Tinian

Essential Fish Habitat. **Table 3.7-1** presents the fishery assemblages and lifestages with EFH adjacent to the Tinian project area. There are no HAPCs adjacent to the Tinian Project Areas.

Federally Listed Corals. *A. globiceps, A. retusa, Pavona diffluens*, and *Seriatopora aculeata* have the potetnial to occur in suitable habitat within the nearshore waters surrounding Tinian. However, *Acropora globiceps* was the only federally listed coral species that was reported in the nearshore waters of Tinian in a 2013 survey (DON 2015a). The 2013 survey recorded *Acropora globiceps* at Unai Chulu, Unai Babui, Unai Lam, and Unai Masalok beaches, none which are adjacent to the project area (DON 2015a). Unai Chulu is the closest beach to Unai Barcinas, the beach less than 0.5 miles from the Tinian International Airport. Suitable habitat is present in the nearshore waters of Tinian for *Acropora retusa, Pavona diffluens,* and *Seriatopora aculeata*.

These species could potentially occur near the project area, but were not recorded during surveys.

Sea Turtles. Green sea turtles and hawksbill sea turtles are known to forage offshore of Tinian (Pultz et al. 1999, Kolinski 2001, Maison et al. 2010, NAVFAC 2014b). Ninety-four percent of sea turtles observed offshore of Tinian during surveys in July 2013 were green sea turtles (the remainder were hawksbills) and 75 percent of the green sea turtles were juveniles (NAVFAC 2014b). The resident population of sea turtles in Tinian's nearshore environment was estimated to be 795 to 1,107 green sea turtles and 50 to 71 hawksbill sea turtles in 2013 (NAVFAC 2014b). Leatherback sea turtles are uncommon in the Tinian area; however, there have been two sightings of the species in open water (NAVFAC 2015b). Nesting likely occurs on all or most of the beaches on Tinian (Minton et al. 2009, Maison et al. 2010, DON 2010a), and nesting activity has been observed in all months (NAVFAC 2014b).

Marine Mammals. The same marine mammals isted in **Section 3.7.4.1** occur in waters around Tinian. The most common species found near shore and in shallow water are spinner dolphins, bottlenose dolphins, and short-finned pilot whales.

3.8 Cultural Resources

3.8.1 Differences Between the Final EIS and 2015 Revised Draft EIS

Some information in the Cultural Resources sections has changed since the release of the 2015 Revised Draft EIS. These changes include updates on information presented in the 2015 Revised Draft EIS and relate to the USAF's consultation pursuant to Section 106 of the NHPA and input received during Section 106 consultation. The Final EIS includes a summary of the agreed-to measures for the Preferred Alternative contained within the *Programmatic Agreement among the Pacific Air Forces, Directorate Of Strategy, Plans, and Programs, the Commonwealth of the Northern Mariana Islands, State Historic Preservation Office, and the Advisory Council on Historic Preservation, regarding the Proposed Construction and Operation of Divert Activities and Exercises within the Commonwealth of the Northern Mariana Islands* between the USAF and the CNMI SHPO, ACHP, and other consulting parties, and the executed PA is provided in **Appendix D**.

The Final EIS also includes an updated APE for the Preferred Alternative, Alternative 2. The APE was revised to include minor technical adjustments in the proposed construction footprint after release of the 2015 Revised Draft EIS. These minor shifts do not result in additional or different adverse effects than those identified in the Section 106 consultation process and resolved in the Divert PA. The APEs for Alternative 1 and Alternative 3 were not updated because these alternatives were removed from the PA upon request of the Office of the CNMI Governor after identification of Alternative 2 as the Preferred Alternative.

3.8.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Information in the Cultural Resources sections changed in the 2015 Revised Draft EIS since the release of the 2012 Draft EIS based on the Modified Alternatives. These changes included updates to information presented in the 2012 Draft EIS and additional analysis beyond that presented in the 2012 Draft EIS. A summary of the changed information is presented below.

Definition of Resource. A new paragraph was added that clarifies USAF's definition of the APE and finding of effects. New maps were also added (see **Figures 3.8-1** and **3.8-2**) to illustrate the revised APE.

Existing Conditions. An expanded discussion of CNMI's World War II history was added as a separate subsection between Cultural Setting and Post-World War II History. The background discussion was also expanded to elaborate on the resources within the defined APE and to summarize the results of the Phase I cultural resources survey that was conducted in support of the Divert EIS Undertaking. An expanded discussion and new paragraph were added to summarize the Section 106 consultation process including USAF's finding of possible adverse effects.

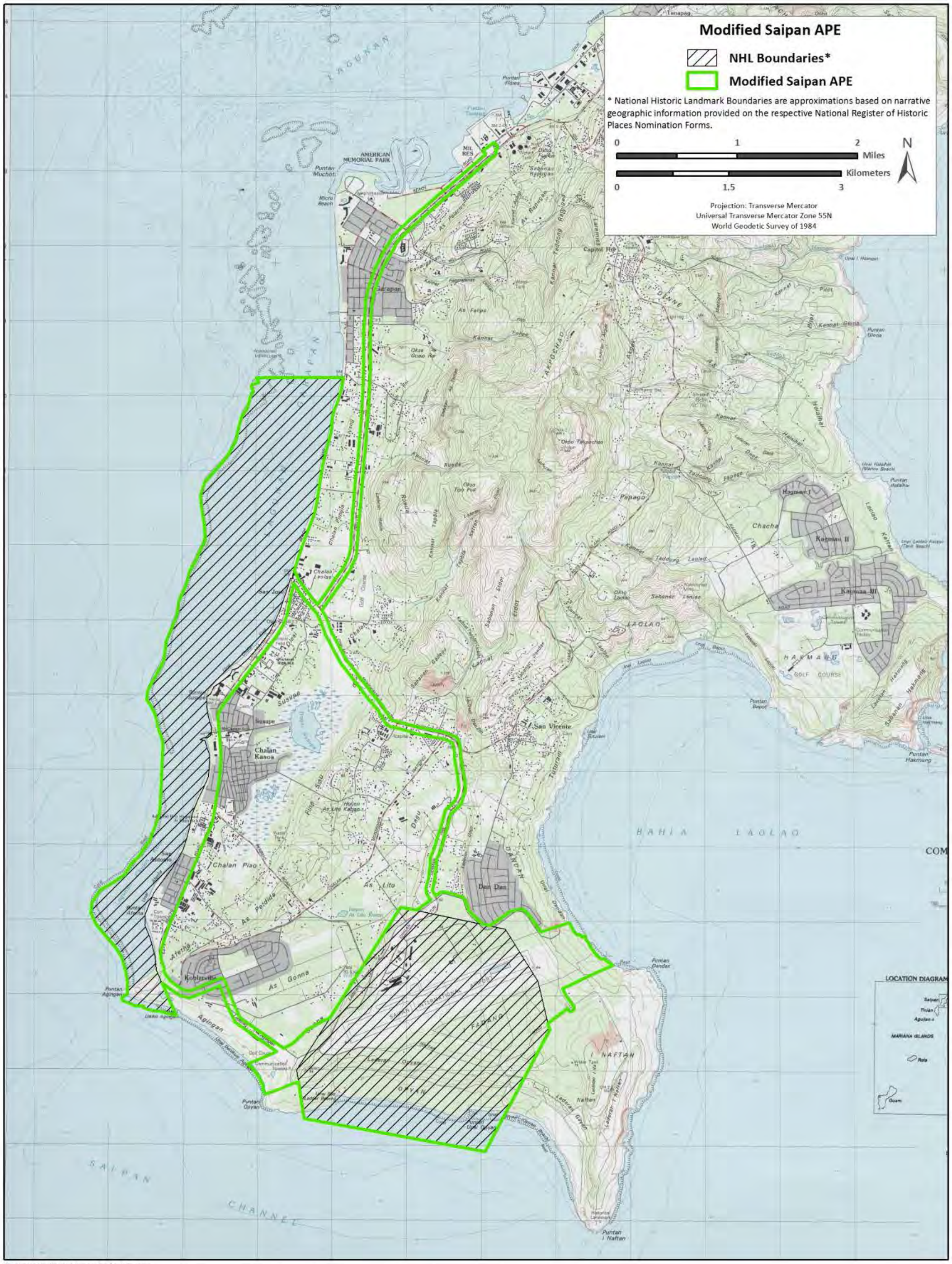
Potential Impacts. Impact conclusions were updated based on the Section 106 consultation process, including an updated discussion of impacts according to the defined APE(s) for all alternatives.

Cumulative Impacts. The Cultural Resources subsection was expanded to explain more thoroughly the cumulative impacts from past, present, and reasonably foreseeable future development when considered with the proposed action.

3.8.3 Definition of Resource

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. These include archaeological resources (prehistoric and historic), historic architectural resources, and traditional resources. Only significant cultural resources (as defined in 36 CFR Part 60.4) are subject to potential adverse impacts from an action. This usage of "significant" is separate from that defined under NEPA (40 CFR Part 1508.27). Significant archaeological and architectural resources are resources that are eligible for listing or are listed on the NRHP. Significant traditional resources are identified by Native American tribes or other groups, and might also be eligible for listing on the NRHP as TCPs. Resources listed on or eligible for listing on the NRHP are referred to as "historic properties."

In addition to NEPA, the USAF concurrently met its obligations under Section 106 of the NHPA. The NHPA provides a framework for determining the relative importance of various types of cultural resources and assessing how federal actions may affect historic properties. Section 106 of the NHPA (36 CFR Part 800, Subpart B) also required the USAF to consider the effects of the Proposed Action on historic properties. Pursuant to 36 CFR Part 800 Subpart B, and in consultation with the CNMI SHPO and other consulting parties, PACAF was responsible for defining the APE, determining whether any historic properties are located within the APE, and assessing whether the proposed Undertaking would adversely affect those historic properties. An adverse effect is any action that might directly or indirectly change the characteristics that make the historic property eligible for listing in the NRHP. If an adverse effect is identified, the Federal agency (USAF) must continue consultation to develop measures to avoid, minimize, or mitigate the adverse impacts of the Undertaking.



Topo Source: United States Geologic Survey

Figure 3.8-1. Modified Saipan APE

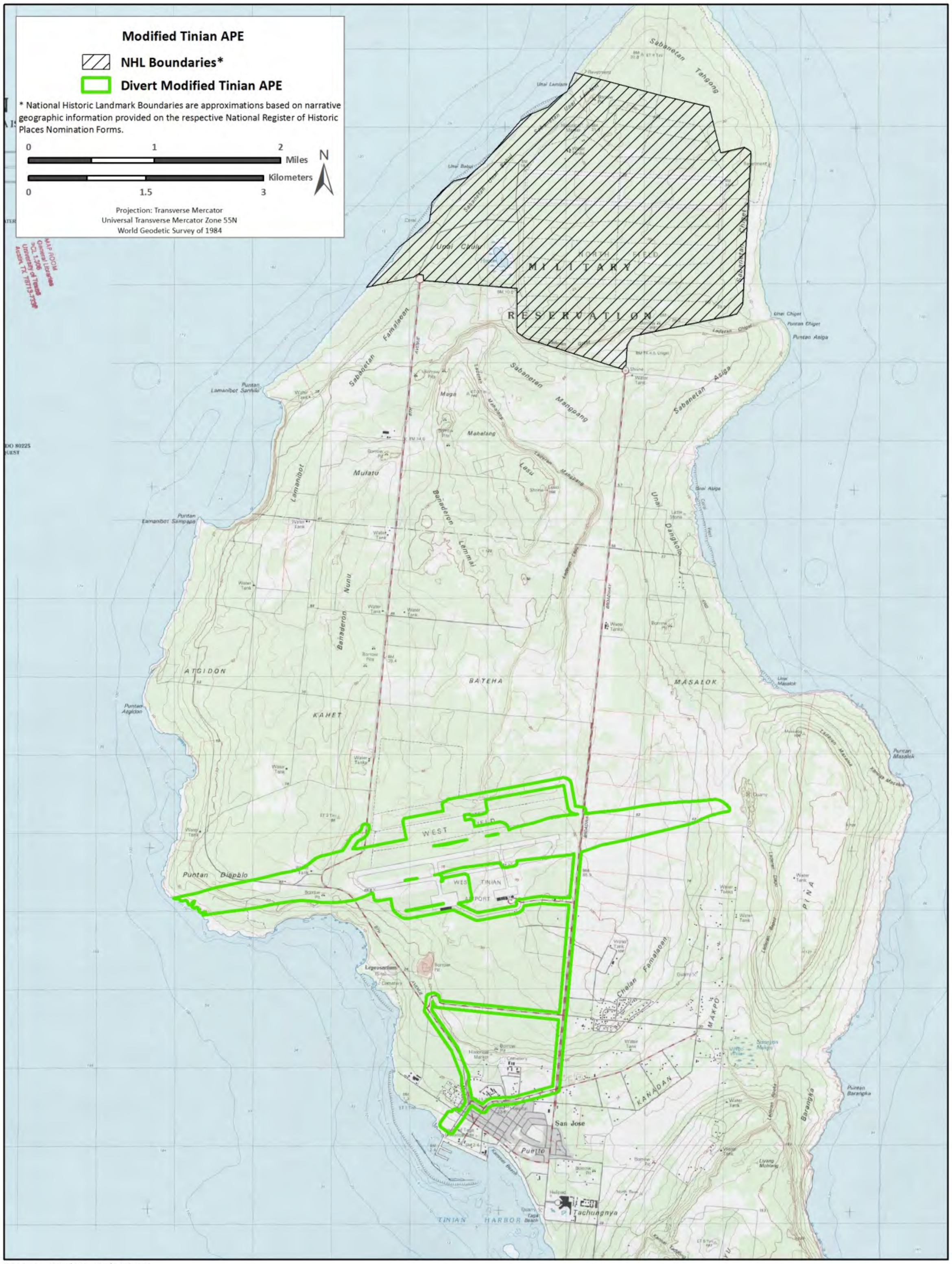


Figure 3.8-2. Modified Tinian APE

The USAF consulted on Alternatives 1, 2, and 3 with the CNMI SHPO, ACHP, NPS, JRM, FAA, CNMI Governor's office, CNMI Historic Preservation Review Board, and members of the public. The Section 106 process resulted in a *Programmatic Agreement among the Pacific Air Forces, Directorate of the Strategy, Plans, and Programs, the Commonwealth of the Northern Mariana Islands State Historic Preservation Office, and the Advisory Council on Historic Preservation Regarding the Proposed Construction and Operation of Divert Activities and Exercises within the Commonwealth of the Northern Mariana Islands* (Divert PA), executed on June 28, 2016 by PACAF, the CNMI Governor on behalf of the CNMI SHPO, and the ACHP. The FAA and NPS were invited signatories to the Divert PA. The Divert PA stipulates the USAF's responsibilities regarding the identification of and resolution of adverse effects to historic properties. Although the USAF consulted on all three alternatives to the Proposed Action, Alternatives 1 and 3 were removed from the Divert PA upon request of the CNMI Governor after identification of Alternative 2 as the Preferred Alternative. The Divert PA requires the USAF to re-initiate Section 106 consultation should Alternatives 1 or 3 be selected. Specific measures outlined in the PA to avoid, minimize, or mitigate adverse effects to historic properties are discussed **Section 4.8**.

The study area for cultural resources is the area where the Proposed Action or alternatives have the potential to affect existing or potential archaeological, historic, architectural, or traditional resources, also known as the APE. The ACHP's regulations implementing Section 106 define the APE as "the geographic area or areas within which an Undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist," (36 CFR Part 800.16(d)). As part of Section 106 consultation for this effort, PACAF engaged the public and consulting parties to develop an appropriate APE for the Proposed Action Alternatives. Because the Proposed Action and alternatives involve multiple alternative Project Areas, the APE includes the maximum extent of potential impacts for each alternative, including potential impacts from construction, aircraft noise, and vehicle traffic. The APEs for each alternative are illustrated in **Figures 3.8.1, 3.8.2,** and **3.8.3**.

3.8.4 Existing Conditions

Cultural Setting. The Mariana Islands have been occupied for at least 3,500 years by prehistoric Chamorro populations and more recent settlers from Spain's colonies, the Caroline Islands, Germany, Japan, and the United States. This section presents a chronological overview of the human occupation of the Marianas and describes the physical traces those settlers left on the islands. The Marianas have been the subject of archaeological and historical research since the 1920s (Thompson and Hornbostel 1932). The presence of the U.S. military brought considerable attention to Marianas archaeology in the mid 1940s (Osborne 1947, Reed 1954). Current understanding of Marianas prehistory is the outgrowth of the work of Alexander Spoehr, who surveyed Guam, Saipan, Rota, and Tinian in the mid 1950s and developed the first regional prehistoric chronology (Spoehr 1957). Knowledge of Mariana Islands archaeology increased dramatically after 1977 with the establishment of the Micronesian Survey of the Office of Historic Preservation for the U.S. Trust Territories of the Pacific Islands (Cordy 1986). Major themes in Marianas archaeology include the effects of colonizing populations on island ecology, the timing of colonization, agricultural practices, and increased status and power differences (Kirch 2002, Kirch and Ellison 1994, Rainbird 1994).

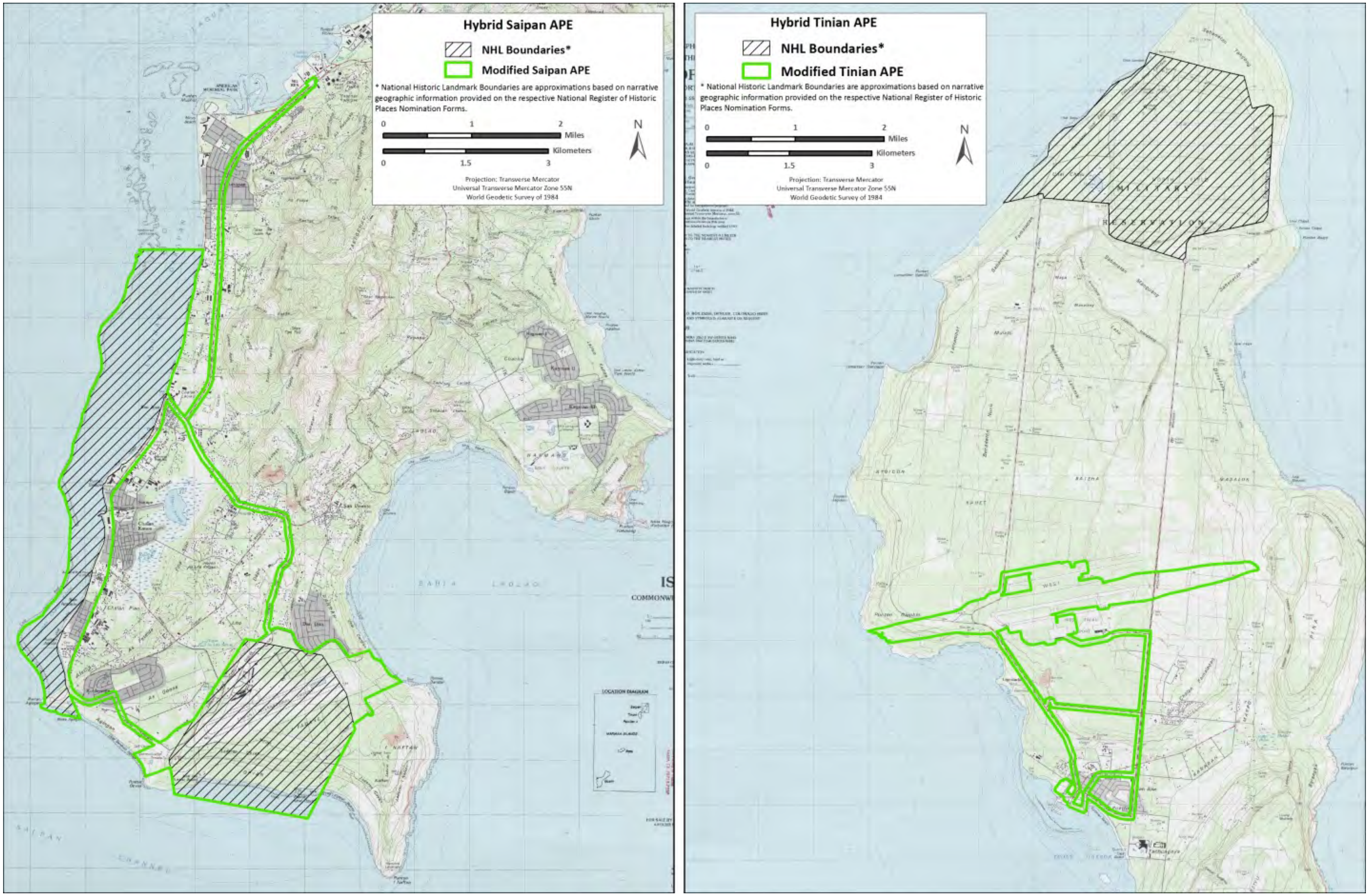


Figure 3.8-3. Modified Hybrid APE

World War II. War-time construction and occupation by Japanese and American forces during World War II contributed more to the region's archaeological and architectural historical record than any other historic period. Japan developed military forces and infrastructure on Rota, Saipan, and Tinian in the 1930s in preparation for war. On December 7, 1941, Japan bombed Pearl Harbor in Hawai'i, bringing the United States into World War II. Japan attacked Guam several hours later (local date on December 8, 1941). The Mariana Islands of Saipan, Tinian, Rota, and Guam were strategic strongholds for Japan during World War II. The islands served as important defensible locations and outposts for bombing missions and airstrikes. After February 1944, Japan realized U.S. forces were likely to strike the Marianas and began reinforcing the 1,500 military personnel then on Saipan (Goldberg 2007). The Japanese Navy built three additional airfields in 1944 on Tinian: one immediately southwest of Ushi field, one east of Tinian Town, and one near Gurguan Point that would later become West Field. On June 15, 1944, the 2nd and 4th U.S. Marine Divisions invaded Saipan. By August 1, 1944, the U.S. secured both Saipan and Tinian. U.S. forces immediately began expanding the Japanese airfields to serve as launching points for B-29 bomber airstrikes on Japanese targets.

Post-War History (1944–Present). The U.S. role in the governance of Saipan, Rota, and Tinian differs from Guam due to differences in how the islands were acquired (Herald 1992, McKibben 1990). Spain ceded Guam to the United States after the end of the Spanish-American War in 1898. Guam's territorial status is managed by the U.S. Congress. In contrast, the United States was given supervisory control of the other Mariana Islands and the rest of Japan's Micronesian possessions by the United Nations under the Trust Agreement. The Trust Agreement was a bilateral contract between the United States and the U.N. Security Council that made the United States responsible for providing for the islands' political, economic, and social needs and to promote eventual adoption of self-government. The United States demanded that the United Nations designate the Trust territory a strategic area, a concession that gave the Security Council, not the General Assembly, authority over the Trust Agreement. This ensured that the United States could veto any decisions regarding the islands. Congress increased appropriations for the islands and in 1964 created a Congress of Micronesia. The Marianas chose to become a separate entity from the rest of the Micronesian islands and in 1972 began negotiating commonwealth status, in part because the proximity of the northern Marianas to Guam made them more "Americanized." The resulting formation of CNMI was part of the United Nations mandate under which other Micronesian islands chose to separate into three political entities: the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau. Each entity negotiates its relationship with the United States separately and each has its own constitution.

3.8.4.1 Saipan

Previous research suggests that prehistoric material such as ceramic, flaked stone, and ground stone artifacts are likely to exist in the Modified Saipan APE and the Saipan portion of the Alternative 3 APE. However, the significant amount of historic modification of the area has impacted pre-contact sites so that the presence of intact prehistoric features is not likely. Prehistoric remains tend to be isolated artifacts in disturbed contexts. Previous research indicates the APE primarily contains historic artifacts and features associated with the Japanese construction of Aslito Field beginning in 1934 and the U.S. expansion of the facility during World War II (at which time it was renamed Isley Field). Artifacts dating to this period include bottle dumps, military supplies and equipment, refuse piles, and other durable metal objects. Features associated with this period, such as concrete foundations and buildings, are also present in the APE. Traditional use areas that may qualify as TCPs may also exist in the APE.

Most of the Modified Saipan APE and the Saipan portion of the Alternative 3 APE was surveyed in 1980 in preparation for nominating Isley Field to the NRHP (Denfeld and Russell 1984). This survey defined 29 sites that encompass 27 intact structures, an Okinawan farm house foundation, two runways, hundreds of hardstands and foundations from the U.S. period, concrete and asphalt roads, and many other features and artifacts within the airport perimeter fence as it stood in 1980. Some of the historic structures associated with the sites recorded by Denfeld and Russell (1984) are still visible on recent aerial imagery and are presumably intact. The Denfeld and Russell report further suggested that additional features and associated artifacts not specifically mentioned in the report are also likely to be present.

The field was nominated to the NRHP as a historic district on September 16, 1980, and was included in the NRHP on June 26, 1981, as the “Isley Field Historic District” (National Register Information System No.: 81000667). As nominated, the district boundary is defined by the “perimeter road,” probably Flame Tree Road to the north, west, and east and Naftan Road to the south, and encompasses 1,189 acres. The condition of the historic structures contained within the district is listed as deteriorated and altered by the modern airport.

Isley Field was later included in an NHL recommendation for three of Saipan’s World War II-era sites. The separate World War II-related properties were listed together as the Saipan Landing Beaches, Aslito/Isley Field, and Marpi Point National Historic Landmark (SNHL) on February 4, 1985 (National Historic Landmark System No.: 85001789). In the landmark nomination, Isley Field’s size is listed as 1,453 acres (compared to 1,189 acres listed in the 1980 district nomination). All of the features noted in the district nomination were recommended for inclusion in the Aslito/Isley Field portion of the SNHL (referred to hereafter as the Aslito/Isley Field National Historic Landmark District [NHLD]), except the site of Kobler Field southwest of Isley Field, which by 1985 was converted into a large housing development.

USAF conducted a cultural resources survey in 2012 to support the Section 106 process. This study, provided in **Appendix D,** resulted in the identification of three pre-contact isolated occurrences (IOs) and 10 historic features (sites) within the boundaries of the Aslito/Isley Field NHLD. The three pre-contact IOs are composed of pre-contact ceramic fragments. All of the prehistoric IOs are recommended not eligible for listing on the NRHP as they retain minimal information potential, most of which was exhausted through field recording, and are located in disturbed contexts. The historic features and artifacts recorded during the survey are associated with the Japanese and U.S. occupations of Aslito/Isley Field from the field’s construction in 1934 through the years immediately following World War II (see **Table 3.8-1**). The features include three similar 4-x-4-foot concrete structures that are apparently water catchment devices (Feature 2, Feature 3, Feature 4), one water retention tower (Feature 1), and two concrete foundations (Feature 5, Feature 11). In addition to these spatially isolated historic features, a cluster of historic features was recorded 220 feet (67 meters) south of Airport Road that included a Japanese air raid shelter (Feature 6), a large cement pad or foundation (Feature 9), two water catchment features (Features 7, Feature 8), and a large bottle dump (Feature 10).

Table 3.8-1. Newly Identified Aslito/Isley Field NHLD Features

Feature or Artifact Number	Cultural Material	Temporal Association	NHL Contributing Resource?
Feature 1	Concrete water tower	Japanese Occupation (1934–1944)	N
Feature 2	Concrete foundation with drain with one Japanese porcelain sherd	Japanese Occupation (1934–1944) American Occupation (1944–1945)	Y
Feature 3	Concrete foundation with drain	Japanese Occupation (1934–1944) American Occupation (1944–1945)	N
Feature 4	Concrete foundation with drain	Japanese Occupation (1934–1944) American Occupation (1944–1945)	Y
Feature 5	Concrete slab	Japanese Occupation (1934–1944) American Occupation (1944–1945)	N
Feature 6	Japanese bunker	Japanese Occupation (1934–1944)	Y
Feature 7	Water catchment feature	American Occupation (1944–1945)	Y
Feature 8	Water catchment feature	American Occupation (1944–1945)	Y
Feature 9	Concrete foundation	American Occupation (1944–1945)	N
Feature 10	Bottle dump	American Occupation (1944–1945)	Y
Feature 11	Concrete foundation	Unknown	N

Historic features identified during the survey were evaluated as contributing or non-contributing elements of the NHL following guidelines published by NPS regarding the evaluation of historic districts (NPS 1993). In order to be a contributing resource, each site, building, structure, or object within the landmark must be evaluated as to whether it possesses the following characteristics (NPS 1993):

- It must have been present during the period that the property achieved its significance. In this case, the applicable periods are the Japanese build-up prior to and during World War II (1934–1944), the Battle of Saipan, or the American occupation after the battle (1944–1945).
- It relates to the documented significance of the property, in this case Japanese and American military use during World War II.
- It possesses historical integrity or is capable of yielding important information relevant to the significance of the property.

All of the cultural resources recorded by the USAF survey, except for the pre-contact IOs, meet the first two criteria for consideration as resources that contribute to the landmark. However, five resources do not meet the third criteria of possessing historical integrity or the capability to yield important information relevant to the district's significance. The USAF recommended these five resources should not be considered contributing elements to the SNHL but recognizes that the determination of whether the features contribute is ultimately a determination made by the Secretary of Interior (see **Table 3.8-1**).

3.8.4.2 Tinian

Previous research suggests that prehistoric material such as ceramic, flaked stone, and ground stone artifacts are likely to exist in the Alternative 2 APE and the Tinian portion of the Alternative 3 APE. However, the APE was extensively modified by the construction of Japan's Gurguan Airfield and the U.S. expansion of the airfield into the much larger West Field during World War II. Traditional use areas that may qualify as TCPs may also exist in the APE.

Most of the APE was surveyed for historic properties in recent decades (Dixon et al. 2014). Previously surveyed areas include all proposed construction areas at the seaport, all proposed construction areas at Tinian International Airport under both the North and South Options, and portions of the APE incorporating noise contour areas. The only areas that have not been previously surveyed include about 3.5 km (2.2 miles) of existing roads in and around San Jose that would possibly serve as truck routes for construction material and fuel trucks.

In addition to archaeological and architectural surveys, a TCP study was conducted on Tinian in support of a separate Undertaking being considered by the U.S. Marine Corps Forces, Pacific (MARFORPAC) (Griffin et al. 2015). The study used ethnographic information from archival research, oral history interviews, and natural resource inventories to identify and evaluate potential TCPs in the MLA on the northern two-thirds of Tinian.

Previous surveys have recorded a large number of historic resources near Tinian International Airport, especially to the west. Many of these sites may be associated with the pre-war Gurguan Airfield and have been recommended eligible by MARFORPAC in survey reports they have produced for their CNMI Joint Military Training (CJMT) Undertaking (Dixon et al. 2014). The site of the WWII-era U.S. Naval Air Base Headquarters (HQ) has been identified at the east end of the modern runway. This site has also been recommended as eligible for listing on the NRHP. These sites lie under the noise effects portion of the APE and are not within proposed construction footprints.

All of West Field, the Japanese-era airstrip as modified by U.S. forces during Word War II and the basis of the modern airport, has also been recorded as a historic resource (Site TN-6-0030, also sometimes referred to as Site 3005) (Dixon et al. 2014). The site is recommended eligible for the NRHP under Criterion A for association with events that have made a significant contribution to the broad patterns of our history and Criterion D for potential to yield information important to understanding history. Pavement, hardstands, and other features associated with West Field are still visible on aerial photographs. However, the exact location of preserved character-defining features associated with the site has not been determined at this time.

3.9 Recreation

3.9.1 Definition of Resource

The term "recreation" refers to both natural and human-made lands designated by planning entities to offer visitors and residents diverse opportunities to enjoy leisure activities. Recreational resources are places or amenities set aside as parklands, beaches, trails, recreational fields, sport or recreational venues, open spaces, open waters, and aesthetically pleasing landscapes along with a variety of other uses. Federal, commonwealth, and local jurisdictions typically have designated land areas with defined boundaries for recreation. Other less-structured activities (e.g., fishing) are performed in broad, less-defined locales. A recreational setting might consist of natural or human-made landscapes and can vary in size from a roadside monument to a designated sport area to a wilderness area. For the purpose of this analysis, recreational activities include any type of outdoor activity in which area residents, visitors, or tourists could participate and pertain to the physical geography of the islands.

3.9.2 Existing Conditions

3.9.2.1 Saipan

Saipan is approximately 115 miles northeast of Guam and 3 miles north of Tinian. Saipan contains a lagoon/barrier reef system along its western coastline and fringing reefs scattered throughout its eastern coastline. Approximately 40 percent of the population lives along Saipan's coasts and has direct access to marine-related recreational activities. Tourists frequent the larger hotels in Garapan and Susupe. Notable recreational resources include trails, historic and cultural attractions, beaches and parks, scenic points, dive spots, and recreational fishing (see **Figure 3.9-1**).

Trails. The Saipan Beach Pathway is a "boonie stomping" (hiking through "boonies" or large areas of undeveloped jungle and beaches) trail that traverses approximately 3 miles along Saipan's western coast. The trail connects to Kilili Beach Park and has various historic attractions along its path. A pathway from Micro Beach, which is approximately 1 mile southwest of the Port of Saipan, goes through American Memorial Park where a variety of World War II bunkers and memorials are found (MVA 2012).

Historic and Cultural Attractions. As described in detail in **Section 3.8**, Saipan International Airport is wholly contained within the Isley Field Historic District and NHL. Because of its modern status as a functioning international airport, some of the historic structures and sites that make up the district are not directly accessible to the public; however, three exceptions exist. Six extant Japanese concrete air raid bunkers are visible from the runway at Saipan International Airport. While few visitors can approach the bunkers directly, the visual reminder of Saipan's critical role in the Pacific theater during World War II provided by the bunkers is an important experience for visitors to the island. The CNMI SHPO on Saipan has cited the visual impact of these bunkers as one of the main motivations for their continued preservation. Two additional bunkers, regularly visited by the public, are outside of the airport boundaries along the edge of a current soccer field. A number of Japanese-era buildings just outside of airport boundaries, including an excellent example of a pre-World War II Okinawan farmhouse, and concrete hardstands that served as parking apron for U.S. B-29s during World War II, are included in a small walking tour area with paths and interpretive signage. This interpretive park is popular with schoolchildren on field trips and tourists to the island.

Beaches and Parks. Saipan has approximately 50 miles of coastline and there are approximately 29 public beach/shoreline access sites on the island. Public access to the shoreline has a high demand throughout the CNMI. Saipan residents use beaches for a variety of activities including swimming, picnicking, snorkeling/diving access, surfing, playing sports, and relaxing. Kilili Beach is used as an occasional canoe racing site. Laolao Bay and Obyan

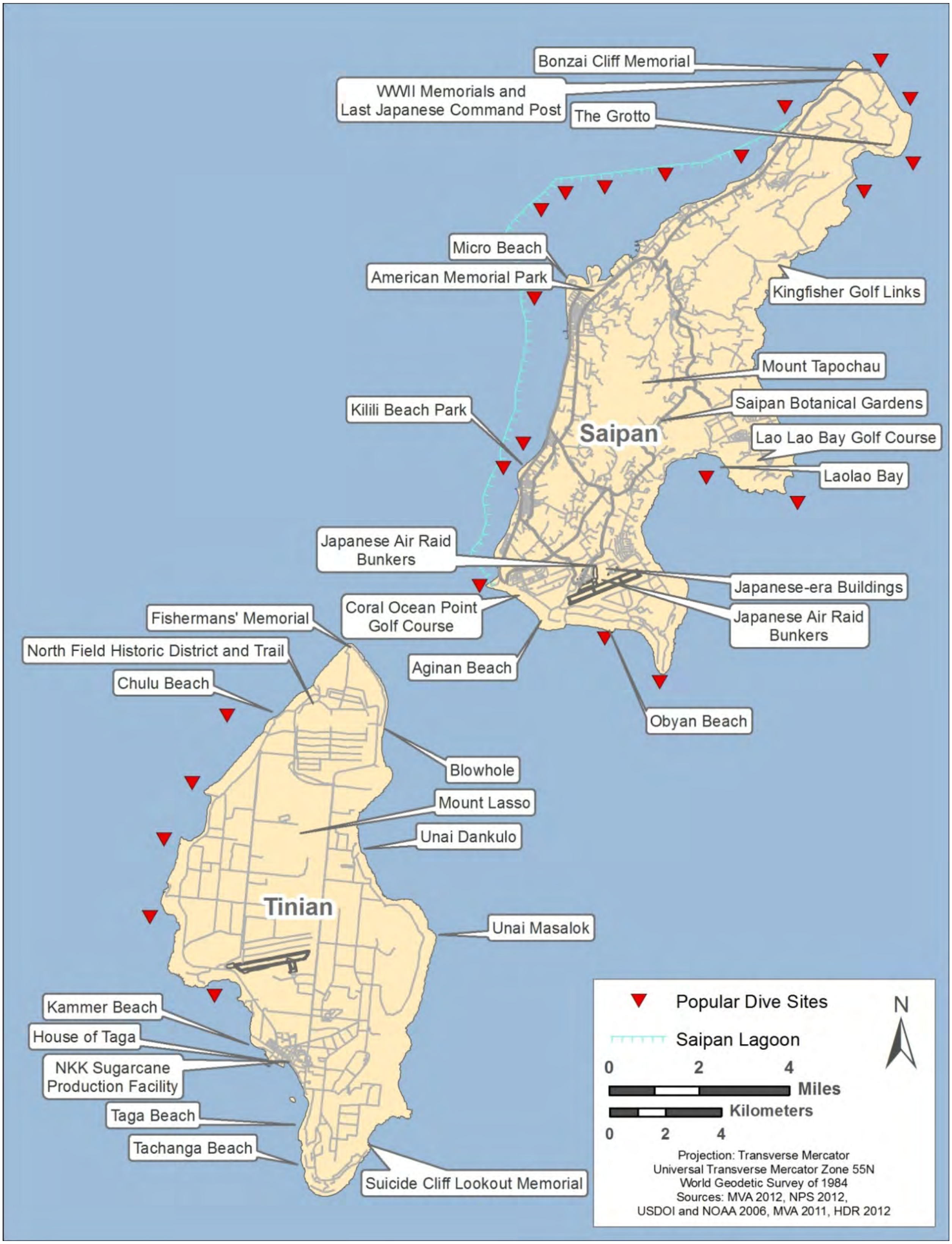


Figure 3.9-1. Popular Recreational Resources on Tinian and Saipan

Beach, on the eastern and southern portions of the island, respectively, are consistently inundated with snorkelers and scuba divers (NOAA 2011). The Beach of Managaha, on Saipan Lagoon, is a widely used snorkel and dive spot, but is also used for viewing wildlife and historical artifacts. Aginan Beach, along Saipan's southern coast, has one of the island's most diverse archaeological areas and can be accessed through the Coral Ocean Point Golf Course. Micro Beach is often used as a staging point for watersports (e.g., windsurfing, parasailing, jet-skiing) (MVA 2012).

American Memorial Park is the only national park on Saipan. The 133-acre park contains beaches, sports fields, picnic sites, boat marinas, playgrounds, walkways, and a 30-acre wetland and mangrove forest. Kilili Beach Park, in Susupe along Beach Road, received an NPS Land and Water Conservation Fund grant in 2004 to develop an access road and paved parking, and to replace picnic shelters, park walkways, and various visitor facilities. Watersports are popular in both parks (NPS 2012).

Scenic Points. The majority of the scenic points on Saipan are in the northeastern portion of the island. Banzai Cliff is a popular tourist spot. Mount Tapochau, at the center of the island, has a panoramic view of the entire island and is frequented by tourists and other sightseers (USAF 1987).

Dive Spots. The CNMI consistently attracts scuba divers due to warm water and prolific coral reefs, which maintain an incredible amount of diversity. Saipan has more than 18 different dive sites scattered around the island (DON 2010a). Saipan Lagoon, Laolao Bay, and Obyan Beach are among the most popular (USDOI and NOAA 2006).

Recreational Fishing. Recreational fishing is prominent throughout CNMI, and is generally conducted in small fishing fleets. Trips are typically made during the daytime within an approximate 26 NM radius of Saipan (DON 2010a). Launching points for Saipan's annual fishing tournament are the Smiling Cove Marina and the Garapan Fishing Base Complex, both on the western side of the island approximately 1 mile southwest of the Port of Saipan (MVA 2011). Saipan Lagoon is considered to be heavily harvested by recreational fishermen. Coral reefs are not thought to be harvested by recreational fishermen; however, poaching by foreign boats is suspected (DON 2010a).

3.9.2.2 Tinian

Tinian is approximately 100 miles northeast of Guam and 3 miles south of Saipan. Approximately 26 of the 39 square miles Tinian covers are leased to the DOD (DON 2010b). The predominant community and tourism activities are on the southwestern portion of the island, associated with San Jose Village. Tinian is known for its precipitous cliffs, though a few coves and beaches are found throughout the island. Several small and narrow fringing reefs and a small barrier reef are found near Tinian Harbor on the western side of the island. Recreational resources include trails, historic and cultural attractions, beaches and parks, scenic points, and dive spots throughout the island (see **Figure 3.9-1**).

Trails. The most notable recreational trail feature on Tinian is the Ushi Field-North Field Trail. The trail, traversing the northern portion of the island, identifies 14 points of interest from World War II. Before the United States took control of the island, the Japanese had constructed an airfield on northern Tinian (Ushi Field). Afterwards, the Seabees and the Marines constructed six airstrips during the war, four on northern Tinian (dubbed North Field) and two on central Tinian (dubbed West Field), to support B-29 bombers. Each strip on North Field had an alphabetical designation. The northernmost strip, Able, was the launching point for the Enola Gay and Bockscar to drop the atomic bombs on Hiroshima and Nagasaki, Japan, on August 6 and 9, 1945, respectively (DON 2010b). The smaller runway at West Field is now Tinian International Airport. World War II Japanese fortification features, including a bunker, naval battery, command post, and the Bomb Assembly Building, can also be found along the trail.

Historic and Cultural Attractions. There are several publicly enjoyed historic properties on Tinian. The House of Taga, north of the seaport, is the remains of prehistoric latte stone pillars that were originally 15 feet (4.6 meters) high, making them the tallest latte stones in the Mariana Islands. Four NRHP-listed properties from the Japanese-era Nanyo Kohatsu Kabushiki Kaisha sugarcane production facility, including a Nanyo Kohatsu Kabushiki Kaisha administration building, ice storage building, laboratory, and a building known only as the “Japanese structure” that might have been a small store, are found in San Jose. Structures at North Field and within the Tinian NHL, including Japanese-era buildings, B-29 hardstands, and the loading point for the atomic bombs that were dropped on Hiroshima and Nagasaki to end World War II, are also popular with tourists. Historic and cultural sites at Tinian International Airport, discussed in **Section 3.8**, are not accessible to the public and, therefore, are not considered recreational attractions.

Beaches and Parks. Unai Dankulo, along Tinian’s east coast, is the island’s largest beach. A continuous reef crest runs along the entire beach. At least 10 beaches are found along Unai Dankulo over a distance of 4,900 feet. Other notable beaches include Chulu Beach, on the northwestern shore, and Unai Masalok, which is composed of three beaches over a distance of 1,600 feet, on the eastern shore. Kammer Beach is found to the east of the Port of Tinian, south of San Jose Village (DON 2010b).

Tinian has approximately 34 miles of coastline, and there are 12 public beach/shoreline access sites on the island (NOAA 2011). Of note, Taga Beach, along the southern end of Tinian, has picnic facilities, parking, and a place to rent scooters. Tachogna Beach, adjacent to Taga Beach, offers activities including snorkeling, scuba diving, jet skiing, and a variety of other marine activities. Unai Dankulo is a favored spot for shore-based spear fishing (MVA 2012). Although there are no national parks on Tinian, six local parks can be found throughout the island (NOAA 2011).

Scenic Points. Mount Lasso Lookout and Tinian Blowhole, on the southern and eastern sides of North Field, respectively, are frequently visited lookout points (DON 2010a).

Dive spots. Tinian has numerous World War II dive sites, predominantly on the northwestern side of the island (DON 2010a).

3.10 Land Use

3.10.1 Differences Between the Final EIS and 2015 Revised Draft EIS

The approach to the analysis in the Land Use section has not changed since the release of the 2015 Revised Draft EIS. However, the Final EIS Land Used section was revised based on better available data on total land requirements. The Final EIS Land Used section provides the total land requirements for each alternative to give a clear concept of the amount of land that would be needed to carry out an alternative, and is analyzed in **Section 4.10**.

3.10.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Some information in the Land Use sections was changed since the release of the 2012 Draft EIS to provide a more thorough and in-depth analysis of impacts. These changes include updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. The changed information relates to the assessment of impacts in **Section 4.10**. A summary of the changed information is presented below.

Land Use Compatibility and Zoning. Land Use Zoning Maps were updated to the most current available data.

Potential Hearing Loss. An analysis of potential hearing loss on the mental and physical health effects of populations exposed to noise was revised because noise levels associated with the Proposed Action would not exceed 65 dBA DNL

3.10.3 Definition of Resource

Land Use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. In appropriate cases, the location and extent of a proposed action is evaluated for its potential effects on a project site and adjacent existing land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its “permanence.”

Coastal Zone and Submerged Lands. The CZMA was promulgated in 1972 as a means to “…preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation’s coastal zones for this and succeeding generations [through] the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and aesthetic values, as well as the needs for compatible economic development…” (16 U.S.C. 1451–1466).

The CZMA is administered through local programs designed in cooperation with the Federal government.

Federal consistency requirements of the CZMA require that Federal activities comply to the greatest extent possible with the enforceable policies of applicable local coastal zone management programs. Non-Federal activities must comply fully with local management programs if they require a Federal permit or license, or if they receive Federal funding (15 CFR Part 930). Land and submerged lands under Federal jurisdiction are excluded from the territorial coastal zone. According to the CZMA, Federal activities that affect any land or submerged land use or natural resource of a territory's coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforcement policies of the federally approved territorial Coastal Zone Management Program.

Region of Influence. The region of influence for land use is the land and submerged lands of Tinian and Saipan in the CNMI. For Saipan, the land use analysis focuses on Saipan International Airport and the Port of Saipan. For Tinian, the analysis focuses on Tinian International Airport and the Port of Tinian.

3.10.4 Existing Conditions

3.10.4.1 Saipan

The CNMI (including Saipan and Tinian) is located to the east of the Philippine Sea. Saipan has an area of approximately 46.5 square miles; Tinian has an area of approximately 39.5 square miles.

CNMI Land Use and Ownership. The Northern Mariana Islands became self-governing as a Commonwealth to the United States in 1976 under the terms of the "Covenant to Establish the Commonwealth of the Northern Mariana Islands with the United States of America" (hereinafter referred to as the Covenant). Land ownership within the CNMI is subject to the stipulations of Article XI and XII of the CNMI Constitution (CNMI 2012) which states that "lands can be privately owned in the CNMI, but only by persons of Northern Mariana descent." Public lands, which are managed by the CNMI Department of Public Lands (DPL), make up the majority of lands found within Saipan and Tinian.

Public lands are subcategorized as Grant of Public Domain Lands, Designated Public Lands, Leased Lands, Undesignated Public Lands, or Covenant Leased Lands. Grant of Public Domain Lands has been transferred to and are managed by another public agency in the CNMI. Designated Public Lands are actively managed for a particular use, such as a forest or a park. Leased Lands are leased to non-government agencies and require government approval. If the area is greater than 12.4 acres, the lease must be approved by the CNMI legislature; if the lease is for an area of less than 12.4 acres, it must be approved by the CNMI DPL. Public lands without a specified use are undeveloped and are classified as Undesignated Public Lands (DON 2010b).

Covenant Leased Lands have been leased to the military for training purposes under Article VIII of the Covenant, which states that approximately 17,799 acres on Tinian and 177 acres on Saipan would "be made available to the U.S. by lease to enable it to carry out its defense responsibilities." The lease for these lands was issued on January 6, 1983, for an initial term of 50 years with an option to renew for an additional 50-year term upon expiration. A separate *Technical Agreement Regarding Use of Land to be Leased by the United States in the Northern Mariana Islands* (hereinafter referred to as the Technical Agreement) was simultaneously executed with the Covenant that provided for the leaseback of property and joint use arrangements for San Jose Harbor and West Field on Tinian and Isley Field, Port of Saipan, and other property on Saipan (DON 2010b). Specifically, the United States retained a limited right of use of both airports for the landing and take-off of military and naval aircraft of the United States, in common with other aircraft at a rate established by agreement between the CNMI government and the U.S. government. The United States has routinely exercised these rights by entering into short-term and long-term agreements with CPA for a variety of military requirements including mooring of the pre-positioned ship squadron at Saipan Harbor; military improvements of dock infrastructure to "Baker" wharf at Saipan harbor to facilitate the mooring of military vessels; intermittent use of Saipan International Airport for refueling of aircraft using FDM; intermittent use of West Field on Tinian for specific military training exercises such as Geiger Fury; and intermittent use of West Field on Tinian for logistics requirements for training and humanitarian efforts, including Marathon Pacific 1999. Furthermore, Article VIII recognizes the right of the United States, as a sovereign government, to acquire property for public purpose. This sovereign right is limited, by mutual agreement between the Commonwealth and the United States, to acquiring the minimum area necessary to accomplish the public purpose.

CNMI Coastal Zone and Submerged Lands. Submerged lands refer to coastal waters extending from the CNMI coastline into the ocean for 3 NM, which is the limit of state, commonwealth, or territorial jurisdiction. Article XI of the CNMI Constitution states that "the submerged lands off the coast of the commonwealth are public lands belonging collectively to the people of the Commonwealth who are of Northern Marianas descent." However, in *CNMI v. U.S.* (399 F.3d 1057, 9th Cir. 2005), it was affirmed that the "U.S. possesses paramount rights in and powers over the waters extending seaward of the ordinary water mark on the Commonwealth coast and the lands, minerals, and other things of value underlying the waters…"

The CZMA is administered in CNMI by the CRMO. The coastal zone includes all non-Federal lands on the island, offshore islands, and non-Federal submerged lands, within 3 NM of the coast. The CRMO has identified Areas of Particular Concern (APCs), which are geographically delineated areas with special management requirements. Before work begins on any project to be located wholly or partially within an APC, a federal coastal consistency determination is required. If the CRMO does not issue a written response within 60 days to the agency's consistency determination, the Federal agency may presume concurrence that the activity is consistent with the Coastal Resources Management (CRM) program. Currently, there are five APCs in CNMI (CNMI CRMO 2012):

- *Shoreline.* The area between the mean high water mark and 150 feet inland.
- *Lagoon and Reef.* The area extending seaward from the mean high water mark to the outer slope of the reef.

- *Wetlands and Mangrove.* Those areas which are permanently or periodically covered with water and where species or mangrove vegetation can be found.
- *Port and Industrial.* Those land and water areas surrounding the commercial ports of Saipan, Tinian, and Rota.
- *Coastal Hazards.* Those areas identified as a coastal flood hazard zones in the FEMA FIRMs.

Saipan Land Use and Ownership. Saipan is the most heavily populated island in the CNMI. Land ownership on Saipan is primarily public. A breakdown of land ownership percentages is not currently available. Land use on the Island of Saipan is regulated by the Saipan Zoning Law of 2008 (CNMI Zoning Board 2008), which stipulates that no development shall commence on Saipan without a zoning permit. The primary land use on Saipan is designated as Rural, with much of the interior of the island consisting of lightly or undeveloped areas. Several large areas along the coast of the islands have been designated as Tourist Resort. Additionally, much of the northern part of the island has been designated as Public Resources. The rest of the island has been designated as a mixture of Industrial, Village Commercial, Village Residential, Mixed Commercial, and Agriculture (CNMI Zoning Board 2012).

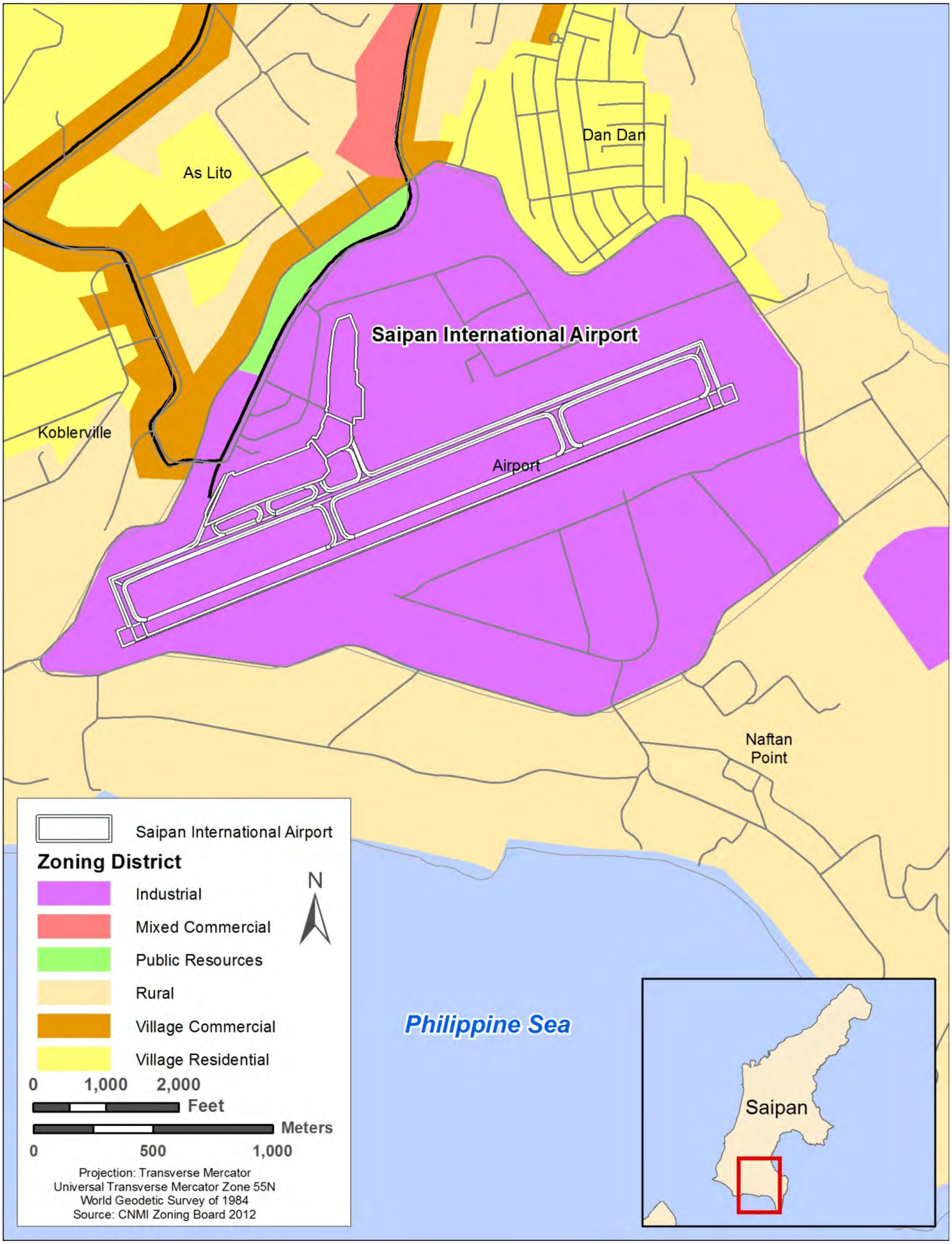
The DOD does not have any active training areas on Saipan; however, the Technical Agreement allows for leaseback at the Port of Saipan for uses compatible with DOD use. The Technical Agreement also allowed the leaseback of the remaining leased property on Saipan for use as a memorial park to honor those who died in the World War II Mariana Islands campaign. The remaining portion of the lease area at the Port of Saipan is used as a U.S. Army Reserve Center.

Saipan International Airport. Saipan International Airport is situated on approximately 700 acres in the southern portion of the Island of Saipan. It is owned and operated by the CPA under the Commonwealth Ports Authority Act (P.L. 2-48), which was enacted in October 1981. The airport is designated as an Industrial land use according to the CNMI Zoning Board. The land use surrounding the airport primarily consists of agricultural, recreation, and conservation (see **Figure 3.10-1**). The 2002 Saipan International Airport Master Plan outlines the development strategy for the airport as it prepares for increases in passenger use (CPA 2002).

Port of Saipan. The Port of Saipan is situated on the west coast of Saipan. It contains 2,600 linear feet of berthing space and a 22-acre container yard. It is owned and operated by the CPA under the jurisdiction of the Commonwealth Ports Authority Act. The Port is designated as industrial according to the CNMI Zoning Board. The land surrounding the harbor is a mixture of undesignated public lands and mixed commercial (see **Figure 3.10-2**) (CPA 2012a).

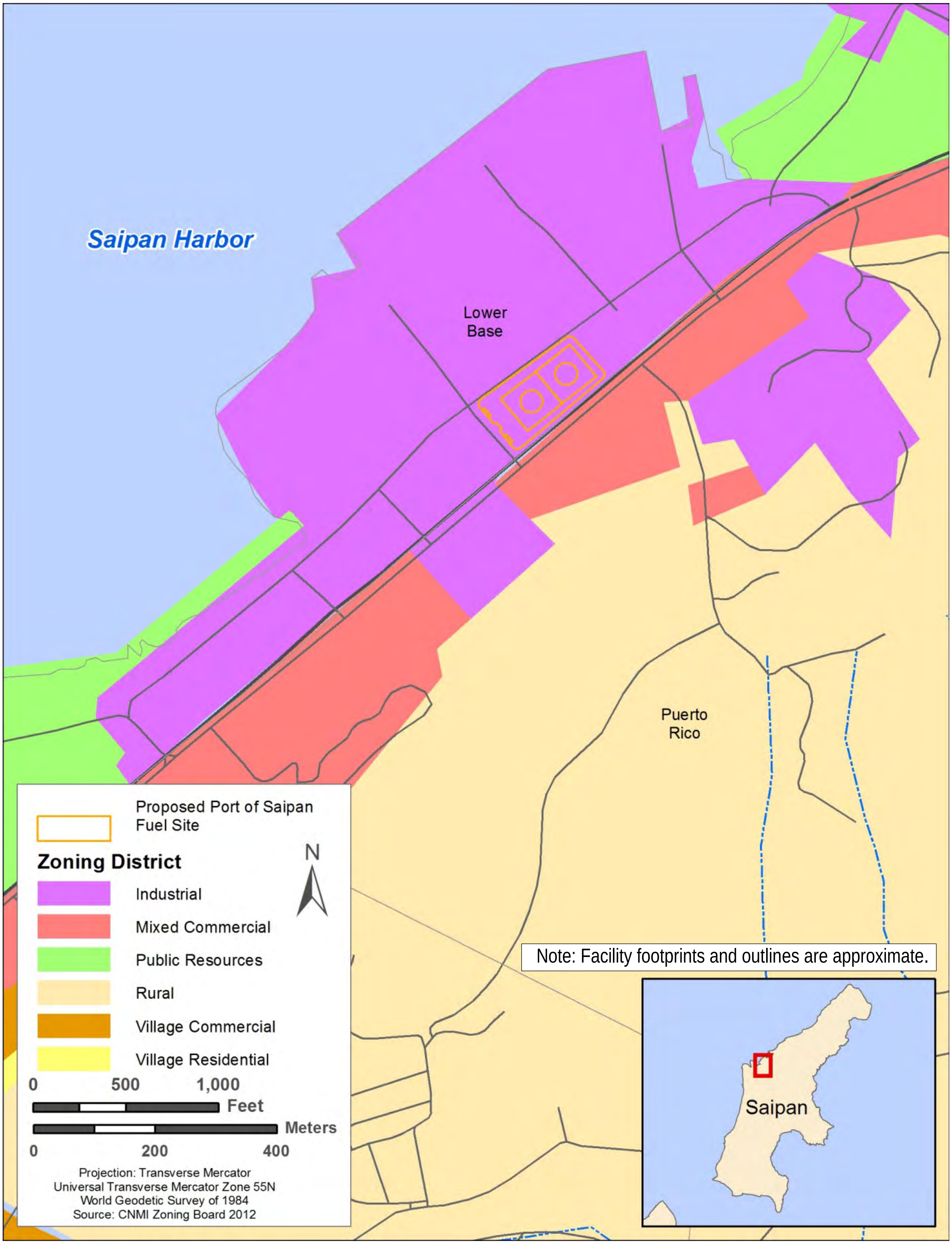
Coastal Zone and Submerged Lands. The coastal zone includes all non-Federal lands on the island, offshore islands, and non-Federal submerged lands within 3 NM of the shoreline.

Noise Levels. Noise levels were calculated for noise-sensitive locations around Saipan International Airport. Most of the population around the airport is north of Saipan International Airport. As shown in **Table 3.10-1**, there are numerous noise-sensitive land uses around Saipan International Airport including residences, schools, and recreation areas. Under the Baseline Scenario, none of these land uses are at or above 65 dBA DNL.



Source: HDR

Figure 3.10-1. Land Use Surrounding Saipan International Airport



Source: HDR 2012

Figure 3.10-2. Land Use Surrounding Port of Saipan

Table 3.10-1. Baseline Scenario Noise Levels at Noise-Sensitive Locations around Saipan International Airport

Land Use	DNL Noise Level
Coral Ocean Point Golf Course	58 dBA
Dandan Elementary School	44 dBA
Village Residential	53 dBA
Koblerville Elementary School	47 dBA
Saipan Southern High School	48 dBA
Lao Lao Bay Golf Course	37 dBA
Ladder Beach	55 dBA
Forbidden Island	44 dBA
Babui Beach on Tinian	46 dBA

Source: HDR

3.10.4.2 Tinian

Land Use and Ownership. Private lands account for approximately 2,422 acres (10 percent) and public lands account for approximately 22,729 acres (90 percent) of the lands on Tinian. **Table 3.10-2** presents the breakdown of land ownership on Tinian.

Table 3.10-2. Tinian Land Ownership

Owner	Sub-classification	Acres
Private Lands	Private	2,422
Public	Grant of Public Domain	1,569
	Designated/In Use	663
	Leased	1,639
	Covenant Leased	15,469
	Undesignated/Not in Use	3,389
	Total	**25,151**

Source: DON 2010b

The DOD currently leases 16,100 acres, known as the MLA, in the northern portion of Tinian (NPS 2001). In 1983, the Navy signed a lease for the MLA for a period of 50 years with a renewal option for an additional 50 years. The MLA encompasses approximately the northern two-thirds of Tinian land area, and is divided into two sections. The northern portion is the EMUA and the southern portion is the LBA. The EMUA is used for periodic military training exercises, and is open to the public for recreational purposes when not being used for military training. The roads that connect the EMUA with the Port of Tinian and Tinian International Airport are also used by the Navy during training exercises. The LBA is a joint-use area where both military and non-military activities can occur. The LBA has been leased back to the CNMI for uses determined by the Navy to be compatible with long-term DOD needs, primarily grazing and agriculture. Under the leaseback agreement, the LBA can be used for DOD training activities that would not be detrimental to ongoing CNMI economic and agricultural activities (NPS 2001).

The EMUA covers approximately the northern third of Tinian and contains approximately 7,574 acres of land. The area is used for ground element exercises, including Military Operations in Urban Terrain-type exercises, command and control, logistics, bivouac, vehicle land navigation, convoy training, and other field activities (DON 2010b). The LBA consists of approximately 7,779 acres in the middle third of the island where the U.S. Government has agreed to lease land back to the CNMI government. In consultation with the U.S. Government, the CNMI government issues permits for LBA lands to Tinian residents for grazing and agricultural uses. Within the LBA, there are 35 lessees with 48 parcels totaling approximately 2,552 acres of grazing and agricultural land (DON 2010b).

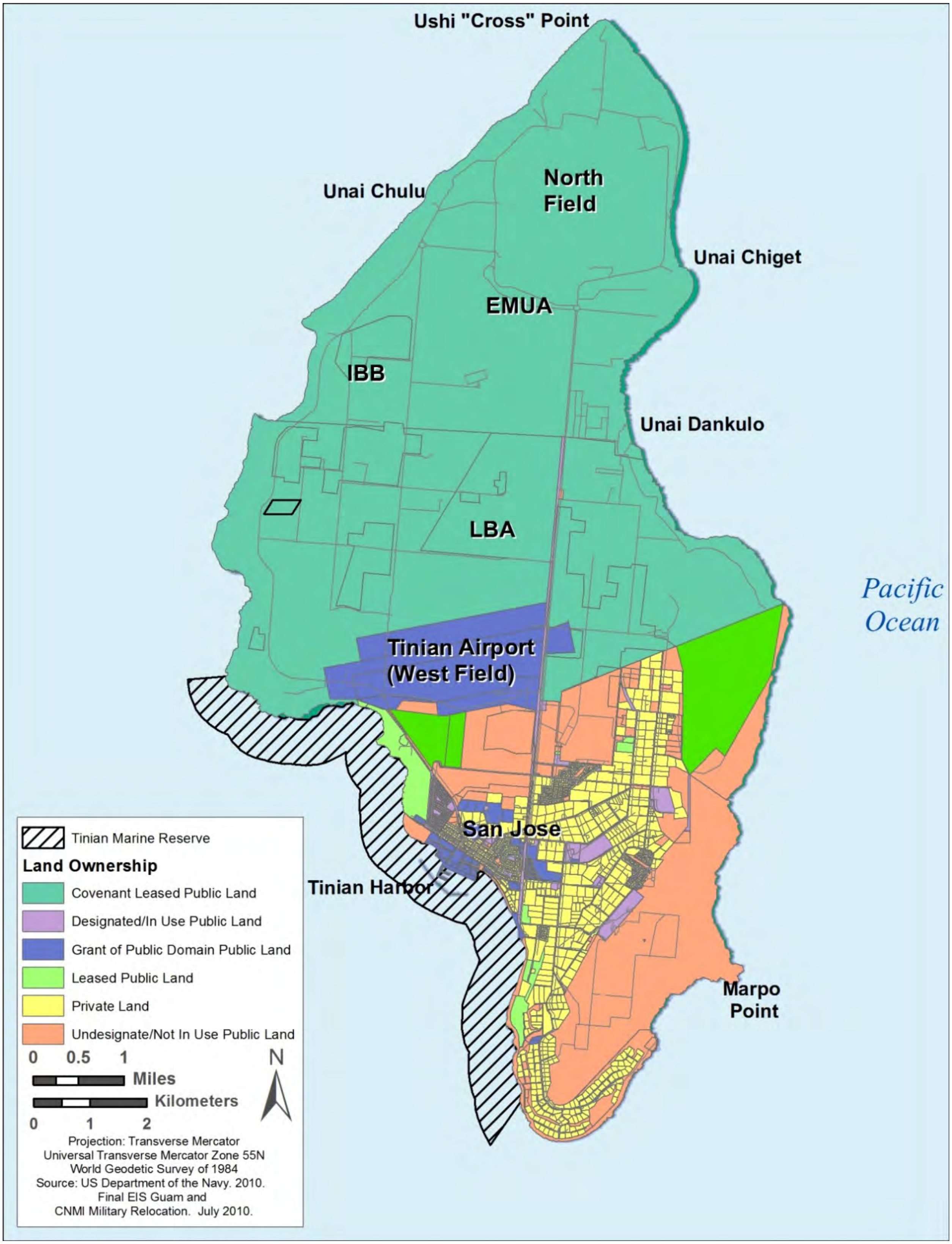
Land use on Tinian is overseen by the CNMI DPL. The primary land use is Agriculture, with other primary land uses including Tourism, Natural Resource Extraction/Alteration, Natural Resource Conservation/Preservation, Urban/Buildup, and Undeveloped (DON 2010b).

Tinian International Airport. Tinian International Airport is owned and operated by the CPA under the Commonwealth Ports Authority Act. The airport is situated on approximately 1,400 acres of land. The airport is designated as urban/buildup and the area surrounding the airport is designated primarily as Agricultural or Undeveloped/Site in a Natural State by the CNMI DPL (see **Figure 3.10-3**) (DON 2010b).

Port of Tinian. The Port of Tinian is situated on the southwest coast of Tinian. It contains three piers, a small boat ramp, and a bulk fuel plant. The Tinian Harbor has undergone emergent repairs to include the sea wall, bollards, and fenders and therefore continues to supports some shipping vessels. It is owned and operated by the CPA under the jurisdiction of the Commonwealth Ports Authority Act (CPA 2012b). The port is designated as Urban/Buildup and the area surrounding the port includes public and private land and is designated as a mixture of Private Land, Agricultural, and Undeveloped/Site in a Natural State by the CNMI DPL (see **Figure 3.10-4**) (DON 2010b).

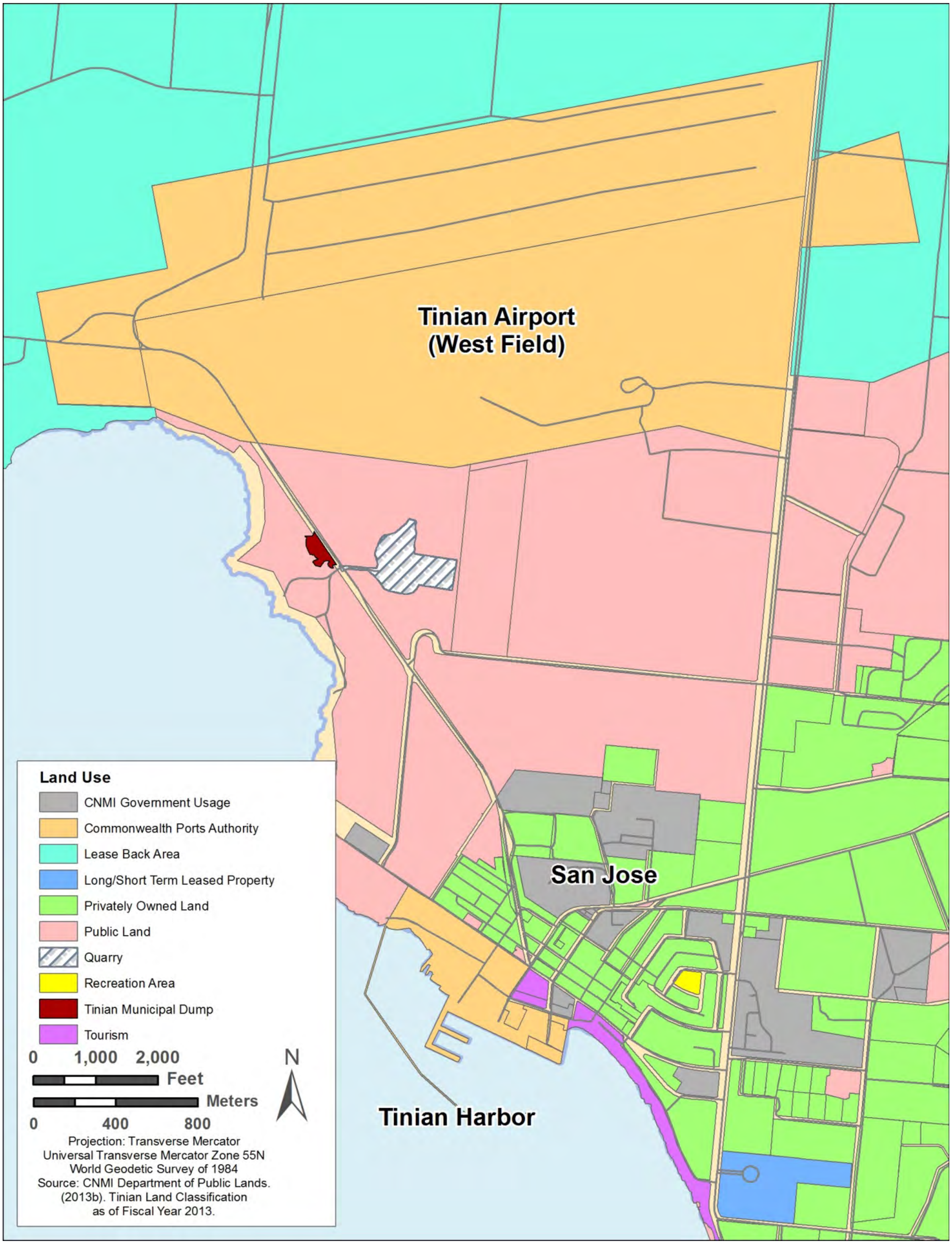
Coastal Zone and Submerged Lands. The coastal zone includes all non-Federal lands on the island, offshore islands, and non-Federal submerged lands within 3 NM of the shoreline. The CRMO has identified three APCs for Tinian: Shoreline, Wetlands, and Port and Industrial. The shoreline APC encompasses the entire island from the mean high water mark to 150 feet inland. The Wetlands APC consists of two areas: one in the north-central part of the island within the EMUA and a second on the southeast portion of the island. The Port and Industrial APC consists of Tinian Harbor in San Jose (DON 2010b).

Noise Levels. Noise levels were calculated for noise-sensitive locations around Tinian International Airport. Since the land north of the airport is leased for military use, the areas on Tinian that are sensitive to noise are south of Tinian International Airport. As shown in **Table 3.10-3**, these land uses are currently exposed to very low noise levels from aircraft operations. These locations include the residential areas, Marpo Heights and the private land east of the airport, and the Old San Jose Bell Tower. The noise level at Marpo Heights, on the private land, and at the Old San Jose Bell Tower is less than 45 dBA DNL.



Source: HDR 2012

Figure 3.10-3. Land Use Surrounding Tinian International Airport



Source: HDR 2012

Figure 3.10-4. Land Use Surrounding Tinian Harbor

Table 3.10-3. Baseline Scenario Noise Levels at Noise-Sensitive Locations around Tinian International Airport

Land Use	DNL Noise Level
Marpo Heights–Residential	< 45 dBA
Private Land	< 45 dBA
Old San Jose Bell Tower	< 45 dBA

Source: HDR

3.11 Transportation

3.11.1 Differences Between the Final EIS and 2015 Revised Draft EIS

The approach to the analysis in the Transportation sections has not changed since the release of the 2015 Revised Draft EIS. However, the Final EIS Transportation sections were revised based on better available data related to construction workers. In the 2015 Revised Draft EIS, the number of construction workers that could be needed to support the construction phase for each alternative was between 500 and 750 workers. However, in the Final EIS the USAF has reduced the number of construction workers that could be needed to support construction for each alternative to between 50 and 150. Potential impacts on transportation due to construction worker traffic during the 3-year construction phase was recalculated for each alternative in the Final EIS, based on the revised number of construction workers.

3.11.2 Definition of Resource

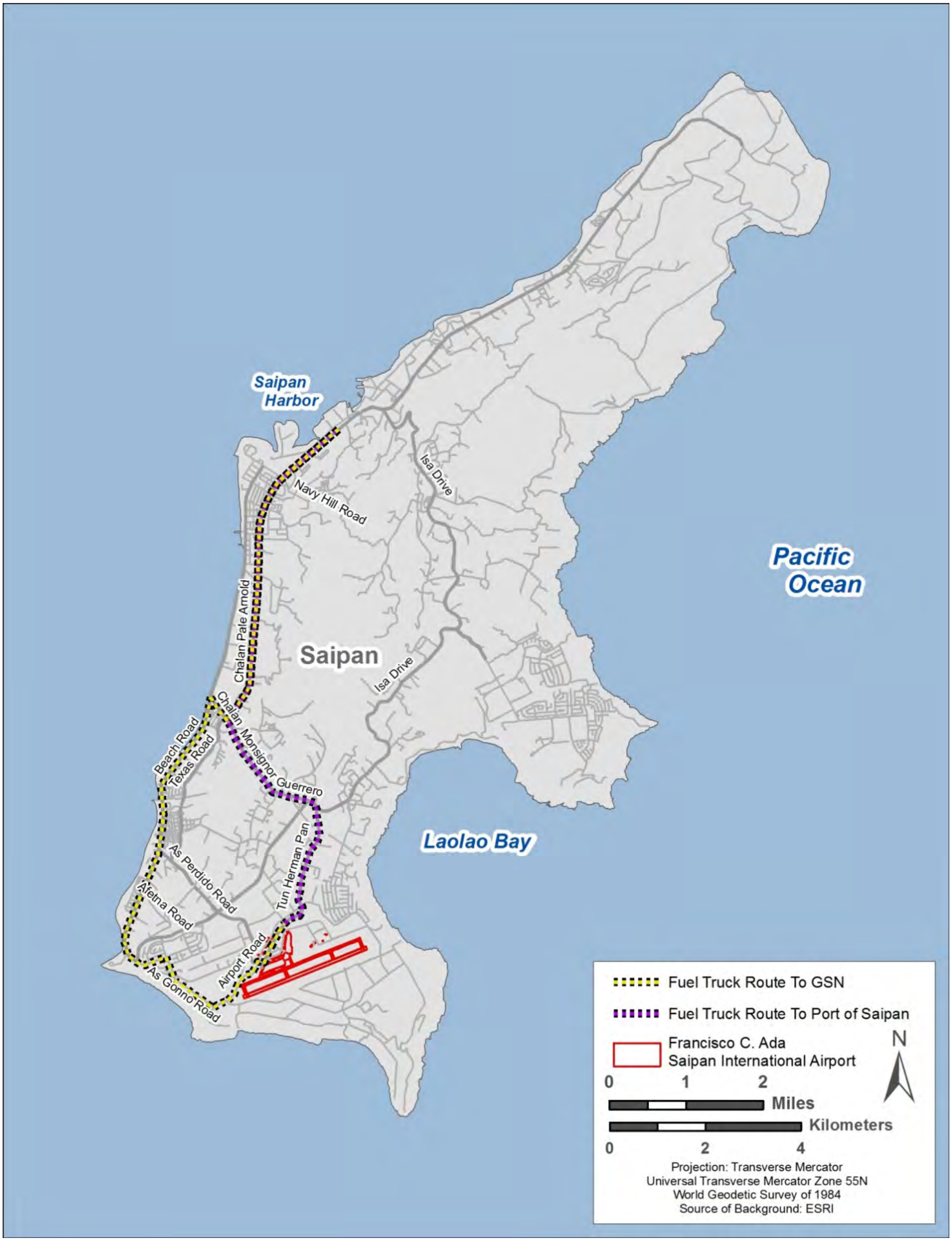
This section describes the existing roadway facilities that serve the islands of Saipan and Tinian. The CNMI Comprehensive Highway Master Plan was used to identify the existing conditions of the roadway network potentially impacted by the proposed action. The roadways discussed in the following sections are located in proximity to the proposed fuel and construction materials truck routes and personnel transport routes as a result of the proposed action. Roadway conditions and capacities are included in the descriptions where available.

3.11.3 Existing Conditions

3.11.3.1 Saipan

Saipan has the largest roadway network in the Mariana Islands with approximately 80 miles of roads on the Territorial Highway System (CNMI DPW 2009). A majority of Saipan roadways were paved during and shortly after World War II under the auspices of the U.S. Navy Administration. Some of the roadway facilities have been widened or repaved since originally constructed (USDOI-OIA 1999).

Several major traffic generators are located in the vicinity of the Project Area including several schools and the Commonwealth Health Center. Key roadways identified on Saipan are shown in **Figure 3.11-1** and described in **Table 3.11-1**. Primary aspects of the existing conditions include traffic volume, level of service (LOS), and pavement condition. LOS is a term used to describe the traffic operations of a roadway. LOS is described using letter designations A through F, with A representing excellent traffic operations with little to no delay and



Source: HDR 2012

Figure 3.11-1. Existing Roadway Network – Saipan

Table 3.11-1. Year 2008 Existing Conditions: Key Saipan Roadways

Roadway	Cross-Section	Average Daily Traffic (ADT) Volume	Level of Service
Chalan Pale Arnold	4-Lane Undivided	23,180–31,350	C–D
Chalan Monsignor Guerrero	4-Lane Undivided	22,330–29,040	C
Beach Road	4-Lane Undivided/ 2-Lane Undivided south of Afetna Road	20,860–39,890 12,690	D–F D
Airport Road	2-Lane Undivided	6,950	C
Tun Herman Pan	2-Lane Undivided	5,280	B
Isa Drive	2-Lane Undivided	7,530	D

Source: CNMI DPW 2009

F representing failing traffic operations with extensive delay. Most roadways in the vicinity of the Project Area operate at an acceptable LOS (LOS D or better) with the exception of Beach Road. Beach Road north of As Perdido Road operates at LOS E or F (CNMI DPW 2009).

Pavement conditions on Saipan tend to be poor as a result of drainage issues and the use of coral and acidic-based pavement materials. Chalan Pale Arnold was repaved and Chalan Monsignor Guerrero was widened to four lanes in the past 15 years (since the previous highway master plan was completed) (CNMI DPW 2009).

The CNMI Comprehensive Highway Master Plan identified three signalized intersections in the vicinity of the Project Area as key intersections of concern, as shown in **Table 3.11-2**. All of these intersections currently operate at LOS D or better.

Table 3.11-2. Year 2008 Existing Conditions: Key Saipan Intersections

Intersection	Level of Service
Beach Road/Chalan Monsignor Guerrero	C
Chalan Pale Arnold/Navy Hill Road	D
Chalan Pale Arnold/Chalan Monsignor Guerrero	B

Source: CNMI DPW 2009

In addition to existing conditions, the CNMI Comprehensive Highway Master Plan includes projected average daily traffic (ADT) volumes and associated future traffic operations (assuming no improvements). **Table 3.11-3** shows the future conditions of key roadways on Saipan. Based on the predicted future LOS, the Comprehensive Highway Master Plan also provides improvement recommendations for several roadways.

The three signalized intersections that were analyzed for existing conditions were also analyzed under future conditions in the CNMI Comprehensive Highway Master Plan. These intersections and corresponding LOSs are shown in **Table 3.11-4**. Chalan Pale Arnold/Navy Hill Road would fail under future conditions; however, it would operate at LOS D if the improvements recommended in the CNMI Comprehensive Highway Master Plan are constructed. The other two intersections would operate with adequate capacity in the future.

Table 3.11-3. Year 2022 Future Conditions: Key Saipan Roadways

Roadway	ADT Volume	Level of Service	Master Plan Proposed Improvements
Chalan Pale Arnold	35,610–40,130	E–F	Intersection Improvements to 3 Intersections
Chalan Monsignor Guerrero	28,580–37,170	C–E	Intersection Improvements to 3 Intersections
Beach Road	26,700–51,060 16,240	E–F F	Install Two-Way Left-Turn Lane Intersection Improvements to 3 Intersections
Airport Road	8,900	D	No Improvements
Tun Herman Pan	9,680	C	Intersection Improvements at Flame Tree Drive Upgrade and Improve
Isa Drive	9,640	E	No Improvements

Source: CNMI DPW 2009

Table 3.11-4. Year 2022 Future Conditions: Key Saipan Intersections

Intersection	Level of Service	Master Plan Proposed Improvements
Beach Road/Chalan Monsignor Guerrero	D	Signal Phase Modifications
Chalan Pale Arnold/Navy Hill Road	F	Signal Phase Modifications Northbound Right-Turn Lane Eastbound Dual Left-Turn Lanes Westbound Dual Left-Turn Lanes
Chalan Pale Arnold/Chalan Monsignor Guerrero	C	Signal Phase Modifications Realign Texas Road to Create 4th Leg Free Westbound Right-Turn Movement

Source: CNMI DPW 2009

3.11.3.2 Tinian

Tinian's roadway system consists of approximately 60 miles of two-lane undivided roadways on the Territorial Highway System (CNMI DPW undated). As with Saipan, a majority of Tinian roadways were paved during and shortly after World War II under U.S. Navy Administration (USDOI-OIA 1999). One prominent traffic generator located on Tinian is the Tinian Health Centre. Key roadways identified on Tinian are described in **Table 3.11-5** and shown in **Figure 2.5-8**. **Table 3.11-5** includes ADT volumes and LOS. All of the roadways currently operate at LOS A. No intersections on Tinian were identified and analyzed in the CNMI Comprehensive Highway Master Plan. Similar to Saipan, the pavement conditions tend to be poor as a result of drainage issues and the use of coral and acidic-base pavement materials (CNMI DPW 2009).

Table 3.11-5. Year 2008 Existing Conditions: Key Tinian Roadways

Roadway	ADT Volume	Level of Service
Broadway	390–1,470	A
42nd Street	150	A
8th Avenue	180–300	A
Route 201	2,240	A

Source: CNMI DPW 2009

In addition to existing conditions, the CNMI Comprehensive Highway Master Plan includes projected ADT volumes and associated future traffic operations (assuming no improvements). **Table 3.11-6** shows the future conditions of key roadways on Tinian. Based on the predicted future LOS, the CNMI Comprehensive Highway Master Plan also provides improvement recommendations for several roadways; however, no improvements were identified for the key roadways in **Table 3.11-6**.

Table 3.11-6. Year 2022 Future Conditions: Key Tinian Roadways

Roadway	ADT Volume	Level of Service
Broadway	500–1,880	A
42nd Street	190	A
8th Avenue	230–380	A
Route 201	2,870	A

Source: CNMI DPW 2009

3.12 Hazardous Materials and Wastes

3.12.1 Definition of the Resource

Hazardous materials are defined by 49 CFR Part 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR Part 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) at 42 U.S.C. 6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR Part 273.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). The USEPA is given authority to regulate these special hazard substances by the Toxic Substances Control Act (TSCA) Title 15 U.S.C. Chapter 53. USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR Part 763 with additional regulation concerning emissions (40 CFR Part 61). Whether from lead abatement or other activities, depending on the quantity or concentration, the disposal of the LBP waste is potentially regulated by RCRA at 40 CFR Part 260. The disposal of PCBs is addressed in 40 CFR Parts 750 and 761.

AFPD 32-70, *Environmental Quality*, and the AFI 32-7000 series incorporate the requirements of all Federal regulations, and other AFIs and DOD Directives for the management of hazardous materials and hazardous wastes.

Evaluation of hazardous materials and wastes focuses on underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, handling, and use of pesticides, fuels, solvents, oils, lubricants, ACMs, PCBs, and LBP. Evaluation might also extend to the generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of a release of hazardous materials or wastes, the extent of contamination varies based on the contaminant and the type of soil, topography, and water resources.

3.12.2 Existing Conditions

3.12.2.1 Saipan

Hazardous Materials and Hazardous Wastes. As a full-service commercial and private airport, Saipan International Airport uses, handles, and stores hazardous materials for day-to-day operations. Common hazardous materials at Saipan International Airport include pesticides (discussed separately in the *Pesticides* subsection), industrial and household cleaning products, hydraulic fluids, paints, solvents, and other hazardous materials. Hazardous materials are stored and managed by Saipan International Airport personnel in accordance with applicable Federal and CNMI regulations.

Saipan International Airport is a registered RCRA Small Quantity Generator (SQG) of hazardous wastes (USEPA Identification Number: TTR000128868). To qualify as an RCRA SQG, a facility must generate between 100 kilograms (kg) and 1,000 kg of hazardous waste during any calendar month and accumulate less than 6,000 kg of hazardous waste at any time. The hazardous wastes generated by Saipan International Airport include universal wastes (e.g., used batteries and fluorescent lamps), ignitable hazardous wastes, reactive hazardous wastes, cadmium, chromium, lead, mercury, endrin, methoxychlor, benzene, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, and vinyl chloride (EDR 2011b). These wastes are managed for safe handling and fire prevention under 40 CFR Part 264 and CNMI regulations. The CNMI BECQ Toxic Waste Management branch regulates the management of hazardous waste activities in the CNMI.

No hazardous materials or hazardous wastes are known to be stored within the proposed Project Areas for Alternatives 1 and 3 on Saipan.

Petroleum Products. Saipan is supplied with petroleum products that include jet fuel, gasoline, diesel, oils and lubricants, and other miscellaneous petroleum products. As discussed in **Section 3.13.3.1**, liquid fuel is delivered to the island in bulk quantities and stored in ASTs at the Port of Saipan for dispensing throughout the island. The Port of Saipan has two jet fuel and nine diesel and gasoline fuel ASTs (AFCEE/PACAF 2010). Petroleum products on Saipan are stored and managed in accordance with applicable Federal and CNMI regulations.

The most prominent petroleum product used at Saipan International Airport is jet fuel, which is used to fuel aircraft. Jet fuel originates from Singapore and arrives on ocean-going tankers. The tankers berth at the Port of Saipan and jet fuel is transferred from the tankers to ASTs at the seaport through a 10-inch dedicated pipeline. Tankers make fuel deliveries approximately once per month and deliver a maximum of 10,000 barrels (bbl; 420,000 gallons) of jet fuel per trip. The seaport has two jet fuel ASTs, each with 15,000 bbl (630,000 gallons) of capacity. Head-space requirements on the ASTs limit the maximum jet fuel usable storage capacity at the seaport to 24,000 bbl (1,008,000 gallons). Both ASTs are considered to be in good condition, and there is no record of any releases (AFCEE/PACAF 2010).

Jet fuel is transported from the Port of Saipan to Saipan International Airport by two Mobil-operated bridger trucks. The bridger trucks are capable of transporting a combined volume of 19,000 gallons of jet fuel per trip, and can transport a maximum of 190,000 gallons per day (gpd) assuming 24-hour operations (AFCEE/PACAF 2010). The distance between the seaport and Saipan International Airport is approximately 8 miles, and the route uses paved roadways through residential, industrial, and undeveloped portions of the island.

After arriving at Saipan International Airport, the jet fuel is transferred from the bridger trucks into two 1,100-bbl (46,200-gallon) ASTs and one 2,800-bbl (117,600-gallon) AST at the Mobil-owned bulk fuel area to the north of the Saipan International Airport. An in-ground hydrant system dispenses the jet fuel from the ASTs to 13 hydrant outlets on the aircraft parking apron via a 10-inch pipeline. The hydrant system is capable of dispensing at a rate of 1,200 gallons per minute (gpm). The condition of the hydrant system is deteriorated because the pipeline between the ASTs and the hydrant outlets no longer has cathodic protection and there is no plan to restore this service (AFCEE/PACAF 2010). One release of jet fuel from the hydrant system was reported in 2001 and is further discussed in the *Existing Contamination Areas* subsection. Saipan International Airport does not own any trucks capable of refueling or defueling aircraft (AFCEE/PACAF 2010). All fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks approved by the CPA. Due to requirements in 14 CFR Part 139, only airlines, the fuel system operator, and fixed base operators are authorized to perform into-plane fueling services.

While jet fuel is the most prominent petroleum product used at Saipan International Airport, other petroleum products are used at the airport for aircraft maintenance and day-to-day operations. Oils and lubricants are used for aircraft and airport facility maintenance. Diesel and gasoline are used for ground vehicles, such as trucks, cargo loaders, and push tractors. Saipan International Airport maintains a 4,000-gallon AST, with separate compartments for gasoline and diesel, adjacent to the Continental cargo building. No underground pipelines are associated with this AST and no releases have been reported (Kretzers 2009).

All ASTs and USTs in the CNMI are managed by the CNMI BECQ, which requires owners of ASTs and USTs to obtain a Permit to Install and Permit to Operate for each AST and UST. The CNMI BECQ published the latest AST regulations for the CNMI in the Commonwealth Register, Volume 27, Number 04, May 18, 2005, at pages 24139 through 24165: *Commonwealth of*

Northern Mariana Islands Aboveground Storage Tank Regulations (CNMI BECQ 2005). The latest UST regulations for the CNMI are published in Northern Mariana Islands Administrative Code *Title 65: Division of Environmental Quality, Chapter 65-100 Underground Storage Tank Regulations* (CNMI BECQ 2004b).

Existing Contamination Areas. There are no known areas of environmental contamination at the Project Areas for Alternatives 1 and 3 on Saipan. However, a review of historical aerial photographs indicates that World War II-era structures formerly were located throughout much of the Project Areas at the Saipan International Airport. The area at and surrounding Saipan International Airport was used during World War II by both Japanese and American forces as a military airfield where aircraft servicing occurred. The World War II-era predates modern environmental regulations; therefore, there is the potential for improper onsite disposal of hazardous materials, hazardous wastes, and petroleum products during the former airfield operations. All of the areas at Saipan International Airport for Alternatives 1 and 3 have the potential to have been impacted by former airfield operations.

Due to the history of Saipan during World War II, there is the potential for unexploded ordnance (UXO) to be present at the Project Areas for Alternatives 1 and 3 on Saipan. UXO is most likely to be discovered in heavily vegetated areas that have not been developed since World War II. While the presence of UXO has not been confirmed and is unlikely, the possibility remains that it exists at the Project Areas for Alternatives 1 and 3 on Saipan.

Several areas of known contamination have been identified in the vicinity of Alternatives 1 and 3 on Saipan. A summary of these sites is included as follows:

- In June 2000, approximately 26 55-gallon drums were discovered during land clearing on a CPA-owned parcel just south of Continental Drive. The parcel is legally known as Lot 028 K 11 Parcel “B.” Subsequent investigations of the discovered drums determined that all but one of these drums was filled with soil, partially buried, and rusting. The remaining drum was one-third full of waste oil. One drum was labeled “U.S. Army,” which suggests that it dates from World War II. A preliminary site inspection indicated the presence of contaminants in the soil at levels greater than USEPA reporting limits. The parcel currently is listed as a Brownfields property and is considered an area for uncontrolled dumping of municipal wastes, tires, construction debris, bottles, and cars. World War II-era UXO contamination is a possibility due to the suspected age of some materials deposited on the property (CNMI BECQ 2010b, CNMI BECQ undated). There is no record of remedial action being conducted at the property. The proposed bulk fuel storage area at Saipan International Airport for Alternatives 1 and 3 on Saipan is approximately 200 feet to the north of this property.
- On January 1, 2001, a pipe flange within a surge suppression vault on an underground jet fuel line between the main and commuter terminals failed, resulting in a release of 7,418 gallons of jet fuel. Of this quantity, 5,873 gallons were not recovered and impacted soil. A soil vapor extraction system was installed to remediate subsurface soil contamination, and groundwater sampling has been occurring on a periodic basis to ensure that contaminants have not impacted groundwater. The proposed parking apron is the nearest component of Alternative 1 on Saipan to this release site at a distance of

approximately 700 feet, while the proposed maintenance facility is the nearest component of Alternative 3 on Saipan at approximately 2,500 feet.

- An inspection of Saipan International Airport property during 2005 identified seven Areas of Concern (AOCs) with the potential for environmental contamination. These AOCs included the CPA Incinerator Area, CPA Operational Maintenance Facility, Freedom Air Maintenance Facility, Pacific Island Aviation Maintenance Facility, Continental Airlines Maintenance Facility, Continental Cargo Facility, and the Former Fuel Storage and Dispensing Facility. A total of 50 surface and subsurface soil samples were taken from these AOCs and analyzed for petroleum hydrocarbons and heavy metals. All seven AOCs were found to contain some form of soil contamination greater than CNMI BECQ clean-up goals. No areas of soil contamination were found below 48 inches of ground surface, and while groundwater sampling was not conducted, impacts on groundwater were determined unlikely. Excavation of contaminated soil and bioremediation was recommended for each of the seven AOCs; however, there is no record of these actions ever taking place (CPA 2006).
- The “Isley Field Commonwealth Utilities Corporation Power Plant #3” property was used formerly as an electrical power generation facility, but after operations ceased, the property was used for the storage of waste oils and discarded electrical transformers, some containing PCBs. A December 2010 site investigation of the property identified several hundred 55-gallon drums, some containing waste oils, on the property. The site investigation recommended the removal and proper disposal of these materials, which equated to approximately 2,500 gallons of oily wastewater, 950 gallons of total petroleum hydrocarbons (TPHs) sludge, 8 cubic yards of TPH-contaminated soil in 55-gallon drums, and less than 4 cubic feet each of paint chips, oil pads, and oily metallic debris. No groundwater contamination was identified, but the site investigation recommended the excavation of several areas of contaminated soil. Removal actions for the site were completed in October 2011 under USEPA oversight and are documented in a letter report dated June 19, 2012, from the Ecology and Environment, Inc., Superfund Technical Assessment and Response to the USEPA (E&E 2012). The proposed bulk fuel storage area at Saipan International Airport for Alternatives 1 and 3 on Saipan is approximately 50 feet to the east of Power Plant #3.
- The Puerto Rico Dump is an approximately 20-acre, unlined, inactive landfill adjacent to Tanapag Harbor and immediately to the south of the Port of Saipan. The landfill received military, industrial, and domestic solid wastes between World War II and 2003. The dump became inactive in 2003 after a new sanitary landfill opened; however, the dump has not yet received official closure. Groundwater and soil contamination have been identified at the Puerto Rico Dump and some contamination has entered the marine environment of Tanapag Harbor (NOAA 2007). The proposed seaport fuel tank area for Alternatives 1 and 3 on Saipan is approximately 200 feet east of the Puerto Rico Dump.

Asbestos-Containing Material. Asbestos is regulated by the USEPA under the CAA, TSCA, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM.

There are no known ACMs at the Project Areas for Alternatives 1 and 3 on Saipan. These areas do not contain structures; therefore, ACM in standing buildings is not present. However, the potential exists for ACMs in the soils of the Project Areas at Saipan International Airport for these alternatives. As noted in the *Existing Contamination Areas* subsection, review of historical aerial photographs indicates that World War II-era structures formerly were located throughout much of the Project Areas at Saipan International Airport for Alternatives 1 and 3. As such, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris buried in surface or near-surface soil. There is no record of soil investigations to determine the presence of buried ACMs at Saipan International Airport being conducted.

Lead-Based Paint. Federal agencies are required to comply with applicable Federal, CNMI, and local laws relating to LBP activities and hazards.

There is no known LBP at the Project Areas for Alternatives 1 and 3 on Saipan. These areas do not contain structures; therefore, LBP in standing buildings is not present. However, because of the former presence of World War II-era structures at the Project Areas at Saipan International Airport, the potential exists for finding buried debris containing LBP and lead-contaminated soils. There is no record of soil investigations to determine the presence of buried debris containing LBP or lead-contaminated soils at Saipan International Airport being conducted.

Polychlorinated Biphenyls. PCBs are a group of chemical mixtures used as insulators in electrical equipment. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCBs can be present in products and materials produced before the 1979 ban. Common products that might contain PCBs include electrical equipment (e.g., transformers and capacitors), hydraulic systems, and fluorescent light ballasts.

Some electrical equipment (e.g., electrical transformers) at the Project Areas for Alternatives 1 and 3 on Saipan might contain PCBs. However, because the Project Areas do not contain buildings, the quantity of equipment possibly containing PCBs is limited. There is no known PCB contamination at Saipan International Airport or the seaport.

Pesticides. Pesticides in CNMI are managed under *Title 65: Division of Environmental Quality, Chapter 65-70: Pesticide Regulations* of the Northern Mariana Islands Administrative Code. The CNMI BECQ issues permits for the application of pesticides and controls the importation of pesticides to the island (CNMI BECQ 2004c). Pesticides are assumed to be applied at Saipan International Airport and the seaport on a regular basis to control noxious weeds and other nuisance species. It is assumed that all pesticide applications are conducted in accordance with manufacturer specifications and CNMI regulations. There are no areas of known pesticide contamination at Saipan International Airport or the seaport.

Radon. Radon is a naturally occurring radioactive gas found in soils and rocks. It comes from the natural breakdown or decay of uranium. Radon has a tendency to accumulate in enclosed spaces that are usually below ground and poorly ventilated (e.g., basements). Radon is an odorless, colorless gas that has been determined to increase the risk of developing lung cancer.

In general, the risk of lung cancer increases as the level of radon and length of exposure increase.

The USEPA has established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences; however, standards have not been established for commercial structures. Radon gas accumulation greater than 4 pCi/L is considered to represent a health risk to occupants. The USEPA has not established formal radon designations on Saipan. There are no records of radon testing being conducted at the existing buildings at Saipan International Airport or the seaport.

3.12.2.2 Tinian

Hazardous Materials and Hazardous Wastes. Much like Saipan International Airport, Tinian International Airport uses, handles, and stores hazardous materials for day-to-day airport operations; however, due to the limited aircraft maintenance and repair capabilities available at Tinian International Airport, the amounts of these hazardous materials are limited. Common hazardous materials at Tinian International Airport include pesticides (discussed separately in the *Pesticides* subsection), industrial and household cleaning products, hydraulic fluids, paints, solvents, and other hazardous materials. Hazardous materials are stored and managed by Tinian International Airport personnel in accordance with applicable Federal and CNMI regulations.

The use of hazardous materials generates various quantities of hazardous wastes. Tinian International Airport is not identified as a RCRA hazardous waste generator or handler, which implies that it doesn't generate any hazardous waste or is a conditionally exempt SQG (EDR 2011a). Hazardous wastes generated at Tinian International Airport are managed for safe handling and fire prevention under 40 CFR Part 264 and CNMI regulations. The CNMI BECQ Toxic Waste Management branch regulates the management of hazardous waste activities in the CNMI.

No hazardous materials or hazardous wastes are known to be stored within Project Areas for Alternatives 2 and 3 on Tinian.

Petroleum Products. Tinian is supplied with petroleum products that include gasoline and diesel fuel, oils and lubricants, and other miscellaneous petroleum products. Diesel and gasoline are delivered to Tinian monthly on shallow-draft barges that originate from Guam. Liquid fuels are offloaded via a 4-inch pipeline into two ASTs at the Port of Tinian. One of these ASTs is dedicated to diesel and has capacity for 12,000 bbl (500,000 gallons); the other AST is dedicated to gasoline and has capacity for 1,500 bbl (63,000 gallons). Diesel and gasoline fuel are used at Tinian International Airport for ground vehicles, such as trucks, cargo loaders, and push tractors; however, diesel and gasoline are not delivered or stored at Tinian International Airport. The nearest commercial source of diesel or gasoline to Tinian International Airport is approximately 3 miles away on Broadway Street (AFCEE/PACAF 2010).

Jet fuel is not available on Tinian. The only aviation fuel available to Tinian International Airport is 100 Low Lead Aviation Gasoline, which is for piston-engine aircraft. The 100 Low Lead Aviation Gasoline is delivered from Saipan via isotanks. Tinian International Airport exchanges one empty isotank at the seaport when a full tank arrives (AFCEE/PACAF 2010).

Tinian International Airport also uses oils and lubricants for aircraft maintenance and day-to-day operations. However, because the airport has limited aircraft maintenance and repair capabilities, the amount of these products are limited.

Existing Contamination Areas. There are no known areas of environmental contamination at the Project Areas for Alternatives 2 and 3 on Tinian. However, much of the area at and surrounding Tinian International Airport was used during World War II by both Japanese and American forces as a military airfield where aircraft servicing occurred. The World War II-era predates modern environmental regulations; therefore, there is the potential for improper onsite disposal of hazardous materials, hazardous wastes, and petroleum products during the former airfield operations. The Project Areas at Tinian International Airport for Alternatives 2 and 3 have the potential to have been impacted by former airfield operations.

Due to the history of Tinian during World War II, there is the potential for UXO to be present at the Project Areas on Tinian. UXO is most likely to be discovered in heavily vegetated areas that have not been developed since World War II. Because the area north of the existing Tinian International Airport was extensively cleared during construction of West Field, it is likely that most of the UXO has been removed (CPA and FAA 1998). While the presence of UXO has not been confirmed and is unlikely, the possibility exists for its discovery at the Project Areas for Alternatives 2 and 3 on Tinian.

A Defense Environmental Restoration Program for Formerly Used Defense Sites site, known as the “Tinian Asphalt Drum Dump Site” at Puntan Diablo, has been identified at the western end of Tinian International Airport runway. Few details regarding the extent of possible contamination at this dumpsite are available; however, this site is believed to have resulted from military activities during World War II (USACE 1994). The western end of the proposed taxiway is the nearest component of the North Option of Alternatives 2 and 3 on Tinian to the site at approximately 1,000 feet, while the proposed cargo pad is the nearest component of the South Option of Alternatives 2 and 3 on Tinian at more than 800 feet distance.

Asbestos-Containing Materials. There are no known ACMs at the Project Areas for Alternatives 2 and 3 on Tinian. These areas presently do not contain structures; therefore, ACMs in standing buildings are not present. However, the potential exists for ACMs in the soils of these Project Areas at Tinian International Airport due to former development and use of Tinian International Airport during World War II. There is the potential for asbestos to be present in abandoned utility lines and previous demolition debris buried in surface or near-surface soil. There is no record of soil investigations to determine the presence of buried ACMs at Tinian International Airport being conducted.

Lead-Based Paint. There is no known LBP at the Project Areas for Alternatives 2 and 3 on Tinian. These areas do not contain structures; therefore, LBP in standing buildings is not present. However, because of the former development and use of Tinian International Airport during World War II, the potential exists for finding buried debris containing LBP and lead-contaminated soils. There is no record of soil investigations being conducted to determine the presence of buried debris containing LBP or lead-contaminated soils at Tinian International Airport.

Polychlorinated Biphenyls. Some electrical equipment (e.g., electrical transformers) at the Project Areas for Alternatives 2 and 3 on Tinian might contain PCBs. However, because these areas do not contain buildings, the quantity of equipment possibly containing PCBs is limited. There is no known PCB contamination at Tinian International Airport or the seaport.

Pesticides. Pesticides are assumed to be applied at Tinian International Airport and the seaport on a regular basis to control noxious weeds and other nuisance species. It is assumed that all pesticide applications are conducted in accordance with manufacturer specifications and CNMI regulations. There are no areas of known pesticide contamination at Tinian International Airport or the seaport.

Radon. The USEPA has not established formal radon designations on Tinian. There are no records of radon testing being conducted at the existing buildings at Tinian International Airport or the seaport.

3.13 Infrastructure and Utilities

3.13.1 Differences Between the Final EIS and 2015 Revised Draft EIS

The approach to the analysis in the Infrastructure and Utilities has been revised since release of the 2015 Revised Draft EIS to consider the construction worker population under each alternative.

3.13.2 Definition of Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity for expansion are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include airfield, port, utilities, and solid waste management.

The airfield includes all pavements, runways, taxiways, overruns, aprons, cargo pads, navigational aids, hangars, and facilities and equipment that are associated with aircraft maintenance and aircraft operations. The port includes berthing space and yard area. Utilities include electrical supply, central heating and cooling, liquid fuel supply, natural gas supply, water supply, sanitary sewer and wastewater systems, storm water drainage, and communications systems. Solid waste management primarily relates to the availability of systems and landfills to support a population’s residential, commercial, and industrial needs. The infrastructure information contained in this section provides a brief overview of each infrastructure component and comments on its existing general condition.

3.13.3 Existing Conditions

3.13.3.1 Saipan

Airfield. Saipan International Airport has one FAA-compliant runway, which is surfaced with asphalt. Runway 7/25 is 8,700 feet long and 150 feet wide. A former runway, Runway 6/24, is 7,001 feet long and 100 feet wide and is shown on the Saipan ALP as a parallel taxiway.

Runway 7/25 has four taxiways on which aircraft can transit to and from the parking aprons. The runway is designed to accommodate aircraft up the size and dimensions of a 747. The lighting along the runway consists of a MALSR, distance remaining markers, runway end identifier lights, 12 PAPI systems, a middle marker, a non-directional beacon, a glidescope, a localizer, and edge lights (AFCEE/PACAF 2010).

The 34.4-acre parking apron has a commercial hydrant fueling system and parking capacity for six 747 aircraft. The concrete portion of the parking apron is adjacent to the main terminal building. The asphalt portion of the parking apron is adjacent to the cargo-handling area and does not have adequate width for most large-frame aircraft.

A summary of commercial aircraft usage at Saipan International Airport is presented in **Table 3.3-2**. The combination of air carrier, air taxi, and general aviation operations compose the majority of air traffic using Saipan International Airport. Approximately 391 military operations occur at Saipan International Airport per year, or less than 1 percent of all annual operations according to available data.

Port. The Port of Saipan features 2,600 linear feet of berthing space, a 22-acre container yard, and an underground fuel line protected by concrete. The channel, turning basin, and berthing area have all been expanded to 40 feet deep to receive deep draft vessels. The tanker schedule is currently on an approximate 1-month schedule but out-of-cycle deliveries can be requested as needed. The typical Jet A1 (jet fuel) resupply load is between 378,000 and 420,000 gallons (AFCEE/PACAF 2010). The seaport has two loading racks; one is dedicated to loading ground product and the other is dedicated to loading Jet A1 fuel to transfer trucks. The storage tanks at the seaport are addressed in the *Liquid Fuel Supply* subsection. The location of the proposed seaport bulk fuel site is currently a vacant lot with a few shipping containers on federally leased land adjacent to the existing fuel storage area.

Electrical Supply. Saipan has a maximum electrical power capacity of 57 megawatts (MW), a peak load of 45 MW, and a base load of 39 MW (CNMI undated). For the past several years, Saipan's annual electrical power production has remained below 300,000 Megawatt Hours (MWh). The majority of this production was for general residential and light commercial consumption. The daily load is generally consistent throughout the year with approximate lows of 30 MW and highs of 45 MW. Saipan International Airport uses about 1 MW of electricity per day (CNMI 2011).

Saipan is powered by diesel generators from three power plants near the central port of Tanapag. One of the plants is operated under a power purchase agreement with the private company Pacific Marine Industrial Corporation. The other two are operated by the Commonwealth Utilities Corporation (CUC). The two power plants operated by the CUC are in the same location and together make up the central power plant. The central power plant generators are in poor condition with two of them decommissioned and several others were undergoing rehabilitation and overhauls as of July 2011 (CNMI 2011).

Most commercial power on the island is provided via a 13.8-kVA multiple feeder distribution system with a single 34.5-kVA transmission link between the central power plant and the Kiya Substation. Some commercial sites use onsite generation instead of purchasing power. The electrical distribution system is underused and the Kiya Substation has an electrical capacity more than double its current load of approximately 16 MW. However, a more expansive high-voltage transmission backbone would be needed to tap into this potential for certain locations of the island. A considerable amount of energy is required to pump and treat potable water, and to collect, pump, and treat wastewater on Saipan (CNMI 2011).

Saipan International Airport's electricity is supplied by the Kiya Substation, which has ample capacity but limited feeder distribution (CNMI 2011). The Port of Saipan has sufficient electrical capacity for the few operations that occur there.

Central Cooling and Heating. The Saipan International Airport has its own separate cooling system (CNMI undated).

Natural Gas Supply. There is currently no natural gas infrastructure on the island (CNMI undated).

Liquid Fuel Supply. Currently, Saipan International Airport has limited capacity for the receipt, storage, and distribution of jet fuel. The existing Mobil A1 fuel storage capacity of the airport includes two 94,000-gallon fixed roof ASTs and one 117,600-gallon fixed roof AST. Until all the ASTs have been inspected, upgraded, and repaired, as necessary, one AST will be out of service at a time. No timeline has been provided for when all ASTs will be simultaneously in operation. All jet fuel is issued using a hydrant system, but currently there is no capability for defueling an aircraft. The hydrant system consists of two 600-gpm pumps that issue fuel to 13 hydrants via a 10-inch pipeline. The jet fuel is issued via three commercial hydrant servicing vehicles (AFCEE/PACAF 2010).

At the Port of Saipan, fuel tankers offload A1 jet fuel via an aboveground 10-inch dedicated pipeline. The Jet A1 fuel storage capacity consists of two 630,000-gallon Mobil-owned ASTs with fixed roofs. However, each AST has a "safe fill" level of 504,000 gallons limiting the actual combined storage capacity to 1,008,000 gallons. The ASTs are in good condition and have recently passed American Petroleum Institute (API) API 653 inspection. Both ASTs can be in use simultaneously during high-consumption periods. Jet A1 fuel is delivered to the airport via two locally owned, Mobil-operated, bridger trucks (one 9,000 gallons and one 10,000 gallons). It has been estimated that the maximum transfer rate between the Port of Saipan and Saipan International Airport is 190,000 gallons every 24 hours (AFCEE/PACAF 2010).

There is potential to improve the infrastructure at the Port of Saipan. Joint Logistics over the Shore operations and training currently take place at unimproved ports around the world, including the Port of Saipan (CNMI 2009).

Current vulnerabilities and inadequacies of the existing Mobil fueling system at the airport and seaport include the following (AFCEE/PACAF 2010):

- Inadequate jet fuel supply and storage capability on Saipan
- Jet fuel hydrant pumping rate at Saipan International Airport is insufficient for high-volume tanker requirements

- The cathodic system has been disabled for years and as a result, the condition of the hydrant system at Saipan International Airport remains unknown
- No fuel trucks are capable of refueling or defueling aircraft at Saipan International Airport
- If both seaport Jet A1 fuel storage tanks were subjected to Quality Control hold for aviation fuel testing, re-supply to airport operational storage tanks would cease.

Water Supply. Potable water on Saipan is from groundwater sources (i.e., wells), with the exception of one small catchment system near Saipan International Airport (CNMI 2011). Groundwater is pumped and distributed by the CUC (USGS 2003). There are about 140 groundwater wells on Saipan, which produce approximately 90 percent of the island's water supply (USGS 2003). The groundwater pumps typically operate at maximum capacity 24 hours per day; however, many parts of the water supply system lack 24-hour supply and residents do not have a continuous potable water supply (USGS 2003, CNMI Department of Commerce 2009, DON 2010a). The existing water supply system on Saipan produces approximately 10 million gpd; however, the CUC estimates that approximately 75 to 80 percent of CNMI's potable water supply is lost as a result of leaks in the piping system (DON 2015a). Additionally, due to high chloride concentrations, only about 1.5 million gpd meet USEPA drinking standards (CNMI Department of Commerce 2009).

Another factor contributing to water insecurity on Saipan is that all fresh groundwater originates as rain and the island has a distinct wet and dry season (USGS 2003). Water supply issues are intensified during the dry season and periods of drought (DON 2010a). Saipan gets approximately 80 inches of rainfall per year and 30 percent of precipitation is estimated to recharge the groundwater (USGS 2003).

The airport area has a combination of artesian wells and a catchment system that contribute to approximately 10 percent of the island's total water supply (AFCEE/PACAF 2010). The catchment system consists of three springs and one rainwater collector (DON 2010a).

Sanitary Sewer and Wastewater Treatment. The only provider of wastewater treatment on Saipan is the CUC. Wastewater treatment occurs at the Marpi Solid Waste Facility (MSWF), which also includes solid waste management and storm water-control systems, and Sadog Tasi Wastewater Treatment Plant (CNMI 2011, CEEC 2006). The wastewater treatment system is highly deficient and the resulting leaks and runoff contribute to the degradation of Saipan's marine ecosystems, which is a key concern of the island's residents (CEEC 2006).

The 2009 Comprehensive Economic Development Strategic Plan for the U.S. Commonwealth of the Northern Mariana Islands highlighted that the existing wastewater and sewer systems need major rehabilitation and upgrades to be USEPA-compliant and achieve sufficiency (CNMI Department of Commerce 2009).

Saipan International Airport is connected to the sewer main line at the intersection of Flame Tree Road and Airport Access Road.

Storm Water. Water pollution and coral reef degradation caused by storm water runoff and sewage operations is by far the most important environmental threat perceived by the residents of Saipan (CEEC 2006). A large lagoon (locally referred to as “Saipan Lagoon”) that parallels virtually the entire western coastline serves as a natural sink for mobilized pollutants during storm events. Saipan Lagoon actually consists of three smaller lagoons (i.e., Tanapag Lagoon, Garapan Lagoon, and Chalan Kanoa Lagoon). It receives storm water from numerous storm drains along its entire length and receives sewer outfall from the Sadog Tasi Wastewater Treatment Plant (CEEC 2006, USGS 2009a).

A study by Winzler and Kelly discussed the storm water drainage issues on Saipan. The study highlighted the negative influence of paved and developed areas on drainage discharges and the sensitive benthic environment. It also identified infiltration issues and mobilized pollutants over paved areas as key issues contributing to the complex storm water and degradation threats. Impervious surfaces and deforestation diminish infiltration, evapotranspiration, and groundwater recharge; and increase runoff, which is generally discharged to the ocean and degrades the coral reefs. In addition, the limited available land due to development constrains options for BMPs. In order to properly address the existing drainage issues and resulting degradation threat, Saipan needs to implement a range of BMPs and low-impact development such as permeable and porous pavements to reduce storm water runoff (Allen and Kaspari undated).

The 2007 *CNMI BECQ’s Round Table with Developers* discussed the deficiencies of the storm water management system. For example, many areas do not have adequate drainage systems (e.g., Mount Carmel Church). In addition, many projects are not constructed according to the plans approved by the government agencies. An example of this includes improperly sloped parking lots that discharge runoff off site instead of into an onsite drainage system approved by BECQ. The BECQ published a two-volume design manual with additional regulations in 2007 (CNMI BECQ 2007). New regulations include the following:

- A menu of BMPs instead of only ponding basins
- Location-specific storm water quality and quantity requirements
- 70 percent impervious cover limits for developments greater than 1 acre except for “infill” projects, which are project locations surrounded by existing development.

Saipan International Airport is about 1,300 feet from the eastern coastline and 3,000 feet from the western coastline. It is relatively flat; however, storm water sheet flows to the south, west, and east. Localized flooding occurs in the developed portions of the airport, such as the terminal area, during heavy rainfalls (CPA 2002).

Storm water at the seaport area sheet flows to the coastline, except for the areas around the ASTs, which have secondary containment systems.

Communications. Saipan International Airport’s transmitters and receivers are sufficient for providing very high-frequency and ultra high-frequency capabilities to communicate between the control tower, radar control, and aircraft. Saipan’s ATC has one radio to support backup radio capabilities. Saipan International Airport does not have an Air Traffic Control and Landing System (ATCALS). However, they do get ATCALS support from Guam (AFCEE/PACAF 2010).

Solid Waste. Solid waste processing on Saipan includes the MSWF, the Refuse Transfer Station, and eight recycling centers. Saipan uses private waste collectors for all waste collection. After the waste is collected, it is taken to either the Refuse Transfer Station or the landfill at the MSWF. As much of the waste as possible is recycled. At the Refuse Transfer Station there is an area for sorting, grinding, and storing green waste (i.e., vegetation). The transfer facility is an 8,000-square-foot building with all utilities (i.e., water, sewer, power, and communications) where civilian and commercial vehicles can drop off solid waste. If recycled materials cannot be re-used, they can often be used for energy or liquid fuels production (CNMI 2011).

The MSWF was constructed in 2003 at the north end of the island in the Marpi depression after the Puerto Rico Dump was closed due to environmental concerns. The MSWF uses state-of-the-art waste reduction and diversion technologies and implements recycling programs, a new solid waste transfer station and materials recovery facility, and a new municipal solid waste landfill. In addition to non-recyclable materials, the landfill receives waste from the sewage treatment plant and the hospital (CNMI 2011).

Logistical information for the MSWF is sparse. In 2009, the input into the landfill was about 100 tons per day. The facility was expected to receive a total of 43,000 tons of materials (10,449 tons of which was expected to be diverted) in 2010 (CNMI 2011). **Table 3.13-1** shows the actual inventory of the materials diverted from the landfill in 2010.

Table 3.13-1. Diverted Materials in 2010

Item	Tons/Year
Backfill	7,600
Green Waste	1,671
Sewage Sludge	480
Cardboard	445
Tires	158
Paper	109
Metals	83
Mixed Recyclables	61
Total	**10,607**

Source: CNMI 2011

3.13.3.2 Tinian

Airfield. The Tinian International Airport airfield is currently designed to accommodate aircraft up to the size and dimensions of a 747. The existing runway (8/26) is 8,600 feet long, 150 feet wide, and has two 25-foot-wide paved shoulders. It is grooved for flight safety and drainage purposes. The lighting along the runway consists of runway end identifier lights, a PAPI, medium-intensity runway edge lights, an ILS, a rotating beacon, and distance remaining markers (AFCEE/PACAF 2010).

Runway 8/26 has two taxiways, one at each end of the runway, in which aircraft can transit to and from the parking aprons. Taxiway A runs parallel to the runway and its centerline is 750 from the centerline of the runway. The taxiway is 70 feet wide and has a 30-foot shoulder. The parking apron is approximately 6 acres, has little capability to park large frame aircraft, and has no fuel hydrant system infrastructure (AFCEE/PACAF 2010).

Tinian International Airport is not as built up as Saipan International Airport and has an average of 36 aircraft operations per day; therefore, it has a higher capability for infrastructure expansion (FAA 2011).

Port. The main wharf at the Port of Tinian is 2,200 feet long with depths between 25 and 29 feet. There are two piers (Pier 1 and Pier 2) on the southwest of the main wharf, both of which are in a state of disrepair. The main wharf is used to moor commercial barges operating between Tinian and Saipan. No tugboats operate in Tinian Harbor.

The current harbor infrastructure is in need of improvements and repairs but has undergone emergent repairs to include the sea wall, bollards, and fenders and therefore continues to support shipping vessels. According to the Tinian Harbor Master Plan, the current usable depth of the Tinian Harbor is approximately 26.5 feet, or 23 feet by some accounts (Tenorio and Dashiell 1997).

The Port of Tinian receives, stores, and issues diesel and unleaded gasoline, but has no aviation fuel capacity. The seaport's storage tanks are discussed in the *Liquid Fuel Supply* subsection. One of the ships that commonly delivers fuel to Tinian is considered a small tanker, the MV Golden Micronesia (PACAF 2010). This ship has a maximum draft (i.e., fully loaded) of approximately 25.5 feet and its capacity is approximately 61,300 bbl (2,574,600 gallons). The tanker AKRI, which has a maximum draft of 21.3 feet, has also been observed delivering fuel to Tinian. The Golden Micronesian fuel barge offloads fuel products to the seaport via a 4-inch pipeline once a month. The seaport has one fuel truck loading rack for diesel and unleaded gasoline.

Electrical Supply. The electrical infrastructure at Tinian is capable of satisfying considerably more demand than the current base and peak loads with a maximum electrical capacity of around 20 MW. This is because the plant was built during a time of high resort development interest. The energy infrastructure is also in good condition and well-maintained. The power plant consists of five 4-MW Wartsilla diesel generators located just outside San Jose. Telesource owns and operates the power system on the island under a power purchase agreement contract (CNMI 2011). Tinian has a peak load of 5.2 MW and a base load of 4.7 MW. The current load is almost consistently between 4 and 5 MW year round (CNMI 2011, CNMI undated). The distribution is through four 13.4-kV feeders, one of which is dedicated solely to the U.S. Government International Broadcasting Bureau (IBB) (CNMI 2011). A more expansive electrical grid would be needed to tap into this potential for certain locations of the island (CNMI 2011).

The population of Tinian is approximately 4,000 people and about 50 percent of its power consumption is from two customers: Tinian Dynasty Hotel & Casino and the International Broadcasting Bureau. The airport is a much smaller, yet still considerable consumer of power

(CNMI 2011). A significant amount of energy is required to pump and treat potable water, and to collect, pump, and treat wastewater on Tinian (CNMI 2011).

Tinian International Airport is connected to the existing power system; however, it has a highly limited feeder distribution network (CNMI 2011). An electrical line runs on the east end of the airport property but does not extend throughout the entire Tinian International Airport property (AFCEE/PACAF 2010).

Central Heating and Cooling. Tinian International Airport has its own separate cooling system.

Natural Gas Supply. There is no natural gas infrastructure on Tinian.

Liquid Fuel Supply. Currently, Tinian International Airport has limited capacity for the receipt, storage, and distribution of aviation fuel. The airfield has no A1 jet fuel infrastructure. Current aviation fuel inadequacies of Tinian include the following (AFCEE/PACAF 2010):

- No capability for Jet A1 fuel supply or storage on Tinian
- No fuel hydrant system on the airfield
- No fuel trucks capable of servicing aircraft on Tinian
- No deepwater port capable of offloading ship to shore.

The Port of Tinian is currently in disrepair and has a limited capability to accept fuel shipments at the port. It can support limited cargo ships and the main wharf can support up to 4,500 tons of cargo per day (AFCEE/PACAF 2010, DON 2010a). Fuel storage at the seaport includes a 12,000-bbl (500,000-gallon) diesel AST and a 1,500-bbl (63,000-gallon) unleaded gasoline AST. The Mobil seaport has no aviation fuel storage capability (AFCEE/PACAF 2010).

Water Supply. Potable water on Tinian is primarily withdrawn from groundwater wells; however, some households use catchment basins (CNMI 2011, AFCEE/PACAF 2010). Most of the agricultural and domestic water supply originates in the Makpo wetland area and is collected in storage tanks at Marpo Heights and Carolina Heights (DON 2010a).

From 1945 to 1999 all municipal water was supplied by the Municipal Well (a 300-foot long horizontal trench). In 1999, two vertical wells (i.e., TH04 and TH06) were added to the system. By 2001, a new 400-foot long infiltration gallery replaced the Municipal Well in a nearby location. Pumps are generally operated 24 hours per day, except during maintenance and low demand in the rainy season. Withdrawals have fluctuated less than 10 percent throughout the years. The new infiltration gallery can supply about 875 gpm. Well TH06 produces approximately 60 gpm and well TH04 is capable of producing 50 gpm; however, they are generally only used to maintain pressure in the distribution system used during peak demand hours (Gingerich 2002). Based on the available withdrawal data, Tinian is capable of producing approximately 1,260,000 gallons of water per day. Due to the lack of considerable amounts of heavy water usage activities on Tinian, such as irrigation, ranching, aquaculture, and mining, it is assumed that the per capita usage of water is similar to the U.S. domestic water usage rate, which is 98 gpd per person (USGS 2009b). Based on the Tinian population of 3,136 people, the island is estimated to use approximately 307,328 gpd. The CUC estimates that approximately 75 to 80 percent of

CNMI's potable water supply is lost as a result of leaks in the piping system (DON 2015a). Given these assumptions, Tinian has a water supply surplus of approximately 7,672 gpd.

***Sanitary Sewer and Wastewater Treatment*.** There are no wastewater processing facilities on Tinian (CNMI Department of Commerce 2009). Residents and businesses on Tinian, including Tinian International Airport, use septic systems for wastewater treatment (CNMI 2011).

Storm Water. There is limited information on the storm water infrastructure on Tinian and at Tinian International Airport. Most of the precipitation on Tinian either evaporates or percolates into the limestone substrata. During periods of intense rainfall, approximately 6 to 12 percent of total rainfall becomes runoff that flows towards the low-lying coastal areas (Gingerich 2002). Tinian International Airport is surrounded by pervious soil with vegetation. Storm water at Tinian International Airport is handled by open drainage ditches and sheet flow overland to lower elevations. Tinian International Airport is about 1,600 feet from the eastern coastline.

Storm water at the seaport area sheet flows to the coastline, except for the areas around the ASTs, which have secondary containment systems.

***Communications*.** Tinian International Airport has no ATCALS, ILS, or ATCT. Tinian International Airport receives ATCALS support from the Guam tower and uses their voice communications equipment for both air-to-ground and in- and out-bound activities. Tinian International Airport has one radio to support backup radio capabilities (AFCEE/PACAF 2010).

***Solid Waste*.** The CNMI uses private waste collectors for all waste collection. There is only one recycling center on Tinian (CNMI 2011). Currently, all solid waste is collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships.

In November 2006, the Mayor of Tinian declared a "state of disaster emergency" due to the failure to close Tinian's unsafe dumpsite (i.e., Tinian landfill). On January 20, 2010, the BECQ issued an administrative order to the CNMI Department of Public Works and the Mayor's Office of Tinian for failure to comply with landfill operating requirements at the municipal dump. The BECQ stated that the office's "non-compliance posed a threat to human health and the environment." The municipal dump received violations for air quality regulations for the open burning of solid wastes. They also failed to cover the solid waste at the end of each operating day, control disease carriers, implement a waste exclusion plan to prevent receiving hazardous wastes and PCB wastes, have trained operators, and have control of public access to prevent unauthorized disposal within and outside the dump (Saipan Tribune 2010). A new sanitary landfill and a corresponding transfer station are planned for Tinian (Marianas Variety 2012); however, as of August 2015, the landfill and transfer station had not yet begun construction.

3.14 Socioeconomics and Environmental Justice

3.14.1 Differences Between the Final EIS and 2015 Revised Draft EIS

The approach to the analysis in the Socioeconomics and Environmental Justice sections has not changed since the release of the 2015 Revised Draft EIS. However, the Final EIS Transportation sections were revised based on better available data related to construction workers. In the 2015 Revised Draft EIS, the number of construction workers that could be needed to support the construction phase for each alternative was between 500 and 750 workers. In the Final EIS, the USAF has reduced the number of construction workers that could be needed to support construction for each alternative to between 50 and 150. Potential impacts on socioeconomics from construction workers during the 3-year construction phase was recalculated for each alternative in the Final EIS, based on the revised number of construction workers.

3.14.2 Differences Between the 2015 Revised Draft EIS and 2012 Draft EIS

Some information in the Socioeconomics and Environmental Justice sections was changed in the 2015 Revised Draft EIS since the release of the 2012 Draft EIS based on the availability of 2010 U.S. Census data and other more recent data, and to provide a more thorough and in-depth analysis of impacts. These changes included updates on information presented in the 2012 Draft EIS and additional analysis beyond that done in the 2012 Draft EIS. The changed information relates to the update of data and the assessment of impacts in **Section 4.14**. A summary of the changed information is presented below.

2010 U.S. Census and Updated Data. The Revised Draft EIS was updated to include socioeconomic and environmental justice data from the 2010 U.S. Census, the latest for which information is available, and other updated data, which has been changed since the 2012 Draft EIS because this data was not available during preparation of the 2012 Draft EIS. The 2012 Draft EIS used 2010 U.S. Census data for total population of CNMI, Saipan, and Tinian; however, all other socioeconomic and environmental justice population data was obtained from the 2000 U.S. Census, the 2005 CNMI Household, Income, and Expenditures Survey (HIES) (CNMI Department of Commerce, Central Statistics Division 2008), and other sources. The Definition of Resource, Existing Conditions, and Environmental Consequences sections was revised to include data from the 2010 U.S. Census and other updated data sources, where available.

3.14.3 Definition of Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment. Two fundamental socioeconomic indicators, population and economic activity, are the primary focus of this analysis.

Population size and demographics identify the population levels and changes to population levels of a region. Demographics data might also identify a region's characteristics in terms of race, ethnicity, poverty status, and other broad indicators. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Data on employment might identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the "before" and "after" effects of any jobs created or lost as a result of a project. Data on industrial or commercial growth or growth in other sectors provide baseline and trendline information about the economic health of a region. Changes in demographic and economic conditions are typically accompanied by changes in other community components, such as housing availability and the provision of public services, which are also discussed in this section. Sociocultural issues, such as land ownership, quality of life, and cultural identity, are also important indicators of the socioeconomic condition of a region.

The geographic area in which a majority of the socioeconomic effects of a proposed action and alternatives would occur is defined as the socioeconomic area of impact. The area of impact is considered a primary effect area because it receives direct and indirect, adverse and beneficial, economic impacts from a proposed action due to residency distribution of employees, commuting distances and times, and the location of businesses providing goods and services during construction and operation of the action, and their dependents. Other components include regional economic activity, population, housing, and public services.

Due to the small size of the CNMI, most anticipated socioeconomic impacts under the Proposed Action would likely affect CNMI as a whole. However, socioeconomic data are presented in this section at the island or municipality level (i.e., Saipan and Tinian) and, when available, for geographic subsets such as election districts and villages that are in the Project Area. Tourism is highlighted in this document as the industry most likely to be affected by the Proposed Action. Data have been collected from previously published documents issued by Federal, CNMI, and local agencies.

Environmental Justice. On February 11, 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued. EO 12898 also requires each Federal agency to identify and address whether their proposed action results in disproportionately high and adverse environmental and health impacts on low-income or minority populations. The EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. This EO also requires that each Federal agency conduct its programs, policies, and activities that substantially affect human health and the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participating in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin.

A Presidential memorandum accompanying EO 12898 states that existing Federal statutes should be used to evaluate environmental justice concerns. One of the referenced statutes is NEPA, and the memorandum highlights the importance of NEPA in addressing environmental hazards in minority and low-income communities. The memorandum states, "Each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA of 1969, 42 U.S.C. 4321 et seq."

Consideration of environmental justice concerns includes the race, ethnicity, and poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the populations targeted for protection. In addition, the USAF has issued guidance (*Guide for Environmental Justice Analysis with the Environmental Impact Analysis Process [EIAP]*) on environmental justice analysis in determining the environmental effect on populations in the vicinity of a proposed action (USAF 1997).

The environmental justice area of impact is the area within which potential impacts from a proposed action could occur. As defined by the CEQ, the environmental justice area of impact is considered to have disproportionately high percentage of minority or low-income residents if the percentage of persons characterized as being a minority or low-income within the area of impact is either greater than 50 percent, or is disproportionately higher than the community of comparison. CEQ also states, “A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds (CEQ 1997).” The community of comparison is the smallest jurisdiction for which U.S. Census data are collected that encompasses the footprint of impacts for all resource areas.

For purposes of this EIS, minority, and low-income populations are defined as follows:

1. Minority Population: The CEQ defines minority populations as members of the following population groups: Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and multi-race that includes one of the aforementioned races; and Hispanic or Latino (CEQ 1997). The U.S. Census Bureau considers race and Hispanic or Latino origin (ethnicity) as two separate concepts and these data are recorded separately. However, the U.S. Census Bureau collects race, ethnic, and Hispanic origin data differently in the Pacific Island Areas (i.e., CNMI) than on the U.S. mainland. Race and ethnic origin data are collected together through one census question and, therefore, are presented as one subject in the Census data. Therefore, this report uses racial and ethnic categories to identify ethnicity of the CNMI population. Some of the single and combined ethnic origins/races identified are Chamorro, Carolinian, Filipino, Chinese, Hispanic or Latino, White, and two or more ethnic origins or races. There is no definition of minority populations that is specific to the CNMI. Therefore, for the purposes of the environmental justice analysis, the total minority population will include ethnic origin and racial minority populations as defined by and collected during the 2010 U.S. Census, the latest available. However, data from the Report on the 2005 CNMI HIES (CNMI Department of Commerce, Central Statistics Division 2008) is also presented in this section to supplement 2010 U.S. Census socioeconomic data.
2. Low-income Population: Populations whose income is below the Federal poverty threshold according to 2009 income data collected in the 2010 U.S. Census. For the 2010 U.S. Census, the Federal poverty threshold for an individual under 65 years old was $11,161 (U.S. Census Bureau 2014).

For purposes of this analysis, the environmental justice areas of impact are the election districts that encompass the Proposed Action activities at Saipan International Airport, Tinian

International Airport, Ports of Saipan and Tinian, and the proposed fuel truck routes (Saipan Districts 1, 2, and 3 and Tinian District 6), and the communities of comparison are the islands of Saipan and Tinian.

3.14.4 Existing Conditions

Because all alternatives are within the CNMI, existing socioeconomics and environmental justice conditions will be presented in this EIS together.

Overview. Following World War II, the Mariana Islands were administered by the United States as part of the United Nations Trust Territory of the Pacific. In the 1970s, the Mariana Islands decided to form closer ties with the United States. A Covenant Agreement to establish a CNMI in political union with the United States was approved in 1975 and took effect in 1976. In 1978, the CNMI became self-governing when its first elected governor took office; however, the United States was responsible for CNMI's foreign affairs and defense. The Covenant Agreement was fully implemented in 1986 at which time legally qualified CNMI residents attained U.S. citizenship.

Terms of the Covenant Agreement allowed the CNMI to set its own immigration, labor, and wage laws, which played an important role in the CNMI's socioeconomic development and racial/ethnic composition. The CNMI took advantage of this economic autonomy and experienced a large increase in the private sector between 1980 and 2004 (McPhee & Associates and Conway 2009). Garment manufacturing and tourism emerged as leading industries in the CNMI economy due to its relationship with the United States, its proximity to cheap labor from Asian nations, its appeal as a tourist destination, and foreign investment from Asian countries (McPhee & Associates and Conway 2009). The success of these industries relied on favorable economic conditions created under the terms of the Covenant Agreement, which allowed for the hiring of foreign workers at low wages.

Foreign workers, primarily from China and the Philippines, were hired for difficult-to-fill positions in the garment manufacturing industry on Saipan and the tourism sector because there were an insufficient number of local workers to populate the workforce and support the growing economy (U.S. GAO 2000). These workers were exempt from U.S. visa and immigration regulations, and were paid less than the U.S. minimum wage. Therefore, manufacturers, particularly those in the garment industry, were able to sell "American-made" products duty-free and quota-free to the U.S. market using cheap foreign labor. The importance of the garment manufacturing and tourism industries to the CNMI economy and the reliance of these industries on foreign workers were evident in economic and workforce statistics. In 1995, the garment manufacturing and tourism industries directly supported more than 50 percent of CNMI employment, and foreign workers made up more than 90 percent of the garment manufacturing industry and more than 70 percent of the tourism industry (McPhee & Associates and Conway 2009). According to *An Economic Study of the Commonwealth of the Northern Marianas Islands* prepared by the Northern Marianas College in 1999, these two industries produced approximately 96 percent of the CNMI's exports and generated 85 percent of the CNMI's total economic activity (U.S. GAO 2000).

While the large influx of foreign workers was needed to support the economy, it also changed the demographics of the CNMI. Between 1990 to 2000 during the peak years of the garment manufacturing and tourism industries, the annual population growth rate of the CNMI was among the highest in the world. The population growth rate slowed during the early 2000s, but still remained high (U.S. Census Bureau International Programs 2012). In 2003, the CNMI was the only Pacific island entity where foreign-born residents outnumbered indigenous residents by a ratio of nearly 2 to 1 (Bank of Hawai'i and East-West Center 2003). As of January 2010, it was reported that there were 20,859 aliens (i.e., non-U.S. citizens) in the CNMI of which 99 percent were legally in the CNMI, and 16,304 were alien workers. More than 18,500 of these aliens had been in the CNMI more than 5 years (Secretary of the Interior 2010). The 2010 U.S. Census reports that noncitizens comprised 43 percent of the CNMI population (U.S. GAO 2014).

During the 2000s, several factors affected the CNMI economy contributing to the collapse of the garment manufacturing industry and to the decline of the tourism industry, which, in turn, affected the demographics. Following are some of the factors affecting the socioeconomic characteristics of the CNMI:

- *World Trade Organization (WTO) Agreement on Textiles and Clothing.* In 2005, as part of the WTO Agreement on Textiles and Clothing, the United States lifted quotas for textile and apparel imports from other countries to conform to the General Agreement on Tariffs and Trade. The effect of this action exposed CNMI garment manufacturers to greater competition from previously restricted countries such as China and Vietnam that had lower labor costs. Without their quota-free economic advantage, garment manufacturers in the CNMI were unable to compete in the global marketplace and began shutting down. All garment manufacturers had closed by early 2009. The closure of the garment factories also affected the tourism industry because there was a large reduction in revenue for the CNMI government, which was previously spent on critical services, infrastructure, destination enhancement, and overseas tourist marketing (CNMI Department of Commerce 2009).
- *Federalization of the minimum wage.* The Fair Minimum Wage Act of 2007 (Title VIII of P.L. 110-28) as amended by P.L. 111-117, P.L. 111-244, and P.L. 113-34 applied Federal minimum wage rates to the CNMI. According to the legislation, the CNMI minimum wage will increase $0.50 per hour each year on September 30 (except 2011, 2013, and 2015, when no increase occurred or will occur) until it reaches the minimum wage generally applicable in the United States ($7.25 as of August 2015). The first increase occurred in May 2007 when the CNMI minimum wage increased from $3.05 per hour to $3.55 per hour. As of August 2015, the minimum wage in the CNMI is $6.05 per hour. Based on responses to surveys conducted by the Government Accountability Office, minimum wage increases instituted through 2015 would affect more than 80 percent of workers at private sector employers that responded to the survey (U.S. GAO 2010), and increases through 2018 would affect 94 percent of hotel industry workers employed by questionnaire respondents (U.S. GAO 2014). Direct effects from the minimum wage increases are difficult to determine due to the existence of other variables affecting the economy.

- *Federalization of immigration.* The Consolidated Natural Resources Act of 2008 (Title VII of P.L. 110-229) applied Federal immigration law to the CNMI in November 2009 with provisions affecting access to the CNMI by foreign workers (using permits referred to as conditional worker, or CW-1, permits), tourists, and foreign investors. The law mandated an annual reduction in the number of CW-1 permits for foreign workers during a 5-year transition period that would result in zero permits by December 31, 2014; however, the transition period has been extended to December 31, 2019. AOCs due to implementation of the Federal immigration law include the availability of foreign workers, status of existing foreign workers, and ease of entry for Chinese and Russian visitors and businesspeople that have to be paroled into the CNMI on a case-by-case basis (U.S. GAO 2011b). The latter is important because tourists and investors from China and Russia are important to the CNMI economy. Given the importance of foreign citizens to the CNMI labor market, tourism industry, and as investors, the long-term impact of the federalization of immigration on the CNMI economy is uncertain (U.S. GAO 2014).
- *Factors affecting tourism.* Tourism in the CNMI peaked in the mid-1990s and has been declining since that time. The decline began with the Asian financial crisis in the late 1990s, which abruptly decreased tourist arrivals (Bank of Hawai'i and East-West Center 2003). Several other unexpected events, including the severe acute respiratory syndrome epidemic; 9/11 terrorist attacks; war in Iraq; decisions by Korean Air Lines and Japan Air Lines to suspend flights to the CNMI; and the 2011 Japanese earthquake, tsunami, and ongoing nuclear disaster contributed to decreased visitor arrivals. Total visitor arrivals to the CNMI dropped from a peak of 726,690 in 1997 to 433,925 in 2013 (U.S. GAO 2014).

In recent years the CNMI has been working to develop new industries and encourage foreign development. This has been difficult due to the instability of transportation, high cost of utilities, and the uncertainty of labor supply availability (CNMI Department of Commerce 2009). In January 2008, the CNMI Comprehensive Economic Development Strategic (CEDS) Planning Commission, a public-private organization, was appointed by the CNMI Governor to improve the quality of life of CNMI residents through the growth and development of the economy and the promotion of investment in the CNMI. Within the resulting 2009 CEDS Plan, the CEDS Commission identified and prioritized approximately $500 million of projects to address infrastructure upgrades needed to improve quality of life and the economy, and to encourage the U.S. military's use of Tinian for training (CNMI Department of Commerce 2009). As of 2011, approximately 40 percent of the projects and needs listed in the 2009 CEDS Plan had been completed, funded, or were under construction. These projects include upgrades to water and wastewater systems, public school facilities, and CNMI broadband infrastructure; energy efficiency and renewable energy projects; and expansion of the CNMI road system.

As a supplement to the CEDS Plan, the CNMI conducted two Economic Restoration Summits (ERSs) in 2009 and 2011. The goal of the 2009 ERS was to solicit public input to identify several industries for development. Four industries (agriculture, aquaculture, educational tourism/eco-tourism, and call/data centers) were identified during the 2009 ERS (CNMI Department of Commerce and USDA 2011). While the 2009 ERS resulted in economic development recommendations, it failed to consider the fiscal constraints on the CNMI, and to provide examples of implementation measures used under economic conditions similar to the CNMI. A 2011 ERS was conducted to solicit feedback from experts in the targeted industries to assess the CNMI's opportunities and challenges associated with introducing and developing each industry. The 2011 ERS resulted in a general set of "next steps" required to introduce, grow, and make the targeted industries sustainable (CNMI Department of Commerce and USDA 2011).

In June 2013, the 2013 Economic Development Forum (EDF) 2013 was launched to streamline CNMI economic planning through an assessment that integrates the CEDS, ERS, American Recovery & Reinvestment Act, and other relevant available planning documents into a single format. The goal is to focus the CNMI's economic priorities by assessing the CNMI's project inventory based on projects that contain elements critical to economic contribution, development and sustainment. Participants ranked energy, infrastructure (especially that related to transportation), and workforce preparedness among top priorities for CNMI's economic health. For purposes of the EDF, the CNMI identified seven criteria to determine project priorities. Based on these criteria, CEDS projects and industries identified in the ERS were assessed to determine the most beneficial projects. The resulting short-listed projects were grouped into four clusters, including alternative energy, tourism, inter-island transportation, and public service (health) (CNMI Department of Commerce 2013a).

The CNMI has also recognized the potential benefits to the CNMI economy and community from the military buildup in the region. The Military Integration Management Committee was established to guide the planning and policymaking for all activities related to the expansion of military training activities in the CNMI. The CNMI has identified the following three areas where it can provide goods and services to facilitate the military buildup:

- *Operational support.* Alternate aerial and surface port capabilities to support training and operations, maintenance infrastructure and services, and staging of prepositioned equipment and supply stocks).
- *Maintenance and supply support.* Logistics support including management, handling, and distribution of necessary supplies and services; subsistence items such as food and potable water; and human capital and other technical expertise.
- *Quality of life services.* Rest and relaxation infrastructure and services such Armed Forces Recreation Center and other Morale, Welfare, and Recreation activities; and use of the CNMI's natural resources such as weather, beaches, pristine scenes, recreational activities, and historic sites (CNMI 2009).

3.14.4.1 Socioeconomics

Population Characteristics. From 1973 through 2000, the population of the CNMI more than tripled from 14,333 to 69,221 people (see **Table 3.14-1**). The most drastic growth occurred from 1980 to 1990 when the population more than doubled and experienced an annual growth rate of 9.5 percent (CNMI Department of Commerce 2002). The primary reason for dramatic growth has been attributed to the in-migration of foreign nationals, primarily to Saipan, for employment and business opportunities (CNMI Department of Commerce, Central Statistics

Table 3.14-1. Actual and Projected Population, 1973–2020

Geographic Area	1973	1980	1990	2000	2010	2015	2020
CNMI	14,333	16,780	43,345	69,221	53,883	56,900	59,700
Saipan	12,382	14,549	38,896	62,392	48,220	N/A	N/A
Tinian	714	866	2,118	3,540	3,136	N/A	N/A

Sources: CNMI Department of Commerce 2002, U.S. Census Bureau 2010b, SPC-SDP 2013
Note: N/A = Not applicable. Projected population data are not available for Saipan and Tinian.

Division 2000). From 2000 to 2010, the CNMI population trend reversed and the populations of CNMI, Saipan, and Tinian decreased. The populations of CNMI and Saipan decreased approximately 22 percent, while the population of Tinian decreased 11 percent since 2000. In 2010, more than 95 percent of CNMI's population resided in Saipan and Tinian (89.5 percent in Saipan and 5.8 percent in Tinian) (U.S. Census Bureau 2010b). Population projections provided by the Secretariat of the Pacific Community show the CNMI population increasing, albeit slightly, through 2015 and 2020 (SPC-SDP 2013).

Saipan is divided into 77 villages. Saipan International Airport is within the village of I Fadang and the Port of Saipan is within the village of Puerto Rico. In 2010, I Fadang and Puerto Rico had no residents (see **Table 3.14-2**). Tinian is divided into 8 villages; Tinian International Airport is in the village of Western Tinian and the Port of Tinian is in the village of San Jose. Western Tinian did not have any residents in 2010; however, San Jose has 1,939 residents, which is 61.8 percent of the Tinian population. **Table 3.14-2** presents the population of villages in the Project Areas (i.e., proposed airports, seaports, and fuel and construction material truck routes). The proposed fuel/construction material truck route on Saipan traverses or is adjacent to 30 villages, which account for 71.1 percent of the island's population. The proposed fuel/construction material truck route on Tinian traverses or is adjacent to 4 villages within which 88.4 percent of Tinian's population resides (U.S. Census Bureau 2010c).

In 2010, the population of the CNMI was relatively young; the median age was 33.4 years old. The median age of the population of Saipan (33.3 years old) and Tinian (33.8 years old) was similar to that of CNMI as whole. Persons under 18 years old accounted for approximately one-third of the populations of the CNMI, Saipan, and Tinian (31.8 percent, 31.9 percent, and 29.9 percent, respectively), while the population over 65 years old was small accounting for 2.9 percent of the populations of the CNMI and Saipan and 1.9 percent of the Tinian population. Approximately 38 percent of the populations of the CNMI (37.9 percent) and Saipan (37.6 percent), and 43.6 percent of the population of Tinian were between 20 and 44 years old (U.S. Census Bureau 2010d).

Males slightly outnumbered females in the CNMI, Tinian, and Saipan, representing 51.5 percent, 51.3 percent, and 53.4 percent, respectively, of the populations (U.S. Census Bureau 2010d).

Table 3.14-3 shows the birthplace of residents of the CNMI, Saipan, and Tinian in 2010. Approximately 45 percent of the residents of CNMI and Saipan were foreign born, while slightly less Tinian residents were born outside the CNMI or the United States. Of foreign born residents, those born in the Philippines and China make up the largest percentages of the populations of the CNMI, Saipan, and Tinian (U.S. Census Bureau 2010e).

Table 3.14-2. Population Data for Villages in the Proposed Project Areas, 2010

Geographic Area	2010 Population	Percent of Population
Saipan	**48,220**	**100**
Airport and Seaport		
I Fadang	0	0.0
Puerto Rico	0	0.0
Along Fuel Truck Route		
Afetnas	1,486	3.1
Agingan	308	0.6
American Memorial Park	0	0.0 *
As Gonna	157	0.3
As Lito	920	1.9
As Palacios	718	1.5
As Terlaje	282	0.6
Chalan Kanoa II	921	1.9
Chalan Kanoa IV	631	1.3
Chalan Kiya	1,062	2.2
Chalan Laulau	1,096	2.3
Chalan Piao	1,282	2.7
Chalan Rueda	257	0.5
China Town	1,274	2.6
Dagu	780	1.6
Dandan	3,280	6.8
Fananganan	1,201	2.5
Finasisu	2,451	5.1
Garapan	3,983	8.3
Gualo Rai	1,660	3.4
I Liyang	917	1.9
Kannat Tabla	874	1.8
Koblerville	2,493	5.2
Opyan	20	0.0 *
San Antonio	1,149	2.4
San Jose (Oleai)	954	2.0
San Vincente	2,091	4.3
Susupe	2,078	4.3
Tinian	**3,136**	**100**
Airport and Seaport		
San Jose	1,939	61.8
Western Tinian	0	0.0
Along Fuel Truck Route		
Eastern Tinian (Marpo Valley)	155	4.9
Marpo Heights	679	21.7

Source: U.S. Census Bureau 2010c

Note: * Due to rounding, percentages less than 0.1 percent are shown as 0.0 percent.

Table 3.14-3. Residents by Birthplace, 2010

Total Population	Saipan	Tinian	CNMI
	48,220	**3,136**	**53,883**
Percent U.S. Born	**54.4%**	**56.8%**	**55.1%**
CNMI	48.9%	50.9%	49.4%
Elsewhere in the U.S. [a]	5.5%	5.9%	5.7%
Percent Foreign Born	**45.6%**	**43.2%**	**44.9%**
Philippines	27.0%	26.3%	26.9%
China [b]	6.6%	7.0%	6.3%
Korea [c]	3.8%	1.5%	3.5%
Japan	1.3%	1.2%	1.3%
Other foreign [d]	6.8%	7.2%	6.8%

Source: U.S. Census Bureau 2010e
Notes:
a. Includes persons born to U.S. parents regardless of location.
b. Includes persons who reported their country of birth as China, Hong Kong, Macau, Paracel Islands, or Taiwan.
c. Includes persons who reported their country of birth as Korea, North Korea, or South Korea.
d. Includes persons born in Federated States of Micronesia and Palau, which are United States associated states.

Asians (i.e., persons reporting one Asian ethnic origin/race) made up half of the populations of the CNMI (49.9 percent) and Saipan (50.9 percent), and slightly less than half of the population (46.7 percent) of Tinian. Filipinos were the largest single ethnic origin/race in the CNMI and Saipan at 35.3 percent and 35.8 percent of the populations, respectively. Chamorro was the largest single ethnic origin/race on Tinian representing 37.7 percent of the population. Chamorro made up 23.9 percent of the CNMI population and 21.6 percent of Saipan population. Approximately 5 percent of the residents in the CNMI (4.6 percent) and Saipan (5.1 percent) reported their ethnic origin/race as Carolinian, while only 0.3 percent of those in Tinian did. Residents reporting their ethnic origin/race as White made up approximately 2 percent of the populations of the CNMI (2.1 percent), Saipan (2.1 percent), and Tinian (1.8 percent). Persons reporting two or more ethnic origins or races made up approximately 12 percent of the residents in the CNMI, Saipan, and Tinian (U.S. Census Bureau 2010d).

Housing. In 2010, approximately 77.1 percent of Saipan's 18,683 housing units were occupied and 78.2 percent of Tinian's 1,118 housing units were occupied (see **Table 3.14-4**). Of the occupied housing units on Saipan and Tinian, most were occupied by renters (56.2 percent on Saipan and 51.0 percent on Tinian) (U.S. Census Bureau 2010g). The median house value of owner occupied units and median gross rent on Saipan was slightly more than those in the CNMI and Tinian. Renters in the CNMI and on Saipan paid approximately 21 percent of their household income towards rent, while renters on Tinian paid 15 percent (U.S. Census Bureau 2010h). The median household income in Tinian ($24,470) was almost $5,000 more than those in the CNMI and Saipan. In CNMI, Saipan, and Tinian, median household incomes of owner occupied households was moderately higher than those of renter occupied households (U.S. Census Bureau 2010i).

Table 3.14-4. Housing Characteristics, 2010

Housing Characteristic	Saipan	Tinian	CNMI
Total Housing Units	18,683	1,118	20,850
Occupied Units	14,406	874	16,035
Owner Occupied	3,906	304	4,537
Renter Occupied	10,500	570	11,498
Vacant Units	4,277	244	4,815
Median Value of Owner Occupied Units	$127,632	$121,212	$123,777
Median Gross Rent *	$328	$261	$324
Median Gross Rent as Percentage of Household Income	21.3%	15.0%	20.9%
Total Median Household Income	$19,607	$24,470	$19,958
Owner Occupied	$38,525	$44,444	$39,032
Renter Occupied	$16,295	$17,744	$16,341

Source: U.S. Census Bureau 2010g, U.S. Census Bureau 2010h, U.S. Census Bureau 2010i

Note: * Gross rent is the amount of contract rent plus the estimated average monthly cost of utilities and fuels if these are paid for by the renter.

Economic Characteristics. Economic activity in the CNMI declined sharply in 2009 as real gross domestic product decreased 19.8 percent reflecting decreases in exports (by 40 percent) and in real consumer spending (by 12.8 percent) (Hamano 2011). Decreased exports are primarily attributed to the collapse of the garment manufacturing industry in 2009 and the decline in tourism. Tourism services were the CNMI's only significant export in 2009. From 2008 to 2009, the number of employed people decreased approximately 13 percent based on CNMI government tax data (U.S. GAO 2011a).

In 2010, the labor forces in Saipan and Tinian were approximately 34,500 people and 2,300 people, respectively. The current unemployment rate in the CNMI has not been determined; however, in 2005, 8 percent of Saipan's labor force and 17 percent of Tinian's labor force was unemployed (CNMI Department of Commerce, Central Statistics Division 2008). Due to the economic downturn since 2005, it is likely that the current unemployment rates are higher.

In 2010, the largest industry in the CNMI, Saipan, and Tinian was arts, entertainment, recreation and accommodation and food services (i.e., tourism), which accounted for 38.4 percent of employment in Tinian and approximately 20 percent on the CNMI (22.2 percent) and Saipan (21.2 percent) (see **Table 3.14-5**). The educational services, healthcare, and social assistance industry was the second largest employer in the CNMI and on Saipan employing 12.4 percent and 12.3 percent of workers, respectively. Public administration was the second largest employer on Tinian. The construction industry accounted for approximately 7 percent of the workforces of the CNMI (1,786 people) and Saipan (1,554 people), and 4.5 percent of the Tinian workforce (79 people) (U.S. Census Bureau 2010f). In 2005, 93 percent of the construction workers in the CNMI were not U.S. citizens (CNMI Department of Commerce, Central Statistics Division 2008).

Table 3.14-5. Overview of Employment by Industry, 2010

Employment Characteristics	Saipan	Tinian	CNMI
Persons 16 Years Old and Over	34,581	2,311	38,679
Persons 16 Years Old and Over in the Labor Force*	24,709	1,878	27,949
Employed Persons 16 Years Old and Over	21,816	1,752	24,826
Percent Employed Persons 16 years old and over (by industry)			
Agriculture, forestry, fishing, hunting, mining	1.7	2.3	1.9
Construction	7.1	4.5	7.2
Manufacturing	3.0	0.3	2.8
Wholesale trade	3.1	0.6	2.8
Retail trade	11.4	4.3	10.7
Transportation and warehousing, utilities	5.7	7.2	5.8
Information	2.1	1.7	2.0
Finance and insurance, real estate and rental/leasing	4.6	1.8	4.3
Professional, scientific, management, administrative and waste management services	8.6	3.0	8.0
Educational services, healthcare and social assistance	12.3	10.2	12.4
Arts, entertainment, recreation and accommodation and food services	21.2	38.4	22.2
Other services (except public administration)	10.6	7.5	10.3
Public administration	8.4	18.3	9.7

Sources: U.S. Census Bureau 2010f
Note: * Labor force includes persons 16 years old and over that are defined as employed or unemployed civilians.

According to the U.S. Census Bureau's 2013 County Business Patterns, Saipan businesses accounted for more than 90 percent of paid employees and annual payroll in the CNMI (see **Table 3.14-6**). As of March 2013, the accommodation and food services and retail trade sectors had the first and second highest number of paid employees and highest annual payrolls in CNMI and Saipan. These two sectors accounted for 41.7 percent of paid employees in Saipan, and more than $64 million in annual payroll. Specific data regarding the number of paid employees and annual payroll by sector was incomplete for Tinian (U.S. Census Bureau 2015).

Table 3.14-6. Payroll Employment, 2013

	Saipan	Tinian	CNMI
Number of establishments	1,342	31	1,401
Number of paid employees *	10,662	626	11,436
Annual payroll	$176,176,000	$9,150,000	$188,129,000

Sources: U.S. Census Bureau 2015
Note: * During week of March 12, 2013.

The CPA manages Saipan International Airport, Tinian International Airport, and the Ports of Saipan and Tinian. In FY 2011, CPA employed 136 employees on Saipan and 28 employees on Tinian. CPA reported that in FY 2011, 404,652 people enplaned and 388,030 people deplaned in Saipan, while 35,225 people enplaned in Tinian and 18,351 people deplaned (CPA 2013). Saipan International Airport also handles cargo and airmail; in 1999, approximately 42,800,000 pounds of cargo was enplaned and deplaned and 635,000 pounds of mail was enplaned (CPA 2002). In FY 2011, the Port of Saipan imported 340,472 revenue tons (RT)[2] and exported 13,901 RT, while the Port of Tinian imported 14,220 RT and exported 1,237 RT (CPA 2013).

Tourism. After the closure of the last garment manufacturer in early 2009, tourism became the only major industry supporting the CNMI (CNMI Department of Commerce 2009).

Several airlines provide service to the CNMI through Saipan International Airport. International flights are provided by Asiana Airlines, Delta Air Lines, and Jeju Air from cities in Japan, Korea, Hong Kong, China, and Guam. Domestic inter-island flights are provided by Cape Air (doing business as United Express), Star Marianas Air, and Arctic Circle Air Company (cargo and charter flights). Charter flights are provided by China Eastern, Sichuan Airlines, and Shanghai Airlines (CPA 2015a). There were 188 average aircraft operations per day at Saipan International Airport for the 12-month period ending May 22, 2015. Commercial flights represented 7 percent of these operations, while air taxi was 50 percent (AirNav.com 2015a).

Passenger traffic originating from or terminating at Tinian International Airport consists of inter-island travel from Saipan, Rota, and Guam. Star Marianas Air is the only airline currently operating regularly scheduled flights to/from Tinian International Airport; however, Star Marianas Air provides charter flights to/from Tinian International Airport and Saipan International Airport. Arctic Circle Air Company provides cargo and charter flights to Tinian International Airport (CPA 2015b). There is an average of 113 aircraft operations per day at Tinian International Airport. Eighty-five percent of these operations were air taxi (AirNav.com 2015b).

Visitor arrivals to the CNMI have decreased since their peak in the mid-1990s; visitor arrivals in the CNMI during 2013 were approximately 438,908 (see **Table 3.14-7**). Japanese tourists represent the largest segment of the tourist population, although the number of Japanese tourists has been decreasing in recent years and are generally equal to those from Korea. Visitors from China also make up a significant portion of arrivals to the CNMI accounting for approximately 27 percent of tourists (CNMI Department of Commerce 2013b).

The average CNMI hotel occupancy rate and hotel daily rate have varied over the past several years (see **Figure 3.14-1**). In 2013, CNMI hotels had an average occupancy rate of 83 percent and the average daily hotel rate was $113.32 (CNMI Department of Commerce 2013b).

Saipan is the capital, principal island, and major commercial center of the CNMI and, therefore, has more tourist opportunities than other islands in the CNMI. Tourist-related activities include outdoor/nature activities (hiking, golfing, and adventure tours), water sports (fishing, parasailing, snorkeling, and scuba diving), and touring cultural and historic sites. The Hotel Association of

---

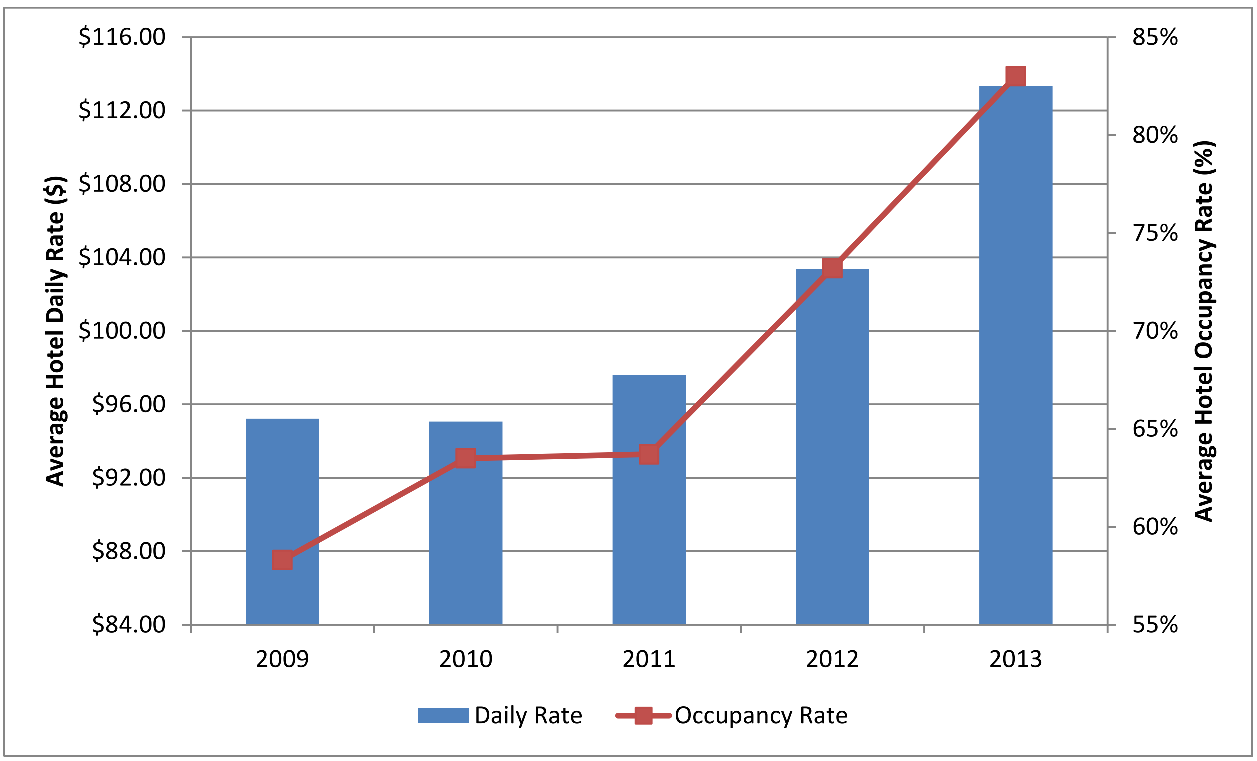
[2] A revenue ton is a measurement on which shipments are freighted. If cargo is rated as weight or measure, whichever produces the higher revenue will be considered the revenue ton. Weights are based on metric tonnes and measures are based on cubic meters. Therefore 1 revenue ton = 1 metric tonne or 1 cubic meter.

Table 3.14-7. CNMI Visitor Arrivals by Market, 2006–2013

Geographic Area	2009	2010	2011	2012	2013
Total Visitors	353,956	379,091	340,957	401,219	438,908
Percent of Total Visitors by Market					
Japan	54.0%	48.8%	41.9%	38.2%	32.3%
Korea	25.2%	30.5%	31.5%	32.3%	31.9%
U.S. and Guam	8.3%	7.2%	7.0%	5.5%	4.8%
China *	8.4%	11.1%	16.2%	21.5%	26.6%
Hong Kong *	-	-	0.2%	0.1%	0.2%
Philippines	0.4%	0.2%	0.2%	0.1%	0.1%
Russia	1.8%	1.2%	1.5%	1.6%	2.8%
Taiwan *	0.1%	0.1%	0.0%	-	-
Other areas *	1.8%	1.0%	1.3%	0.8%	1.2%

Source: CNMI Department of Commerce 2010, CNMI Department of Commerce 2012, CNMI Department of Commerce 2013b

Notes: * For 2009 and 2010 and January-June 2011, arrivals from China included persons arriving from China and Hong Kong. Effective July 2011, arrivals from Hong Kong were counted separately, and arrivals from Taiwan were included in Other Areas.



Source: CNMI Department of Commerce 2010, CNMI Department of Commerce 2012, CNMI Department of Commerce 2013b

Figure 3.14-1. CNMI Average Hotel Daily Rate and Occupancy Rates, 2009–2013

the Northern Mariana Islands (HANMI) represents 12 hotels on Saipan, although there are several other hotels and lodging options on Saipan and one hotel under construction in San Antonio (Saipan Tribune 2014c). There are approximately 3,000 hotel rooms on Saipan

(Licanto 2015). The Commonwealth Casino Commission has granted a casino license to operate an integrated casino/resort on Saipan; currently a 'temporary' casino is operating as a live training facility (Pinaroc 2015, Marianas Variety 2015). Because Saipan International Airport is the only airport in the CNMI that can accommodate international flights, it accounts for most visitor arrivals to the CMNI

The focus of tourism on Tinian has been the development of the gaming industry. Five casino licenses were approved for Tinian; however, only one licensed full-scale casino is operating (Tinian Dynasty Hotel and Casino) (CNMI Department of Commerce and USDA 2011). In 2002, Tinian had 452 total hotel rooms and 440 of these rooms were at the Tinian Dynasty Hotel and Casino (Bank of Hawai'i and East-West Center 2003). A 300-room hotel resort (Tinian Ocean View Resort) is under construction at Tinian Harbor; the project has also submitted an application for a license to operate a casino at the site (Villegas Zotomayor 2015). Other tourism-related activities include cultural and historic sites, and marine activities such as snorkeling, scuba diving, fishing, and beach going. To promote tourism, the runway at Tinian International Airport was expanded to allow for direct flights from China; however, Tinian International Airport does not currently have international flights (Shin 2007).

While tourism is the major industry on Saipan and Tinian, other smaller industries exist. Saipan supports small-scale agriculture, an aquaculture operation, one small call center, and many retail businesses (CNMI Department of Commerce and USDA 2011). Other industries on Tinian include commercial agriculture consisting of small-scale vegetable and fruit cultivation that is marketed locally and shipped to Saipan, a few family-owned ranches, and retail establishments in the village of San Jose (NPS 2001).

Public Services. This section addresses health and human services and public safety as these are two public services most likely to be affected by the Proposed Action.

Health and Human Services. Health and medical services on Saipan are primarily provided by the Commonwealth Healthcare Corporation via the Commonwealth Health Center (CHC) and various out-patient clinics. CHC is an 86-bed hospital that began operations in 1986. It can accommodate inpatient and outpatient medical/surgical services including obstetrics, adult and neonatal intensive care, general medicine, pediatrics, and psychiatry; emergency care; public health services; dental services; other ancillary and diagnostic services such as hemodialysis, physical therapy, respiratory care, and radiology; and has a pharmacy and medical laboratory (CHCC 2015a). As of June 2015, Commonwealth Healthcare Corporation employed 31 physicians in Saipan (Camacho 2015) and various other medical professionals such as physician's assistants, nurses, nursing assistants, and other allied health professionals. There are also several private health, dental, and optical clinics on Saipan, including the Pacific Medical Center-Saipan, a 137-bed acute care facility (PMC-Saipan 2015).

Tinian Health Center, built in 1987, is the island's only medical facility. The health center, which has a 5-bed capacity as well as an emergency room and out-patient clinic, provides emergency services, treatment, laboratory, X-ray, ultrasound, pharmacy, and public health services. The Tinian Health Center is staffed by 31 personnel, including 1 family nurse practitioner, currently the only medical provider; 4 registered nurses; 5 licensed practical nurses, and 2 nursing assistants (CHCC 2015a).

Public Safety. The CNMI Department of Public Safety (DPS) consists of four major divisions: State Police Division, State Fire Division; Bureau of Motor Vehicles; and Bureau of Investigation. The DPS Fire Division has five stations on Saipan.

The Saipan International Airport ARFF department, which is managed by the CPA, has approximately 35 personnel and 6 firefighting vehicles and equipment. It runs two 24-hour shifts with 15 personnel assigned to each shift and an average of 8 personnel on duty per shift each day. A Fire Captain is in charge of each shift. Administration of the Saipan International Airport ARFF department includes the Fire Chief, Assistant Fire Chief, Secretary, Training Officer, Training Coordinator, Fire Inspector/Logistics, ARFF Chief Mechanic, and ARFF Mechanic (CPA 2005). In addition, the Pacific Region ARFF Training Center is operated from Saipan International Airport.

DPS has a 24-hour operations center and police, fire, traffic, criminal investigation, and motor vehicle sections on Tinian. The DPS facilities are in the village of San Jose and, as of late 2008, were staffed by 20 police officers, 12 firefighters, and 6 administrative support personnel (DON 2010b).

The Tinian International Airport ARFF department has 3 firefighting vehicles and a staff of 10 personnel who have dual roles as ARFF personnel and Ports police officer. Tinian International Airport ARFF operates on three 8-hour shifts with an average of two to three personnel on duty per shift each day. A Fire/Police Captain runs the daily operation for both law enforcement and ARFF protection (CPA 2005). Tinian International Airport's firefighting capability can be made available to DPS in the event of a major emergency (DON 2010b).

The CNMI has correctional facilities on Saipan and Tinian. These facilities consist of a detention facility, jail, a women's unit, and a work release unit in Saipan and a police lockup in Tinian. These facilities are inadequate and are overcrowded (USDOI-OIA 2008).

Sociocultural Issues. A 45-day Public Scoping Period occurred from September 27 through November 10, 2011, and several public scoping meetings were conducted in the CNMI in October 2011 to present preliminary information on the Proposed Action and to identify potential issues of concern. Some concerns that were identified related to the socioeconomic impact of the Proposed Action beyond areas discussed in the preceding sections. This section describes some of these other issues such as land ownership, quality of life, and cultural identity.

The U.S. citizen population of the CNMI is primarily of Chamorro cultural descent, although Carolinians and immigrants from East Asia and Micronesia have also settled in the Mariana Islands. English is the official language of the CNMI, but Chamorro and Carolinian are the spoken native tongues. Spanish culture, which influenced the Chamorro culture for approximately 400 years, is still present today. Japanese is also spoken in some areas of the CNMI and is a reflection of the importance of Japanese to the tourism industry. Filipino and Chinese make up a large portion of the non-U.S. citizen population with some representation from other Asian countries (see **Table 3.14-8**).

Table 3.14-8. Ethnic Origin and Race, and Poverty Status Characteristics, 2010

Demographic	Saipan	Saipan District 1	Saipan District 2	Saipan District 3	Tinian & Tinian District 6	CNMI
Total Population	**48,220**	**15,160**	**6,382**	**15,624**	**3,136**	**53,883**
Native Hawaiian and Other Pacific Islander	**33.6%**	**37.7%**	**25.5%**	**23.8%**	**39.0%**	**34.9%**
Carolinian *	5.1%	4.4%	3.1%	5.4%	37.7%	4.6%
Chamorro	21.6%	24.7%	15.8%	12.8%	0.2%	23.9%
Chuukese	2.5%	3.1%	2.3%	2.8%	0.0%	2.3%
Kosraean	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
Marshallese	0.1%	0.2%	0.1%	0.1%	0.4%	0.1%
Palauan	2.3%	2.9%	2.1%	1.6%	0.1%	2.2%
Pohnpeian	0.9%	0.9%	0.9%	0.4%	0.2%	0.8%
Yapese	0.5%	0.7%	0.6%	0.2%	0.0%	0.4%
Other Native Hawaiian and Other Pacific Islander	0.6%	0.6%	0.3%	0.4%	37.7%	0.5%
Asian	**50.9%**	**47.9%**	**62.7%**	**63.4%**	**46.7%**	**49.9%**
Bangladeshi	0.8%	0.7%	1.3%	1.0%	1.8%	0.9%
Chinese (except Taiwanese)	7.1%	6.9%	9.2%	9.7%	7.6%	6.8%
Filipino	35.8%	34.0%	44.9%	43.3%	30.3%	35.3%
Japanese	1.5%	0.7%	0.6%	2.8%	1.2%	1.5%
Korean	4.6%	4.5%	5.7%	5.4%	1.3%	4.2%
Nepalese	0.3%	0.3%	0.2%	0.3%	3.1%	0.4%
Thai	0.5%	0.7%	0.5%	0.4%	0.3%	0.5%
Other Asian	0.3%	0.2%	0.4%	0.4%	1.1%	0.4%
Black or African American	**0.1%**	**0.0%**	**0.1%**	**0.1%**	**0.2%**	**0.1%**
Hispanic or Latino	**0.1%**	**0.1%**	**0.0%**	**0.1%**	**0.2%**	**0.1%**
White	**2.1%**	**1.4%**	**0.8%**	**2.6%**	**1.8%**	**2.1%**
Other Ethnic Origin or Race	**0.2%**	**0.2%**	**0.6%**	**0.2%**	**0.3%**	**0.2%**
Two or more Ethnic Origins or Races	**12.9%**	**12.6%**	**10.3%**	**9.8%**	**11.9%**	**12.7%**
Individuals Below Poverty Level	53.3%	55.1%	62.7%	53.1%	43.6%	52.3%

Source: U.S. Census Bureau 2010j, U.S. Census Bureau 2010k

Notes: * Carolinian includes Caroline Islander, Eauripikese, Faisian, Ifalukese, Lamotrekese, Satawalese, Ulithian, and Woleaian.

Chamorro life revolves around family and clans. Family loyalty is seen as important in both politics and business in the CNMI. One of the most distinctive aspects of family life in the CNMI is the fiesta, which is held for events such as births, baptisms, religious holidays, and weddings (Shin 2007).

Quality of life is a person's overall well-being. It is a difficult concept to measure, but standard indicators of quality of life include not only wealth and employment (i.e., standard of living), but also available infrastructure, environmental quality, personal safety/security, health, education, recreation and leisure opportunities, and social belonging. Quality of life includes many of the resource areas discussed in this EIS. Generally, it relates to the ability of Saipan and Tinian to support the Proposed Action adequately, including how the island's general tranquility, family and community relations, cultural identity, infrastructure, social services, and standards of living could be affected.

3.14.4.2 Environmental Justice

Table 3.14-8 presents ethnic origin and race, and poverty status characteristics collected in the 2010 U.S. Census for Saipan; Tinian; Saipan Districts 1, 2, and 3; Tinian District 6; and the CNMI. Native Hawaiian and Other Pacific Islanders made up 33.6 percent of Saipan's population and 39.0 percent of Tinian's population. Percentage of Native Hawaiian and Other Pacific Islanders in Districts 1, 2, and 3 ranged from 23.8 percent of the population in District 3 to 37.7 percent of the population in District 1. Native Hawaiian and Other Pacific Islanders made up 39.0 percent of the population of Tinian (and District 6). Among people reporting to be Native Hawaiian and Other Pacific Islander alone and identifying one specific ethnic origin and race, the majority in the CNMI and Saipan (including Districts 1,2, and 3) identified as Chamorro. People identifying as Chamorro made up more than 20 percent of the populations of the CNMI, Saipan, and District 1, and approximately 16 percent and 13 percent of the populations of District 2 and District 3, respectively. The population of Tinian (and District 6) was only 0.2 percent Chamorro, but Carolinians represented almost 38 percent of the population. Those reporting to be Asian made up more than 50 percent of the populations of Saipan and Districts 1 and 2, and slightly less than 50 percent of the populations of the CNMI, Tinian (and District 6), and District 1. Filipinos and Chinese were the largest ethnic origins and races within populations of those reporting to be Asian alone. Filipinos made up more than 30 percent and Chinese made at least 7 percent of the populations of the CNMI, Saipan, Tinian (and District 6), and Districts 1, 2, and 3 (U.S. Census Bureau 2010j). More than 50 percent of the populations of the CNMI, Saipan, and Districts 1, 2, and 3 were below the poverty level. Approximately 44 percent of the population of Tinian was below the poverty level (U.S. Census Bureau 2010k).

As described in **Section 3.14.4.1**, the CNMI has a complex and dynamic ethnic history due to the influences of many cultures throughout its past history and the in-migration of many foreign workers in recent history. Based on the Federal definition of a minority, most of the CNMI population would be considered a minority. There is no regional or CNMI-specific definition of a minority; therefore, the Federal definition is used in this analysis.

Data from the 2010 U.S. Census was used to identify minority and low-income populations within the areas of impact on Saipan and Tinian, which are the election districts that encompass the Proposed Action (i.e., Saipan International Airport, Tinian International Airport, Ports of Saipan and Tinian, and fuel truck routes) in Saipan (Districts 1, 2, and 3) and Tinian (District 6). District 6 encompasses the whole island of Tinian as well as the island of Aguijan, which is uninhabited.

To determine whether each election district contains a disproportionately high percentage of minority or low-income residents, these districts are compared to the islands of Saipan and Tinian, which are the communities of comparison, using the methodology described in **Section 3.14.3**. Because District 6 is the island of Tinian, it will be compared to the CNMI.

Based on 2010 U.S. Census data, Saipan District 3 had a lower percentage of minorities than Saipan. Districts 1 and 2 had a higher minority percentage than Saipan. All differences (higher or lower) between the districts' minority percentages and those of Saipan were less than 1 percent, except for difference between District 2 and Saipan which was 1.3 percent. However, each district had minority percentages higher than 50 percent. The low-income population of District 3 was lower than that of Saipan; however, Districts 1 and 2 had higher percentages of low-income residents when compared to Saipan. Tinian District 6 had a higher percentage of minorities than the CNMI, but a lower percentage of low-income residents. **Table 3.14-9** presents the data used in determining if minority and low-income populations within the areas of impact on Saipan and Tinian (Saipan Districts 1, 2, and 3 and Tinian District 6) were higher than that of the areas of comparison (Saipan and the CNMI, respectively).

Table 3.14-9. Minority and Low Income Populations

Demographic	Total Population	Percent Minority *	Percent Low-Income	Disproportionate Minority Population	Disproportionate Low-Income Population
CNMI	53,883	97.9%	52.3%	-	-
Saipan	48,220	97.9%	53.3%	-	-
Tinian (Election District 6)	3,136	98.2%	43.6%	Yes	No
Election District 1 (Saipan)	15,160	98.6%	55.1%	Yes	Yes
Election District 2 (Saipan)	6,382	99.2%	62.7%	Yes	Yes
Election District 3 (Saipan)	15,624	97.4%	53.1%	No	No

Sources: U.S. Census Bureau 2010j, U.S. Census Bureau 2010k

Notes: * Within **Table 3.14-9**, the definition of "minority" is Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and multi-race that includes one of the aforementioned races; and Hispanic or Latino as defined by the CEQ (CEQ 1997).

3.15 Human Health and Safety

3.15.1 Definition of Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' and the public's health and safety during facility demolition and construction and subsequent operation of the newly constructed facilities.

The OSHA developed standards to promote a safe working environment. These standards establish general environmental controls, including personal protective equipment (PPE), wherever necessary because of hazards, processes, or the environment. Exposure limits for noise, ionizing and nonionizing radiation, and toxic and hazardous substances have been established; and requirements for handling and storing compressed gases and flammable liquids.

Contractor safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by the OSHA and the USEPA. These standards specify the amount and type of training required for industrial workers, the use of PPE and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified, and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the location of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns. Refer to **Sections 3.1** and **4.1** for information regarding noise.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFPD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

UFC 3-260-01, *Airfield and Heliport Planning and Design*, and other applicable criteria such as FAA Advisory Circular 150/5300-13A, *Airport Design,* provide standardized airfield, heliport, and airspace criteria for the layout, design, and construction of runways, helipads, taxiways, aprons, and related permanent facilities. It details dimensional and geometric layout criteria for safety standards for airfields, landing zones, heliports and helipads, related permanent facilities, and the navigational airspace surrounding such facilities. USAF installations on a municipal airport or FAA-controlled airfields must apply FAA criteria to facilities such as runways and taxiways that are jointly used by civilian and military aircraft. However, facilities that are for military use need to comply with USAF/DOD criteria only.

An RSA is a defined surface surrounding a runway that enhances the safety of and reduces the risk of damage to airplanes in the event of an undershoot (i.e., aircraft landing short of the runway), an overshoot (i.e., aircraft landing on the runway but not able to stop on the runway), or an excursion from the runway (i.e., aircraft moving off the runway to the right or left). RSAs also provide accessibility for firefighting and rescue equipment responding to such incidents. The requirement to ensure that all certificated airports have RSAs compliant with 14 CFR Part 139 was brought about by aircraft accidents that resulted in passenger and crew fatalities or injuries and property damage.

Threat to human safety and the potential for damage to aircraft prompted the FAA to require all airfields handling commercial aircraft with 30 or more passenger seats to address wildlife hazards if a real or potential wildlife problem is present. The FAA is responsible for setting and enforcing FARs and policies to ensure commercial aviation safety. FAR Part 139.337 requires certificated airports to conduct a WHA to identify and quantify wildlife hazards to aviation safety.

3.15.2 Existing Conditions

3.15.2.1 Saipan

Contractor Health and Safety. All contractors performing activities are responsible for following ground safety regulations and workers compensation programs and are required to conduct those activities in a manner that does not pose an undue risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of PPE, and availability of Safety Data Sheets. Industrial hygiene is the responsibility of the contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous materials), physical hazards (e.g., noise propagation, falls), and biological agents (e.g., infectious waste, wildlife, poisonous plants); to recommend and evaluate controls (e.g., prevention, administrative, engineering) to ensure personnel are property protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

Military Health and Safety. Military personnel do not currently operate at Saipan International Airport, except for occasional divert operations.

Public Health and Safety. Saipan International Airport has a 24-hour Aircraft Rescue and Fire Fighting unit. It includes approximately 35 personnel and 6 pieces of firefighting apparatus (CPA 2012c).

Airfield Safety. The RSA for the runway at Saipan International Airport is an area 500 feet wide centered on the runway centerline and extending 1,000 feet beyond each runway end (CPA 2002) and has been certified per 14 CFR Part 139. Refer to **Section 3.3** for information on aircraft operations at Saipan International Airport.

The WHA prepared in August 2008 recommended that Saipan International Airport develop and implement a WHMP to reduce aviation safety hazards (CPA 2008). The WHMP for Saipan International Airport outlines applicable wildlife control measures. Refer to **Section 3.6** for additional information regarding the WHA and BASH statistics at Saipan International Airport.

Explosive Safety. Currently, there are no munitions facilities, firing ranges, or FAA restricted areas at Saipan International Airport or the seaport. Additionally, no munitions facilities, or ordnance storage is planned at Saipan International Airport or the seaport and is thus further removed from analysis.

3.15.2.2 Tinian

Contractor Health and Safety. The existing conditions for contractors at Tinian are identical to that at Saipan.

Military Health and Safety. Military personnel do not currently operate at Tinian International Airport.

Public Health and Safety. Tinian International Airport has an Aircraft Rescue and Fire Fighting unit that includes approximately 10 personnel working three 8-hour shifts. The unit has 3 pieces of firefighting apparatus (CPA 2012c).

Airfield Safety. The RSA for the runway at Tinian International Airport is an area 500 feet wide centered on the runway centerline and extending 1,000 feet beyond each runway end (CPA 2012d) and has been certified per 14 CFR Part 139. Refer to **Section 3.3** for information on aircraft operations at Tinian International Airport.

The WHA prepared for Tinian International Airport recommended the development and implementation of a WHMP to reduce aviation safety hazards (CPA undated). The WHMP for Tinian International Airport outlines applicable wildlife control measures. Refer to **Section 3.6** for additional information regarding the WHA and BASH statistics at Tinian International Airport.

Explosive Safety. Currently, there are no munitions facilities, firing ranges, or FAA restricted areas at Tinian International Airport or the seaport. Additionally, no munitions facilities, or ordnance storage is planned at Tinian International Airport or the seaport and is thus further removed from analysis.

This page intentionally left blank.

4. Environmental Consequences

This section presents potential impacts that could occur and incorporates the use of mitigation measures, including BMPs and compliance with federal and local regulations and requirements. Specific descriptions of mitigations measures have been integrated into the resource area analysis for each alternative and are summarized in **Section 4.16**. For some resource areas, the same detailed mitigation measures would be applicable to all three Alternatives; to prevent extensive repetition, these mitigation measures are presented at the beginning of the resource section, rather than under each Alternative.

Changes Since the 2015 Revised Draft EIS and 2012 Draft EIS. Since the release of the 2015 Revised Draft EIS and the 2012 Draft EIS, all required consultations have been completed and PACAF has reviewed the environmental impacts of the Proposed Action and comments received on the 2015 Revised Draft EIS and the 2012 Draft EIS. As a result, the analysis presented in **Section 4** for some resource areas has changed since the release of the 2015 Revised Draft EIS. Additional information about changes that were made since the 2015 Revised Draft EIS and the 2012 Draft EIS is provided in **Section 3** for each resource area, as applicable. All changes presented in **Section 3** have been incorporated into the analysis presented in **Section 4** of this Final EIS.

4.1 Noise

Noise impact analysis evaluates potential changes to the existing noise environment that would result from a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to high noise levels or reduce the ambient sound level), or adverse (i.e., if they result in increased sound exposure to high noise levels or ultimately increase the ambient sound level).

Noise annoyance is defined by the USEPA as any negative subjective reaction to noise by an individual or group. DNL is an accepted metric for quantifying community annoyance to general environment noise, including aircraft noise. **Table 4.1-1** presents the percentages of people that would be projected to be "highly annoyed" when exposed to various levels of noise measured in DNL. This table presents the results of more than a dozen studies of the relationship between noise and annoyance levels. This relationship was suggested in 1977 by the National Academy of Sciences and was recently reevaluated for use in describing people's reaction to semicontinuous (transportation) noise (Finegold et al. 1994). The data shown provide a perspective on the level of annoyance that might be anticipated.

Table 4.1-1. Percentage of Population Highly Annoyed by DNL Noise Levels

DNL Noise Contours	Percentage of Persons Highly Annoyed	
	Low	High
65–70 dBA	12	22
70–75 dBA	22	36
75–80 dBA	36	54
80+ dBA	> 54	

Source: Finegold et al. 1994

For this analysis, the NOISEMAP noise modeling program was used to analyze the military aircraft operations. NOISEMAP is a DOD-approved computer modeling program used to define noise levels in areas near USAF installations. For civilian aircraft, the INM was used. INM is the FAA's preferred model when assessing aircraft noise for environmental documentation. The output from NOISEMAP and INM was combined in NMPlot to create one set of noise contours for each scenario. NMPlot is a software program sponsored by the USAF and the FAA to produce contour plots for their airport noise models. An analysis of existing and proposed conditions was estimated from the flying operations including types of aircraft, flight patterns, variations in altitude, power settings, number of operations, and hours of operation. This information was used to develop the noise contours contained in this document.

4.1.1 Alternative 1– Modified Saipan Alternative

4.1.1.1 Construction Phase

Short-term, direct, minor to moderate, adverse impacts on the noise environment would be expected from construction associated with Alternative 1. Impacts associated with construction noise under Alternative 1 would result from the projects identified in **Section 2.5.1.1** and would be constructed at different times and locations over 24 to 36 months. Individual equipment used for construction would be expected to result in noise levels comparable to those shown in **Table 4.1-2**. New temporary sources of noise would be imposed by construction at the specific selected construction sites and the vehicle traffic on public roads associated with the mobilization/demobilization of construction equipment, delivery of construction materials, and the daily transport of construction workers to and from the construction sites.

Table 4.1-2. Predicted Peak Noise Levels for Construction Equipment

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94

Source: USEPA 1971

Construction Equipment. Noise from construction varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. Additionally, noise from construction equipment is estimated without the use of enclosures, mufflers, or other sound reducing equipment. Individual equipment used for construction would be expected to result in noise levels comparable to those shown in **Table 4.1-2.** To predict how these activities would impact adjacent populations or other nearby sensitive noise receptors, noise levels from the probable equipment was estimated.

Under Alternative 1, the combined noise from construction equipment during the busiest day was estimated to determine the total impact of noise from construction at a given distance. Examples of expected combined construction noise during daytime hours at specified distances are shown in **Table 4.1-3**. These sound levels were estimated by adding the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source of the noise.

Table 4.1-3. Estimated Peak Noise Levels from Construction Activities

Distance from Noise Source	Estimated Peak Noise Level
50 feet	90–94 dBA
100 feet	84–88 dBA
150 feet	81–85 dBA
200 feet	78–82 dBA
400 feet	72–76 dBA
800 feet	66–70 dBA
1,200 feet	< 64 dBA

Source: HDR

The majority of projects under Alternative 1 would occur on or adjacent to Saipan International Airport property. The closest residences to construction sites are approximately 700 feet north of the fuel storage and hydrant system infrastructure. As shown in **Table 4.1-3**, at this distance, peak noise levels from construction equipment would be approximately 67 to 71 dBA. This means there would be some periods of time during construction when instantaneous noise levels could be in the 67 to 71 dBA range, but this would be short term and periodic.

In addition to the projects at Saipan International Airport, fuel tanks would be constructed at the Port of Saipan. Most of the property around this site consists of industrial land use. The closest noise-sensitive receptors are residences approximately 300 feet away. At this distance, noise levels from construction equipment would be approximately 75 to 79 dBA.

Since noise is typically less annoying during normal working hours, restricting activities to these hours (i.e., between 7 a.m. and 5 p.m.) could reduce the annoyance to adjacent populations. Common measures such as using equipment noise mufflers could minimize noise impacts. Use of these potential mitigation measures would reduce and minimize potential noise impacts during construction.

Short-term, direct, minor, adverse impacts from construction noise under Alternative 1 would be expected. However, noise generation would only last for the duration of construction activities. It is not anticipated that the short-term increase in noise levels resulting from construction associated with Alternative 1 would cause significant adverse impacts on the surrounding populations.

Vehicle Traffic. Construction-related traffic would add to existing traffic noise levels. As a rule of thumb, doubling the noise source, in this case the number of vehicles, would result in a 3-dBA increase in the existing noise level. This increase over the ADT volume shown in **Table**

3.11-1 in **Section 3.11.3.1** represents only a fractional increase in terms of noise generation. There are numerous noise-sensitive receptors adjacent to the roadways that construction traffic would travel on including schools (such as the Northern Marianas College), recreational facilities (such as the Saipan Country Club), and residences. These trips would be dispersed throughout the day, and noise levels from construction trucks generally range between 83 to 94 dBA, 50 feet from the source. During peak construction, short-term, minor to moderate impacts would occur on receptors adjacent to the roadways. For the remaining construction period, substantially fewer construction-related trips would occur. Therefore, impacts from construction traffic are not anticipated to be significant.

4.1.1.2 Implementation Phase

4.1.1.2.1 Aircraft Operations

Aircraft operations under Alternative 1 were analyzed using the KC-135 aircraft because it is the design aircraft for the Proposed Action. As described in **Section 1.5.3**, the ISR/Strike capability proposed to establish 12 KC-135 aircraft in the region at Andersen AFB. Because the purpose and need of the Proposed Action presented in this EIS is to provide a divert airfield to Andersen AFB, the noise analysis was completed for the operation of these 12 KC-135 aircraft from Saipan International Airport. However, as described in **Section 2.5.1.2**, a typical military exercise conducted at Saipan International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft. Therefore, noise impacts from aircraft operations at Saipan International Airport would typically be less than those described below.

Additional analysis related to noise impacts, including impacts on land use and sensitive populations, is provided in **Section 4.10.1.2**.

Average Annual Day. Direct, minor, adverse impacts on the noise environment would be expected from Alternative 1 aircraft operations. Impacts would be periodic and short-term because they would only occur during planned military exercises for a maximum of 8 weeks per year. To model the Alternative 1 noise contours, the 2011 aircraft operations under the baseline scenario were increased by 1 percent based on the FAA's Terminal Area Forecast, as shown on **Table 4.1-4**. The Terminal Area Forecast system is the official forecast of aviation activity at FAA facilities. At Saipan International Airport, a 1 percent increase per year in aircraft operations is forecasted (FAA 2011). The forecasted operations presented in **Table 4.1-4** and **Figure 4.1-1** represent the year 2012 and include baseline aircraft operations and the proposed Divert operations, had they occurred in the forecasted 2012 year. Baseline operations are expected to increase gradually through 2018, when Divert aircraft operations could occur (FAA 2011). Therefore, the AAD Alternative 1 Noise Scenario represents a conservative analysis of potential noise from aircraft operations at Saipan International Airport because baseline operations (i.e., air carrier, air taxi) are expected to be greater than those presented in **Table 4.1-4** and **Figure 4.1-1**. The percentage of operations between 10 p.m. and 7 a.m. and the flight tracks did not change as compared to baseline conditions. In addition to the aircraft that were modeled under the Baseline Scenario, Alternative 1 includes operations with the KC-135 aircraft.

The aircraft operations were modeled using an AAD. The AAD is calculated by looking at the total number of aircraft operations that are conducted per year and dividing by 365 days to

Table 4.1-4. Alternative 1–Forecasted AAD Aircraft Operations at Saipan International Airport

Aircraft Category[1]	Aircraft[2]	Average Daily Operations[1]
Air Carrier	A-330	2.02
	A-321	2.02
	B-757	4.04
	B-767	2.02
Air Taxi/ General Aviation[3]	ATR-42	22.22
	C-172	15.15
	SD3-60	4.04
	Piper Cherokee	89.53
Military	C-130H	0.72
	F-16C	0.35
	KC-135	5.26
	Total	**147.37**

Source: FAA 2011[1] and HDR[2]
[3] Air taxi flights also occasionally include operations by a Piper Navajo; differences in noise levels are negligible.

obtain an average number of operations per day. The AAD method is used to evaluate significance.

To model an AAD, it was estimated that each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during military exercises. The aircraft would likely fly 8 weeks per year, for 5 days a week, which equals 40 flying days per year. Therefore, each aircraft would complete approximately 160 operations per year; 12 aircraft would complete 1,920 operations per year. As stated in the first paragraph of this section, typical military exercises conducted at Saipan International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft and would total up to 720 operations (i.e., 360 take-offs and 360 landings). Therefore, noise impacts from aircraft operations at Saipan International Airport would typically be less than those described in the following sentences. For example, if the number of operations analyzed in this document, (1,920 operations per year) was reduced by half, a decrease of 3 dBA DNL of each noise zone would be expected.

To estimate the AAD, the total number of operations was divided by 365 days, which equals 5.26 operations per day with the KC-135. It was assumed that 90 percent of the KC-135 operations would occur during the day (7 a.m. to 10 p.m.) and 10 percent at night (10 p.m. to 7 a.m.). KC-135 flight tracks were modeled heading to the airspace areas to the north and south, where the aircraft would train. **Table 4.1-5** shows the acreage within the AAD noise contours under Alternative 1 and **Figure 4.1-1** shows the Alternative 1–AAD and baseline scenario noise contours at Saipan International Airport. The total number of acres within the 65–80+ dBA DNL noise contours is 374 which is an increase of 21 acres as compared to the baseline scenario. The noise contours extend slightly farther out from the runway ends as compared to the baseline scenario. There is an increase of 6 acres of off-airport property as compared to the baseline scenario (5 acres within the 65–70 dBA DNL contours and 1 acre

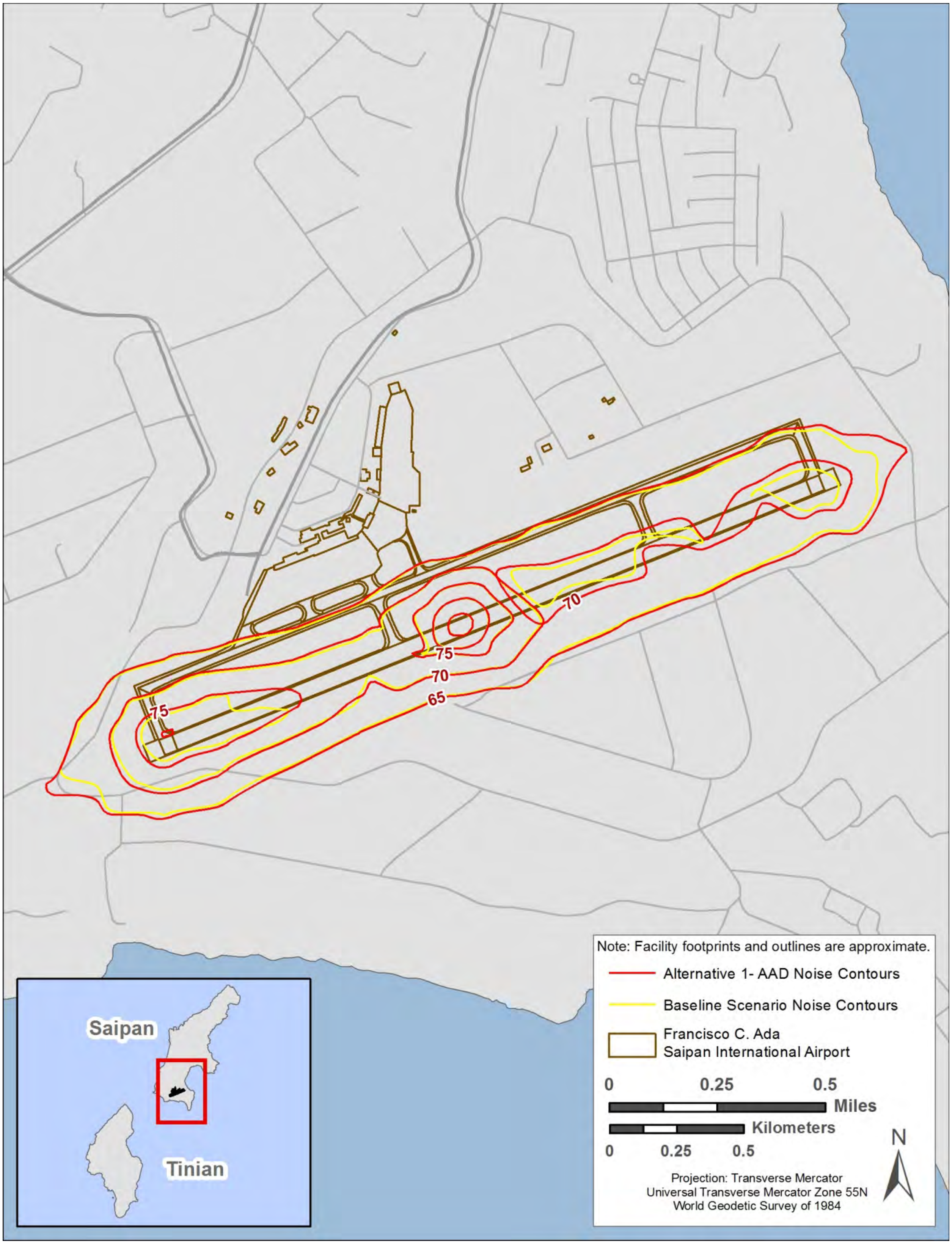


Figure 4.1-1. Alternative 1–AAD Noise Contours at Saipan International Airport (2012)

Table 4.1-5. Alternative 1 – Projected AAD Noise Contour Acreage at Saipan International Airport

Noise Contours	Alternative 1 (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	21	185	206
70–75 dBA DNL	2	123	125
75–80 dBA DNL	0	35	35
80+ dBA DNL	0	8	8
Total	**23**	**351**	**374**

Source: HDR

within the 70–75 dBA DNL contours). This is the result of the minor increase in current aircraft operations (by approximately 7) and the addition of the KC-135 operations. The contours above 65 dBA DNL would occur entirely on airport property. Of the total number of acres, approximately 23 include off-airport property.

Presence of residences under the noise contours was determined based on review of aerial photographs due to lack of other data. All visible structures were considered residences, unless another use was obvious. Based on this method, there are approximately zero to three residences within the 65–70 dBA DNL contour. Therefore, it is assumed that a population of fewer than 12 would be exposed to the 65-dBA DNL. The USAF would notify the local government and public in advance of the exercises per existing procedures as described in **Section 2.3.2**. For additional information on land use categories and sensitive noise receptors within the Alternative 1 noise contours, see **Section 4.10.1**.

Table 4.1-6 shows a summary of the noise contour acreage at Saipan International Airport under the Baseline Scenario and the AAD.

Table 4.1-6. Summary of Saipan International Airport Noise Contour Acreage for the Baseline Scenario and AAD

DNL Noise Contours	Baseline Scenario (in acres)	Alternative 1–AAD (in acres)
65–70 dBA	214	206
70–75 dBA	105	125
75–80 dBA	26	35
80–85 dBA	8	8
85+ dBA	0	0
Total	**353**	**374**

Source: HDR

Average Busy Day. The ABD was modeled to depict the increased noise exposure that would occur during an exercise activity and are considered to be “exercise contours” and are not used to determine significance. To model the ABD, each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during a military exercise. As stated in the first paragraph of this section, the noise analysis was completed for the operation of 12 KC-135 aircraft from Saipan International Airport. Since the analysis was completed for 12 KC-135s, and each aircraft would complete four operations per day the number of KC-135 daily operations was modeled at 48.

Except for the KC-135 aircraft, the daily operations shown in **Table 4.1-4** would remain the same under the ABD scenario because those aircraft typically operate from Saipan International Airport 365 days per year. The other assumptions discussed for the AAD would also remain the same.

Table 4.1-7 shows the acreage within the ABD noise contours under Alternative 1 and **Figure 4.1-2** shows the Alternative 1 – ABD noise contours at Saipan International Airport. The acreage calculations only include the land areas that the noise contours encompass; acreage over water was not calculated. As expected, the noise contours are larger than under the AAD. The contours follow the flight tracks, which extend out from the runway. The total number of acres within the 65–80+ dBA DNL noise contours is 561 which is an increase of 208 acres as compared to the baseline scenario. The 65 dBA DNL contour extends off airport property over the Pacific Ocean. The 70 dBA DNL contour also extends off airport property, mostly to the northeast. There is an increase of 182 acres of off-airport property as compared to the baseline scenario (164 acres within the 65–70 dBA DNL contours, 17 acres within the 70–75 dBA DNL contours, and 1 acre within the 75–80 dBA DNL contours). Of the total number of acres, approximately 199 include off-airport property.

Table 4.1-7. Alternative 1 – Projected ABD Noise Contour Acreage at Saipan International Airport

Noise Contours	Alternative 1 (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	180	111	291
70–75 dBA DNL	18	166	184
75–80 dBA DNL	1	66	67
80+ dBA DNL	0	19	19
Total	**199**	**362**	**561**

Source: HDR

Using the same method described in the Average Annual Day section, it was determined there are approximately zero to seven residences within the 65–70 dBA DNL contour. Therefore, it is assumed that a population of fewer than 28 would be exposed to the 65-dBA DNL. For additional information on land use categories and sensitive noise receptors within the Alternative 1 noise contours, see **Section 4.10.1**.

Table 4.1-8 shows a summary of the noise contour acreage at Saipan International Airport under the Baseline Scenario and the ABD. The acreage calculations only include the land areas that the noise contours encompass; acreage over water was not calculated.

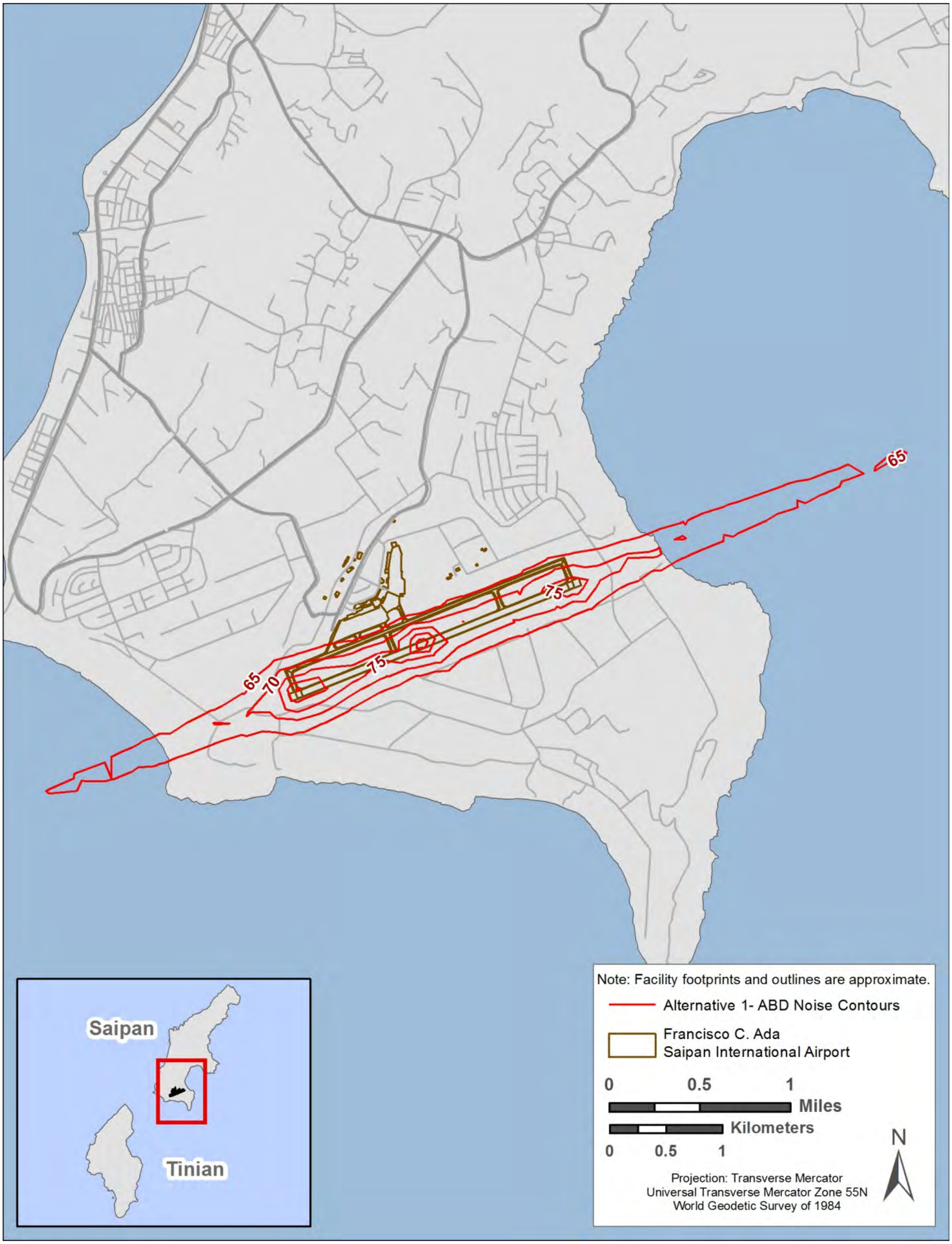


Figure 4.1-2. Alternative 1–ABD Noise Contours at Saipan International Airport (2012)

Table 4.1-8. Summary of Saipan International Airport Noise Contour Acreage for the Baseline Scenario and ABD

DNL Noise Contours	Baseline Scenario (in acres)	Alternative 1–ABD (in acres)
65–70 dBA	214	291
70–75 dBA	105	184
75–80 dBA	26	67
80+ dBA	8	19
Total	**353**	**561**

Source: HDR

Although noise levels would vary based on weather and wind conditions and whether exercises occur during day or night, people in the neighboring communities closest to Saipan International Airport would be able to hear the departures and arrivals of the KC-135s during the 8 weeks of exercises. Some people may find this new noise source annoying to varying degrees, depending on their degree of noise sensitivity. However, these DNL noise levels would not result in compatibility issues. For additional information on land use compatibility within the Alternative 1 noise contours, see **Section 4.10.1**.

4.1.1.2.2 Vehicle Use

Short-term, periodic, minor to moderate, direct adverse impacts would occur on receptors adjacent to the roadways. Under Alternative 1, vehicle traffic would increase due to fuel truck delivery from the fuel storage at the port to the proposed airfield fuel storage facility. These short-term impacts would be realized during a 14-day period to initially fill the 100,000-bbl bulk storage tank at the airport and throughout the 8 weeks of anticipated operations each year. The short-term periodic increase in fuel truck deliveries would use existing roadways commonly used by similar delivery trucks on each island. For initial fuel supply to fill the proposed new bulk storage facility at the airport, 84 daily one-way trips of the fuel truck would be required over the 14-day period. During each day of the 8 weeks of annual operations, 60 one-way trips by the fuel trucks would be required. Noise levels from trucks generally range between 83 and 94 dBA, 50 feet from the source.

Other potential vehicle use increases would be associated with bus transportation of support personnel on Saipan from the hotel to the airfield on a daily basis during the 8-week training operations. This short-term increase would be realized from commercial lodging to the airport and return. Buses would use existing roadways on Saipan, and the level of increased traffic as compared to existing average daily traffic (ADT) levels shown in **Section 3.11** would not impose a significant increase in current noise levels associated with traffic.

4.1.2 Alternative 2–Modified Tinian Alternative

4.1.2.1 Construction Phase

4.1.2.1.1 North Option

Short-term, direct, minor to moderate, adverse impacts on the noise environment would be expected from construction associated with the Alternative 2 North Option. Impacts associated with construction noise under Alternative 2 North Option would result from the projects identified in **Section 2.5.2.1** and would be constructed at different times and locations over 24 to 36 months. New temporary sources of noise would be imposed by construction at the specific selected construction sites and the vehicle traffic on public roads associated with the mobilization/demobilization of construction equipment, delivery of construction materials, and the daily transport of construction workers to and from the construction sites.

Construction Equipment. Noise from construction varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. Additionally, noise from construction equipment is estimated without the use of enclosures, mufflers, or other sound-reducing equipment. Individual equipment used for construction would be expected to result in noise levels comparable to those shown in **Table 4.1-2**. To predict how these activities would impact adjacent populations or other nearby sensitive noise receptors, noise levels from the probable equipment was estimated. Under the Alternative 2 North Option, the combined noise from the equipment, during the busiest day, was estimated to determine the total impact of noise from construction at a given distance. Examples of expected combined construction noise during daytime hours at specified distances are shown in **Table 4.1-9**. These noise levels were estimated by adding the noise from several pieces of equipment and then calculating the decrease in noise levels at various distances from the source of the noise.

Table 4.1-9. Estimated Peak Noise Levels from Construction

Distance from Noise Source	Estimated Noise Level
50 feet	90–94 dBA
100 feet	84–88 dBA
150 feet	81–85 dBA
200 feet	78–82 dBA
400 feet	72–76 dBA
800 feet	66–70 dBA
1,200 feet	< 64 dBA

Source: HDR

The majority of the projects under the Alternative 2 North Option would occur on Tinian International Airport property. The closest noise-sensitive receptors to the airport are residences on the south side of the airport, approximately 5,200 feet away of the southern airport boundary. At this distance, noise levels from construction equipment would be below 55 dBA, typically the levels heard in suburban residential areas (see **Table 3.1-2**). In addition to the projects at Tinian International Airport, a fuel tank would be constructed at the Port of Tinian. The closest noise-sensitive receptors to this site are residences, approximately 700 feet away. At this distance, noise levels from construction equipment would be approximately 67 to 71 dBA.

Since noise is typically less annoying during normal working hours, restricting activities to these hours (i.e., between 7 a.m. and 5 p.m.) could reduce the annoyance to adjacent populations. Common measures such as using equipment exhaust mufflers could minimize noise impacts.

Use of these potential mitigation measures would reduce and minimize potential noise impacts during construction.

Short-term, direct, minor, adverse impacts from construction noise under Alternative 2 North Option would be expected. However, noise generation would only last for the duration of construction. It is not anticipated that the short-term increase in noise levels resulting from construction under the Alternative 2 North Option would cause significant adverse impacts on the surrounding populations.

Vehicle Traffic. Construction-related traffic would add to existing traffic noise levels. As a rule of thumb, doubling the noise source, in this case the number of vehicles, would result in a 3-dBA increase in the existing noise level. This increase over the ADT volume shown in **Table 3.11-5** in **Section 3.11.3.2** represents only a fractional increase in terms of noise generation. Roadways that would likely receive the majority of the construction traffic include 8th Avenue and Broadway. Noise-sensitive receptors adjacent to these roadways include Kramer Beach and residences. These trips would be dispersed throughout the day and noise levels from construction trucks generally range between 83 and 94 dBA, 50 feet from the source. However, during peak construction, short-term, moderate impacts would occur on receptors adjacent to the roadways. During the remaining construction period, substantially fewer construction-related trips would occur. Noise levels would be temporary, occurring several times a day during work hours. Therefore, the impacts from construction traffic are not anticipated to be significant.

4.1.2.1.2 South Option

Short-term, direct, minor, adverse impacts on the noise environment would be expected from Alternative 2 South Option construction. Impacts on the noise environment from the Alternative 2 South Option would be less than those described in **Section 4.1.2.1.1**. The construction footprint under the South Option is approximately 1,500,000 ft^2 smaller than the North Option and would therefore require less construction equipment and vehicle use. While the noise level from construction equipment and vehicles would remain the same, the noise would also be less frequent than that described under the Alternative 2 North Option.

4.1.2.2 Implementation Phase – North and South Options

Noise impacts from aircraft operations during military exercises, vehicle use, and lodging would be the same for the Alternative 2 North and South Options. They are discussed as one alternative in the impacts analysis below.

4.1.2.2.1 Aircraft Operations

Aircraft operations under Alternative 2 were analyzed using the KC-135 aircraft because it is the design aircraft for the Proposed Action. As described in **Section 1.5.3**, the ISR/Strike capability proposed to establish 12 KC-135 aircraft in the region at Andersen AFB. Because the purpose and need of the Proposed Action presented in this EIS is to provide a divert airfield to Andersen AFB, the noise analysis was completed for the operation of these 12 KC-135 aircraft from Tinian International Airport. However, as described in **Section 2.5.1.2**, a typical military exercise conducted at Tinian International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft. Therefore, noise impacts from aircraft operations at

Tinian International Airport would typically be less than those described below. **Section 4.10.1.2** provides an additional analysis related to noise impacts, including impacts on land use and sensitive populations.

Average Annual Day. Direct, minor, adverse impacts on the noise environment would be expected from Alternative 2 aircraft operations. Impacts would be periodic and short term because they would only occur during planned military exercises for a maximum of 8 weeks per year. To model the Alternative 2 noise contours, the aircraft operations under the baseline scenario were increased by 1 percent, based on the FAA's Terminal Area Forecast, as shown on **Table 4.1-10**. The forecasted operations presented in **Table 4.1-10** and **Figure 4.1-3** represent the year 2012 and include baseline aircraft operations and the proposed Divert operations, had they occurred in the forecasted 2012 year. Baseline operations are expected to increase gradually through 2018, when Divert aircraft operations could occur (FAA 2011). Therefore, the AAD Alternative 2 Noise Scenario represents a conservative analysis of potential noise from aircraft operations at Tinian International Airport because baseline operations (i.e., air carrier, air taxi) are expected to be greater than those presented in **Table 4.1-10** and **Figure 4.1-3**. In addition, charter flights scheduled to begin flying locally and between China and Tinian were included under Alternative 2 at Tinian International Airport because they would be considered the baseline noise environment when military exercises would begin (Star Marianas Air 2012). This includes the Cessna 441 and the 737-500 aircraft. The number of Piper Cherokee and Cessna 172 operations that occur between the hours of 10 p.m. and 7 a.m. was not expected to change from the Baseline Scenario. It was assumed that the Cessna 441 and the 737-500 would fly during daytime hours (7 a.m. to 10 p.m.). In addition to the aircraft that were modeled under the Baseline Scenario, Alternative 2 includes operations with the KC-135 aircraft.

Table 4.1-10. Alternative 2 – Forecasted AAD Aircraft Operations at Tinian International Airport

Aircraft	Daily Operations
Piper Cherokee[1]	27.76
C-172	8.45
737-500	0.13
C-441	0.07
KC-135	5.26
Total	**41.67**

Source: HDR
[1] Air taxi flights also occasionally include operations by a Piper Navajo; differences in noise levels are negligible.

To model the AAD, each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during military exercises. The aircraft would likely fly 8 weeks per year, for 5 days a week, which equals 40 flying days per year. Therefore, each aircraft would complete approximately 160 operations per year, and 12 aircraft would complete 1,920 operations per year. As stated in the first paragraph of this section, typical military exercises conducted at Tinian International Airport as part of this proposal would only include the operation of two to four KC-135 aircraft and would total up to 720 operations (i.e., 360 take-offs and 360 landings)

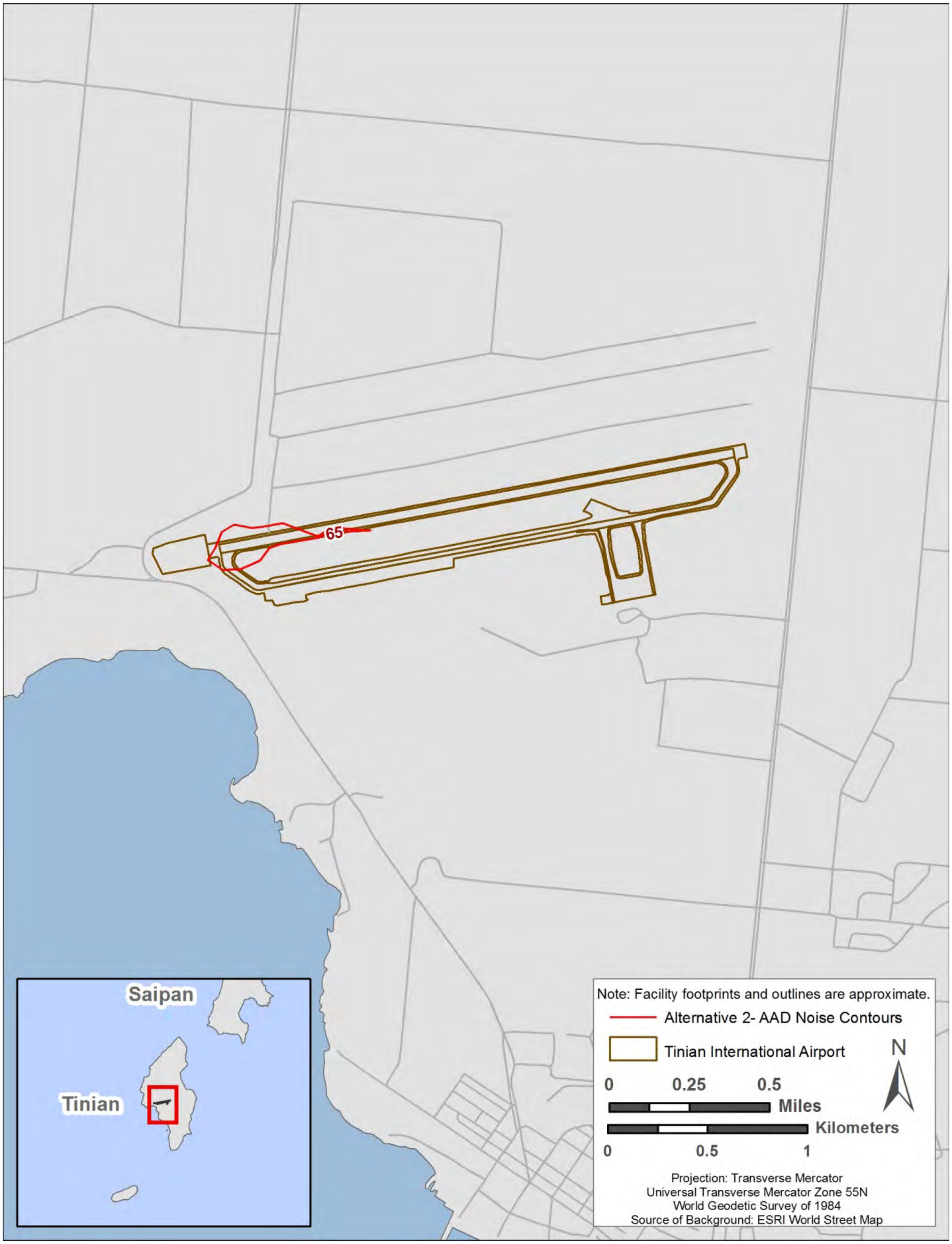


Figure 4.1-3. Alternative 2–AAD Noise Contours at Tinian International Airport (2012)

per year. Therefore, noise impacts from aircraft operations at Tinian International Airport would typically be less than those described in the following sentences. For example, if the number of operations analyzed in this document, (1,920 operations per year) was reduced by half, a decrease of 3 dBA DNL of each noise zone would be expected.

To estimate the AAD, the total number of operations was divided by 365 days, which equals 5.26 operations per day. It was assumed that 90 percent of the KC-135 operations would occur during the day (7 a.m. to 10 p.m.) and 10 percent at night (10 p.m. to 7 a.m.). KC-135 flight tracks were modeled heading to the airspace areas where they would train, which is to the north and south. **Table 4.1-11** shows the acreage within the noise contours under the Alternative 2 – AAD and **Figure 4.1-3** shows the Alternative 2 – AAD noise contour at Tinian International Airport. The total number of acres within the 65–80+ dBA DNL noise contours is 18. Under the baseline scenario, the total number of acres within the 65–80+ dBA DNL is 0. This is the result of the increase in current aircraft operations (by approximately six) and the addition of the Cessna 441, 737-500, and the KC-135 aircraft operations.

Table 4.1-11. Alternative 2 – AAD Noise Contour Acreage at Tinian International Airport

Noise Contours	Alternative 2 (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	0	18	18
70–75 dBA DNL	0	0	0
75–80 dBA DNL	0	0	0
80+ dBA DNL	0	0	0
Total	**0**	**18**	**18**

Source: HDR

Given the low number of operations and relatively quiet aircraft, only the 65 dBA DNL noise contour is large enough to plot. The contour is present at Runway 07 because 85 percent of the operations arrive and depart from that runway end. Because the 65 dBA DNL contour would occur entirely on airport property, existing residences and population on Tinian would not be exposed to these noise levels. The USAF would notify the local government and public in advance of the exercises per existing procedures as described in **Section 2.3.2**. For additional information on land use categories and sensitive noise receptors within the Alternative 2 noise contours, see **Section 4.10.2**.

A summary of the noise contour acreage at Tinian International Airport under the Baseline Scenario and AAD is shown in **Table 4.1-12**.

The increase in acreage under the Alternative 2 – AAD, as compared to the baseline scenario, would result in a temporary increase in noise levels around Tinian International Airport. However, the military exercises would only occur for a total of 8 weeks per year, approximately 40 flying days per year.

Table 4.1-12. Summary of Tinian International Airport Noise Contour Acreage for the Baseline Scenario and AAD

DNL Noise Contours	Baseline Scenario (in acres)	Alternative 2–AAD (in acres)
65–70 dBA	0	18
70–75 dBA	0	0
75–80 dBA	0	0
80–85 dBA	0	0
85+ dBA	0	0
Total	**0**	**18**

Average Busy Day. The ABD scenario was modeled to depict the increased noise exposure that would occur during an exercise activity and are considered to be "exercise contours" and are not used to determine significance. To model an ABD, it was estimated that each KC-135 aircraft would complete four operations per day, two arrivals and two departures, during a military exercise. As stated in the first paragraph of this section, the noise analysis was completed for the operation of 12 KC-135 aircraft from Tinian International Airport. Since the analysis was completed for 12 KC-135s, and each aircraft would complete four operations per day, the number of KC-135 daily operations was modeled at 48. Except for the KC-135 aircraft, the daily operations that are shown in **Table 4.1-10** would remain the same under the ABD scenario since those aircraft typically operate from Tinian International Airport 365 days per year. The assumptions discussed for the AAD would also remain the same.

Table 4.1-13 shows the acreage within the ABD noise contours under Alternative 2 and **Figure 4.1-4** shows the Alternative 2 – ABD noise contours at Tinian International Airport. The acreage calculations only include the land areas that the noise contours encompass; acreage over water was not calculated. As expected, the noise contours are larger than under the AAD. The total number of acres within the 65–80+ dBA DNL noise contours is 466, which is an increase of 466 acres as compared to the baseline scenario. The 65 dBA DNL contour extends out from the runway off airfield property to the east and west. The 70 and 75 dBA DNL contours remain close to the runway. There is an increase of 135 acres of off-airport property as compared to the baseline scenario (134.9 acres within the 65–70 dBA DNL contours and 0.1 acre within the 70–75 dBA DNL contours). Of the total number of acres within the 65–80+ dBA DNL noise contours, approximately 135 include off-airport property.

Table 4.1-13. Alternative 2 – Projected ABD Noise Contour Acreage at Tinian International Airport

Noise Contours	Alternative 2 (in acres)		
	Off-Airport Property	Airport Property	Total Acres
65–70 dBA DNL	134.9	197.8	332.7
70–75 dBA DNL	0.1	119.0	119.1
75–80 dBA DNL	0	14.2	14.2
80+ dBA DNL	0	0	0
Total	**135.0**	**331.0**	**466.0**

Source: HDR

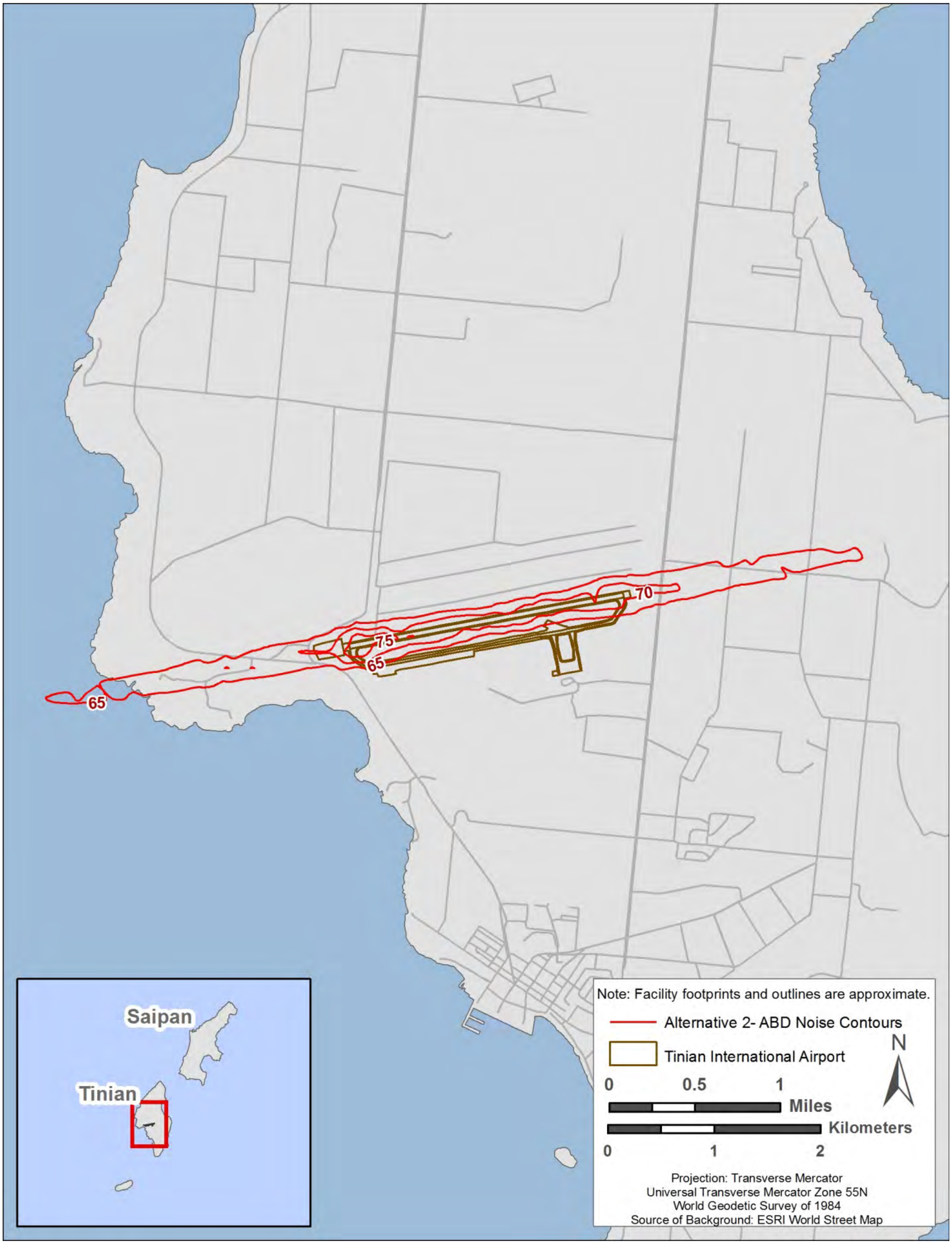


Figure 4.1-4. Alternative 2–ABD Noise Contours at Tinian International Airport (2012)

Using the same method described in **Section 4.1.1.2.1**, it was determined there are no residences within the 65–70 dBA DNL or 70–75 dBA DNL contours. Therefore, it is assumed that no residential communities would be exposed to the 65 dBA DNL; however, farmers might be present in the area for agricultural or grazing purposes. For additional information on land use categories and sensitive noise receptors within the Alternative 2 noise contours, see **Section 4.10.2**.

Table 4.1–14 shows a summary of the noise contour acreage at Tinian International Airport under the Baseline Scenario and the ABD. The acreage calculations only include the land areas that the noise contours encompass; acreage over water was not calculated.

Table 4.1-14. Summary of Tinian International Airport Noise Contour Acreage for the Baseline Scenario and ABD

DNL Noise Contours	Baseline Scenario (in acres)	Alternative 2–ABD (in acres)
65–70 dBA	0	332.7
70–75 dBA	0	119.1
75–80 dBA	0	14.2
80+ dBA	0	0
Total	**0**	**466**

Source: HDR

Although noise levels would vary based on weather and wind conditions and whether exercises occur during day or night, people in the neighboring communities closest to Tinian International Airport would be able to hear the departures and arrivals of the KC-135s during the 8 weeks of exercises. Some people may find this new noise source annoying to varying degrees, depending on their degree of noise sensitivity. However, these DNL noise levels would not result in compatibility issues. For additional information on land use compatibility within the Alternative 2 noise contours, see **Section 4.10.2**.

4.1.2.2.2 Vehicle Use

Periodic, direct, minor to moderate, adverse impacts from truck traffic noise would be expected. Under Alternative 2, increases in vehicle traffic are anticipated due to fuel truck delivery from the port to the proposed airfield fuel storage facility during the 8 weeks of anticipated operations each year. However, the increase in noise levels from fuel truck deliveries would not be significant because it would be short-term and intermittent. These short-term impacts would be realized during a 30-day period to fill the 100,000-bbl bulk storage tank at the airport and throughout the 8 weeks of anticipated operations each year. The short-term periodic increase in fuel truck deliveries would use existing roadways commonly used by similar delivery trucks on Tinian. For initial fuel supply to fill the proposed new bulk storage facility at the airport, it is anticipated that 84 daily one-way trips of the fuel truck would be required over the 30-day period. Noise levels from trucks generally range between 83 to 94 dBA, 50 feet from the source. During this time period, short-term, moderate impacts would occur on receptors adjacent to the roadways.

Other potential vehicle use increases would be associated with bus transportation of support personnel on Tinian from the hotel to the airfield on a daily basis during the 8-week training operations. This short-term increase would be realized from commercial lodging to the airport and return. Buses would use existing roadways on Tinian, and the level of increased traffic as compared to existing ADT levels shown in **Section 3.11** would not impose a significant increase in current noise levels associated with traffic.

4.1.3 Alternative 3–Hybrid Modified Alternative

4.1.3.1 Construction Phase

Under Alternative 3, construction would occur on both Saipan and Tinian. Therefore, noise impacts are expected on both islands. However, noise impacts would not be cumulative, or amplified, because the noise contours of each island would not overlap.

4.1.3.1.1 Saipan

Direct, negligible, adverse impacts on the noise environment would be expected from Alternative 3 on Saipan under the Construction Phase. Under Alternative 3 on Saipan, the construction footprint would be much smaller than that described under Alternative 1 in **Section 4.1.1.1**. Therefore, the use of construction footprint and construction vehicles would be less frequent. While the noise level from construction equipment and vehicles would remain the same, the noise would also be less frequent. The USAF could restrict construction activities to between sunrise and sunset to reduce the annoyance to adjacent populations and would use common measures such as equipment exhaust mufflers to minimize noise impacts.

4.1.3.1.2 Tinian

NORTH OPTION

Short-term, direct, minor to moderate, adverse impacts on the noise environment would be expected from construction associated with Alternative 3 North Option. Under the Alternative 3 North Option on Tinian, noise impacts during the Construction Phase would be similar to those described under Alternative 2 North Option. Although the Alternative 3 construction footprint is slightly smaller due to a reduced fuel tank and parking apron size, the difference in construction equipment and vehicle use would be negligible. The USAF could restrict construction activities to between sunrise and sunset to reduce the annoyance to adjacent populations and would use common measures such as equipment exhaust mufflers to minimize noise impacts.

SOUTH OPTION

Short-term, direct, minor, adverse impacts on the noise environment would be expected from construction associated with the Alternative 3 South Option. Under the Alternative 3 South Option on Tinian, noise impacts during the Construction Phase would be similar to those described under the Alternative 2 South Option. Although the Alternative 3 construction footprint is slightly smaller due to a reduced fuel tank and parking apron size, the difference in construction equipment and vehicle use would be negligible. The USAF could restrict construction to between sunrise and sunset to reduce the annoyance to adjacent populations and would use common measures such as equipment exhaust mufflers to minimize noise impacts.

4.1.3.2 Implementation Phase

Under Alternative 3, the Implementation Phase would occur on both Saipan and Tinian. Therefore, noise impacts are expected on both islands. However, noise impacts would not be cumulative, or amplified, because the noise contours of each island would not overlap. Additionally, the noise analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.1.3.2.1 Saipan

AIRCRAFT OPERATIONS

Periodic, direct, minor, adverse impacts on the noise environment from aircraft operations would be expected on Saipan under Alternative 3. Under Alternative 3 on Saipan, noise impacts from aircraft operations would be the same as those analyzed under Alternative 1. Although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes that all exercises could occur at one location in the event that one of the airports is unavailable. The USAF would notify the local government and public in advance of the exercises per existing procedures as described in **Section 2.3.2.**

VEHICLE USE

Direct, minor to moderate, adverse impacts on the noise environment from vehicles would be expected on Saipan under Alternative 3. Under Alternative 3 on Saipan, noise impacts from vehicles would be the same as those analyzed under Alternative 1 because the fuel tanks at the airport would be the same size and would take the same number of trips to fill. Additionally, although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes that all exercises could occur at one location in the event that one of the airports is unavailable.

4.1.3.2.2 Tinian - North and South Options

AIRCRAFT OPERATIONS

Periodic, direct, minor, adverse impacts on the noise environment from aircraft operations would be expected on Tinian under Alternative 3. Under Alternative 3 on Tinian, noise impacts from aircraft operations would be the same as those analyzed under Alternative 2. Although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes that all exercises could occur at one location in the event that one of the airports is unavailable. The USAF would notify the local government and public in advance of the exercises per existing procedures as described in **Section 2.3.2**.

VEHICLE USE

Direct, minor to moderate, adverse impacts on the noise environment from vehicles would be expected on Tinian under Alternative 3. Under Alternative 3 on Tinian, noise impacts from vehicles would be less than those presented under Alternative 2 because the fuel tanks at the airport would be smaller. Therefore, under Alternative 3 the fuel tanks would take only 17 days to fill, rather than 30 days under Alternative 2. While the noise level from fuel vehicles would remain the same, the noise would be less frequent. Additionally, although the USAF would plan to distribute military exercises between both Saipan and Tinian each year, this noise analysis assumes all exercises could occur at one location or the other in the event that one of the airports is unavailable.

4.1.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian, and the existing conditions discussed in **Section 3.1.4** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions. Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on the ambient noise environment would be expected as a result of the No Action Alternative. Ambient noise levels on Saipan and Tinian would not increase due to construction traffic, planned military exercises, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.2 Air Quality

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS attainment areas is assessed to determine if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any Evaluation Criteria established by an SIP or permit limitations/requirements
- Emissions representing an increase of 100 tpy for any attainment criteria pollutant or their precursors (O_3 [NO_x and VOCs are precursors to O_3], CO, PM_{10}, $PM_{2.5}$, and SO_2), unless the proposed activity qualifies for an exemption under the Federal General Conformity Rule.

Although the Project Area is considered unclassifiable/attainment, the 100 tpy threshold was applied as a measure of significance. No baseline data are available for Alternative 1, Alternative 2, or Alternative 3. Per communication with CNMI BECQ on February 19, 2013, no air quality data is available for CNMI, and there are no stationary source permits for Saipan International Airport or Tinian International Airport from which to estimate baseline emissions (Fuller 2013). The rationale for applying a 100 tpy threshold is that it is consistent with the highest General Conformity *de minimis* levels for nonattainment areas and maintenance areas. In addition, it is consistent with Federal stationary major source thresholds for Title V permitting which formed the basis for the nonattainment *de minimis* levels.

Saipan and Tinian are located in attainment areas for all criteria pollutants; therefore, the General Conformity rule does not apply to any Alternative and is not discussed further. Additionally, only stationary source emissions are evaluated for PSD and Title V permitting impacts as construction activity emissions are typically not subject to PSD and Title V permitting. The three alternatives would not entail significant modification to stationary source emissions; therefore, PSD and Title V permitting significance criteria are not discussed further. HAPs emissions were also considered. However, due to the expected negligible emissions based on the emission source types and the trade winds that carry emissions out to sea, HAPs were omitted in the quantitative analysis.

Each alternative discussion is divided into a Construction Phase and Implementation Phase. Implementation Phases would occur after the Construction Phases, so their associated emissions do not overlap and are not additive.

4.2.1 Alternative 1– Modified Saipan Alternative

4.2.1.1 Construction Phase

Short-term, direct, minor, adverse impacts would be expected from construction emissions and land disturbance under this Alternative. Alternative 1 would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials from the port to the concrete batch plant, transport of concrete from the batch plant to the project site, construction worker on-island commute, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site.

All emissions associated with construction operations would be temporary in nature. Any lighting or utilities would be installed on the same surfaces already accounted for in the Construction Phase. The overall square footage of these items is also very small and would not be a significant source of temporary air pollution from their construction and there is no long term air pollution component associated with them. The Construction Phase of Alternative 1 would occur over a 2- to 3-year time period; therefore, construction emissions were equally divided over a 3-year time period. It is not expected that emissions from construction of the projects associated with Alternative 1 would contribute to or affect local or regional attainment status or violate any NAAQS standards.

Air Pollutant Emissions. The construction projects associated with Alternative 1 would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite impacts. Emissions from construction associated with Alternative 1 are summarized in **Table 4.2-1**. Emissions estimation spreadsheets and a summary of the method used are included in **Appendix E.**

Table 4.2-1. Estimated Emissions Resulting from Alternative 1 Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	6.75	0.93	5.63	0.15	16.47	1.57	1,403.20
Year 2	6.75	0.93	5.63	0.15	16.47	1.57	1,403.20
Year 3	6.75	0.93	5.63	0.15	16.47	1.57	1,403.20
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**
Key: tpy = tons per year

Emissions from Alternative 1 Construction Phase are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-1.** Additionally, average daily wind speeds on Saipan of 8 mph to 13 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with Alternative 1. In addition, the Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program.

Fugitive Dust. Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Mitigation measures would be employed during construction to reduce and control fugitive dust and to suppress emissions. Specific fugitive dust control measures could include watering the construction surface and phasing work to limit dust, setting up wind fences to limit wind blown dust, and limiting vehicle speed to 15 mph or less at construction sites on unpaved roads. Fugitive dust emissions were not calculated for the activities conducted at the concrete batch plant because it is assumed the plant could be located at an existing commercial concrete supply company that operates under an approved air permit issued by the CNMI BECQ.

CO_2-equivalent Emissions. CO_2-equivalent emissions under the Alternative 1 Construction Phase would not reach the annual threshold of 25,000 metric tonnes of CO_2-equivalent described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions.

Permitting. The CNMI BECQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI BECQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. The USAF would coordinate with CNMI BECQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas. The New Source

Performance Standard, Subpart Kb, for bulk fuel storage tanks would not apply based on the low vapor pressure of JP-8 fuel.

4.2.1.2 Implementation Phase

4.2.1.2.1 Aircraft Operations

Periodic, direct, minor, adverse impacts on local and regional air quality would be expected from aircraft operations due to the implementation of Alternative 1. The USAF anticipates that two to four cargo or tanker type aircraft would operate up to 8 weeks annually (typically not on weekends) for a maximum of 720 annual operations under Alternative 1. For planning purposes, air emissions from aircraft operations were developed using the following assumptions and methods:

- The USEPA has established formal procedures for calculating exhaust emissions associated with aircraft operations based on a landing and take-off (LTO) cycle (USEPA 1992). Under these procedures, an emissions inventory for aircraft operations focuses on the emissions in the vertical column of air where pollutant chemical reactions occur. This portion of the atmosphere, which begins at the Earth's surface and can range from several hundred to several thousand feet in altitude, is commonly referred to as the "mixing zone" or "inversion layer." Exhaust emissions occurring within this area are calculated for one complete LTO cycle for each aircraft type by applying aircraft engine-specific emissions factors derived from fuel flow rates; the period of time (or time-in-mode [TIM]) that each engine operates at a particular power setting during an LTO; and activity-based operational data such as the number of aircraft, the number of engines per aircraft, and the annual number of sorties or LTOs. Regardless of fuel type, emissions of concern from aircraft operations include the pollutants NO_x, VOCs, CO, PM_{10} and $PM_{2.5}$, and SO_2. Emissions occurring above the mixing zone are typically not considered during the emissions inventory process (AFCEC 2014b).
- An aircraft operation is defined as either one take-off to a destination or one landing from a destination. Therefore, one LTO cycle is equivalent to two aircraft operations.
- Each LTO cycle is composed of five operating modes: approach, taxi/idle in, taxi/idle out, take off, and climb out. The TIM for each mode is measured as follows:
    - *Approach.* The period of time from the moment the aircraft enters the mixing zone until the aircraft lands.
    - *Taxi/Idle In.* The period of time spent after landing until the aircraft is parked and the engines are turned off.
    - *Taxi/Idle Out.* The period of time from engine startup to take-off.
    - *Take-off.* Characterized by full engine thrust, the period of time it takes the aircraft to reach between 500 and 1,000 feet AGL. This transition height is fairly standard and does not vary much from location to location or among aircraft categories.
    - *Climb Out.* The period of time following take-off that concludes when an aircraft exits the mixing zone and continues on to cruise altitude.

- Military aircraft engines are exempt from the Federal aircraft engine NO_x emissions standards in 40 CFR Part 87. Further, military aircraft engines are not subject to permitting requirements or to any other Federal stationary or mobile source emissions standards or regulations.
- Changes in the aircraft mission at Saipan International Airport must be evaluated to confirm that associated emissions changes conform to the regional Clean Air Plan component of the SIP, in accordance with the General Conformity Rule in 40 CFR Parts 51 and 93.
- Emissions from aircraft were calculated using emissions factors provided by Air Force Civil Engineer Center (AFCEC) Air Quality.

Emissions from aircraft operations for Alternative 1 were analyzed for 4 KC-135R aircraft operating for 8 weeks and a maximum of 720 total operations per year.

Criteria emissions from Airfield Operations associated with Alternative 1 are summarized in **Table 4.2-2**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-2. Alternative 1 Estimated Annual Aircraft Operations Emissions

Aircraft	LTOs	Total Fuel (gal/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	NO_x (tons/yr)	SO_x (tons/yr)	VOC (tons/yr)
KC-135R	360	277,671*	0.05	0.05	18.67	6.77	0.98	1.25
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Note: *This is the total fuel used for LTOs up to the mixing zone height and does not include fuel used above the mixing zone height, per the USAF emissions factors. Criteria pollutant emissions generated above this height are not counted towards air quality impact analyses.

Emissions from Alternative 1 proposed aircraft operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-2**. No significant impacts on local and regional air quality are anticipated from aircraft operations associated with Alternative 1. In addition, the Title V permit criterion does not apply to aircraft operations as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from aircraft under Alternative 1 at Saipan International Airport are presented in **Table 4.2-3**. GHG emissions were estimated based on PACAF data indicating approximately 7,500 pounds of fuel is used per LTO cycle from the ground to 10,000 feet elevation and back to a landing. Fuel use and associated emissions above 10,000 feet are accounted for under the MITT EIS. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-3. Alternative 1 Estimated Annual Aircraft Operations Greenhouse Gas Emissions

Fuel Use (gal/yr)	Fuel	CO_2-equivalent (metric tonnes/yr)
404,798	JP-8	4,007

Source: **Appendix E**

4.2.1.2.2 Fuel Truck and Commuter Vehicle Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from the fuel truck and commuter vehicle operations due to the implementation of Alternative 1. Under this Alternative, two activities would contribute to commuter emissions. These activities include jet fuel receiving, storage, and distribution; and personnel lodging. Under Alternative 1, standard fuel transfer trucks would transfer fuel from fuel tanks at the Port of Saipan to fuel tanks at Saipan International Airport. It is assumed six 10,000-gallon fuel trucks will take 2 days at 8 hours per day and 3 hours on a third day to travel from the Port of Saipan to Saipan International Airport and to fill the airport tanks with the needed fuel for the 8-week operation; 420,000 gallons total. The six 10,000-gallon fuel trucks will make three round trips per day for the first 2 days and one round trip each on the third day.

Under Alternative 1, commercial buses would be required to transport a maximum of 256 personnel to and from commercial lodging and the airfield. It is assumed all buses would transport approximately 50 personnel per busload, or approximately 24 round trips per day. For emissions analysis, it is assumed 6 buses would be used to transport personnel, requiring 4 trips each to and from the airfield each operation day.

Because the exact types and mixes of commuter vehicles is not known at this time, this EIS uses the following vehicle class types to analyze potential emissions related to Alternative 1:

- HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 pounds gross vehicle weight [GVW]); assumed average model year of 2005
- HDDV8B (Refueler truck) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW); assumed average model year of 2005.

Emissions from the operation of on-road vehicles can be classified as exhaust, evaporative, or fugitive in nature. Exhaust emissions result from the combustion (sometimes incomplete) of the motor fuel typically, while evaporative emissions result from the volatilization of the fuel at engine components during the different stages of a vehicle's operating cycle. In addition to exhaust and evaporative emissions, a small amount of fugitive particulate emissions (in the form of road dust, brake wear dust, and tire wear dust) can be attributed to the operation of on-road vehicles. The emissions of concern from the operation of on-road vehicles include NO_x, VOCs, CO, SO_2, $PM_{2.5}$, and PM_{10}. Some of these direct pollutant emissions also participate in atmospheric reactions that contribute to the formation of ground-level ozone and fine particulate matter pollution.

Emissions from fuel truck and commuter vehicles were calculated using USEPA MOBILE 6 (MOVES) vehicle categories, applicable source classification codes and emissions factors provided in AFCEC's Air Emissions Factor Guide to Air Force Mobile Sources dated October 2014.

Criteria emissions from fuel transfer trucks and commuter vehicles associated with Alternative 1 are summarized in **Table 4.2-4**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-4. Alternative 1 Estimated Fuel Truck and Commuter Vehicle Emissions

Vehicle Class	Model Year	Annual Miles	Emissions (tpy)					
			PM_{10} (tons)	$PM_{2.5}$ (tons)	CO (tons)	NO_x (tons)	SO_x (tons)	VOC (tons)
HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	2005	53,760	0.015	0.012	0.166	0.324	0.001	0.028
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	2005	6,270	0.002	0.001	0.023	0.043	<0.001	0.004
Total Emissions (tpy)			**0.017**	**0.013**	**0.189**	**0.367**	**0.001**	**0.032**

Source: **Appendix E**

Emissions from Alternative 1 fuel truck and commuter vehicles are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-4.** No significant impacts on local and regional air quality are anticipated from fuel truck and commuter vehicle operations associated with Alternative 1. In addition, the Title V permit criteria does not apply to fuel truck and commuter vehicle emissions as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from commuting under Alternative 1 at Saipan International Airport are presented in **Table 4.2-5**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-5. Alternative 1 Estimated Fuel Truck and Commuter Vehicle Greenhouse Gas Emissions

Vehicle Class	Annual Miles	GHG Pollutant Emissions (metric tonnes/year)
		CO_2
HDDV8A(Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	53,760	83.09
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	6,270	10.14
Total GHG Emissions (tpy)		**93.23**

FUEL TRANSFER EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel transfer operations due to the implementation of Alternative 1. Two types of fuel operations would be required under Alternative 1, which include loading fuel onto aircraft from nearby hydrants and loading fuel onto refueler trucks at the seaport.

The emissions of concern from fuel transfer operations are VOCs. As liquid fuel is loaded into a source (e.g., into a fuel truck, an aircraft tank, a vehicle/equipment tank, or a bowser), vapors are displaced and emitted into the atmosphere. The amount of emissions released is dependent on several factors, such as the type of fuel being transferred, temperature, and the loading method. The amount of emissions caused during fuel transfer is also influenced by the recent history of the tank/bowser being loaded. If the tank/bowser has just been cleaned and vented, it will contain vapor-free air. However, if the fuel truck has just carried fuel and has not been vented, it will contain vapors which are expelled during the loading operation along with newly generated vapors (AFCEC 2014a).

Emissions from fuel transfer operations were calculated using AP 42 Section 5.2, Transportation and Marketing of Petroleum Liquids (USEPA 2008).

VOC emissions from fuel transfer associated with Alternative 1 are summarized in **Table 4.2-6**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-6. Alternative 1 Estimated Annual Fuel Loading Emissions

Location	Description	Fuel Type	Fuel Transferred (gal)	Displaced Vapor (Total VOC) (tons)
Flightline	Loading Aircraft from Hydrants	JP-8	420,000	0.004
Seaport, Loading Racks (assume 50,000-bbl tank 1)	Loading Refueler Trucks	JP-8	210,000	0.002
Seaport, Loading Racks (assume 50,000-bbl tank 2)	Loading Refueler Trucks	JP-8	210,000	0.002
		Total	**840,000**	**0.008**

Source: **Appendix E**

Emissions from Alternative 1 fuel transfer operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-6**. No significant impacts on local and regional air quality are anticipated from fuel transfer operations associated with Alternative 1. In addition, emissions are below Title V permit threshold of 100 tpy for VOCs.

FUEL STORAGE TANK EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from Fuel Storage Tanks due to the implementation of Alternative 1. Under this Alternative, all fuel storage tanks are assumed to be fixed roof, ASTs with no pressure/vacuum vents installed. All fuel storage tanks are assumed to contain JP-8 fuel. Note that the emissions factors are the same for JP-8 and diesel fuel.

Emissions from fixed roof tanks are caused by changes in temperature, pressure, and liquid level. The amount of emissions varies as a function of vessel capacity, vapor pressure of the stored liquid, utilization rate of the tank, and atmospheric conditions at the tank location. In general, there are two types of emissions from fixed roof tanks, "storage losses" and "working losses." Storage loss from a fixed roof tank is in the form of "breathing loss," which is the expulsion of vapor from a tank as a result of vapor expansion and contraction caused by changes in temperature and barometric pressure. This occurs without any liquid level change in the tank. Working loss is the combined loss from filling and emptying the tank. Evaporation during filling operations is a result of an increase in the liquid level in the tank. As the liquid level increases, the pressure inside the tank exceeds the relief pressure and vapors are expelled from the tank. Evaporative loss occurs as the fuel is emptied when air drawn into the tank during liquid removal becomes saturated with organic vapor and expands; therefore, exceeding the capacity of the vapor space (AFCEC 2014a).

Emissions from fuel storage tanks were calculated using USEPA's TANKS Emissions Estimation Software, Version 4.09.

Emissions from fuel storage tanks associated with Alternative 1 are summarized in **Table 4.2-7**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-7. Estimated Annual Fuel Storage Tank Emissions

Tank Type	Total VOC*(tons)
Tank 1 (Port of Saipan) - assume 50,000 bbl, cut-and-cover or AST	0.30
Tank 2 (Port of Saipan) - assume 50,000 bbl, cut-and-cover or AST	0.30
Tank 3 (Saipan International Airport) - assume 50,000 bbl, cut-and-cover or AST	0.30
Tank 4 (Saipan International Airport) - assume 50,000 bbl, cut-and-cover or AST	0.30
Total	**1.20**

Source: **Appendix E**
Note: Total VOCs calculated using TANKS (TANKS 4.0.9d 2012a and 2012b).

Emissions from Alternative 1 Fuel Storage Tanks are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-7.** No significant impacts on local and regional air quality are anticipated from tank fuel storage associated with Alternative 1. In addition, emissions are below Title V permit threshold of 100 tpy for VOCs.

SUMMARY OF ALTERNATIVE 1 IMPLEMENTATION PHASE EMISSIONS

Periodic, minor, direct, adverse impacts would be expected from all activities associated with the Implementation Phase of Alternative 1. A summary of emissions from the Implementation Phase associated with Alternative 1 is provided in **Table 4.2-8**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-8. Estimated Annual Emissions Resulting from Alternative 1 Implementation Phase

Source Category	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Airfield Operations	6.77	1.25	18.67	0.98	0.05	0.05	4,007
Fuel Truck and Commuter Vehicle Emissions	0.37	0.03	0.19	0.001	0.02	0.01	93
Fuel Transfer Emissions	N/A	0.01	N/A	N/A	N/A	N/A	0
Fuel Storage Tank Emissions	N/A	1.19	N/A	N/A	N/A	N/A	0
Total Pollutant Emissions	7.14	2.48	18.86	0.98	0.07	0.07	4,100
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**

Emissions from all activities associated with the Implementation Phase of Alternative 1 are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-8.** Additionally, average daily wind speeds on Saipan of 8 mph to 13 mph would result in negligible impacts to air quality due to implementation. CO_2-equivalent emissions under Alternative 1 Implementation Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions. No significant impacts on local and regional air quality are anticipated from the Implementation Phase associated with Alternative 1. In addition, stationary source emissions are below Title V permit thresholds of 100 tpy for each criteria pollutant.

SUMMARY OF ALTERNATIVE 1 EMISSIONS

The Construction Phase is expected to occur over a three-year time frame and would then be followed by the activities proposed under the Implementation Phase. The significance criteria thresholds are not expected to be reached for either phase. No significant impacts on local and regional air quality are anticipated from the Construction and Implementation Phases associated with Alternative 1.

4.2.2 Alternative 2–Modified Tinian Alternative

4.2.2.1 Construction Phase

4.2.2.1.1 North Option

Short-term, minor, direct, adverse impacts would be expected from construction emissions and land disturbance. The Alternative 2 North Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to from the port to the concrete batch plant, transport of concrete from the batch plant to the project site, construction worker on-island commute, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site.

All emissions associated with construction operations would be temporary in nature. It was assumed that all lighting and utilities would be installed on the same surfaces already accounted for in the Construction Phase. The overall square footage of these items is also very small and would not be a significant source of temporary air pollution from their construction and there is no long term air pollution component associated with them. The Construction Phase of the Alternative 2 North Option would occur over a 2- to 3-year time period; therefore, construction emissions were equally divided over a 3-year time period. It is not expected that emissions from construction of the projects associated with the Alternative 2 North Option would contribute to or affect local or regional attainment status or violate any NAAQS standards.

Air Pollutant Emissions. The construction projects associated with the Alternative 2 North Option would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite impacts. Emissions from the construction activities associated with the Alternative 2 North Option are summarized in **Table 4.2-9**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-9. Estimated Emissions Resulting from the Alternative 2, North Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	10.15	1.41	9.18	0.33	77.51	7.83	1,738.30
Year 2	10.15	1.41	9.18	0.33	77.51	7.83	1,738.30
Year 3	10.15	1.41	9.18	0.33	77.51	7.83	1,738.30
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

Emissions from the Alternative 2 North Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-9.** Additionally, average daily wind speeds on Tinian of 7 mph to 15 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 2 North Option.

Fugitive Dust. Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Mitigation measures would be employed during construction to reduce and control fugitive dust and to suppress emissions. Specific fugitive dust control measures could include watering the construction surface and phasing work to limit dust, setting up wind fences to limit wind blown dust, and limiting vehicle speed to 15 mph or less at construction sites on unpaved roads. Fugitive dust emissions were not calculated for the activities conducted at the concrete batch plant because it is assumed that the plant would be operated under an existing approved air permit issued by the CNMI BECQ.

CO_2-Equivalent Emissions. CO_2-equivalent emissions under the Alternative 2, North Option Construction Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions.

Permitting. Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. The CNMI BECQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI BECQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. USAF would coordinate with CNMI BECQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas. The New Source Performance Standard, Subpart Kb, for bulk fuel storage tanks would not apply based on the low vapor pressure of JP-8 fuel.

4.2.2.1.2 South Option

Impacts on air quality described in **Section 4.2.2.1.1** regarding the Construction Phase under the Alternative 2 North Option would be similar under the Alternative 2 South Option. The difference between the two Options is that the Construction Phase emissions from the South Option are less because the South Option doesn't include construction of taxiways or road reroute, has a smaller size parking apron and cargo pad, and has less cement and concrete that is transported to the concrete batch plant and to the construction site. Short-term, minor, direct, adverse air quality impacts would be expected from construction emissions and land disturbance.

Air Pollutant Emissions. The Alternative 2 South Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to and from the port to the concrete batch plant, transport of concrete from the concrete batch plant to the project site, construction worker on-island commute, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site. Emissions from the construction activities associated with the Alternative 2 South Option are summarized in **Table 4.2-10**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Emissions from the Alternative 2 South Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-10.** Additionally, average daily wind speeds on Tinian of 7 mph to 15 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 2 South Option.

Table 4.2-10. Estimated Emissions Resulting from the Alternative 2 South Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	7.94	1.16	6.78	0.29	32.32	3.19	1,419.03
Year 2	7.94	1.16	6.78	0.29	32.32	3.19	1,419.03
Year 3	7.94	1.16	6.78	0.29	32.32	3.19	1,419.03
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

Fugitive Dust. Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Mitigation measures would be employed during construction to reduce and control fugitive dust and to suppress emissions. Specific fugitive dust control measures could include watering the construction surface and phasing work to limit dust, setting up wind fences to limit wind blown dust, and limiting vehicle speed to 15 mph or less at construction sites on unpaved roads. Fugitive dust emissions were not calculated for the activities conducted at the concrete batch plant because it is assumed that the plant would be operated under an existing approved air permit issued by the CNMI BECQ.

CO_2-equivalent Emissions**.** CO_2-equivalent emissions under the Alternative 2 South Option Construction Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions.

Permitting. Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. The USAF would coordinate with CNMI BECQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas. The New Source Performance Standard, Subpart Kb, for bulk fuel storage tanks would not apply based on the low vapor pressure of JP-8 fuel.

4.2.2.2 Implementation Phase – North and South Options

4.2.2.2.1 Aircraft Operations

Periodic, direct, minor, adverse impacts on local and regional air quality would be expected from aircraft operations due to the implementation of the Alternative 2 North and South Options. The USAF anticipates that two to four cargo, tanker, or similar aircraft would operate up to eight weeks annually (typically not on weekends) for a maximum of 720 annual operations under Alternative 2.

The same air quality assumptions and methodologies described in **Section 4.2.1.2** under the Implementation Phase for Alternative 1 apply to the Implementation Phase for the Alternative 2, North and South Options.

Criteria emissions from airfield operations associated with the Alternative 2, North and South Options are summarized in **Table 4.2-11**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-11. Estimated Annual Aircraft Operations Emissions from the Alternative 2, North and South Options

Aircraft	LTOs	Total Fuel (gal/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	NO_x (tons/yr)	SO_x (tons/yr)	VOC (tons/yr)
KC-135R	360	277,671*	0.05	0.05	18.67	6.77	0.98	1.25
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Note: *This is the total fuel used for LTOs up to the mixing zone height and does not include fuel used above the mixing zone height, per the USAF emissions factors. Criteria pollutant emissions generated above this height are not counted towards air quality impact analyses.

Emissions from the Alternative 2 aircraft operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-11**. No significant impacts on local and regional air quality are anticipated from aircraft operations associated with Alternative 2. In addition, the Title V permit criterion does not apply to aircraft operations as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from aircraft under Alternative 2 are presented in **Table 4.2-12**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. GHG emissions were estimated based on PACAF data indicating approximately 7,500 pounds of fuel is used per LTO cycle from the ground to 10,000 feet elevation and back to a landing. Fuel use and associated emissions above 10,000 feet are accounted for under the MITT EIS. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-12. Estimated Annual Aircraft Operations Greenhouse Gas Emissions from the Alternative 2, North and South Options

Fuel Use (gal/yr)	Fuel	CO_2-equivalent (metric tonnes/yr)
404,798	JP-8	4,007

Source: **Appendix E**

4.2.2.2.2 Fuel Truck and Commuter Vehicle Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from the fuel truck and commuter vehicle operations due to the implementation of the Alternative 2, North and South Options. Under this Alternative, two activities would require commuter emissions. These activities include jet fuel receiving, storage, and distribution; and transfer of personnel staying in commercial lodging. Under Alternative 2, standard fuel transfer trucks would transfer fuel from fuel tanks at the Port of Tinian to the fuel tanks at Tinian international Airport. Under both Options, it is assumed six 10,000-gallon fuel trucks will take 2 days at 8 hours per day and 3 hours on a third day to travel from Port of Tinian to Tinian International Airport and to fill the airport tanks with the needed fuel for the 8-week operation; 420,000 gallons total. The six 10,000-gallon fuel trucks will make three round trips per day for the first 2 days and one round trip each on the third day

Under the Alternative 2, North and South Options, the same number of personnel would need to be transported from commercial lodging to the airfield as described under Alternative 1 in **Section 4.2.1.2.** Therefore, 256 personnel would be transported on 6 commercial buses for a total of 24 roundtrips per day. In addition, the same types and mixes of commuter vehicles are assumed to be used as under Alternative 1 in **Section 4.2.1.2**; HDDV8A (Bus) and HDDV8B (Refueler), both with average model years at 2005. Emissions from these vehicles were calculated using the same methodology as described under Alternative 1 in **Section 4.2.1.2**.

Criteria emissions from fuel transfer trucks and commuter vehicles associated with the Alternative 2, North and South Options are summarized in **Table 4.2-13**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Emissions from Alternative 2 fuel truck and commuter vehicles are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-13.** No significant impacts on local and regional air quality are anticipated from fuel truck and commuter vehicle operations associated with Alternative 2. In addition, the Title V permit criteria does not apply to Fuel Truck and Commuter Vehicle emissions as these sources are mobile sources which are not regulated under the Title V permit program.

Table 4.2-13. Estimated Fuel Truck and Commuter Vehicle Emissions from the Alternative 2, North and South Options

Vehicle Class	Model Year	Annual Miles	Emissions (tpy)					
			PM_{10} (tons)	$PM_{2.5}$ (tons)	CO (tons)	NO_x (tons)	SO_x (tons)	VOC (tons)
HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	2005	53,760	0.015	0.012	0.166	0.324	0.001	0.028
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	2005	6,270	0.002	0.001	0.023	0.043	<0.001	0.004
Total Emissions* (tpy)			**0.017**	**0.013**	**0.189**	**0.367**	**0.001**	**0.032**
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

GHG emissions from commuting under Alternative 2, North and South Options are presented in **Table 4.2-14**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-14. Estimated Fuel Truck and Commuter Vehicle Greenhouse Gas Emissions from the Alternative 2, North and South Options

Vehicle Class	Annual Miles	GHG Pollutant Emissions (metric tonnes/year)
		CO_2
HDDV8A(Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	53,760	83.09
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	6,270	10.14
	Total GHG Emissions (tpy)	**93.23**

FUEL TRANSFER EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel transfer operations due to the implementation of Alternative 2, North and South Options. Two types of fuel operations would be required under Alternative 2, which include loading fuel onto aircraft from nearby fill stands and loading fuel onto refueler trucks at the seaport. The emissions of concern from fuel transfer operations are VOCs and the emissions calculation methodology is the same as described under Alternative 1 in **Section 4.2.1.2**.

VOC emissions from fuel transfer associated with Alternative 2, North and South Options are summarized in **Table 4.2-15**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-15. Estimated Annual Fuel Transfer Emissions from the Alternative 2, North and South Options

Location	Description	Fuel Type	Fuel Transferred (gal)	Displaced Vapor (Total VOC) (tons)
Flightline	Loading Aircraft from Fill Stands	JP-8	420,000	0.004
Port of Tinian, Loading Racks (assume 50,000-bbl tank 1)	Loading Refueler Trucks	JP-8	210,000	0.002
Port of Tinian, Loading Racks (assume 50,000-bbl tank 2)	Loading Refueler Trucks	JP-8	210,000	0.002
		Totals	**840,000**	**0.01**

Source: **Appendix E**

Emissions from Alternative 2 fuel transfer operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-15**. No significant impacts on local and regional air quality are anticipated from fuel transfer operations associated with Alternative 2. In addition, emissions are below Title V permit threshold of 100 tpy for VOCs.

FUEL STORAGE TANK EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel storage tanks due to the implementation of the Alternative 2, North and South Options. Under this Alternative, all fuel storage tanks are assumed to be fixed roof, ASTs with no pressure/vacuum vents installed. All fuel storage tanks are assumed to contain JP-8 fuel. Note that the emissions factors are the same for JP-8 and diesel fuel. The description of how emissions are generated and the methodology for calculating emissions from fuel storage tanks, i.e., USEPA TANKS model, are the same as described under Alternative 1 in **Section 4.2.1.2**.

Emissions from fuel storage associated with the Alternative 2, North and South Options are summarized in **Table 4.2-16**. The emissions from the North Option would be the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-16. Estimated Annual Fuel Storage Tank Emissions from the Alternative 2, North and South Options

Tank Type	Total VOC*(tons)
Tank 1 (Port of Tinian) - assume 50,000 bbls, cut-and-cover or AST	0.30
Tank 2 (Port of Tinian) - assume 50,000 bbls, cut-and-cover or AST	0.30
Tank 3 (Tinian International Airport) - assume 60,000 bbls, cut-and-cover or AST	0.36
Tank 4 (Tinian International Airport) - assume 60,000 bbls, cut-and-cover or AST	0.36
Tank 5 (Tinian International Airport) - assume 100,000 bbls, cut-and-cover or AST	0.59
Total	**1.91**

Source: **Appendix E**
Note: Total VOCs calculated using TANKS (TANKS 4.0.9d 2012a and 2012b).

Emissions from the Alternative 2, North and South Options, fuel storage tanks are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-16.** No significant impacts on local and regional air quality are anticipated from tank fuel storage associated with Alternative 2. In addition, emissions are below Title V permit threshold of 100 tpy for VOCs.

SUMMARY OF ALTERNATIVE 2, NORTH AND SOUTH OPTIONS, IMPLEMENTATION PHASE EMISSIONS

Periodic, minor, direct, adverse impacts would be expected from all activities associated with the Implementation Phase of Alternative 2. A summary of emissions from the Implementation Phase associated with Alternative 2 are summarized in **Table 4.2-17**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Emissions from all activities associated with the Implementation Phase of Alternative 2 are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-17.** Additionally, average daily wind speeds on Tinian of 7 to 15 mph would result in negligible impacts to air quality due to implementation. CO_2-equivalent emissions under the Alternative 2 Implementation Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions.

Table 4.2-17. Estimated Annual Emissions Resulting from the Alternative 2, North and South Options, Implementation Phase

Source Category	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Airfield Operations	6.77	1.25	18.67	0.98	0.05	0.05	4,007
Fuel Truck and Commuter Vehicle Emissions	0.37	0.03	0.19	0.001	0.02	0.01	93
Fuel Transfer Emissions	N/A	0.01	N/A	N/A	N/A	N/A	0
Fuel Storage Tank Emissions	N/A	1.91	N/A	N/A	N/A	N/A	0
Total Pollutant Emissions	7.14	3.19	18.86	0.98	0.07	0.07	4,100
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**

No significant impacts on local and regional air quality are anticipated from the Implementation Phase associated with Alternative 2.

SUMMARY OF ALTERNATIVE 2 EMISSIONS

The Construction Phase is expected to occur over a three-year time frame and would then be followed by the activities proposed under the Implementation Phase. The air quality significance criteria thresholds are not expected to be reached for either phase. No significant impacts on local and regional air quality are anticipated from the Construction and Implementation phases associated with Alternative 2.

4.2.3 Alternative 3–Hybrid Modified Alternative

4.2.3.1 Construction Phase

Under Alternative 3, construction would occur at both Saipan and Tinian and be phased over 3 years. Therefore, Construction Phase air quality impacts are expected at both islands. For purposes of the Alternative 3 Construction Phase analyses, emissions at Saipan and Tinian were conservatively combined before comparison to significance thresholds. The islands are relatively close to each other and are considered to be within the same AQCR.

4.2.3.1.1 Saipan and Tinian North Option

Short-term, minor, direct, adverse impacts would be expected from construction emissions and land disturbance. Alternative 3 Saipan and Tinian North Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to from the port to the concrete batch plant, transport of concrete from the concrete batch plant to the project site, construction worker on-island commute, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site.

All emissions associated with construction operations would be temporary in nature. It was assumed that lighting and utilities would be installed on the same surfaces already accounted for in the Construction Phase. The overall square footage of these items is also very small and would not be a significant source of temporary air pollution from their construction and there is no long term air pollution component associated with them. The Construction Phase of the Alternative 3, Saipan and Tinian North Option would occur over a 2- to 3-year time period; therefore, construction emissions were equally divided over a 3-year time period. It is not expected that emissions from construction of the projects associated with the Alternative 3, Saipan and Tinian North Option would contribute to or affect local or regional attainment status or violate any NAAQS standards.

Air Pollutant Emissions. Emissions from the construction activities associated with the Alternative 3, Saipan and Tinian North Option are summarized in **Table 4.2-18**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-18. Estimated Emissions Resulting from Alternative 3, Saipan and Tinian North Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	9.53	1.42	9.65	0.33	68.12	6.90	1,674.26
Year 2	9.53	1.42	9.65	0.33	68.12	6.90	1,674.26
Year 3	9.53	1.42	9.65	0.33	68.12	6.90	1,674.26
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

The construction projects associated with Alternative 3 Saipan and Tinian North Option would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite impacts. Emissions from the Alternative 3, Saipan and Tinian North Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-18.** Additionally, average daily wind speeds on Saipan and Tinian of 8 to 13 mph and 7 to 15 mph, respectively, would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 3, Saipan and Tinian North Option.

Fugitive Dust. Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Mitigation measures would be employed during construction to reduce and control fugitive dust and to suppress emissions. Specific fugitive dust control measures could include watering the construction surface and phasing work to limit dust, setting up wind fences to limit wind blown dust, and limiting vehicle speed to 15 mph or less at construction sites on unpaved roads. Fugitive dust emissions were not calculated for activities conducted at the concrete batch plant because it is assumed that the plant would be operated under an existing approved air permit issued by the CNMI BECQ.

CO_2-Equivalent Emissions. CO_2-equivalent emissions under the Alternative 3, Saipan and Tinian North Option Construction Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions.

Permitting. Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources, which are not regulated under the Title V permit program. The CNMI BECQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI BECQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. The USAF would coordinate with the CNMI BECQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas. The New Source Performance Standard, Subpart Kb, for bulk fuel storage tanks would not apply based on the low vapor pressure of JP-8 fuel.

4.2.3.1.2 Saipan and Tinian South Option

Impacts on air quality described in **Section 4.2.3.1.1** regarding the Construction Phase under the Alternative 3, Saipan and Tinian North Option would be similar to the impacts expected under the Alternative 3, Saipan and Tinian South Option. The main difference between the two Options is that the Construction Phase emissions from the Tinian South Option are less because the South Option has over 900,000 square feet less in total disturbed area and pavement construction. The South Option would not include construction of taxiways or road reroute, has a smaller size cargo pad and parking apron, and has less cement and concrete that is transported to the concrete batch plant and to the construction site. The air emissions and air quality impacts for the South Option are described below.

Short-term, minor, direct, adverse air quality impacts would be expected from construction emissions and land disturbance. The Alternative 3 Saipan and Tinian South Option would result in minor impacts on regional air quality during construction activities primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, transport of concrete materials to and from the port to the concrete batch plant, transport of concrete from the concrete batch plant to the project site, construction worker on-island commute, concrete and asphalt paving operations, and transport of excavation and construction materials to and from the site.

Air Pollutant Emissions. Emissions from the construction activities associated with the Alternative 3 Saipan and Tinian South Option are summarized in **Table 4.2-19**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-19. Estimated Emissions Resulting from the Alternative 3, Saipan/Tinian South Option Construction Activities

Construction Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Year 1	8.54	1.24	7.74	0.31	49.51	4.98	1,486.86
Year 2	8.54	1.24	7.74	0.31	49.51	4.98	1,486.86
Year 3	8.54	1.24	7.74	0.31	49.51	4.98	1,486.86
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	Not Applicable

Sources: **Appendix E**

Emissions from Alternative 3 Saipan and Tinian South Option are below the air quality significance criteria of 100 tpy as shown in **Table 4.2-19.** Additionally, average daily wind speeds on Saipan and Tinian of 8 to 13 mph and 7 mph to 15 mph would result in negligible impacts to air quality due to construction. No significant impacts on local and regional air quality are anticipated from implementation of construction activities associated with the Alternative 3 Saipan and Tinian South Option.

Fugitive Dust. Construction and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Mitigation measures would be employed during construction to reduce and control fugitive dust and to suppress emissions. Specific fugitive dust control measures could include watering the construction surface and phasing work to limit dust, setting up wind fences to limit wind blown dust, and limiting vehicle speed to 15 mph or less at construction sites on unpaved roads. Fugitive dust emissions were not calculated for the activities conducted at the concrete batch plant because it is assumed that the plant would be operated under an existing approved air permit issued by the CNMI BECQ.

CO_2-Equivalent Emissions. CO_2-equivalent emissions under the Alternative 3 Saipan and Tinian South Option would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA as a threshold for discussion and disclosure of GHG emissions.

Permitting. Title V permit criteria do not apply to the Construction Phase as all sources are mobile sources which are not regulated under the Title V permit program. The CNMI BECQ requires all stationary sources to submit an air quality construction permit prior to commencement of their construction activities. Construction permits in the CNMI require air dispersion modeling; however, less rigorous screening modeling might be adequate. The CNMI BECQ and associated regulations should be consulted to confirm such permit requirements at the time of permit application. The USAF would coordinate with CNMI BECQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas. The New Source Performance Standard, Subpart Kb, for bulk fuel storage tanks would not apply based on the low vapor pressure of JP-8 fuel.

4.2.3.2 Implementation Phase – Saipan and Tinian North and South Options

4.2.3.2.1 Aircraft Operations

Periodic, direct, minor, adverse impacts on local and regional air quality would be expected from aircraft operations due to the implementation of Alternative 3. Under this Alternative, military exercises as described under Alternative 3 would occur at either Saipan, Tinian, or both. The USAF anticipates that two to four cargo, tanker, or similar type aircraft would operate up to eight weeks annually (typically not on weekends) for a maximum of 720 annual operations under Alternative 3. The USAF would typically divide the 720 operations (i.e., 360 take-offs and 360 landings) between Saipan and Tinian but a maximum of 720 operations are being analyzed at each location in the event that one of the airports is unavailable for exercises.

The same air quality assumptions and methodologies described for Alternative 1 and Alternative 2 apply to the Implementation Phase for Alternative 3.

Criteria emissions from airfield operations associated with Alternative 3 are summarized in **Table 4.2-20**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-20. Estimated Annual Aircraft Operations Emissions from Alternative 3

Aircraft	LTOs	Total Fuel (gal/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	NO_x (tons/yr)	SO_x (tons/yr)	VOC (tons/yr)
KC-135R	360	277,671*	0.05	0.05	18.67	6.77	0.98	1.25
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

Note: *This is the total fuel used for LTOs up to the mixing zone height and does not include fuel used above the mixing zone height, per the USAF emissions factors. Criteria pollutant emissions generated above this height are not counted towards air quality impact analyses.

Emissions from Alternative 3 aircraft operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-11**. No significant impacts on local and regional air quality are anticipated from aircraft operations associated with Alternative 3. In addition, the Title V permit criterion does not apply to aircraft operations as these sources are mobile sources which are not regulated under the Title V permit program.

GHG emissions from aircraft under Alternative 3 are presented in **Table 4.2-21**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. GHG emissions were estimated based on PACAF data indicating approximately 7,500 pounds of fuel is used per LTO cycle from the ground to 10,000 feet elevation and back to a landing. Fuel use and associated emissions above 10,000 feet are accounted for under the MITT EIS. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-21. Estimated Annual Aircraft Operations Greenhouse Gas Emissions from Alternative 3

Fuel Use (gal/yr)	Fuel	CO_2-equivalent (metric tonnes/yr)
404,798	JP-8	4,007

Source: **Appendix E**

4.2.3.2.2 Fuel Truck and Commuter Vehicle Emissions

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from the fuel truck and commuter vehicle operations due to the implementation of Alternative 3. Under this Alternative, two activities would require commuter emissions. These activities include jet fuel receiving, storage, and distribution; and personnel transport associated with commercial lodging. Under Alternative 3 at Saipan, it is assumed standard fuel transfer trucks would transfer fuel from existing tanks at the seaport. This truck transfer would occur from the seaport to the proposed tanks at Saipan International Airport. Under Alternative 3, for both the Tinian North and South Options, standard fuel transfer trucks would transfer fuel the proposed fuel tanks at the seaport to Tinian International Airport

On Saipan, it is assumed six 10,000-gallon fuel trucks will take 2 days at 8 hours per day and 3 hours on a third day to travel from Saipan Seaport to Saipan International Airport and to fill the airport tanks with the needed fuel (420,000 gallons total). The six 10,000-gallon fuel trucks will make three round trips per day for the first 2 days and one round trip each on the third day. Under the Tinian North and South Options, it is assumed six 10,000-gallon fuel trucks will have the same travel schedule as on Saipan.

Under Alternative 3 on both Saipan and Tinian, the same number of personnel would need to be transported from commercial lodging to the airfield as described under Alternative 1 in **Section 4.2.1.2.** Therefore, 256 personnel would be transported on 6 commercial buses for a total of 24 roundtrips per day. In addition, the same types and mixes of commuter vehicles are assumed to be used; HDDV8A (Bus) and HDDV8B (Refueler), both with average model years at 2005. Emissions from these vehicles were calculated using the same methodology as described for Alternative 1 in **Section 4.2.1.2**.

Criteria emissions from fuel transfer trucks and commuter vehicles associated with Alternative 3, are summarized in **Table 4.2-22**. The emissions from the North Option are the same as the South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Emissions from Alternative 3 fuel truck and commuter vehicles are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-22.** No significant impacts on local and regional air quality are anticipated from fuel truck and commuter vehicle operations associated with Alternative 3. In addition, the Title V permit criteria does not apply to Fuel Truck and Commuter Vehicle emissions as these sources are mobile sources which are not regulated under the Title V permit program.

Table 4.2-22. Estimated Fuel Truck and Commuter Vehicle Emissions from Alternative 3

Vehicle Class	Model Year	Annual Miles	Emissions (tpy)					
			PM_{10} (tons)	$PM_{2.5}$ (tons)	CO (tons)	NO_x (tons)	SO_x (tons)	VOC (tons)
HDDV8A (Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	2005	53,760	0.015	0.012	0.166	0.324	0.001	0.028
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	2005	6,270	0.002	0.001	0.023	0.043	<0.001	0.004
Total Emissions* (tpy)			**0.017**	**0.013**	**0.189**	**0.367**	**0.001**	**0.032**
Significance Criteria Threshold (tpy)			100	100	100	100	100	100

Source: **Appendix E**

GHG emissions from commuting under Alternative 3 are presented in **Table 4.2-23**. The emissions from Saipan and the Tinian North and Tinian South Options are the same so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-23. Estimated Fuel Truck and Commuter Vehicle Greenhouse Gas Emissions from Alternative 3

Vehicle Class	Annual Miles	GHG Pollutant Emissions (metric tonnes/year)
		CO_2
HDDV8A(Bus) - Class 8a Heavy-Duty Diesel Vehicles (33,001–60,000 pounds GVW)	53,760	83.09
HDDV8B (Refueler) - Class 8b Heavy-Duty Diesel Vehicles (> 60,000 pounds GVW)	6,270	10.14
Total GHG Emissions (tpy)		**93.23**

FUEL TRANSFER EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel transfer operations due to the implementation of Alternative 3. Two types of fuel operations would be required under Alternative 3 on both Saipan and Tinian, which include loading fuel onto aircraft and loading fuel onto refueler trucks at the seaport. The emissions of concern from fuel transfer operations are VOCs as described in Alternative 1 in **Section 4.2.1.2**. The emissions from fuel transfer operations under Alternative 3 are based on the maximum of potential emissions at Tinian because of the fuel tanks proposed at the Port of Tinian.

VOC emissions from fuel transfer associated with Alternative 3 are summarized in **Table 4.2-24**. The emissions from the Saipan and Tinian North Option are the same as the Saipan and Tinian South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-24. Estimated Annual Fuel Transfer Emissions from Alternative 3

Location	Description	Fuel Type	Fuel Transferred (gal)	Displaced Vapor (Total VOC) (tons)
Flightline (Saipan or Tinian)	Loading Aircraft from Fill Stands	JP-8	420,000	0.004
Port of Tinian or Saipan Seaport (assume 50,000-bbl tank 1)	Loading Refueler Trucks	JP-8	210,000	0.002
Port of Tinian or Saipan Seaport, Loading Racks (assume50,000-bbl tank 2)	Loading Refueler Trucks	JP-8	210,000	0.002
		Totals	**840,000**	**0.01**

Source: **Appendix E**

Emissions from Alternative 3 fuel transfer operations are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-24**. No significant impacts on local and regional air quality are anticipated from fuel transfer operations associated with Alternative 3. In addition, emissions are below Title V permit threshold of 100 tpy for VOCs.

FUEL STORAGE TANK EMISSIONS

Periodic, minor, direct, adverse impacts on local and regional air quality would be expected from fuel storage tanks due to the implementation of Alternative 3. Under this Alternative, all fuel storage tanks are assumed to be fixed roof, ASTs with no pressure/vacuum vents installed. All fuel storage tanks are assumed to contain JP-8 fuel.

Note that the emissions factors are the same for JP-8 and diesel fuel. The description of how emissions are generated and the methodology for calculating emissions from fuel storage tanks, i.e., USEPA TANKS model, are the same as described in Alternative 1 in **Section 4.2.1.2**. The emissions from fuel storage tank operations under Alternative 3 are based on the maximum of emissions at Tinian due to a slightly larger proposed fuel capacity.

Emissions from fuel storage tanks associated with Alternative 3 are summarized in **Table 4.2-25**. The emissions from the Saipan and Tinian North Option are the same as the Saipan and Tinian South Option so only one emissions summary table is provided below which applies to both Options. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-25. Estimated Annual Fuel Storage Tank Emissions from Alternative 3

Tank Type	Total VOC*(tons)
Tank 1 (Port of Tinian) – assume 50,000 bbls, cut-and-cover or AST	0.30
Tank 2 (Port of Tinian) – assume 50,000 bbls, cut-and-cover or AST	0.30
Tank 3 (Tinian International Airport) – assume 60,000 bbls, cut-and-cover or AST	0.36
Tank 4 (Tinian International Airport) – assume 60,000 bbls, cut-and-cover or AST	0.36
Total	**1.32**

Source: **Appendix E**
Note: Total VOCs calculated using TANKS (TANKS 4.0.9d 2012a and 2012b).

Emissions from Alternative 3 fuel storage tanks are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-25.** No significant impacts on local and regional air quality are anticipated from tank fuel storage associated with Alternative 3. In addition, emissions are below Title V permit threshold of 100 tpy for VOCs.

SUMMARY OF ALTERNATIVE 3, IMPLEMENTATION PHASE EMISSIONS

Periodic, minor, direct, adverse impacts would be expected from all activities associated with the Implementation Phase of Alternative 3. A summary of emissions from the Implementation Phase associated with Alternative 3 are summarized in **Table 4.2-26**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix E**.

Table 4.2-26. Estimated Annual Emissions Resulting from the Alternative 3 Implementation Phase

Source Category	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tonnes)
Airfield Operations	6.77	1.25	18.67	0.98	0.05	0.05	4,007
Fuel Truck and Commuter Vehicle Emissions	0.37	0.03	0.19	<0.001	0.02	0.01	93
Fuel Transfer Emissions	N/A	0.01	N/A	N/A	N/A	N/A	0
Fuel Storage Tank Emissions	N/A	1.32	N/A	N/A	N/A	N/A	0
Total Pollutant Emissions	7.14	2.61	18.86	0.98	0.07	0.07	4,100
Significance Criteria Threshold (tpy)	100	100	100	100	100	100	N/A

Source: **Appendix E**

Emissions from all activities associated with the Implementation Phase of Alternative 3 on both Saipan and Tinian are below the air quality significance criteria threshold of 100 tpy as shown in **Table 4.2-26.** Additionally, average daily wind speeds on Saipan and Tinian of 8 mph to 13 mph and 7 mph to 15 mph, respectively, would result in negligible impacts to air quality due to implementation. CO_2-equivalent emissions under the Alternative 3, Implementation Phase would not reach the threshold of 25,000 metric tonnes described in guidance issued by the USEPA

as a threshold for discussion and disclosure of GHG emissions. No significant impacts on local and regional air quality are anticipated from the Implementation Phase associated with Alternative 3.

4.2.3.2.3 Summary of Alternative 3, Saipan/Tinian North and South Options

The Construction Phase is expected to occur over a three-year time frame and would then be followed by the activities proposed under the Implementation Phase. The significance criteria thresholds are not expected to be reached for either phase. No significant impacts on local and regional air quality are anticipated from the Construction and Implementation Phases associated with the Alternative 3 Saipan and Tinian North and South Options.

4.2.4 Climate Change

Alternatives 1, 2, and 3 would emit GHGs during both the construction and implementation phases. As shown in **Table 4.2-27**, the net annual change in CO_2 emissions due to the construction and implementation of any of the three modified alternatives would be a small fraction of the total annual world CO_2 emissions. The direct annual CO_2 emissions increase associated with the construction and implementation of any of the three alternatives would contribute approximately 0.00001 percent to the global CO_2 emissions, assuming no increases in total world GHG emissions from 2012 until the start of construction or implementation.

Table 4.2-27. Estimated Annual Greenhouse Gas Emissions from all Alternatives

Category	CO_2-equivalent Emissions (million metric tonnes/yr)
World Total (2012)	32,310.287
U.S. Total (2012)	5,270.422
Alternative 1 Total	0.004
Alternative 2 Total	0.004
Alternative 3 Total	0.004

Source: HDR, **Appendix E**, U.S. EIA 2012

4.2.5 No Action Alternative

Under the No Action Alternative, neither Alternative 1, Alternative 2, nor Alternative 3 would occur and the existing conditions discussed in **Sections 3.2.3.1** and **3.2.3.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, or similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions. Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on air quality would be expected as a result of the No Action Alternative. Emissions levels on Saipan and Tinian would not increase due to construction, planned military exercises, fuel transfer and storage, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.3 Airspace and Airfield Environment

This section reviews the impacts of proposed construction and implementation to the airfield and surrounding airspace at the Saipan International Airport, Saipan; and Tinian International Airport, Tinian. Airspace/airfield impacts were assessed based on the following criteria:

- Disruption of airfield operations
- Disruption of the existing flow of commercial air traffic to or from the selected airport
- Obstructions which would be considered hazardous to air traffic.

If the analysis shows that these conditions might occur, then the impacts were further evaluated in terms of duration (short- or long-term) and intensity (minor, moderate, or major).

4.3.1 Alternative 1 – Modified Saipan Alternative

4.3.1.1 Construction Phase

USAF operational and safety requirements drive the need for the Proposed Action and construction at Saipan International Airport under Alternative 1. The following paragraphs relate specific construction elements that are required, and provide a summary of potential impacts on airspace and airfield operations. Potential impacts due to construction activities are anticipated in the form of airspace and airfield management and operations constraints, with possible associated socioeconomic and safety concerns. To avoid or rectify any potential insignificant impacts on airfield operations during construction, the USAF would develop a Safety Management System Plan and Construction Safety Phasing Plan in accordance with Advisory Circular 150/5370-2F.

Parking Apron. Construction of the parking apron under Alternative 1 at Saipan International Airport would lead to minor, short-term, direct, adverse impacts on airfield operations. Impacts on airfield operations would occur from additional congestion on the roads leading to the parking apron and the possible generation of foreign object debris (FOD). Ballfield-type lighting is proposed on the apron boundary to provide adequate security and lights for night operations. The ballfield-type lighting structure height at the apex is 40 feet AGL with an overall height of 251 feet AMSL but would not exceed Part 77 criteria. Aircraft located on the parking apron could impede ARFF's line-of-sight to the approach end of RWY 25. If ARFF's line-of-sight would be impeded by aircraft participating in divert exercises, the USAF could implement mitigation measures to rectify the impact and restore line-of-sight, which could include installing a tower on the ARFF facility to increase visibility; adding surveillance cameras on the airfield; or requesting a waiver for surveillance of movement area criteria.

Cargo Pad. Construction of the cargo pad under Alternative 1 at Saipan International Airport would result in minor, short-term, adverse, direct impacts on airfield operations. The proposed pad is outside approach/departure clearance surface areas, but would likely cause minor, adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway. Adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway could be reduced by temporarily modifying aircraft movement procedures, such as accommodating aircraft taxiing to and from the runway or closing a portion of the parallel taxiway during construction.

Maintenance Facility. Construction of the maintenance facility under Alternative 1 at Saipan International Airport should not present impacts on airfield "ground" operations, or airfield "air" operations. FAR Part 77 establishes the requirements to provide notice to the FAA of certain proposed construction or the alteration of existing structures and determination of obstructions impact on air navigation. To avoid impacts on air navigation, this project would need to be submitted to FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

Jet Fuel Receiving, Storage, and Distribution. Short-term, minor, direct, adverse impacts would be expected on airfield access roads from the construction of fuel receiving, storage and distribution systems. Construction of Hydrant Refueling System and associated pipeline would cause minimum disruption to airfield ground operations because of FOD during installation of the underground fuel system. To avoid impacts on air navigation, this project would need to be submitted to FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

4.3.1.2 Implementation Phase

Analyses of the implementation stage on airspace and airport operations have been based on assumptions and the Aeronautical Study, provided in **Appendix F**. To avoid or rectify any potential insignificant impacts on airfield operations during implementation, the USAF would develop a Safety Management System Plan.

Military Exercises**.** Short-term, periodic, negligible, direct, adverse impacts would be expected on the immediate airspace and airfield operations due to implementation of joint military exercises under Alternative 1. USAF aircraft would not have priority over current aircraft operating from Saipan International Airport. The USAF would reduce potential impacts by conducting take-offs and landings around existing commercial airliner schedules on a first come, first served basis. However, per FAA Joint Order 7110.65T, aircraft operating on IFR flight plans, such as military aircraft, receive priority over VFR aircraft, such as charter flights between Saipan and Tinian. Additionally, per FAA Joint Order 7100.65T, small aircraft departing or arriving behind larger military aircraft could be delayed for safety precautions due to wake turbulence. However, the same requirements are currently in place for commercial airliners at Saipan International Airport because military exercises would only occur for up to 8 weeks per year. Therefore, intermittent, negligible impacts would be expected on small civilian carriers arriving and departing from Saipan International Airport.

Air operations (beyond take-offs and landings) of the proposed joint military exercises under Alternative 1 at Saipan International Airport have previously been analyzed in the MIRC EIS and the MITT EIS (DON 2010a, DON 2010b). Military exercises would have moderate, direct, adverse, short-term, periodic impacts on airspace and airfield operations as indicated in the MIRC EIS. It is assumed up to 8 weeks of exercises would occur at Saipan International Airport. These military exercises are well within levels of training previously authorized in the MIRC and MITT RODs.

DOD, local stakeholders, and Federal regulators collect and review military training data annually to implement required adaptive management techniques, if required. In addition to this annual review, military training in the MIRC ROD is also reviewed on a 5-year cycle. This adaptive management approach ensures that any increase or changes in quality or quantity of exercises is fully analyzed on a continuing basis. In addition to the exercise requirements, individual units would periodically land and take off to become familiar with the airfield while in the AOR. This type of training is also included within the authorizations contained in the MIRC and MITT RODs.

Jet Fuel Receiving, Storage, and Distribution. No adverse impacts on airspace or airfield operations would be expected due to operation of the jet fuel receiving, storage, and distribution system under Alternative 1. As with any similar system, fueling operations could result in incidental spills of fuel on CPA property, but implementing appropriate spill containment and management plans would control the potential for any significant adverse impacts. See **Section 4.12** for the mitigation measures proposed for spill containment and management. Additionally, to minimize impacts related to incidental fuel spills, all fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks in accordance with FAA Advisory Circular 150/5230-4 *Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports*. In accordance with 14 CFR Part 139 requirements, only airlines, the fuel system operator, and fixed based operators are authorized to perform into-plane fueling services.

4.3.2 Alternative 2–Modified Tinian Alternative

4.3.2.1 Construction Phase

USAF operational and safety requirements drive the need for the Proposed Action and construction at Tinian International Airport under Alternative 2. The following paragraphs relate specific construction elements that are required, and provide a summary of potential impacts on airspace and airfield operations. Potential impacts due to construction activities are anticipated in the form of airspace and airfield management and operations constraints, with possible associated socioeconomic and safety concerns. To avoid or rectify any potential insignificant impacts on airfield operations during construction, the USAF would develop a Safety Management System Plan and Construction Safety Phasing Plan in accordance with Advisory Circular 150/5370-2F.

During the Construction Phase under Alternative 2, the USAF would construct infrastructure on either the north or south side of the runway. For the North Option, all construction would be on the north side of the runway. For the South Option, all construction would be on the South side of the runway.

4.3.2.1.1 North Option

Parking Apron. No impacts on airspace or airfield operations would be expected due to construction of the parking under Alternative 2 North Option, because the parking apron would be built adjacent to the proposed parallel taxiway and would provide segregation between the runway and the construction area. Ballfield-type lighting is proposed on the apron boundary to provide adequate security and lights for night operations. The ballfield-type lighting structure height at the apex is 40 feet AGL with an overall height of 251 feet AMSL but would not exceed Part 77 criteria.

Cargo Pad. No impacts on airspace or airfield operations would be expected due to construction of the cargo pad under Alternative 2 North Option, provided segregation between usable runway and the construction area can be maintained. The proposed pad is outside approach/departure clearance surface areas.

Maintenance Facility. Construction of the maintenance facility under the Alternative 2 North Option should not present impacts on airfield “ground” operations or airfield “air” operations. In addition, construction at the proposed location would not present impacts on airfield “ground” operations. To avoid impacts on air navigation, this project would need to be submitted to FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

Access Road. No impacts on airspace or airfield operations would be expected due to construction of the access road under Alternative 2 North Option, provided segregation between usable runway and the construction area can be maintained. The proposed access road is outside approach/departure clearance surface areas.

Fire Suppression System. No impacts on airspace or airfield operations would be expected due to construction of the fire suppression system under Alternative 2 North Option, provided segregation between usable runway and the construction area can be maintained. The proposed fire suppression system is outside approach/departure clearance surface areas. To avoid impacts on air navigation, this project would need to be submitted to the FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

Jet Fuel Receiving, Storage, and Distribution. Short-term, minor, direct, adverse impacts on airfield access roads may be experienced due to construction of the proposed jet fuel receiving, storage, and distribution system under Alternative 2 North Option. Construction of fuel storage tanks at Tinian International Airport would be consistent with the intent of the DOD and CNMI in the reservation of leasehold rights to develop petroleum, oil, and lubricant (POL) capabilities within the CPA areas in exchange for the release of the military leasehold, dated 1999. The fuel storage facility could be developed with limited disruption of CPA activities because these facilities would be located north of the proposed parallel taxiway and would not be adjacent to the commercial taxiway. To avoid impacts on air navigation, this project would need to be submitted to the FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

Taxiways. Short-term, minor to moderate, direct, adverse impacts on airfield operations due to construction of the taxiways could occur. Possible FOD and construction vehicles during construction of the taxiways could be problematic. Adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel runway could be reduced by temporarily modifying aircraft movement procedures.

Reroute 8th Avenue. Short-term, minor, direct, adverse impacts on airfield access roads may be experienced due to the reroute of 8th Avenue. However, segregation between the usable runway and the construction area can be maintained. The proposed road reroute is outside approach/departure clearance surface areas.

4.3.2.1.2 South Option

Parking Apron. Short-term, minor, direct, adverse impacts on airfield operations due to construction of the parking apron could occur due to the construction of the parking apron adjacent to the existing runway. Ballfield-type lighting is proposed on the apron boundary to provide adequate security and lights for night operations. The ballfield-type lighting structure height at the apex is 40 feet AGL with an overall height of 251 feet AMSL but would not exceed Part 77 criteria. Adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway or runway, within the Runway Safety Area, could be reduced by temporarily modifying aircraft movement procedures.

Aircraft located on the proposed parking apron could further impede ARFF's line-of-sight to the approach end of RWY 8. If ARFF's line-of-sight would be impeded by aircraft participating in divert exercises, the USAF could implement mitigation measures to rectify the impact and restore line-of-sight, which could include installing a tower on the ARFF facility to increase visibility; adding surveillance cameras on the airfield; or requesting a waiver for surveillance of movement area criteria.

Cargo Pad. No impacts on airspace or airfield operations would be expected due to construction of the cargo pad under Alternative 2 South Option, provided segregation between usable runway and the construction area can be maintained. The proposed pad is outside approach/departure clearance surface areas.

Maintenance Facility. Construction at the proposed location should not present impacts on airfield "ground" operations or airfield "air" operations. In addition, construction at the proposed location would not present impacts on airfield "ground" operations. To avoid impacts on air navigation, this project would need to be submitted to the FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

Access Road. No impacts on airspace or airfield operations would be expected due to construction of the access road under Alternative 2 South Option, provided segregation between usable runway and the construction area can be maintained. The proposed access road is outside approach/departure clearance surface areas.

Fire Suppression System. No impacts on airspace or airfield operations would be expected due to construction of the fire suppression system under Alternative 2 South Option, provided segregation between usable runway and the construction area can be maintained. The proposed fire suppression system is outside approach/departure clearance surface areas. To avoid impacts on air navigation, this project would need to be submitted to the FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

Jet Fuel Receiving, Storage, and Distribution. Short-term, minor, direct, adverse impacts on airfield access roads may be experienced due to construction of the proposed jet fuel receiving, storage, and distribution system under Alternative 2. Construction of fuel storage tanks at Tinian International Airport would be consistent with the intent of the DOD and CNMI in the reservation of leasehold rights to develop POL capabilities within the CPA areas in exchange for the release of the military leasehold, dated 1999. The fuel storage facility could be developed with limited disruption of CPA activities. The development of a Hydrant Refueling System could cause minor disruption to airfield "ground" operations because of the need to develop POL lines and hydrants in the proposed parking areas. Trenching and possible FOD and vehicles during installation of the underground fuel system could be problematic. Adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway or runway, within the Runway Safety Area, could be reduced by temporarily modifying aircraft movement procedures. To avoid impacts on air navigation, this project would need to be submitted to the FAA in accordance with the FAR requirements; however, it does not exceed any of the Part 77 criteria.

4.3.2.2 Implementation Phase- North and South Options

Analyses of the implementation stage on airspace and airport operations have been based on assumptions and the Aeronautical Study, provided in **Appendix F**. To avoid or rectify any potential insignificant impacts on airfield operations during implementation, the USAF would develop a Safety Management System Plan.

Military Exercises. Short-term, periodic, moderate, direct, adverse impacts on airspace and airfield operations would be expected due to implementation of joint military exercises under Alternative 2. Implementation of the proposed joint military exercises at Tinian International Airport could lead to periodic minor to moderate, short-term, direct, adverse impacts on the immediate approach and departure airspace as there is no ATCT to provide positive control instructions to aircraft and vehicles operating on the airfield. There is no surveillance (radar) service available below 3,500 feet AMSL. Therefore, FAA non-radar separation standards would apply, causing delays in the non-radar environment during joint military exercises. Because there are no NAVAIDs at Tinian International Airport, capability would be further limited during poor weather conditions. However, the USAF could rectify impacts on approach and departure airspace by installing a mobile ATCT during military exercises which would assist with aircraft separation and prevent delays. If implemented, major, direct, beneficial impacts on the airspace and airfield operations would be expected due to the positive control and safety factors an ATC facility brings to an airfield.

USAF aircraft would not have priority over current aircraft operating from Tinian International Airport, as DOD aircraft would also operate using VFR into and out of Tinian International Airport. Per FAA Joint Order 7100.65T, small aircraft departing or arriving behind large aircraft such as the KC-135, could be delayed for safety precautions due to wake turbulence.

It is assumed that up to 8 weeks of exercises would occur at Tinian International Airport. Air operations (beyond take-offs and landings) is well within levels of training previously authorized in the MIRC ROD and the MITT ROD, which were issued on July 20, 2010, and July 29, 2015, respectively (DON 2010a, DON 2010b). DOD, local stakeholders, and Federal regulators collect military training data annually. DOD and stakeholders review that data yearly to implement required adaptive management techniques and adaptive mitigation techniques if required. Additionally, military training in the MIRC is reviewed on a 5-year cycle. This adaptive management approach ensures that any increase of types or changes in quality or quantity of training is fully analyzed on a continuing basis. In addition to the exercise requirements, individual units would periodically land and take off to become familiar with the airfield while in the AOR. This type of training is also included within the authorizations contained in the MIRC and MITT RODs. Implementation of military exercises could lead to moderate short-term, periodic impacts on the airspace.

Additionally, no impacts would be expected from the use of the proposed taxiways under the North Option of Alternative 2. The proposed taxiways would be used by military aircraft during exercises and would prevent interference with charter aircraft using the existing taxiway.

Jet Fuel Receiving, Storage, and Distribution. No adverse impacts on airspace or airfield operations would be expected due to operation of the jet fuel receiving, storage, and distribution system under Alternative 2. As with any similar system, fueling operations could result in incidental spills of fuel on CPA property, but implementing appropriate spill containment and management plans would control the potential for significant adverse impacts. Additionally, to minimize impacts related to incidental fuel spills, all fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks in accordance with FAA Advisory Circular 150/5230-4 *Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports*. In accordance with 14 CFR Part 139 requirements, only airlines, the fuel system operator, and fixed base operators are authorized to perform into-plane fueling services.

4.3.3 Alternative 3–Hybrid Modified Alternative

4.3.3.1 Construction Phase

USAF operational and safety requirements drive the need for the Proposed Action and construction at Saipan International Airport and Tinian International Airport under Alternative 3. The following paragraphs relate specific construction elements that are required, and provide a summary of potential impacts on airspace and airfield operations. Potential impacts due to construction activities are anticipated in the form of airspace and airfield management and operations constraints, with possible associated socioeconomic and safety concerns. To avoid or rectify any potential insignificant impacts on airfield operations during construction, the USAF would develop a Safety Management System Plan and Construction Safety Phasing Plan in accordance with Advisory Circular 150/5370-2F.

4.3.3.1.1 Saipan

Impacts on airport operations during the Construction Phase at Saipan International Airport would be similar but less than those described under Alternative 1. Alternative 3 does not include the construction of a parking apron and therefore would cause fewer disturbances to aircraft operations and taxiing during construction. Therefore, short-term negligible adverse impacts on airport operations would be expected.

4.3.3.1.2 Tinian

NORTH OPTION

Impacts on airport operations during the Construction Phase at Tinian International Airport would be similar to those described under Alternative 2 North Option. Construction under the Alternative 3 North Option would include the same features as those described under Alternative 2, with the exception of a smaller parking apron and a smaller fuel capacity. However, the proposed taxiways would still be constructed adjacent to the existing runway and could cause some minor disturbances to aircraft taxiing and operations during construction. Adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway or runway, within the Runway Safety Area, could be reduced by temporarily modifying aircraft movement procedures. Therefore, short-term minor to moderate adverse impacts on airport operations would be expected.

SOUTH OPTION

Impacts on airport operations during the Construction Phase at Tinian International Airport would be similar to those described under Alternative 2 South Option. Construction under the Alternative 3 South Option would include the same features as those described under Alternative 2, with the except of a smaller parking apron and a smaller fuel capacity. However, the parking apron would still be constructed adjacent to the existing runway and could cause some minor disturbances to aircraft taxiing and operations during construction. Adverse impacts on airfield operations due to construction equipment or vehicles immediately adjacent to the active parallel taxiway or runway, within the Runway Safety Area, could be reduced by temporarily modifying aircraft movement procedures. Therefore, short-term minor adverse impacts on airport operations would be expected.

4.3.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3. To avoid or rectify any potential insignificant impacts on airfield operations during implementation, the USAF would develop a Safety Management System Plan.

4.3.3.2.1 Saipan

Military Exercises. Impacts on the immediate airspace and airport operations during the Implementation Phase at Saipan International Airport from military exercises would be the same as those described under Alternative 1. The same number of personnel and take-offs or landings could be expected at Saipan International Airport under Alternative 3. Short-term, periodic, negligible, direct, adverse impacts would be expected on the immediate airspace and airfield operations.

Jet Fuel Receiving, Storage, and Distribution. Under the Implementation Phase of Alternative 3, the USAF would use a FORCE system for aircraft refueling. Short-term, periodic, minor to moderate adverse impacts would be expected on commercial operations from the use of this system. Because the FORCE system is expeditionary and is not a built-in component, the installation and use of the system could interrupt commercial aviation, depending on location. Alternately, the USAF would use existing commercial parking apron spots and fuel trucks for refueling under Alternative 3 on Saipan. This option would also result in moderate impacts on commercial operations during exercises.

4.3.3.2.2 Tinian North and South Options

Military Exercises. Impacts on the immediate airspace and airport operations during the Implementation Phase at Tinian International Airport from military exercises would be the same as those described under Alternative 2. The same number of personnel and take-offs or landings could be expected at Tinian International Airport under Alternative 3. Short-term, periodic, moderate, direct, adverse impacts would be expected on the immediate airspace and airfield operations. Additionally, no impacts would be expected from the use of the proposed taxiways under the North Option of Alternative 3. The proposed taxiways would be used by military aircraft during exercises and would prevent interference with charter aircraft using the existing taxiway. If implemented, major, direct, beneficial impacts on the airspace and airfield operations could be expected due to the positive control and safety factors an ATC facility brings to an airfield.

Jet Fuel Receiving, Storage, and Distribution. No adverse impacts on the immediate airspace airport operations during the Implementation Phase at Tinian International Airport would be expected from jet fuel receipt, storage, and distribution. The same number of personnel and take-offs or landings could be expected at Tinian International Airport under Alternative 3 as Alternative 2. To minimize impacts related to incidental fuel spills, all fueling and defueling of aircraft must be conducted from fuel systems and fuel trucks in accordance with FAA Advisory Circular 150/5230-4 *Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports*. In accordance with 14 CFR Part 139 requirements, only airlines, the fuel system operator, and fixed base operators are authorized to perform into-plane fueling services.

4.3.4 No Action Alternative

Under the No Action Alternative, Alternative 1, Alternative 2, and Alternative 3 would not occur and the existing conditions discussed in **Sections 3.3.4.1** and **3.3.4.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions. Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area; and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

The No Action Alternative would have short-term, direct, moderate, adverse, impacts on airspace and airport operations. Under the No Action Alternative, divert landings would continue to occur at Saipan International Airport on an emergency basis; and the airport would not be improved to accommodate the landing of larger aircraft. A divert operation could interrupt and impact commercial operations.

4.4 Geological Resources and Soils

Protection of unique geological features, minimization of soil and sediment erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, adverse impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Impacts on geological resources were assessed by evaluating the following:

- Potential to destroy unique geological features
- Potential for soil erosion
- Proximity to or impact on geologic hazards (such as locating a proposed action in a seismic zone)
- Potential to affect soil or geological structures that control groundwater quality or groundwater availability
- Alteration of soil structure or function.

The USAF would implement mitigation measures during the Construction Phase and the Implementation Phase of Alternative 1, Alternative 2, and Alternative 3, regardless of alternative, to minimize or avoid impacts to geological resources and soils. The mitigation measures applicable to all alternatives are described in the following paragraphs.

Mitigation Measures During Construction for Geological Resources and Soils

To minimize impacts on geological resources from soil erosion, the USAF would follow standards for erosion and sediment control recommended by the 2006 *CNMI and Guam Storm Water Management Manual* (CNMI BECQ and GEPA 2006). These standards include the following:

- *Standard 1:* Minimize unnecessary clearing and grading from all construction sites. Clearing and grading will only be performed within areas needed to build the project, including structures, utilities, roads, recreational amenities, post-construction storm water management facilities, and related infrastructure. Clearing should only be scheduled during the dry season, if possible. Mass clearing during the wet season should be avoided.
- *Standard 2:* Whenever practicable and feasible, construction will be phased to limit disturbance to only one area of active construction at a time. Future phases shall not be disturbed until construction of prior phases is complete and the land area is stabilized.
- *Standard 3:* Disturbed areas will be stabilized as soon as feasibly possible after construction is completed within a designated construction area, and in no case longer than 14 days after completion of active construction.
- *Standard 4:* Steep slopes will be protected from erosion by limiting clearing of these areas in the first place or, where grading is unavoidable, by providing special techniques to prevent upland runoff from flowing down a steep slope and through immediate stabilization to prevent gullying. A steep slope is defined as any slope over 20 percent (5:1) in grade over a length of 50 feet.

- *Standard 5:* Perimeter sediment controls will be applied to retain or filter concentrated runoff from disturbed areas to trap or retain sediment before it leaves a construction site. Upland runoff should be diverted around excavations where possible.
- *Standard 6:* Sediment trapping and settling devices shall be employed to trap and/or retain suspended sediments and allow time for them to settle out in cases where perimeter sediment controls (e.g., silt fence) are deemed to be ineffective in trapping suspended sediments on-site.
- *Standard 7:* All construction site managers (or superintendents) will provide documentation that they have received adequate training in the application and maintenance of erosion and sediment control practices.
- Standard 8: All construction site managers must participate in a pre-construction meeting with the applicable authority to review the provisions of the erosion and sediment control plan and make any field adjustment necessary to implement the intent of the plan to minimize erosion and maximize sediment retention on-site throughout the construction process.
- *Standard 9:* Construction should be scheduled to minimize soil exposure in the rainy season (July 1st–Nov. 30th) and during periods of coral spawning. The 2014 CNMI Water Quality Standards note that to avoid coral spawning, a stoppage period starting around the June or July full moon (to be determined by BECQ), is required. The stoppage period, if determined to be applicable, shall be no less than twenty-one calendar days (CNMI BECQ 2014a). USAF will also contact CNMI BECQ to determine when soil exposing work should be halted during spring rainfall events to avoid adversely affecting soft corals that are spawning.
- *Standard 10:* Erosion and sediment control practices shall be aggressively maintained throughout all phases of construction. All erosion and sediment control plans shall have an enforceable operation and maintenance agreement.

The USAF would also keep waste materials, stockpiles, and building supplies tied down or covered to protect from wind or storm water. Additionally, in accordance with CNMI Chapter 65-30 Earthmoving and Erosion Control Regulations, the USAF would minimize grading, filling, clearing of vegetation or other disturbance of the soil during inclement weather and for the resulting period of time when the site is in a saturated, muddy or unstable condition.

Additional erosion and sediment control mitigation measures could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. All construction BMPs would follow the guidelines provided in Federal- and CNMI-permitting processes, and a CNMI BECQ Noncommercial Earthmoving permit would need to be obtained prior to the start of any construction activities. In compliance with CNMI Chapter 65-30 Earthmoving and Erosion Control Regulations, the USAF would also develop an ESCP that would be implemented during construction.

Because development would occur in Seismic Zone 3, all buildings and other structures would be designed and constructed to meet the engineering requirements in the 2012 International

Building Code. This would minimize potential for adverse impacts on human life associated with earthquakes. In addition, structures must be able to withstand maximum winds of at least 155 mph and withstand the minimum horizontal and uplift pressures set forth in the regulations adopted by the Building Safety Official in accordance with the Building Safety Code (CNMI 1988).

Mitigation Measures During Implementation for Geological Resources and Soils

The USAF would also develop an ESCP that would be followed during the Implementation Phase.

All mitigation measures that would be implemented to control storm water runoff, both during and after construction, are provided in **Section 4.5**. All mitigation measures related to spill prevention and control are provided in **Section 4.12**.

4.4.1 Alternative 1 – Modified Saipan Alternative

4.4.1.1 Construction Phase

Short-term, direct, minor, adverse impacts on soils would be expected as a result of site preparation and construction activities. Construction activities at the airport and seaport disturb soils, which has the potential to result in excessive erosion as soils on Saipan could be highly erosive. As described in **Section 4.4**, mitigation measures, such as complying with CNMI erosion and sediment controls standards, would be implemented and an ESCP established to avoid or minimize impacts from erosion and sedimentation. Therefore, no major, adverse impacts on the soils would be anticipated.

Long-term, direct, minor, adverse impacts would be expected from compaction of soils under the weight of vehicles and other construction equipment, buildings, and other structures. Compaction of soils would result in disturbance and modification of soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas and be eliminated in those areas within the footprint of roadways or structures. Loss of soil structure due to compaction from foot and vehicle traffic could result in changes in drainage patterns. Landslides would not be anticipated during the Construction Phase as no steep slopes and unconsolidated materials exist at the proposed construction sites for Alternative 1.

Although mitigation measures described in **Section 4.4** would be implemented to minimize soil erosion and sedimentation during construction, minor to moderate, adverse impacts on geology and soil would be anticipated due to disturbance and construction of an additional 1,245,382 ft^2 of new impervious surfaces.

During construction, the USAF would also implement the spill prevention and control mitigation measures described in **Section 4.12.** These mitigation measures would minimize adverse impacts on geological resources and soils that could occur due to contamination from an inadvertent spill.

4.4.1.2 Implementation Phase

Impacts on geology and topography would be long-term, direct, minor, and adverse from the compaction of soil, degradation in soil productivity, alteration of storm water drainage and the percolation of rainwater. An ESCP would be developed for the Implementation Phase as described in **Section 4.4** to minimize soil erosion and sedimentation during implementation. Additionally, the USAF would also implement spill prevention and control mitigation measures described in **Section 4.12.** These mitigation measures would minimize adverse impacts on geological resources and soils that could occur due to contamination from an inadvertent spill.

4.4.2 Alternative 2 – Modified Tinian Alternative

4.4.2.1 Construction Phase

4.4.2.1.1 North Option

Impacts on soils from implementing Alternative 2 North Option on Tinian would be anticipated to be similar to, but greater than, those described for Alternative 1 as 4,483,194 ft^2 of new impervious surface would be required. Therefore, short- and long-term, direct, minor to moderate, adverse impacts would be anticipated due to soil disturbance, compaction, erosion and sedimentation during construction. The North Option would require construction of taxiways to connect the cargo pad and parking aprons to the runway and to connect the existing runway to the existing taxiway, and would reroute 8th Avenue on the western side of the runway so that it avoids the proposed parallel taxiway area.

Although mitigation measures such as developing an ESCP and following the CNMI standards for erosion in sediment control, described in **Section 4.4,** would be implemented to minimize soil erosion and sedimentation during construction, minor to moderate, adverse impacts on geology and soil would be anticipated due to disturbance and construction of an additional 4,483,194 $ft^{2\ of}$ new impervious surfaces.

During construction, the USAF would also implement the spill prevention and control mitigation measures described in **Section 4.12.** These mitigation measures would minimize adverse impacts on geological resources and soils that could occur due to contamination from an inadvertent spill.

4.4.2.1.2 South Option

Under the Alternative 2 South Option, the construction footprint would be 1,650,579 ft^2 less than that described under the North Option. The South Option does not require any additional taxiways or road reroutes. Therefore, minor impacts on soils due to soil disturbance, compaction, erosion and sedimentation during construction would be expected.

4.4.2.2 Implementation Phase- North and South Options

Implementation of Alternative 2 on Tinian would result in impacts similar to those described for Alternative 1. Therefore, long-term, direct, minor, adverse impacts on geology and soil would be anticipated under the Implementation Phase for Alternative 2.

4.4.3 Alternative 3 – Hybrid Modified Alternative

4.4.3.1 Construction Phase

4.4.3.1.1 Saipan

The construction footprint under Alternative 3 on Saipan would be less than that described under Alternative 1. The maximum increase in impervious surfaces is estimated to be 388,557 ft^2 (8.9 acres), which is approximately 856,825 ft^2 (19.7 acres) less than Alternative 1. Less impervious surfaces would result in less compaction of soil, degradation in soil productivity, alteration of storm water drainage and infiltration.

Therefore, short-term, direct, negligible to minor adverse impacts on geology and soil resources would be expected under the Construction Phase of Alternative 3 on Saipan.

4.4.3.1.2 Tinian

NORTH OPTION

Under the Construction Phase of Alternative 3 on Tinian North Option, the construction footprint would be less than that described under the Alternative 2 North Option. The maximum increase in impervious surfaces is estimated to be 3,569,972 ft^2 (82.0 acres), which is approximately 913,222 ft^2 (21.0 acres) less than Alternative 2 North Option. Less impervious surfaces would result in less compaction of soil, degradation in soil productivity, alteration of storm water drainage and infiltration.

Therefore, short-term, direct, minor adverse impacts on geology and soil resources would be expected under the Construction Phase of Alternative 3 on Tinian North Option.

SOUTH OPTION

Under the Construction Phase of Alternative 3 on Tinian South Option, the construction footprint would be less than that described under the Alternative 2 South Option. The maximum increase in impervious surfaces is estimated to be 1,935,772 ft^2 (44.4 acres), which is approximately 896,843 ft^2 (20.6 acres) less than the Alternative 2 South Option on Tinian and 1,634,200 ft^2 (37.5 acres) less than the Alternative 3 North Option on Tinian. Less impervious surfaces would result in less compaction of soil, degradation in soil productivity, alteration of storm water drainage and infiltration.

Therefore, short-term, direct, minor adverse impacts on geology and soil resources would be expected under the Construction Phase of the Alternative 3 South Option on Tinian

4.4.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.4.3.2.1 Saipan

Under Alternative 3 on Saipan, impacts on geology and soils would be the same as those described under Alternative 1. The same number of aircraft operations would occur and number of personnel requiring lodging would be the same. Therefore, long-term, direct, minor, adverse impacts on geology and soils would be expected under Alternative 3 on Saipan.

4.4.3.2.2 Tinian – North and South Options

Under Alternative 3 on Tinian, impacts on geology and soils would be the same as those described under Alternative 2. The same number of aircraft operations would occur and number of personnel requiring lodging would be the same. Therefore, long-term, direct, minor, adverse impacts on geology and soils would be expected under Alternative 3 on Tinian.

4.4.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.4.2.1** and **3.4.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions. Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on geological resources and soils would be expected as a result of the No Action Alternative. Geological resources on Saipan and Tinian would not be disturbed as a result of the Construction or Implementation Phase of the Proposed Action. The No Action Alternative would result in a continuation of existing conditions.

4.5 Water Resources

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. Impacts on water resources were assessed by determining if the proposed action would do one or more of the following:

- Substantially reduce water availability or supply to existing users
- Create or contribute to overdraft of groundwater basins
- Exceed safe annual yield of water supply sources
- Cause a violation of water quality standards or increase the magnitude or frequency of an existing water quality violation
- Endanger public health by creating or worsening health hazard conditions

- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The potential effect of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

The USAF would implement mitigation measures during the Construction Phase and the Implementation Phase of Alternative 1, Alternative 2, and Alternative 3, regardless of alternative, to minimize or avoid impacts on water resources. The mitigation measures applicable to all alternatives are described in the following paragraphs and are described in more detail in the EFH Assessment prepared for this project and provided in **Appendix B** (USAF 2016).

Mitigation Measures During Construction and Implementation for Water Resources

Water Quality. The USAF would ensure that any storm water runoff or release from the project is consistent with CNMI Water Quality Standards (CNMI BECQ 2014a). **Table 4.5-1** provides the CNMI BECQ-published water quality standards for the waters of CNMI, which are the minimum water quality criteria that the USAF would comply with for discharges into CNMI waters (CNMI BECQ 2014a). The USAF would comply with CNMI water quality standards in compliance with a Clean Water Act (CWA), Section 401 Certification.

NPDES and SWPPP. The USAF would manage storm water runoff during construction and for operation of the proposed facilities after construction is complete in compliance with a USEPA NPDES permit. A SWPPP would be developed to support this permit in compliance with USEPA guidelines. The SWPPP would be completed prior to submitting the Notice of Intent for permit coverage. The SWPPP would describe responsible parties; site evaluation, assessment, and planning; documentation of compliance with other federal requirements; erosion and sediment controls; permanent construction BMPs; pollution prevention standards; inspection and corrective actions; training requirements; certification and notification requirements; and operation and maintenance of permanent storm water controls.

Mitigation Measures During Construction for Water Resources

Storm Water Management. The USAF would design all construction site storm water management measures to accommodate (safely convey without creating erosive conditions) the 10-year frequency storm. The 10-year frequency storm represents a large event that will generally produce significant runoff and yet has a relatively high chance of occurring in any given year (i.e., 10 percent) (CNMI BECQ and GEPA 2006).

The USAF would design all temporary sediment trapping devices to retain runoff from a minimum of the 1.5-inch precipitation event. The 1.5-inch storm represents a frequent event that generates runoff and potential sediment load. In the CNMI and Guam, the 1.5-inch event is equal to or greater than approximately 90 percent of precipitation events and, therefore, a design criterion that requires the capture of this event will capture approximately 90 percent of the annual sediment load from construction sites (CNMI BECQ and GEPA 2006).

Table 4.5-1. 2014 CNMI Water Quality Standards

Criteria	Level
Enterococci	Will not exceed a geometric mean of 35 per 100 mL based on samples taken in any 30-day interval. The Statistical Threshold Value is 130 Enterococci per 100 mL.
E. coli	Will not exceed a geometric mean of 126 per 100 mL based on samples taken in any 30 day interval. The Statistical Threshold Value is 410 E. coli per 100 mL.
pH	Will not deviate more than 0.5 unit from a value of 8.1; no lower than 7.6 or higher than 8.6.
Nitrate-Nitrogen	Concentration will not exceed 0.20 mg/L.
Total Nitrogen	Concentration will not exceed 0.40 mg/L.
Orthophosphate	Concentration will not exceed 0.025 mg/L.
Total Phosphorous	Concentration will not exceed 0.025 mg/L.
Ammonia	Concentration will not exceed 0.02 mg/L.
Dissolved oxygen	Concentration all waters will not be less than 75 percent saturation. Where natural conditions cause lower dissolved oxygen levels, controllable water quality factors shall not cause further reductions.
Total Suspended Solids (TSS)	Concentrations of suspended matter at any point will not be increased from ambient conditions at any time, and should not exceed 5 mg/l except when due to natural conditions.
Salinity	No alterations of the marine environment will occur that would alter the salinity of marine or estuarine waters more than 10 percent from ambient conditions or which would otherwise adversely affect the indigenous biota and sedimentary patterns, except when due to natural causes.
Temperature	Water temperature will not vary by more than 1.0ºC from the ambient conditions.
Turbidity	Turbidity at any point, as measured by nephelometric turbidity units (NTU), will not exceed 0.5 NTU over ambient conditions.
Oil and Petroleum Products	The concentration of oil or petroleum products in any Commonwealth or State waters will not: (a) be detectable as a visible film, sheen, or discoloration of the surface, or cause an objectionable odor, (b) cause tainting of fish or other aquatic life, be injurious to the indigenous biota, or cause objectionable taste in drinking water. (c) form an oil deposit on beaches or shoreline, or on the bottom of a body of water.

Source: CNMI BECQ 2014a

The level given is the most stringent standard for the marine waters of Tinian. Less stringent standards are applicable for some criteria for discharges into the San Jose harbor or fresh waters.

For maximum efficacy, the USAF site-specific storm water management measures would include some, or all, of the following to manage storm water runoff from the 10-year frequency storm: stabilized construction entrances, silt fencing, berms and swales, check dams, vegetated channels, basins and traps, stabilization, erosion control blankets, inlet protection, outlet protection, and level spreaders.

Monitoring. Prior to the start of construction, and as part of the planning and NPDES permitting process, baseline percolation rates and other parameters necessary to properly design and permit the storm water management system would be measured at the areas proposed for construction. Preconstruction water quality also would be measured at the outflows of any existing drainage systems to establish a baseline for storm water quality. Should the assessment of impacts provided in **Sections 4.5.1, 4.5.2,** or **4.5.3** change based on additional site specific data developed during this permitting process, the USAF would coordinate with the Natural Resources Trustees, and USEPA Region 9, the permitting authority, to ensure resources are appropriately protected.

All storm water management structures and practices would be inspected and maintained during all stages of the construction process in accordance with the SWPPP and CNMI regulations to ensure proper function. Inspections would be conducted by on-site USAF or contractor personnel. At a minimum, those inspections would occur following major rainfall events to ensure that storm water control structures are functioning as designed and remain effective. During events that cause sufficient surface flows, water quality would be sampled at the outfall of existing drainage systems.

The USAF would implement an adaptive management approach that would be based on information obtained during regular monitoring and inspection of construction storm water management controls. The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. The USAF would follow Engineering Technical Letter (ETL) 14-1 *Construction and Operation and Maintenance Guidance for Storm Water Systems* which provides inspection checklists and schedules for each type of storm water management control that would be followed for inspections and maintenance.

Mitigation Measures During Implementation for Water Resources

***Storm Water Management*.** To prevent adverse impacts of storm water runoff after construction is complete, the USAF would seek to include the following performance standards, as recommended by the 2006 *CNMI and Guam Storm Water Management Manual* (CNMI BECQ and GEPA 2006), to the maximum extent technically feasible, in the design of the project. The USAF would focus on the use of strategically placed berms to intercept surface water flows from impervious surfaces and promote rapid infiltration to maintain pre-development hydrological conditions and avoid an increase in the runoff of sediment and fresh water.

- *Standard 1:* The USAF would strive to reduce the generation of storm water runoff and utilize pervious areas for storm water treatment. For development sites over 1 acre, such as this project, impervious cover will not exceed 70 percent of the total site area.
- *Standard 2:* Storm water management would be provided through a combination of the use of structural and non-structural practices.
- *Standard 3:* All storm water runoff generated from the project would be adequately treated to the maximum extent technically feasible if it would result in discharge into jurisdictional wetlands or inland and coastal waters of CNMI.
- *Standard 4:* Pre-development annual groundwater recharge rates and runoff rates to coastal waters would be maintained by promoting infiltration through the use of structural and non-structural methods.

- *Standard 5:* Structural storm water BMPs would be designed to remove 80 percent of the average annual post development total suspended solids (TSS) load and match or exceed predevelopment infiltration rates, as possible. It is presumed that a BMP complies with this performance standard if it is:
  - Sized to capture the prescribed water quality volume (WQ_v)
  - Designed to match or exceed pre-development infiltration rates
  - Designed according to the specific performance criteria prescribed by the *CNMI and Guam Storm Water Management Manual* (CNMI BECQ and GEPA 2006)
  - Constructed properly
  - Maintained regularly.
- *Standard 6*: The post-development peak discharge rate frequency would not exceed the pre-development peak discharge rate for the 25-year frequency storm event.
- *Standard 7:* To protect stream channels from degradation, a channel protection volume would be provided by means of 24 hours of extended detention storage for the one-year frequency storm event.

The USAF would also implement low-impact development (LID) technologies for storm water management which would be consistent with LID requirements in UFC 3-210-01 *Low Impact Development.* Examples of structural storm water management LID techniques include infiltration, filtering practices, and open channels. The storm water management system would be designed to capture, at a minimum, the 95th percentile rainfall event. The storm water management system and features, developed consistent with UFC 3-210-01 *Low Impact Development,* would also be designed to meet water quality criteria, overland erosion and channel protection criteria, overbank flood control/receiving stream criteria, and recharge criteria. A downstream analysis would also be conducted. Additional LID site features that the USAF could deploy include rain gardens, vegetated filter strips, downspout disconnection, reduced impervious area, tree preservation or re-vegetation using native plants, soil amendments.

Monitoring. The goal of LID is to retain the same amount of rainfall within the development site as was retained on the site prior to the project. The USAF would conduct post-construction site visits to inspect the system and assess the as-built LID features and validate if they have been constructed according to plans and specifications.

All storm water management structures and practices would be inspected and maintained in accordance with SWPPP and CNMI regulations to ensure proper function. Inspections would be conducted by on-site USAF or contractor personnel. At a minimum, those inspections would occur following major rainfall events to ensure that storm water control structures are functioning as designed and remain effective. During events that cause sufficient surface flows, water quality would be sampled at the outfalls of the airport storm water drainage system.

The USAF would also implement an adaptive management approach that would be informed by information obtained during regular monitoring and inspection of permanent storm water management controls. The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. The USAF would follow ETL 14-1 which provides inspection checklists and schedules for each type of storm water management control.

Mitigation measures provided in **Section 4.4** would be implemented for erosion and sediment control both during and after construction, and would minimize impacts on water resources by controlling sedimentation. Mitigation measures for spill prevention and control are provided in **Section 4.12. Section 4.13** includes potential impacts on and mitigation measures for the existing water supply and water infrastructure.

4.5.1 Alternative 1–Modified Saipan Alternative

4.5.1.1 Construction Phase

Surface Water. Short-term, direct, minor adverse impacts on surface water resources could occur under Alternative 1. Impacts on surface water could result from a reduction in water quality, increased storm water runoff, and altered hydrologic conditions. However, these impacts would be avoided or minimized through use of mitigation measures identified in **Section 4.5,** such as storm water control measures and water quality monitoring**.**

Under Alternative 1, adverse impacts on water quality in downgradient surface water bodies and nearshore waters could occur. Construction activities such as clearing, grading, trenching, and excavating would displace soils and sediment. If not managed properly, disturbed soils and sediments could be washed into nearby surface water bodies or nearshore waters during storm events and reduce water quality. However, mitigation measures to control sediment described in **Section 4.4.** would reduce these impacts.

Under Alternative 1, adverse impacts on water resources would be expected as a result of land development activities altering the local hydrologic cycle in the Project Area. Initial land clearing would remove vegetation that evapotranspirates a large proportion of rainfall that falls in the Project Area. Grading activities would remove natural depressions that might serve to pond storm water temporarily and naturally infiltrate precipitation into the groundwater. Removal of vegetation and the soil's humus layer would further decrease storm water interception and increase runoff and soil erosion in the area.

Storm Water*.* Short-term, direct, minor adverse impacts on storm water resources could occur under Alternative 1. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. The discharge of storm water runoff from construction activities at Saipan International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Saipan International Airport and the Seaport, and the high infiltration rates of the island, the impacts would not be significant.

Groundwater. Short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under Alternative 1. Impacts on groundwater resources could result from a reduction in groundwater recharge and possible contamination to the groundwater lens.

For site preparation and construction activities, potential environmental consequences can include groundwater contamination from stormwater runoff that may contain elevated sediment concentrations, and from spills and leaks of chemicals such as lubricants, fuels, or other construction materials. Due to the high permeability of the limestone on Saipan, the Mariana Limestone Aquifer could be very susceptible to contamination. Therefore, stormwater generated during construction would be monitored for water quality to protect the quality of groundwater resources. Stormwater management and infiltration features would not be located in close proximity to the wellhead protection area at Saipan International Airport (Isley Field) to ensure protection of a safe drinking water supply. The potential for contaminated storm water runoff from the construction site would be minimized through development and implementation of a site-specific ESCP described in **Section 4.4**, which describes the BMPs to be implemented onsite to eliminate or minimize nonpoint source pollution; and the development and implementation of a SWPPP to prevent contaminated storm water runoff. Potential groundwater contamination from spills and leaks from fuel storage and equipment maintenance would also be minimized through the development and implementation of an Spill Prevention, Control, and Countermeasure (SPCC) Plan and Facility Response Plan (FRP), which are described in **Section 4.12**. Additionally, as described in **Section 4.12**, all construction equipment would be maintained according to the manufacturer's specifications and all fuels and other potentially hazardous materials would be contained and stored appropriately. Therefore, adverse impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during construction activities are anticipated to be negligible to minor.

Clearing and grading activities would reduce infiltration by removing vegetation and natural depressions that might serve to pond storm water temporarily and naturally infiltrate precipitation into the groundwater. It is also assumed that the USAF would use commercially available water for dust suppression during construction, which could be sourced from groundwater. This could result in a lowering of the water table and a reduction of the thickness of the groundwater lens. However, these impacts would be avoided or minimized through use of mitigation measures identified in **Section 4.5**, such as compliance with applicable permits and regulations, and coordination with the CUC, as described in **Section 4.13**.

Flood Zones. No flood zones occur within the proposed Saipan International Airport or Port of Saipan fuel site Project Areas; therefore, no impacts on flood zones would be expected under Alternative 1.

4.5.1.2 Implementation Phase

Surface Water. Long-term, direct, minor adverse impacts on surface water resources could occur under Alternative 1 during implementation. Impacts on surface water could result from a reduction in water quality, increased stormwater runoff, and altered hydrologic conditions. However, these impacts would be avoided or minimized through use of mitigation measures identified in **Section 4.5,** such as storm water control measures and water quality monitoring**.**

Storm Water. Long-term, direct, minor adverse impacts on storm water could occur under Alternative 1 during implementation. Under Alternative 1, the maximum increase in impervious surfaces is estimated to be 1,245,382 ft^2 (28.6 acres). The volume of stormwater runoff increases sharply with impervious cover. For example, a 1-acre parking lot can produce

16 times more stormwater runoff than a 1-acre grassland each year (Schueler 1994). As described in **Section 4.5**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface water associated with the permanent increase in impervious surfaces. Some stormwater management efforts are already used at Saipan International Airport and at the seaport; however, due to the proposed large increase in impervious surfaces, these stormwater management features could be re-sized or supplemented to accommodate the increase in stormwater runoff from the improved areas. Alternative 1 would involve the use of low-impact development strategies to comply with EISA Section 438 and would be designed in accordance with the *CNMI BECQ/GEPA Storm Water Management Manual* (CNMI BECQ and GEPA 2006), as described in **Section 4.5**.

Groundwater. Long-term, direct and indirect, minor, adverse impacts on groundwater would be expected under Alternative 1 Implementation Phase. Under Alternative 1, replacement of pervious surfaces with impervious surfaces could result in depletion of groundwater resources and increased salt water intrusion to drinking water wells. Additionally, impervious surfaces preclude the natural infiltration of rainwater, thereby reducing the groundwater recharge rate. Stormwater directed from the new impervious areas would be monitored for water quality to protect the quality of groundwater resources. The USAF would focus on the use of LID technologies for storm water runoff, such as berms and infiltration, which would minimize impacts to groundwater resources and increase recharge rates. Storm water management and infiltration features would not be located in close proximity to the wellhead protection area at Saipan International Airport (Isley Field) to ensure protection of a safe drinking water supply.

Based on up to 265 personnel using an average of 98 gallons of water per day per person (USGS 2009b), implementation of Alternative 1 would result in the consumption of up to 25,970 gpd, which is approximately 0.5 percent of the daily water production capacity, and approximately 2 percent of the daily drinkable water capacity in Saipan. As described in **Section 4.13.1**, the existing water supply system on Saipan produces approximately 10 million gpd; however, the CUC estimates that approximately 75 to 80 percent of CNMI's potable water supply is lost as a result of leaks in the piping system (DON 2015a). Additionally, due to high chloride concentrations, only approximately 1.5 million gpd meet USEPA drinking standards (CNMI Department of Commerce 2009). As described in **Section 4.13,** the USAF would coordinate with the CUC to ensure that adequate water supply is available and would identify other methods to obtain drinking water if required.

Impacts on groundwater quality would also be expected as a result of sheet runoff or petroleum spills from fuel storage and aircraft-refueling activities at Saipan International Airport and the proposed fuel tank site at the Port of Saipan. However, these impacts would be avoided or minimized through implementation of the various applicable Federal and CNMI storm water management measures, including water quality monitoring and development of a SWPPP described in **Section 4.5** so that petroleum and other contaminants are prevented from reaching the underlying aquifer. The USAF would also implement proper secondary containment and maintenance of fuel storage and delivery equipment, and a SPCC plan and FRP as described in **Section 4.12**. Therefore, adverse impacts on groundwater quality as a result of accidental spills of petroleum or other contaminants during fuel storage or aircraft-refueling activities are anticipated to be negligible to minor. Therefore, significant impacts on groundwater are not expected.

4.5.2 Alternative 2–Modified Tinian Alternative

4.5.2.1 Construction Phase

4.5.2.1.1 North Option

Surface Water. Under the Alternative 2 North Option, impacts on surface water resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short-term, direct, minor, adverse impacts on surface water would be expected from the construction activities proposed under the Alternative 2 North Option.

Storm Water. Short-term, direct, minor adverse impacts on storm water resources could occur under Alternative 2 North Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. The discharge of storm water runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Tinian International Airport and the Seaport, and the high infiltration rates of the island, the impacts would not be significant.

Groundwater. Under the Alternative 2 North Option, impacts on groundwater resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under the Alternative 2 North Option. Impacts on groundwater resources could result from a reduction in groundwater recharge and possible contamination to the groundwater lens. As described in **Section 4.5 and 4.5.1**, impacts to groundwater during construction would be minimized by implementing mitigation measures including but not limited to water quality monitoring and an ESCP, SWPPP, SPCC Plan, and FRP.

Flood Zones. No impacts on floodplains would be expected from the construction activities proposed under the Alternative 2 North Option. Although the area designated as Flood Zone A is adjacent to the proposed taxiways, no impacts on floodplains would be expected. Because these flood zone areas are only designated as such due to their potential to hold water during heavy rain events and because these are not associated with floodplains of surface water bodies, these areas would not be protected under EO 11988, *Floodplain Management*. During and after construction, water from heavy rain would be addressed by permit conditions of the associated SWPPP.

4.5.2.1.2 South Option

Surface Water. Under the Alternative 2 South Option, impacts on surface water resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short-term, direct, minor, adverse impacts surface water would be expected from the construction activities proposed under Alternative 2 South Option.

Storm Water. Short-term, direct, minor adverse impacts on stormwater could occur under the Alternative 2 South Option. Impacts on stormwater would be similar to, but less than, the

Alternative 2 North Option, which has a larger construction footprint than the South Option, and therefore fewer construction-related impacts would be expected. Mitigation measures would be implemented as described for the Alternative 1 and Alternative 2 South Option in **Sections 4.5, 4.5.1,** and **4.5.2.1.1**.

Groundwater. Short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under Alternative 2. Under Alternative 2 South Option, impacts on groundwater resources would be similar to, but greater than, Alternative 1 due to the larger construction footprint of Alternative 2. Therefore, short- and long-term, minor to moderate adverse impacts on groundwater resources could occur under Alternative 2 South Option. Impacts on groundwater resources could result from a reduction in groundwater recharge and possible contamination to the groundwater lens. However, these impacts could be avoided or minimized by implementing mitigation measures including but not limited to water quality monitoring and an ESCP, SWPPP, SPCC Plan, and FRP as described in **Sections 4.5 and 4.5.1**.

Flood Zones. No impacts on floodplains would be expected from the construction activities proposed under Alternative 2 South Option. Although an area designated as Flood Zone A within the proposed fuel tank site at Tinian International Airport would potentially need to be filled, this flood zone area is not associated with surface water bodies and would not be protected under EO 11988, *Floodplain Management*.

4.5.2.2 Implementation Phase- North and South Options

Surface Water. Long-term, direct, minor adverse impacts on surface water resources could occur under Alternative 2 during Implementation. Impacts on surface water could result from a reduction in water quality, increased storm water runoff, and altered hydrologic conditions. However, these impacts would be avoided or minimized through use of mitigation measures identified in **Section 4.5**, such as storm water control measures and water quality monitoring.

Storm Water. Long-term, direct, minor adverse impacts on storm water could occur under Alternative 2 during Implementation. The maximum increase in impervious surfaces is estimated to be 4,483,194 ft^2 (103.0 acres) for the North Option and 2,832,615 ft^2 (65.0 acres) for the South Option. As the Preferred Alternative, the USAF developed a storm water management conceptual site design for Alternative 2 to support the EFH consultation, which is provided in **Appendix B**. The conceptual design was based on the North Option because it would have the greatest potential increase in impervious surfaces. As described in **Section 4.5**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface water associated with the permanent increase in impervious surfaces. Alternative 1 would involve the use of low-impact development strategies to comply with EISA Section 438 and would be designed in accordance with the *CNMI BECQ/GEPA Storm Water Management Manual* (CNMI BECQ and GEPA 2006), as described in **Section 4.5**.

Groundwater. Long-term, direct and indirect, minor, adverse impacts on groundwater would be expected under Alternative 2 Implementation Phase. Under Alternative 2, replacement of pervious surfaces with impervious surfaces could result in depletion of groundwater resources and increased salt water intrusion to drinking water wells.

Based on the available withdrawal data, Tinian is capable of producing approximately 1,260,000 gallons of water per day. However, implementation of Alternative 2 would result in the consumption of up to 25,970 gpd, based on up to 265 personnel using an average of 98 gpd per person (USGS 2009b). Water would also be required to support fire suppression. Analysis of groundwater and drinking water requirements is provided in **Section 4.13** and concludes that the USAF would install groundwater wells in manage withdrawals to ensure that the projected increase in potable water demand would not result in substantial additional groundwater withdrawals with minimal increase in salinity intrusions into the groundwater aquifer.

As described under **Section 4.5**, and Alternative 1 in **Section 4.5.1.1**, would focus on the use of LID technologies for storm water runoff, such as berms and infiltration to minimize impacts to groundwater resources and increase recharge rates and would implement stormwater management and spill control measures to prevent groundwater contamination.

4.5.3 Alternative 3–Hybrid Modified Alternative

4.5.3.1 Construction Phase

4.5.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be considerably less than that described under Alternative 1. The maximum increase in impervious surfaces is estimated to be 388,557 ft^2 (8.9 acres), which is approximately 856,825 ft^2 (19.7 acres) less than Alternative 1. Less construction and ground disturbance would reduce impacts related to storm water runoff, infiltration, and potential surface water and groundwater contamination. Therefore, short-term, direct, negligible adverse impacts on surface water, storm water, and groundwater resources would be expected under the Construction Phase of Alternative 3 on Saipan.

4.5.3.1.2 Tinian

NORTH OPTION

Under the Construction Phase of Alternative3 North Option on Tinian, the construction footprint would be less than that described under Alternative 2 North Option. The maximum increase in impervious surfaces is estimated to be 3,569,972 ft^2 (82.0 acres), which is approximately 913,222 ft^2 (21.0 acres) less than Alternative 2. Less construction and ground disturbance would reduce impacts related to storm water runoff, reduced infiltration, and potential surface water and groundwater contamination. Therefore, short-term, direct, minor adverse impacts on surface water, storm water, and groundwater resources would be expected under the Construction Phase of Alternative 3 North Option on Tinian.

SOUTH OPTION

Under the Construction Phase of Alternative 3 South Option on Tinian, the construction footprint would be less than that described under Alternative 2 South Option. The maximum increase in impervious surfaces is estimated to be 1,935,772 ft^2 (44.4 acres), which is approximately 896,843 ft^2 (20.6 acres) less than the Alternative 2 South Option and 1,634,200 ft^2 (37.5 acres) less than the Alternative 3 North Option. Less construction and ground disturbance would reduce impacts related to storm water runoff, reduced infiltration, and potential surface water and groundwater contamination. Therefore, short-term, direct, minor adverse impacts on surface water, storm water, and groundwater resources would be expected under the Construction Phase of Alternative 3 South Option.

4.5.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.5.3.2.1 Saipan

Under Alternative 3 on Saipan*,* impacts on water resources during the Implementation Phase would be similar or the same as those described under Alternative 1. A less amount of impervious surface would reduce impacts related to stormwater runoff, reduced infiltration, and potential surface water and groundwater contamination. However, the same number of personnel and associated water requirements would be required. Therefore, long-term, indirect and direct, negligible to minor, adverse impacts on surface water, storm water, and groundwater supply and quality would be expected under Alternative 3 on Saipan*.*

4.5.3.2.2 Tinian- North and South Options

Under Alternative 3 on Tinian, impacts on water resources during the Implementation Phase would be the similar or the same as those described under Alternative 2. A less amount of impervious surface would reduce impacts related to stormwater runoff, reduced infiltration, and potential surface water and groundwater contamination. However, the same number of personnel and associated water requirements would be required. The same size fire suppression water tanks would also be required. Therefore, long-term, indirect and direct, negligible to minor, adverse impacts on surface water, storm water, and groundwater supply and quality would be expected under Alternative 3 on Tinian*.*

4.5.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.5.2.1** and **3.5.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at existing airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions. Planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No

Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on water resources would be expected as a result of the No Action Alternative. Hydrologic conditions within the Project Areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.6 Terrestrial Biological Resources

Issues and concerns addressed in this section include the potential direct, indirect, and cumulative impacts of construction and implementation of the alternatives on terrestrial biological resources. Impacts can be either temporary (reversible) or permanent (irreversible). Direct and indirect impacts are distinguished as follows.

Direct impacts are associated with proposed construction activities (e.g., ground-disturbing activities) and implementation (e.g., aircraft overflights). Potential types of direct impacts include the following:

- Loss of habitat due to vegetation removal during construction
- Temporary loss of habitat during construction from noise, lighting, and human activity
- Potential loss of habitat due to increased noise, including proposed aircraft activities
- Injury or mortality to plants and animals, including special-status species, caused by the action.

Indirect impacts are caused by or result from project-related activities, are usually later in time, and are reasonably foreseeable (e.g., increased likelihood of nonnative, invasive species moving into the area after disturbance). Potential indirect impacts include the following:

- Disturbances from human activity, noise, and lighting that could impact unoccupied suitable habitat for special-status species
- Introduction of new nonnative, invasive species or increased dispersal of existing nonnative, invasive species
- Adverse impacts from pollutants that are released during construction or military operations.

Determination of the significance of wetland impacts is based on (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high-value wetlands would be adversely affected.

The level of impact on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. Impacts on biological resources are considered significant if species or habitats of high concern are adversely affected over relatively large areas, or disturbances cause reductions in population size or distribution of a species of special concern. A habitat perspective is used to provide a framework for analysis of general classes of impacts (i.e., removal of critical habitat, noise, human disturbance).

Ground disturbance and noise might directly or indirectly cause potential impacts on terrestrial biological resources. Direct impacts from ground disturbance were evaluated by identifying the types and locations of planned ground-disturbing activities and determining the types of biological resources that use those areas. Mortality of individuals, habitat removal, and damage or degradation of habitats might be impacts associated with ground-disturbing activities.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could lead to population declines or local or regional extinction. To evaluate impacts, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area affected to total available habitat within the region, type of stressors involved, and magnitude of the impacts.

ESA Consultation for Terrestrial Species. As a requirement under the ESA, Federal agencies must ensure that their actions do not jeopardize the existence of any threatened or endangered species or adversely modify critical habitat. In addition, the ESA prohibits the "taking" of threatened or endangered animals. Section 7 of the ESA establishes a consultation process with the USFWS that ends with USFWS concurrence or a determination of the risk of jeopardy from a Federal agency project. The USAF prepared the *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* in 2012 for proposed acitivities on Saipan. The USFWS issued the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* in 2013 (USFWS 2013). The USFWS issued an amendment to the Biological Opinion in 2015 that confirmed that the Modified Saipan Alternative is within the scope of the project considered in the Biological Opinion and the effects of this alternative are consistent with those analyzed in the Biological Opinion. The amended Biological Opinion also includes concurrence with the USAF determination that proposed activities on Tinian are not likely to adversely affect nesting sea turtles and documented the USAF's commitment to conduct invasive species control on Tinian, as provided in **Appendix B**. Beyond the 2012 Biological Assessment, the USAF has integrated the requirements of NEPA and the ESA so that all procedures run concurrently. As such, in accordance with 50 CFR Part 402.06(a), the USAF intends to have this EIS stand as the Biological Assessment for threatened and endangered species that could be affected by the project that were not addressed in the 2012 Biological Assessment.

In compliance with the 2013 Biological Opinion and the 2015 Amendment (USFWS 2013, 2015e), the USAF would implement mitigation measures during the Construction Phase and the Implementation Phase of Alternative 1, Alternative 2, and Alternative 3, regardless of alternative, to minimize or avoid impacts to terrestrial biological resources. The mitigation measures applicable to all alternatives are described in the following paragraphs.

Mitigation Measures for Terrestrial Biological Resources During Construction and Implementation

As further described in the Biological Opinion for this project (USFWS 2013, 2015e), which is contained in **Appendix B**, the USAF is committed to implement the following measures for all alternatives to prevent the spread of brown treesnakes and other invasive species.

- Inspect 100 percent of all outgoing cargo and aircraft that are leaving from Guam associated with the Divert project, and 100-percent redundant inspections upon arrival in the CNMI.
- Route inbound personnel and cargo for tactical approach exercises or humanitarian operations (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot be avoided, the USAF would implement appropriate interdiction methods that may include redundant inspections or other interdiction methods.
- Establish and maintain snake-free quarantine areas (barriers) for cargo traveling from Guam to CNMI and other brown treesnake-free areas.
- Develop procedures and protocols specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities, and provide agreed-upon logistical support as needed.
- Working in collaboration with the USFWS and USDA-WS, decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities.
- Provide invasive species awareness training for all military and contractor personnel prior to all Divert training activities.
- Coordinate closely with the USFWS, U.S. Department of Agriculture (USDA), CNMI DLNR, and JRM staff responsible for managing their brown treesnake program, on planning for training activities in the CNMI.

Additional measures to minimize or avoid impacts to biological resources from activities associated with each alternative are described in the **Sections 4.6.1**, **4.6.2**, and **4.6.3**.

4.6.1 Alternative 1–Modified Saipan Alternative

4.6.1.1 Construction Phase

4.6.1.1.1 Vegetation

Long-term, minor, direct, adverse impacts on vegetation would be expected from construction activities associated with this alternative. A total of 30.84 acres would be occupied by new facilities at Saipan International Airport and 4.43 acres would be used at the Port of Saipan (**Table 4.6-1**). At the airport, 15.23 acres of that land is currently maintained as mowed fields or parks and 1.07 acres is paved and located along the edge of the existing taxiway, cargo areas, and aircraft parking areas. Approximately 6.6 acres is currently vegetated with tangantangan forest, and an additional 3.74 acres where the airport fuel tanks and hydrant system would be located was

Table 4.6-1. Area (acres) of Vegetation Communities to be Cleared – Alternative 1

Proposed Additions/ New Facilities	Tangan-tanga n Forest	Mowed Field	Park	Disturbed/ Unmowed	Existing Paved Areas
Parking apron	–	12.49	–		0.33
Cargo pad	1.31	2.51	–		0.60
Maintenance facility	0.83	0.02	–	–	
Hydrant system	–	0.06	3.20	0.44	
Pipeline	0.16	0.14			0.13
Airport fuel storage	4.31	0.01	0.54	3.74	
Seaport fuel site	–	–	–	4.43	
Total (acres)	**6.61**	**15.23**	**3.74**	**8.60**	**1.07**

Source: HDR

cleared in approximately 2011 and is partially revegetated. The proposed 4.43-acre area at the Port of Saipan where the fuel tanks are to be located has a deteriorating asphalt surface with scattered invasive vegetation. Because most areas to be disturbed are bare, have maintained or mowed vegetation, or are dominated by tangantangan and other non-native species, impacts to native vegetation and vegetation communities would be minor. No limestone forest would be disturbed.

Up to an additional 20 acres of land would be required around planned facilities (**Figure 2.5-1**), and some vegetation maintenance could occur within those buffer areas to ensure security of and access to the facilities. That vegetation maintenance would result in a very small additional loss of tangantangan forest and other vegetation communities.

4.6.1.1.2 Wildlife

Short-term, minor, direct and indirect, adverse impacts on wildlife would be expected from construction activities associated with the Project. Facilities will be developed on approximately 31 acres at the airport, including about 6.6 acres of tangantangan forest (**Table 4.6-1**), resulting in the long-term loss of habitat for forest birds and other species. There are over 8,000 acres of tangantangan and other secondary forest vegetation on Saipan (Donnegan et al. 2011); therefore, Alternative 1 would result in a very small decrease in the amount of similar habitat available for wildlife.

Construction activities would likely cause migratory birds and other mobile wildlife to temporarily avoid the grassy edges and other habitat along the taxiways, runways, and other facilities. For example, black noddy and other birds in the area of the rookery observed during field surveys (**Section 3.6.4.1**) might temporarily avoid areas surrounding construction sites. However, that rookery is outside of the areas to be disturbed and would not otherwise be directly or indirectly adversely affected by construction activities. Smaller, less-mobile species and nesting birds could inadvertently be affected during construction activities. To comply with the MBTA, surveys and/or monitoring for nesting birds during construction would be conducted and areas where active nests are found would be avoided, or other measures would be taken to avoid harming any migratory birds, nests, or eggs. Long-term, permanent impacts on native species of wildlife would be less than significant because very little habitat used by those species would be disturbed and because the species observed in the Project Area are abundant in surrounding areas.

Noise created during construction activities could result in temporary adverse impacts on nearby wildlife. Clearing, grading, paving, and building construction can cause an increase in sound that is well above the ambient level. These impacts would include subtle, widespread impacts from the overall elevation of ambient noise levels. This would result in reduced communication ranges, interference with predator/prey detection, or habitat avoidance. More intense impacts would include behavioral change, disorientation, or hearing loss. Predictors of wildlife response to noise include noise type (i.e., continuous or intermittent), prior experience with noise, proximity to a noise source, stage in the breeding cycle, activity, age, and sex composition. Prior experience with noise is the most important factor in the response of wildlife to noise, because wildlife can become accustomed (or habituate) to the noise. The rate of habituation to short-term construction is not known. Wildlife could be permanently displaced from the areas where the habitat is cleared and temporarily dispersed from areas adjacent to the Project Area during construction. Wildlife inhabiting these sites might be displaced, but would be expected to move temporarily to adjacent less-utilized habitat and then potentially return to the area. Increased mortality of less-mobile species would be expected as the result of unavoidable direct impacts associated with construction activities. Impacts on wildlife would be minor.

Nonnative, invasive plant species could expand their distribution on Saipan and additional species could be introduced into the area due to the construction activities. Of particular concern is the potential for the establishment of the brown treesnake. The brown treesnake has decimated bird populations on Guam (Wiles et al. 2003). Because the ecosystem on Saipan is biologically similar to that of Guam, establishment of a brown treesnake population on Saipan would be likely to have consequences similar to those experienced on Guam. Equipment and materials (e.g., for construction) have the potential to carry and therefore spread brown treesnakes to Saipan, increasing the ability of the snake to establish itself islandwide. There have been 71 credible sightings of brown treesnakes on Saipan since 1982 resulting in 11 captures of live snakes, 8 in the vicinity of the port or airport and 3 in the interior of the island (USFWS 2006a). An expert panel was convened by the Department of the Interior, Office of Insular Affairs in 2004 to assess research and control programs relating to the brown treesnake. The report states that repeated sightings of the brown treesnake on Saipan indicate that an incipient (breeding) population is now present there; at the time of the Department of the Interior visit to Saipan in June 2004, about 85 to 90 percent of cargo was being checked (USDOI-OIA 2005). EO 13112 directs agencies to prevent the spread of invasive species in their work. To prevent the introduction of brown treesnakes, and the spread of other invasive species, control and interdiction methods listed in **Section 4.6**, and described in detail in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (**Appendix B)** would be implemented (USFWS 2013). These measures, which include minimizing the routing of shipments through Guam, and redundant inspection of materials that must be shipped from that island, would reduce to a very low level the risk that a brown tree snake would be transported to Saipan during the construction phase of Alternative 1 As described in **Section 4.6,** the USAF would also conduct risk analyses, develop and implement procedures, and participate in regional planning to reduce or eliminate the spread of other invasive species.

4.6.1.1.3 Threatened and Endangered Species

The following threatened and endangered species could occur on Saipan within or near the Project Area (see **Table 3.6-3**) and are therefore analyzed for potential impacts from Alternative 1.

Mariana fruit bat and Micronesian megapode. The Mariana fruit bat and Micronesian megapode are restricted to limestone forests and surrounding areas, primarily on the northern part of the island (USFWS 1998b, USFWS 2009b). Land at and surrounding Saipan International Airport where facilities would be developed and divert activities and exercises would occur has been cleared of native vegetation or is vegetated with second-growth forests dominated by tangantangan. During surveys of the area surrounding Saipan International Airport conducted in 2012 for other rare species and to characterize avian populations (MES 2012), observers were vigilant for megapodes and flying and roosting fruit bats. Even though observation times of those surveys were favorable for detection of these species, no fruit bats or megapodes were observed or heard during any of the surveys. In addition, no habitat was found in the areas surveyed of sufficient quality or quantity to support these species. Because these species are rare or do not occur on the southern part of Saipan and there is no habitat for them within the Project Area, construction of facilities at Saipan International Airport and the Port of Saipan would have no impacts on the Mariana fruit bat and Micronesian megapode as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

Mariana swiftlets. Mariana swiftlets nest in caves located in central Saipan (Cruz et al. 2008) and favor ridge crests and open, grassy areas for foraging (USFWS 1991). No swiftlets were detected during bird surveys conducted at Saipan International Airport during 2012, and the nearest cave used by these birds for roosting and nesting is more than 2 miles north of Saipan International Airport (MES 2012). The clearing of up to 6.6 acres of second-growth forest to construct facilities at Saipan International Airport would have a negligible effect on the availability of foraging habitat for this species because tangantangan forest is common in the area and is not preferred foraging habitat. Therefore, construction on Saipan under Alternative 1 is not likely to adversely affect the Mariana swiftlets and the USAF has received concurrence of this conclusion from the USFWS as required by Section 7 of the Endangered Species Act as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B** (USFWS 2013).

Mariana common moorhen. There are no wetlands in or surrounding the Project Area, and the man-made impoundments there would not be disturbed during construction. Thus, there would be no adverse effects on this species during construction on Saipan, as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B** (USFWS 2013)**.**

Nightingale reed-warbler. Long-term, moderate, direct, adverse impacts on the nightingale reed-warbler would occur as a result of construction of facilities and infrastructure on Saipan. Eight nightingale reed-warbler territories were detected during surveys conducted from January to March 2012 in tangantangan forests north and northwest of the airfield (MES 2012).

Two of the territories detected in 2012 are partially within or adjacent to the proposed location of the fuel tanks, and those areas could be used periodically by reed-warblers from nearby territories. About 3.7 acres of the 8.6-acre site where the fuel tanks would be installed has been cleared and was used as a materials storage area in about 2011 during past construction at Saipan International Airport. Because a portion of that site has been cleared, and the remaining vegetated area was not used, or was used infrequently, by nightingale reed-warblers, there would be minimal direct effects on those territories. However, as suggested by the USFWS (USFWS 2006a), noise, human activities, lights, and other disturbances associated with the construction and operation of the fuel storage system could temporarily adversely affect nightingale reed-warblers in those territories by disrupting or modifying their behavior, further degrading nearby nesting or foraging habitat, causing an increase in predation, or otherwise causing a decrease in reproductive output. The other five nightingale reed-warbler territories would be separated from facilities by a buffer of tangantangan forest of more than 150 feet, and thus would not be directly or indirectly affected, or would be minimally affected, by construction as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

Surveys on Saipan indicate that the nightingale reed-warbler population is declining and has declined since surveys were first conducted in 1982 (USFWS 1998a). The most serious threat is the potential for the establishment of the brown treesnake. Sightings of the brown treesnake on Saipan suggest that it might be in the process of becoming established there (Rodda and Savidge 2007). The spread of the brown treesnake to Saipan would likely cause the nightingale reed-warbler's extirpation there, leaving only a single, small population on Alamagan (USFWS 2005). Construction associated with Alternative 1 could open pathways that could spread invasive species, including the brown treesnake, to habitats of sensitive species.

Because construction of facilities at Saipan International Airport could directly and indirectly affect some nightingale reed-warbler territories, and because aircraft noise during exercises could disrupt the behavior of nightingale reed-warblers in areas surrounding Saipan International Airport (see **Section 4.6.1.2**), the USAF has concluded that this alternative is likely to adversely affect nightingale reed-warblers as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.** Thus, the USAF has completed formal consultation with the USFWS, as required under Section 7 of the ESA, and as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B** (USFWS 2013). In 2015, the USFWS issued and amendment to the Biological Opinion and confirmed that the Modified Saipan Alternative (Alternative 1) is within the scope of the project considered in the 2012 Divert Biological Opinion (**Appendix B**), and the effects of this alternative are consistent with those analyzed in the Biological Opinion (USFWS 2015).

To avoid or minimize impacts on nightingale reed-warblers from construction of facilities at Saipan International Airport, the USAF would implement the following impact-minimization measures identified by the USFWS (USFWS 2008b) for construction activities within nightingale reed-warbler habitat on Saipan.

- Clearing of vegetation would only occur between October through December or April through June, when nightingale reed-warbler nesting activity is not at its peak.
- Laydown yards and other temporary construction facilities would not be located within 50m of nightingale reed-warbler habitat.
- The use of very noisy (greater than 60 dBA) heavy machinery would be limited during the peak breeding season or temporary noise barriers or buffer zones would be installed.
- Temporary fencing would be installed to prevent entry of personnel and equipment into habitat that is to be avoided.
- Construction personnel would receive environmental awareness training.
- A litter-control program would be implemented during construction.

The USAF would also implement the measures described in **Section 4.6** to reduce or eliminate the spread of brown treesnakes and other nonnative species, and would implement all other mitigation measures required as a result of the ESA consultation process as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B** (USFWS 2013). Compliance with CNMI brown treesnake control requirements is considered voluntary and would be fulfilled through compliance with the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (USFWS 2013).

The *Biological Opinion for Divert Activities and Exercises* considered the construction of an east parking apron and fighter jet aircraft operations described in the 2012 Draft EIS as part of Alternative 1. Therefore, mitigation measures, such as purchasing of credits from the Saipan Upland Mitigation Bank, were also included related to these project elements (USFWS 2013). However, the east parking apron and fighter jet aircraft operations were removed from Alternative 1 in the 2015 Revised Draft EIS, and in this Final EIS. Therefore, the related mitigation measures are no longer applicable, as confirmed by the USFWS in the 2015 Amendment to the Biological Opinion (USFWS 2015e).

In addition to these listed species, in October 2015 the USFWS listed two other plant and animal species that are currently known to occur on Saipan, the humped tree snail and the orchid *Dendrobium guamense*. Neither of these species occur in tangantangan thickets or the other vegetation communities at the Saipan International Airport (Rounds 2015), and they would not be affected by the Modified Saipan Alternative.

4.6.1.1.4 Wetlands

Wetlands are attractive to wildlife as water sources and areas of forage. The presence of ephemeral or permanent water sources provides microhabitats that are unique in comparison to the surrounding landscape. Based on the site investigations there are no wetlands in the Project Area; therefore, no impacts on wetlands are expected from construction.

4.6.1.2 Implementation Phase

4.6.1.2.1 Vegetation

Short-term, periodic, direct, minor, adverse impacts on vegetation would be expected from implementation of the Alternative 1. Nonnative, invasive plant could expand their distribution in some areas due to the increase in activities necessary to support divert activities. This is unlikely to impact primary limestone forest because all activities are well away from these forest areas. Therefore, minor, adverse impacts would be expected. EO 13112 directs agencies to prevent the spread of invasive species in their work. To implement this directive and per requirements of the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (USFWS 2013), a Hazard Analysis and Critical Control Points (HACCP) plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products (USFWS 2012), and the additional measures listed at the beginning of **Section 4.6** would be implemented.

4.6.1.2.2 Wildlife

Short-term, periodic, direct, minor, adverse impacts on wildlife would be expected from implementation of Alternative 1. Aircraft operations could result in some migratory bird airstrikes. Conducting all divert activities and exercises from Saipan would add approximately 720 aircraft operations per year, which would be a 1.6 percent increase above the existing number of air operations at Saipan International Airport, and an approximately 20 percent increase in the number of flights by large aircraft (i.e., air carriers, tankers, and similar aircraft). Based on the FAA Strike Database records, there were about five reported strikes per year at Saipan International Airport over the past 5 years (**Section 3.6.4.1**). Assuming a 1.6 percent increase in strikes caused by an increase in air operations, the increase in strikes would be approximately 0.1 per year or approximately one additional reported strike every 10 years. A WHA was conducted at Saipan International Airport, which identifies areas of the airfield and the surrounding region that are attractive to wildlife and provides recommendations to remove or modify the attractive features. Implementation of these measures and measures that are currently employed at the airport in accordance with FAA requirements could minimize the likelihood of strikes. Therefore, significant impacts on migratory birds are not expected and 50 CFR Part 21.15 of the MBTA, which authorizes take incidental to military activities, would be applicable.

Long-term, direct, minor, adverse impacts would be expected from an increase in the frequency of aircraft operations at Saipan International Airport. The impacts of noise are considered minor because the wildlife in this area is already subjected to similar noise levels from aircraft operating from Saipan International Airport. Behavioral responses reflect a variety of states, from indifference to extreme panic. To some extent, responses are species-specific. However, even within a species, responses by individual animals vary. Minor responses that are typical of both birds and mammals include head-raising, body-shifting, and turning and orienting towards the aircraft. Animals that are moderately disturbed usually show nervous behaviors such as trotting short distances (mammals), standing up with necks fully extended and sunning the area (mammals), or walking around and flapping wings (birds). When animals are more severely disturbed, escape is the most common response. Perching or nesting birds might flush (fly up from a perch or nest) and circle the area before landing again. Some birds, particularly waterfowl and seabirds, might leave the area if sufficiently disturbed. There are dozens of reports, mostly from national wildlife refuges, of waterbirds flying, diving, or swimming away from aircraft. This is a widespread and common response. Bird flight responses are usually abrupt, and whole colonies of birds often flush together (NPS 1994). Wildlife present would likely move away from these areas, but there are other large areas of similar habitat nearby where they could move to when disturbed.

4.6.1.2.3 Threatened and Endangered Species

Long-term and periodic, negligible, adverse impacts on terrestrial threatened and endangered species would be expected under the Implementation Phase of Alternative 1.

Mariana fruit bat and Micronesian megapode. As indicated in **Section 4.6.1.1,** because these species are rare or do not occur on the southern part of Saipan and there is no habitat for them within the Project Area, implementation of all aircraft operations from Saipan International Airport would have no impacts, and therefore also no effects under Section 7 of the ESA, on the Mariana fruit bat and Micronesian megapode as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B.**

Mariana swiftlet. The possibility of a swiftlet being harmed by aircraft during divert activities and exercises under the Implementation Phase is discountable because the area is distant from nesting caves, the second-growth forests at the end of the runways are not preferred foraging habitat, and swiftlets likely avoid the busy airspace around Saipan International Airport. Therefore, implementing this alternative at Saipan International Airport is not likely to adversely affect the Mariana swiftlets and the USAF has received concurrence of this conclusion from the USFWS as required by Section 7 of the ESA as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B** (USFWS 2013).

Mariana common moorhen. Mariana common moorhens using artificial impoundments near Saipan International Airport would be exposed to more frequent elevated noise levels from large aircraft during divert activities and exercises. A single moorhen was seen at one golf course pond located about 0.6 mile from Saipan International Airport during four of nine surveys of those impoundments. The golf course pond other impoundments in the area are marginal habitat for moorhens because they have impervious liners that prevent establishment of shoreline emergent vegetation. Because moorhens using those ponds are habituated to frequent noise from current operations at Saipan International Airport, and because the increase in noise from divert activities and exercises would be infrequent, moorhens likely would not alter their behavior, or would only temporarily avoid using those ponds during exercises in response to a temporary increase in noise levels during those activities. Therefore, implementing all divert activities and exercises at Saipan International Airport is not likely to adversely affect the Mariana common moorhen and the USAF has received concurrence with this conclusion from the USFWS as required by Section 7 of the ESA, as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in **Appendix B** (USFWS 2013).

Nightingale reed-warbler. Under Alternative 1, about 720 additional operations by KC-135 tankers or similar aircraft would occur at Saipan International Airport per year. KC-135 aircraft, and other similar military aircraft that might be operated from Saipan International Airport under this alternative, generate sound levels that are similar to large aircraft currently operated from that airport. Because noise levels would be similar to current conditions, impact to nightingale reed-warblers from operation of KC-135 and similar aircraft at Saipan International Airport would be negligible. The *Biological Assessment and Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* concluded that no adverse effects would be expected from the operation of KC-135 aircraft and are provided in **Appendix B**.

4.6.1.2.4 Wetlands

Based on the site investigations there are no wetlands in the Project Area. No impacts on wetlands would be expected due to activities associated with the Implementation Phase.

4.6.2 Alternative 2–Modified Tinian Alternative

4.6.2.1 Construction Phase- North and South Options

4.6.2.1.1 Vegetation

Long-term, minor, direct, adverse impacts on vegetation would be expected from construction activities associated with Alternative 2.

If facilities were to be constructed north of the runway, 97.61 acres would be occupied by those facilities or otherwise cleared of vegetation at Tinian International Airport (**Table 4.6-2**). Most (82.49 acres) of land to be cleared at Tinian International Airport is second-growth tangantangan/ironwood scrub or tangantangan forest, which is very common on Tinian.

Table 4.6-2. Acreages of Vegetation to be Cleared at Tinian International Airport – Alternative 2 North Option

Proposed Additions/ New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road		2.96		
Cargo Pad		6.88		
Fire Pump Building, Tanks, and Wells		1.14		
Fuel Pump Buildings, Tanks, and Fill Stands		1.92		
Maintenance Facility		0.17		
Relocate 8th Ave		0.78	0.15	
Taxiways	14.26	16.65	0.02	0.85
Parking Apron		39.71		
Airport Fuel Tanks		12.11		
Seaport Fuel Storage				5.29
Total	**14.26**	**82.33**	**0.17**	**6.15**

Source: HDR

In addition, 14.26 acres of mowed fields adjacent to the existing taxiway would be occupied for additional taxiways.

If facilities were to be constructed south of the runway, 59.73 acres would be occupied at Tinian International Airport (**Table 4.6-3**). About 37.4 acres of second-growth tangantangan forest would be cleared. In addition, 15.55 acres of mowed field and 6.75 acres of previously developed land would be occupied at the airport. This Option would not require additional taxiways and 8th Avenue would not need to be rerouted.

Table 4.6-3. Acreages of Vegetation to be Cleared at Tinian International Airport – Alternative 2 South Option

Proposed Additions/New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road	0.27	-	3.80	0.00
Cargo Pad	1.69	-	-	3.60
Fire Pump Building, Tanks, and Wells	-	-	1.23	-
Fuel Pump Buildings, Tanks, and Fill Stands	-	-	1.89	-
Maintenance Facility	0.02	-	0.16	
Parking Apron	12.46	-	19.01	3.15
Airport Fuel Tanks	1.11	-	11.35	-
Seaport Fuel Storage	-	-	-	5.29
Total	**15.55**	**0.00**	**37.43**	**12.05**

Source: HDR

Up to an additional 62 acres for the North Option and 41 acres for the South Option would be required as buffer areas around planned facilities (**Figure 2.5-5**), and some vegetation maintenance could occur within those areas to ensure security of and access to the facilities. That vegetation maintenance could result in a small additional loss of tangantangan forest and other vegetation communities.

For both Options, 5.29 acres would be used at the Port of Tinian. That land has been previously cleared of vegetation. No limestone forest would be disturbed on Tinian for either Option.

4.6.2.1.2 Wildlife

Short-term, minor, direct, adverse impacts on wildlife would be expected from construction activities associated with Alternative 2. Up to approximately 83 acres of tangantangan-ironwood forest would be cleared if facilities would be constructed north of the runway, and approximately 37 acres of that vegetation would be cleared if facilities were to be constructed to the south. Forested areas around the airport are used by the Tinian monarch and other forest birds (**Section 3.6.4.2**), and Alternative 2 would cause a long-term loss of habitat for those and some other species. The Tinian monarch was federally delisted in 2004 (69 FR 56367) and delisted by the CNMI government in 2009; however, this endemic species could be threatened by habitat loss. There are over 11,000 acres of tangantangan and other second growth forest vegetation on Tinian (Donnegan et al. 2011); therefore, the Alternative 2 would result in the loss of a small amount of similar available habitat on Tinian.

Migratory birds and other mobile wildlife would temporarily avoid the grassy edges and other habitat along the taxiways, runways, and other facilities during construction. Smaller, less-mobile species and nesting birds could inadvertently be affected during construction activities. To comply with the MBTA, surveys and/or monitoring for nesting birds during construction would be conducted and areas where active nests are found would be avoided, or other measures would be taken to avoid harming any migratory birds, nests, or eggs. Long-term, permanent impacts on native species of wildlife would be less than significant because very little habitat used by those species would be disturbed and because the species observed in the Project Area are abundant in surrounding areas.

Areas adjacent to Tinian International Airport would be subject to disturbance from the construction noise and human activity. Species sensitive to noise and activity would temporarily move to other areas and could return to the area following construction. Long-term, permanent impacts on populations of wildlife would not likely result.

Nonnative, invasive species could affect wildlife or degrade habitat, thus creating indirect impacts. Movement of construction personnel, equipment, and supplies could result in the movement and spread of invasive plant and animal species to Tinian. The potential establishment of the brown treesnake is of great concern on Tinian. There have been 75 confirmed brown treesnake detections throughout the CNMI as of 2008. There have been eight unconfirmed brown treesnake sightings on Tinian: one reported in February 1990, four reported in 1994, and three reported in 2003. If brown treesnakes were to become established (without immediate suppression) on Tinian under Alternative 2, the impacts would likely be similar to those experienced on Guam (DON 2010b). EO 13112 directs agencies to prevent the spread of invasive species in their work. To prevent the introduction of brown treesnakes, and the spread of other invasive species, control and interdiction methods listed at the beginning of **Section 4.6**, and described in detail in the Biological Opinion provided in **Appendix B** would be implemented (USFWS 2013, 2015e). These measures, which include minimizing the routing of shipments through Guam, and redundant inspection of materials that must be shipped from that island, would reduce to a very low level the risk that a brown treesnake would be transported to Tinian during the construction phase of Alternative 2. As described in **Section 4.6**, the USAF would also conduct risk analyses, develop and implement procedures, and participate in regional planning to reduce or eliminate the spread of other invasive species.

4.6.2.1.3 Threatened and Endangered Species

Terrestrial threatened and endangered species would not be affected by construction activities on Tinian. All facilities would be constructed in tangantangan forests, mowed fields, or other disturbed areas (**Tables 4.6-2** and **4.6-3**). Those areas are not suitable habitat for the Mariana fruit bat, Micronesian megapode, Mariana moorhen, or any recently listed species that have potential to occur on Tinian (**Section 3.6.4.2**). In addition, the USAF would implement measures to reduce or eliminate the spread of brown treesnakes and other nonnative species, as described **Section 4.6,** detailed in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI,* and required by the 2015 USFWS amendment to the Biological Opinion (USFWS 2013, USFWS 2015e). The amendment required invasive species control/interdiction measures on Tinian and provided concurrence from USFWS of a no effect determination for listed species on Tinian as provided in **Appendix B**.

4.6.2.1.4 Wetlands

There are no wetlands in the Project Area; therefore, no impacts are expected.

4.6.2.2 Implementation Phase- North and South Options

4.6.2.2.1 Vegetation

Short-term, periodic, minor, direct, adverse impacts on vegetation would be expected from implementation of Alternative 2. Nonnative, invasive plant species could increase in abundance within the Project Area due to the increase in activities necessary to support divert activities. This is unlikely to impact primary limestone forest because all activities are well away from these forest areas. Therefore, impacts would be less than significant. EO 13112 directs agencies to prevent the spread of invasive species in their work. To implement this directive and per requirements of the amendment to the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* (USFWS 2015e), an HACCP plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products (USFWS 2012). The measures listed in the beginning of **Section 4.6** also would be implemented to prevent the spread of brown treesnakes and other invasive species.

4.6.2.2.2 Wildlife

Aircraft operations could result in some additional migratory bird airstrikes. Under Alternative 2, there would be an additional 720 aircraft operations per year, which would be a 5.8 percent increase in the number of air operations at Tinian International Airport. Less than one bird strike per year has been reported at Tinian International Airport (**Section 3.6.4.2**), and this increase in flights therefore would result in a negligible increase mortality of birds and other wildlife. Significant impacts on migratory birds are not expected and 50 CFR Part 21.15 of the MBTA, which authorizes take incidental to military activities, would be applicable.

Long-term, direct, minor, adverse impacts would be expected from the noise generated by operations to support the divert activities at Tinian International Airport. Short duration, loud noise from aircraft taking off and landing during exercises could impact wildlife; however, exposure to elevated noise levels would be brief (seconds) and would occur over a period of no more than 8 weeks of the year. The impacts of noise are considered minor because the wildlife in this area is already subjected to these impacts from Tinian International Airport. Wildlife present would be affected and would move away from these areas, but there are other large areas of similar habitat nearby where they could move to when disturbed.

4.6.2.2.3 Threatened and Endangered Species

Threatened and endangered species would not be affected by implementation on Tinian. Mariana fruit bats and Micronesian megapodes are rare on or extirpated from Tinian and there is no limestone forest or other suitable habitat for any listed species within or near Project Areas. There also are no wetlands or impoundments that would be used by Mariana common moorhens.

4.6.2.2.4 Wetlands

Based on the site investigations there are no wetlands in the Project Area. No impacts on wetlands would be expected due to activities associated with the Implementation Phase of Alternative 2.

4.6.3 Alternative 3–Hybrid Modified Alternative

4.6.3.1 Construction Phase- Saipan and Tinian

4.6.3.1.1 Vegetation

Long-term, minor, direct, adverse impacts on vegetation would be expected on Saipan and Tinian from construction activities associated with Alternative 3.

For this alternative, 13.95 acres at Saipan International Airport would be occupied by facilities or otherwise cleared of vegetation at Saipan International Airport (**Table 4.6-4**), including 5.14 acres of second-growth tangantangan forest that would have to cleared. An additional 10 acres of buffer areas would be required around facilities there, and some vegetation management could be required in those buffers to ensure security of and access to the facilities. That vegetation maintenance could result in a small additional loss of tangantangan forest and other vegetation communities. There would be no construction at the Port of Saipan.

Table 4.6-4. Area (acres) of Vegetation Communities to be Cleared on Saipan – Alternative 3

Proposed Additions/New Facilities	Tangan-tangan Forest	Mowed Field	Park	Disturbed/ Unmowed
Cargo pad	–	3.95	–	0.55
Maintenance facility	0.83	0.02	–	–
Airport fuel storage	4.31	0.01	0.54	3.74
Total (acres)	**5.14**	**3.98**	**0.54**	**4.29**

Source: HDR

On Tinian, 76.64 acres at Tinian International Airport would be occupied or otherwise cleared of vegetation if facilities were constructed on the north side of the runway (**Table 4.6-5**). About 61.5 acres of second-growth tangantangan forest would be cleared. If facilities were to be constructed on the south side of the runway, 39.15 acres would be occupied, including 16.84 acres of growth tangantangan forest (**Table 4.6-6**). An additional 60 acres of buffer areas would be required north of the runway, or 30 acres south of the runway. For both Options, 5.29 acres would be used at the Port of Tinian. That land has been cleared of vegetation. No limestone forest would be disturbed on Saipan or Tinian for this alternative.

4.6.3.1.2 Wildlife

Short-term, minor, direct, adverse impacts on wildlife would be expected from construction activities associated with Alternative 3. There would be a small loss of habitat for migratory and other terrestrial birds, including the Tinian monarch, and other wildlife on both islands, and construction activities could inadvertently affect small nonmobile species. As described in **Sections 4.6.1 and 4.6.2**, the vegetation communities that would be cleared are common on Saipan and Tinian. To comply with the MBTA, surveys and/or monitoring for nesting birds

Table 4.6-5. Acreages of Vegetation to be Cleared on Tinian – Alternative 3 North Option

Proposed Additions/New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road	–	2.96	–	–
Cargo Pad	–	6.88	–	–
Fire Pump Building, Tanks, and Wells	–	1.14	–	–
Fuel Pump Buildings, Tanks, and Fill Stands	–	1.92	–	–
Maintenance Facility	–	0.17	–	–
Relocate 8th Ave	–	0.78	0.15	–
Taxiways	14.26	16.65	0.02	0.85
Parking Apron	–	23.65	–	–
Airport Fuel Tanks	–	7.29	–	–
Seaport Fuel Storage	–	–	–	5.29
Total	**14.26**	**61.36**	**0.17**	**6.15**

Source: HDR

Table 4.6-6. Acreages of Vegetation to be Cleared on Tinian – Alternative 3 South Option

Proposed Additions/ New Facilities	Mowed Field	Tangantangan Ironwood	Tangantangan Forest	Existing Developed
Access Road	0.27	–	3.80	–
Cargo Pad	1.69	–	–	3.60
Fire Pump Building, Tanks, and Wells	–	–	1.23	–
Fuel Pump Buildings, Tanks, and Fill Stands	–	–	1.89	–
Maintenance Facility	0.02	–	0.16	–
Parking Apron	12.46	–	3.49	3.15
Airport Fuel Tanks	1.11	–	6.28	–
Seaport Fuel Storage	–	–	–	5.29
Total	**15.55**	**0.00**	**16.48**	**12.05**

Source: HDR

during construction would be conducted and areas where active nests are found would be avoided, or other measures would be taken to avoid harming any migratory birds, nests, or eggs. Migratory birds and other species sensitive to noise and activity might temporarily move to other areas but likely would return following construction. Long-term, permanent impacts on populations of wildlife would not likely result.

Nonnative, invasive species could affect wildlife or degrade habitat, thus creating indirect impacts. To prevent the introduction of brown treesnakes, and the spread of other invasive species, control and interdiction methods listed at the beginning of **Section 4.6**, and described in detail in the Biological Opinion provided in **Appendix B** would be implemented (USFWS 2013, 2015e). These measures, which include minimizing the routing of shipments through Guam, and redundant inspection of materials that must be shipped from that island, would reduce to a very low level the risk that a brown treesnake would be transported to Tinian during the construction phase of Alternative 2. As described in **Section 4.6**, the USAF would also conduct risk analyses, develop and implement procedures, and participate in regional planning to reduce or eliminate the spread of other invasive species.

4.6.3.1.3 Threatened and Endangered Species

Construction of facilities at Saipan International Airport would require clearing of about 5.14 acres of tangantangan forest, including 4.31 acres for the fuel tanks that is adjacent to areas used by one or more pairs of nightingale reed warblers in 2012, and those areas could be used periodically by reed-warblers from those nearby territories. Because a portion of that site has been cleared, and the remaining vegetated area was not used, or was used infrequently, by nightingale reed-warblers, there would be minimal direct effects on those territories. However, as suggested by the USFWS (USFWS 2006a), noise, human activities, lights, and other disturbances associated with the construction and operation of the fuel storage system could temporarily adversely affect nightingale reed-warblers in those territories by disrupting or modifying their behavior, further degrading nearby nesting or foraging habitat, causing an increase in predation, or otherwise causing a decrease in reproductive output. The other five nightingale reed-warbler territories would be separated from facilities by a buffer of tangantangan forest of more than 150 feet, and thus would not be directly or indirectly affected, or would be minimally affected, by construction as indicated in the USAF *Biological Assessment for Headquarters Pacific Air Forces Divert Activities and Exercises in Saipan* provided in **Appendix B** (USFWS 2013)**.** Applicable measures identified in the Biological Opinion and described in **Section 4.6.1.1** would be implemented during construction activities on Saipan under Alternative 3 to reduce or avoid effects to nightingale reed-warblers. Those measures would eliminate disturbances to this species during the breeding season, minimize habitat loss, and reduce or eliminate noise and other indirect effects to this species.

As confirmed by the USFWS (2015e), construction activities on Tinian would not affect any threatened or endangered species.

As described in **Sections 4.6.1** and **4.6.2**, no other terrestrial threatened or endangered species would be adversely affected by construction on Saipan or Tinian.

4.6.3.1.4 Wetlands

There are no wetlands in the Project Areas on Saipan or Tinian.

4.6.3.2 Implementation Phase- Saipan and Tinian

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.6.3.2.1 Vegetation

Nonnative, invasive plant species could increase in abundance within the Project Areas due to the increase in activities necessary to support divert activities. An HACCP plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products (USFWS 2012). Short-term, periodic, direct, minor, adverse impacts on vegetation would be expected due to potential distribution of nonnative invasive plants.

4.6.3.2.2 Wildlife

Aircraft operations on Saipan and Tinian could result in a very small increase in bird strikes, as discussed in **Sections 4.6.1.2** and **4.6.2.2**.

Long-term, direct, minor, adverse impacts would be expected from the noise generated by operations Saipan and Tinian International Airports. Short duration, loud noise from aircraft taking off and landing during exercises could impact wildlife; however, exposure to elevated noise levels would be brief (seconds) and would occur over a period of no more than 8 weeks of the year. The impacts of noise are considered minor because the wildlife on Saipan and Tinian are already subjected to these impacts from aircraft operations there.

4.6.3.2.3 Threatened and Endangered Species

Threatened and endangered species would not be affected by implementation on Saipan or Tinian. As described in **Section 3.6.4.2**, nightingale reed warblers currently are exposed to noise levels similar to those that would occur during operation of KC-135 aircraft. No other terrestrial threatened or endangered occur in areas that would have increased noise levels or that would otherwise be affected by implementation of divert activities and exercises.

4.6.3.2.4 Wetlands

There are no wetlands in the Project Areas on Saipan or Tinian; therefore, no impacts are expected.

4.6.4 No Action Alternative

Under the No Action Alternative, the existing conditions discussed in **Sections 3.6.4.1** and **3.6.4.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions; planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area; and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on terrestrial biological resources would be expected as a result of the No Action Alternative. Terrestrial biological resources within the Project Areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.7 Marine Biological Resources

Impacts on marine biological resources were assessed using the potential following outcomes:

- Permanent loss of habitat
- Temporary loss or modification of habitat that adversely affects a substantial number of a species
- Permanent loss of feeding and breeding areas of a federally listed species
- Temporary loss or modification of feeding and breeding areas that adversely affects a substantial number of individuals of a species
- Substantial interference with movement of any resident species that results in the inability of the species to survive.

As a requirement under the ESA, Federal agencies must ensure that their actions do not jeopardize the existence of any threatened or endangered species or adversely modify critical habitat. In addition, the ESA prohibits the “taking” of threatened or endangered animals. The USAF has integrated the requirements of NEPA and the ESA so that all procedures run concurrently. As such, in accordance with 50 CFR Part 402.06(a), the USAF intends to have this EIS stand as the Biological Assessment for threatened and endangered marine species that could be affected by the project.

The USAF would implement mitigation measures during the Construction Phase and the Implementation Phase of Alternative 1, Alternative 2, and Alternative 3, regardless of alternative, to minimize or avoid impacts on marine biological resources. The mitigation measures applicable to all alternatives that would control storm water runoff and reduce the release of sediment from project sites into the marine environment are fully detailed in **Section 4.5** and the EFH Assessment prepared for the Preferred Alternative provided in **Appendix B**. Mitigation measures provided in **Section 4.4** would be implemented for erosion and sediment control both during and after construction, and would minimize impacts on water resources by controlling sedimentation. Specific storm water mitigation measures include the development and implementation of a SWPPP, compliance with CNMI water quality standards, and developing storm water control measures that would accommodate the 95th percentile storm event. The USAF would also implement mitigation measures for spill control and countermeasure, detailed in **Section 4.12**. These mitigation measures include implementation of an SPCC Plan and FRP. While some of the mitigation measures identified in **Section 4.4**, **4.5**., and **4.12** were developed in support of the EFH consultation for the Preferred Alternative, they are applicable to all alternatives. Implementation of the mitigation measures for sediment and storm water management and spill prevent and control, as detailed in **Sections 4.4, 4.5,** and **4.12**, would avoid or minimize the release of sediment, storm water, and pollutants into the marine environment and would therefore reduce the potential for impacts on marine species.

4.7.1 Alternative 1–Modified Saipan Alternative

4.7.1.1 Construction Phase

4.7.1.1.1 Nearshore Marine Resources

Short-term, negligible, indirect, adverse, impacts would be expected on nearshore marine resources. No construction would occur in the marine waters surrounding Saipan; however, proposed construction at the airport and seaport would disturb soils and has the potential to result in excessive erosion and in stormwater runoff to marine waters and affect the quality of the marine environment. Erosion and sedimentation would be avoided or minimized by implementing the mitigation measures identified in **Section 4.4**, such as complying with CNMI erosion and sediment controls standards and following an ESCP. The discharge of stormwater runoff from construction activities at Saipan International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, storm water runoff during construction would be minimal. The USAF would also implement mitigation measures for spill prevention and control during construction, such as following an SPCC, provided in **Section 4.12.** By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment during construction would be avoided or minimized, and therefore, adverse impacts from sedimentation, runoff, and potential spills on nearshore marine resources would be expected to be negligible and indirect.

The Saipan harbor currently accepts cargo ships and it is presumed that the same tankers that currently supply Saipan with cargo and construction materials would continue to do so under this alternative (see **Section 2.5.1.2**). As such, no port improvements would be needed to meet the shipping requirements under the Proposed Action.

4.7.1.1.2 Essential Fish Habitat

The USAF consulted with NMFS on potential impacts on EFH for proposed actions on Tinian, as the Preferred Alternative is proposed on Tinian. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects on EFH should they select Alternative 1 and would be required to initiate EFH consultation. Potential mitigation measures for Alternative 1 would include those described in **Sections 4.7** and **4.7.1.1** for nearshore marine resources. The USAF would implement mitigation measures for erosion and sediment control, storm water management, and spill prevention and control during construction. By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment that could affect water quality and EFH during construction would be avoided or minimized. Therefore, short-term, indirect, negligible adverse impacts from sedimentation, runoff, and potential spills on EFH would be expected.

4.7.1.1.3 Threatened and Endangered Species

The USAF consulted with NMFS under Section 7 of the ESA for potential effects on marine species, including listed sea turtles and marine mammals, from planned activities on Saipan in 2012. The USAF sent correspondence to NMFS on October 3, 2012, informing them of the

USAF determination that conducting divert activities and exercises on Saipan and Tinian may affect but is not likely to adversely affect marine species. After the 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species. This correspondence is presented in **Appendix B**.

Since completion of the 2015 Revised Draft EIS and the 2012 Draft EIS, three species of coral, *Acropora globiceps, A. retusa, and Seriatopora aculeata,* and the Indo-West Pacific distinct population segment of the scalloped hammerhead shark *(Sphyrna lewini)* were listed as threatened and could occur in waters surrounding Saipan and Tinian. The USAF consulted with NMFS on potential impacts on these species for proposed actions on Tinian, as the Preferred Alternative is proposed on Tinian. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects should they select Alternative 1 and would be required to initiate Section 7 consultation for these species. Potential mitigation measures for Alternative 1 would include those described in **Sections 4.7** and **4.7.1.1** for nearshore marine resources.

Short-term, indirect, negligible adverse impacts from sedimentation, runoff, and potential spills on threatened and endangered marine species would be expected. The USAF would implement mitigation measures for erosion and sediment control, storm water management, and spill prevention and control during construction. By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment during construction would be avoided or minimized.

4.7.1.2 Implementation Phase

4.7.1.2.1 Nearshore Marine Resources

Long-term, negligible, indirect, adverse, impacts would be expected on nearshore marine resources. No activities would occur in the marine waters surrounding Saipan during implementation; however, increases in impervious surfaces and fuel operations have the potential to increase storm water runoff and the potential for fuel spills, which could affect the quality of the marine environment. As described in **Sections 4.5** and **4.7**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface and storm waters associated with the permanent increase in impervious surfaces. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, storm water runoff during implementation would be minimal. The USAF would also implement mitigation measures for spill prevention and control during implementation, such as design standards for fuel tanks and following an SPCC, provided in **Section 4.12.** By implementing these mitigation measures, the release of fresh water and hazardous materials from project sites into the marine environment during implemented would be avoided or minimized, and therefore, adverse impacts from runoff and potential spills on nearshore marine resources would be expected to be negligible and indirect.

The Saipan harbor currently accepts fuel ships and it is presumed that the same tankers that currently supply Saipan with fuel would continue to do so under this alternative (see **Section**

2.5.1.2). As such, no port improvements would be needed to meet the shipping requirements under the Proposed Action.

4.7.1.2.2 Essential Fish Habitat

Long-term, negligible, indirect, adverse, impacts would be expected on EFH from storm water runoff and potential accidental spills under the Alternative 1 Implementation Phase. The USAF consulted with NMFS on potential impacts on EFH for proposed actions on Tinian, as the Preferred Alternative is proposed on Tinian. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects should they select Alternative 1 and would be required to initiate EFH consultation. To avoid indirectly affecting EFH, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities, as described in **Sections 4.5,** to ensure that runoff of storm water and sediment are minimized and controlled during implementation. These mitigation measures will work to avoid and minimize storm water discharge into the nearshore marine environment. Because these measures would prevent or greatly reduce surface runoff and subterranean discharge of sediment and fresh water from project sites into the marine environment, effects to EFH would not occur or would be minimal.

In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure.

4.7.1.2.3 Threatened and Endangered Species

The USAF consulted with NMFS under Section 7 of the ESA for potential effects on marine species, including listed sea turtles and marine mammals, from planned activities on Saipan in 2012. The USAF sent correspondence to NMFS on October 3, 2012, informing them of the USAF determination that conducting divert activities and exercises on Saipan and Tinian may affect but is not likely to adversely affect marine species. After the 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species. This correspondence is presented in **Appendix B**.

Since completion of the 2015 Revised Draft EIS and the 2012 Draft EIS, three species of coral, *Acropora globiceps, A. retusa, and Seriatopora aculeata,* and the Indo-West Pacific distinct population segment of the scalloped hammerhead shark *(Sphyrna lewini)* were listed as threatened and could occur in waters surrounding Saipan and Tinian. The USAF consulted with NMFS on potential impacts on these species for proposed actions on Tinian, as the Preferred Alternative is proposed on Tinian. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects should they select Alternative 1 and would be required to initiate Section 7 consultation for these species. Potential mitigation measures for Alternative 1 would include those described in **Sections 4.7** and **4.7.1.2** for nearshore marine resources and EFH.

Corals. Long-term, negligible, indirect, adverse, impacts would be expected on listed corals from storm water runoff and potential accidental spills under the Alternative 1 Implementation Phase. As described under the EFH analysis and in **Section 4.5**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure. Based on the mitigation measures described in **Sections 4.5**, **4.7**, and **4.12** impacts from sedimentation, runoff, and potential spills on listed corals would not occur or would be minimal.

Sea Turtles. Periodic, minor, direct, adverse impacts on sea turtles could occur under the Alternative 1 Implementation Phase. For approximately eight weeks per year, sea turtles would be exposed to an increased frequency of noise from large aircraft. Sea turtles residing at or near the surface of nearshore waters, or nesting on the beaches of Saipan could be exposed to this noise. In addition, low-flying aircraft passing overhead could create a shadow effect that could induce a reaction in sea turtles (DON 2010a). However, the majority of the flights during exercises are expected to occur during the day and sea turtles typically nest at night. In the unlikely event that nesting sea turtles would be exposed to noise, exposure to elevated noise levels would be brief (seconds) and would only occur periodically for a total of up to 8 weeks per year. Little information regarding sea turtle reactions to fixed-wing aircraft overflights is available. Based on the sensory biology of sea turtles, sound from low-flying aircraft could be heard by a sea turtle at or near the surface or on land (DON 2010a). Because sea turtles might also rely on visual cues, they might not respond to aircraft overflights based on noise alone. Sea turtles exposed to aircraft overflights might exhibit no response or behavioral reactions such as quick diving. Any behavioral avoidance reaction would be short-term and periodic and would not permanently displace sea turtles or result in physical harm. Noise from take-offs and landings would not result in chronic stress because it is unlikely that individual sea turtles would be repeatedly exposed to low-altitude overflights (DON 2010a).

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, training activities within the MIRC are described and authorized in the MIRC ROD and the MITT ROD, which were issued on July 20, 2010, and July 29, 2015, respectively (DON 2010a, DON 2010b). Training exercises within the MIRC are also covered under the Programmatic Biological Opinion on military readiness activities within the MIRC, valid from August 2015 to August 2020; and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to “take” marine mammals incidental to those training activities (NMFS 2015).

As described under the EFH analysis and in **Section 4.5**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled during and after construction. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure. Therefore, impacts on sea turtles from sedimentation, runoff, and potential spills would not occur or would be minimal.

Impacts on nesting sea turtles would not be expected from lighting associated with proposed facilities. The proposed lighting at the airfield would not be considered as additional lighting because only the existing terminal lighting would be expanded. The approach lighting would be angled away from the beach and no forested vegetation would be removed from the ends of the runways, which are at least 0.5 mile from the beaches. Additionally, the airport is on a mesa above the beaches. Any lights required at the port facility would not be pointed towards the harbor. As such, the lights would not be seen on the beaches.

The Saipan harbor currently accepts fuel tankers and it is presumed that the same tankers that currently supply Saipan with jet fuel would continue to do so under this alternative (see **Section 2.5.1.2**). The USAF does not propose to measurably increase the number of fuel tanker trips to the Saipan harbor or to improve the harbor. Therefore, no impacts on sea turtles would be expected.

Alternative 1 may affect, but is not likely to adversely affect, sea turtles. The USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species in waters surrounding Saipan.

Marine Mammals. Periodic, minor, direct, adverse impacts on marine mammals could occur under the Alternative 1 Implementation Phase. Some noise associated with take-offs and landings during military exercises would be transmitted over the ocean for up to eight weeks per year. However, most of the sound from aircraft is reflected off the surface of the water and only penetrates a small area of aircraft path over the water (Urick 1972). Marine mammals could exhibit a short-term and periodic behavioral response, but not to the extent where natural behavioral patterns would be abandoned or significantly altered. Chronic stress is also not likely to result because it is extremely unlikely that individual animals would be repeatedly exposed to overflights associated with take-offs and landings (DON 2010a). As such, Alternative 1 is not expected to result in Level A or Level B harassment as defined by the MMPA.

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities within the MIRC are described and authorized in the MIRC ROD and the MITT ROD, which were issued on July 20, 2010, and July 29, 2015, respectively (DON 2010a, DON 2010b). Training exercises within the MIRC are also covered under the Programmatic Biological Opinion on military readiness activities within the MIRC, valid from August 2015 to August 2020; and the NMFS Permits Division’s proposal to issue regulations to authorize the U.S. Navy to “take” marine mammals incidental to those training activities (NMFS 2015).

As described under the EFH analysis and in **Section 4.5**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled during and after construction. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure. Therefore, impacts on marine mammals from sedimentation, runoff, and potential spills would not occur or would be minimal.

The Saipan harbor currently accepts fuel tankers and it is presumed that the same tankers that currently supply Saipan with jet fuel would continue to do so under this alternative (see **Section 2.5.1.2**). The USAF does not propose to measurably increase the number of fuel tanker trips to the Saipan harbor or to improve the harbor. Therefore, no impacts on marine mammals would be expected.

Alternative 1 may affect, but is not likely to adversely affect, ESA-listed marine mammals. The USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species in waters surrounding Saipan.

4.7.2 Alternative 2–Modified Tinian Alternative

4.7.2.1 Construction Phase- North and South Options

4.7.2.1.1 Nearshore Marine Resources

Short-term, negligible, indirect, adverse, impacts would be expected on nearshore marine resources. No construction would occur in the marine waters surrounding Tinian; however, proposed construction at the airport and seaport would disturb soils and has the potential to result in excessive erosion and in stormwater runoff to marine waters and affect the quality of the marine environment. Erosion and sedimentation would be avoided or minimized by implementing the mitigation measures identified in **Section 4.4**, such as complying with CNMI erosion and sediment controls standards and following an ESCP. The discharge of stormwater runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, storm water runoff during construction would be minimal. The USAF would also implement mitigation measures for spill prevention and control during construction, such as following an SPCC, provided in **Section 4.12.** By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment during construction would be avoided or minimized, and therefore, adverse impacts from sedimentation, runoff, and potential spills on nearshore marine resources would be expected to be negligible and indirect.

Cargo and construction materials would be received at the current port in Tinian from shallow draft vessels; shallow draft vessels currently dock at the Port of Tinian. The USAF does not propose to measurably increase the number of vessel trips to the Tinian harbor or to improve the harbor.

4.7.2.1.2 Essential Fish Habitat

Short-term, negligible to minor, indirect, adverse, impacts would be expected on EFH during construction. On November 24, 2015, NMFS provided comments on the 2015 Revised Draft EIS and requested that USAF conduct EFH consultation in accordance with Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801–1883). The USAF prepared an EFH Assessment, which is provided in **Appendix B**, and provided additional information to NMFS regarding the proposed action and mitigation measures for sedimentation, runoff, and potential spills during construction, such as those provided in **Sections 4.4**, **4.5**, and **4.12**. Based on the USAF commitments to adhere to stringent BMPs and provide NMFS review of management plans, NMFS concluded in a letter dated April 12, 2016 that adverse impacts on EFH from the proposed action on Tinian would be minimal. The correspondence is presented in **Appendix B**.

4.7.2.1.3 Threatened and Endangered Species

ESA Consultation with NMFS. The USAF consulted with NMFS under Section 7 of the ESA for potential effects on marine species, including listed sea turtles and marine mammals, from planned activities on Tinian in 2012. The USAF sent correspondence to NMFS on October 3, 2012, informing them of the USAF determination that proposed activities on Tinian may affect but are not likely to adversely affect marine species. After the 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012, that proposed activities not likely to adversely affect marine species.

Since completion of the 2015 Revised Draft EIS and the 2012 Draft EIS, three species of coral, *Acropora globiceps, A. retusa, and Seriatopora aculeata,* and the Indo-West Pacific distinct population segment of the scalloped hammerhead shark *(Sphyrna lewini)* were listed as threatened and could occur in waters surrounding Saipan and Tinian. The USAF sent a letter to NMFS to request concurrence with the determination that the proposed action may affect, but is not likely to adversely affect these threatened species. The NMFS communicated their concurrence in a letter dated March 28, 2016. NMFS correspondence is provided in **Appendix B**.

ESA Consultation with USFWS. In July 2015, the USAF requested that the USFWS concur with their determination that proposed activities on Tinian may affect, but are not likely to adversely affect, nesting green sea turtles and hawksbill sea turtles. The USFWS concurred with that determination in October 2015 in the amendment to the 2012 Biological Opinion (USFWS 2015e). This correspondence is presented in **Appendix B**.

Based on completion of the ESA consultation for threatened and endangered species in the nearshore waters of Saipan, and the mitigation measures described in **Section 4.7**, short-term, indirect, negligible adverse impacts from sedimentation, runoff, and potential spills on threatened and endangered marine species during construction would be expected.

4.7.2.2 Implementation Phase- North and South Options

4.7.2.2.1 Nearshore Marine Resources

Long-term, negligible, indirect, adverse, impacts would be expected on nearshore marine resources. No activities would occur in the marine waters surrounding Tinian during implementation; however, increases in impervious surfaces and fuel operations have the potential to increase storm water runoff and the potential for fuel spills, which could affect the quality of the marine environment. As described in **Sections 4.5** and **4.7**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface and storm water associated with the permanent increase in impervious surfaces. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, storm water runoff during implementation would be minimal. The USAF would also implement mitigation measures for spill prevention and control during implementation, such as design standards for fuel tanks and following an SPCC, provided in **Section 4.12.** By implementing these mitigation measures, the release of fresh water and hazardous materials from project sites into the marine environment during implemented would be avoided or minimized, and therefore, adverse impacts from runoff and potential spills on nearshore marine resources would be expected to be negligible and indirect.

Fuel would be received at the current port in Tinian from shallow draft tankers; shallow draft tankers currently dock at the Port of Tinian. The USAF does not propose to measurably increase the number of tanker trips to the Tinian harbor or to improve the harbor.

4.7.2.2.2 Essential Fish Habitat

Long-term, negligible, indirect, adverse, impacts would be expected on EFH from stormwater runoff and potential accidental spills under the Alternative 2 Implementation Phase. As described in **Section 4.7.2.1**, NMFS concluded in a letter dated April 12, 2016 that adverse impacts on EFH from the proposed action on Tinian would be minimal. The correspondence is presented in **Appendix B**.

To avoid indirectly affecting these EFH, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities, as described in **Sections 4.5,** to ensure that runoff of storm water and sediment are minimized and controlled during and after construction. Implementation of these measures will work to avoid and minimize storm water discharge into the nearshore marine environment. Because these measures would prevent or greatly reduce surface runoff and subterranean discharge of additional sediment and fresh water from project sites into the marine environment, effects to EFH in waters surrounding Tinian would not occur or would be minimal.

In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure.

4.7.2.2.3 Threatened and Endangered Species

As described in **Section 4.7.2.1**, NMFS concurred in 2012 that proposed activities on Tinian are not likely to adversely affect marine species; and in March 2016 that the proposed action may affect, but is not likely to adversely affect listed corals and the scalloped hammerhead shark. NMFS correspondence is provided in **Appendix B**.

In July 2015, the USAF requested that the USFWS concur with their determination that proposed activities on Tinian may affect, but are not likely to adversely affect, nesting green sea turtles and hawksbill sea turtles. The USFWS concurred with that determination in October 2015 in the amendment to the 2012 Biological Opinion (USFWS 2015e). This correspondence is presented in **Appendix B**.

Corals. Long-term, negligible, indirect, adverse, impacts would be expected on listed corals from storm water runoff and potential accidental spills under the Alternative 2 Implementation Phase. As described under the EFH analysis and in **Section 4.5**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure.

Based on completion of the ESA consultation for listed corals in the nearshore waters of Tinian, and the mitigation measures described in **Sections 4.5**, **4.7**, and **4.12** impacts from sedimentation, runoff, and potential spills on listed corals would not occur or would be minimal.

Sea Turtles. Short-term, periodic, minor, direct, adverse impacts on sea turtles could under the Alternative 2 Implementation Phase. Some noise associated with take-offs and landings during military exercises would be transmitted over the ocean. Green and hawksbill sea turtles residing at or near the surface of nearshore waters, or nesting on the beaches of Tinian could be exposed to this noise. In addition, low-flying aircraft passing overhead could create a shadow effect that could induce a reaction in sea turtles (DON 2010a). However, the majority of the flights during exercises are expected to occur during the day and sea turtles typically nest at night. In the unlikely event that nesting sea turtles would be exposed to noise, exposure to elevated noise levels would be brief (seconds) and would only occur periodically for a total of up to 8 weeks per year. Additionally, take-offs and landings would not pass directly over beaches where sea turtles nest on Tinian.

Little information regarding the reaction of sea turtles to fixed-wing aircraft overflights is available. Based on the sensory biology of sea turtles, sound from low-flying aircraft could be heard by a sea turtle at or near the surface or on land (DON 2010a). Because sea turtles might also rely on visual cues, they might not respond to aircraft overflights based on noise alone. Sea turtles exposed to aircraft overflights might exhibit no response or behavioral reactions such as quick diving. Any behavioral avoidance reaction would be short-term and periodic and would not permanently displace sea turtles or result in physical harm. Noise from take-offs and landings would not result in chronic stress because it is unlikely that individual sea turtles would be repeatedly exposed to low-altitude overflights.

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities within the MIRC are described and authorized in the MIRC ROD and the MITT ROD, which were issued on July 20, 2010, and July 29, 2015, respectively (DON 2010a, DON 2010b). Training exercises within the MIRC are also covered under the Programmatic Biological Opinion on military readiness activities within the MIRC, valid from August 2015 to August 2020; and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to "take" marine mammals incidental to those training activities (NMFS 2015).

As described under the EFH analysis and in **Section 4.5**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled during and after construction. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure. Therefore, impacts on sea turtles from sedimentation, runoff, and potential spills would not occur or would be minimal.

Impacts on nesting sea turtles would not be expected from lighting associated with proposed facilities. The proposed lighting at the airfield would not be considered as additional lighting because only the existing terminal lighting would be expanded. The approach lighting would be angled away from the beach and no forested vegetation would be removed from the ends of the runways, which are at least 0.5 mile from the beaches. Any lights required at the port facility would not be pointed towards the harbor. As such, the lights would not be seen on the beaches.

Jet fuel would be received at the current port in Tinian from a shallow draft tanker. The port currently accepts fuel shipments and shallow draft tankers currently dock at the Port of Tinian (see **Section 2.5.2.2**). The USAF does not propose to measurably increase the number of fuel tanker trips to the Tinian harbor or to improve the harbor. Therefore, no impacts on sea turtles would be expected.

Alternative 2 may affect, but is not likely to adversely affect, sea turtles. The USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species and received concurrence from USFWS in October 2015 that divert activities may affect, but are not likely to adversely affect, nesting green sea turtles and hawksbill sea turtles on Tinian (USFWS 2015e).

Marine Mammals. Short-term, periodic, minor, direct, adverse impacts on marine biological resources could under the Alternative 2 Implementation Phase. Some noise associated with take-offs and landings during military exercises would be transmitted over the ocean. However, most of the sound from aircraft is reflected off the surface of the water and only penetrates a small area of aircraft path over the water (Urick 1972). Marine mammals could exhibit a short-term and periodic behavioral response, but not to the extent where natural behavioral patterns would be abandoned or significantly altered. Chronic stress is also not likely to result, because it is extremely unlikely that individual animals would be repeatedly exposed to overflights associated with take-offs and landings (DON 2010a). As such, this alternative is not expected to result in Level A or Level B harassment as defined by the MMPA.

In addition to take-offs and landings during military exercises, military aircraft would also conduct training over the ocean within the MIRC. However, these training activities within the MIRC are described and authorized in the MIRC ROD and the MITT ROD, which were issued on July 20, 2010, and July 29, 2015, respectively (DON 2010a, DON 2010b). Training exercises within the MIRC are also covered under the Programmatic Biological Opinion on military readiness activities within the MIRC, valid from August 2015 to August 2020; and the NMFS Permits Division's proposal to issue regulations to authorize the U.S. Navy to "take" marine mammals incidental to those training activities (NMFS 2015).

As described under the EFH analysis and in **Section 4.5**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled during and after construction. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure. Therefore, impacts on marine mammals from sedimentation, runoff, and potential spills would not occur or would be minimal.

Jet fuel would be received at the current port in Tinian from a shallow draft tanker. The port currently accepts fuel shipments and shallow draft tankers currently dock at the Port of Tinian (see **Section 2.5.2.2**). The USAF does not propose to measurably increase the number of fuel tanker trips to the Tinian harbor or to improve the harbor. Therefore, no impacts on marine mammals would be expected.

Alternative 2 may affect, but is not likely to adversely affect, ESA-listed marine mammals. The USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species.

4.7.3 Alternative 3–Hybrid Modified Alternative

4.7.3.1 Construction Phase- Saipan and Tinian

4.7.3.1.1 Nearshore Marine Resources

Short-term, negligible, indirect, adverse, impacts would be expected on nearshore marine resources. No construction would occur in the marine waters surrounding Saipan or Tinian; however, proposed construction at the airport and seaport would disturb soils and has the potential to result in excessive erosion and in stormwater runoff to marine waters and affect the quality of the marine environment. Erosion and sedimentation would be avoided or minimized by implementing the mitigation measures identified in **Section 4.4**, such as complying with CNMI erosion and sediment controls standards and following an ESCP. The discharge of stormwater runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, storm water runoff during construction would be minimal. The USAF would also implement mitigation measures for spill prevention and control during construction, such as following an SPCC, provided in **Section 4.12.** By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment during construction would be avoided or minimized, and therefore, adverse impacts on nearshore marine resources from sedimentation, runoff, and potential spills would be expected to be negligible and indirect.

The same methods currently used to receive cargo on Saipan and Tinian would be continued for receipt of construction materials. As such, no improvements to the harbor would need to be made.

4.7.3.1.2 Essential Fish Habitat

Short-term, negligible to minor, indirect, adverse, impacts would be expected on EFH during construction. The USAF prepared an EFH Assessment, which is provided in **Appendix B**, and provided additional information to NMFS regarding the proposed action and mitigation measures for sedimentation, runoff, and potential spills during construction, such as those provided in **Sections 4.4**, **4.5**, and **4.12**. Based on the USAF commitments to adhere to stringent BMPs and provide NMFS review of management plans, NMFS concluded in a letter dated April 12, 2016 that adverse impacts on EFH from the proposed action on Tinian would be minimal. The correspondence is presented in **Appendix B**. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects on Saipan should they select Alternative 3 and would be required to initiate EFH consultation. Potential mitigation measures would be the same as those provided in **Sections 4.7.1.1** and **4.7.2.1**. By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment that could affect water quality and EFH during construction would be avoided or minimized.

4.7.3.1.3 Threatened and Endangered Species

Short-term, indirect, negligible adverse impacts from sedimentation, runoff, and potential spills on threatened and endangered marine species would be expected. The USAF consulted with NMFS under Section 7 of the ESA for potential effects on marine species, including listed sea turtles and marine mammals, from planned activities on Saipan and Tinian in 2012. The USAF sent correspondence to NMFS on October 3, 2012, informing them of the USAF determination that conducting divert activities and exercises on Saipan and Tinian may affect but is not likely to adversely affect marine species. After the 2012 Draft EIS was released, the USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species. This correspondence is presented in **Appendix B**.

The USAF also consulted with NMFS on potential impacts for proposed actions on Tinian, on three species of coral, *Acropora globiceps, A. retusa, and Seriatopora aculeata,* and the Indo-West Pacific distinct population segment of the scalloped hammerhead shark *(Sphyrna lewini)* that were listed as threatened after the release of the 2012 Draft EIS and Tinian was identified as the Preferred Alternative. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects on Saipan should Alternative 3 be selected and would be required to initiate Section 7 consultation for these species. Potential mitigation measures for Alternative 3 would include those described in **Section 4.7.1.1** and **4.7.2.1**. By implementing these mitigation measures, the release of fresh water, sediment, and hazardous materials from project sites into the marine environment during construction would be avoided or minimized.

4.7.3.2 Implementation Phase- Saipan and Tinian

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.7.3.2.1 Nearshore Marine Resources

Long-term, negligible, indirect, adverse, impacts would be expected on nearshore marine resources. No activities would occur in the marine waters surrounding Saipan or Tinian during implementation; however, increases in impervious surfaces and fuel operations have the potential to increase storm water runoff and the potential for fuel spills, which could affect the quality of the marine environment. As described in **Sections 4.5.** and **4.7**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface and storm waters associated with the permanent increase in impervious surfaces. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, storm water runoff during implementation would be minimal. The USAF would also implement mitigation measures for spill prevention and control during implementation, such as design standards for fuel tanks and following an SPCC, provided in **Section 4.12**. By implementing these mitigation measures, the release of fresh water and hazardous materials from project sites into the marine environment during implemented would be avoided or minimized, and therefore, adverse impacts nearshore marine resources from runoff and potential spills would be expected to be negligible and indirect.

The Saipan and Tinian harbors currently accepts fuel tankers and it is presumed that the same tankers that currently supply Saipan and Tinian with fuel would continue to do so under this alternative. As such, no port improvements would be needed to meet the shipping requirements under the Proposed Action.

4.7.3.2.2 Essential Fish Habitat

Long-term, negligible, indirect, adverse, impacts would be expected on EFH from storm water runoff and potential accidental spills under the Alternative 3 Implementation Phase. As described in **Section 4.7.3.1**, NMFS concluded in a letter dated April 12, 2016 that adverse impacts on EFH from the proposed action on Tinian would be minimal. The correspondence is presented in **Appendix B**. Although the USAF consulted only on Tinian, the USAF would remain committed to mitigating potential adverse effects on Saipan should they select

Alternative 3 and would be required to initiate EFH consultation. Potential mitigation measures would be the same as those provided in **Sections 4.7.1.2** and **4.7.2.2**. To avoid indirectly affecting these species, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities, as described in **Sections 4.5,** to ensure that runoff of storm water and sediment are minimized and controlled during and after construction. Implementation of these measures will work to avoid and minimize storm water discharge into the nearshore marine environment. Because these measures would prevent or greatly reduce surface runoff and subterranean discharge of additional sediment and fresh water into the marine environment, effects to EFH and corals in waters surrounding Saipan and Tinian would not occur or would be minimal.

In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure.

4.7.3.2.3 Threatened and Endangered Species

As described in **Section 4.7.3.1**, NMFS concurred in 2012 that proposed activities on Saipan and Tinian are not likely to adversely affect marine species; and in March 2016 that the proposed action may affect, but is not likely to adversely affect listed corals and the scalloped hammerhead shark. NMFS correspondence is provided in **Appendix B**. Although the USAF consulted only on Tinian for listed corals and the scalloped hammerhead shark, the USAF would remain committed to mitigating potential adverse effects on Saipan should they select Alternative 3 and would be required to initiate Section 7 consultation for these species.

In July 2015, the USAF requested that the USFWS concur with their determination that proposed activities on Tinian may affect, but are not likely to adversely affect, nesting green sea turtles and hawksbill sea turtles. The USFWS concurred with that determination in October 2015 in the amendment to the 2012 Biological Opinion (USFWS 2015e). This correspondence is presented in **Appendix B**.

Corals. Long-term, negligible, indirect, adverse, impacts would be expected on listed corals from stormwater runoff and potential accidental spills under the Alternative 3 Implementation Phase. As described under in **Sections 4.7.1.2** and **4.7.2.2**, the USAF would develop and implement plans and procedures, design facilities, and adaptively manage their actions and facilities to ensure that runoff of storm water and sediment are minimized and controlled. In addition, the USAF would develop and implement spill control and prevention measures to prevent the release of fuel or other contaminants from the built environment, as described in **Section 4.12**. Those measures include constructing fuel storage facilities with secondary containment greater than 100% of fuel storage capacity. In the event of a spill, hazardous materials are not expected to leave the site but would instead be contained within the existing infrastructure.

Sea Turtles. As described in **Sections 4.7.1.2** and **4.7.2.2**, short-term, periodic, minor, direct, adverse impacts on sea turtles could occur as a result of implementing divert activities and exercises on Saipan and Tinian. A similar or lower number of flights would be conducted from each island under this alternative, and the effects therefore will be similar to or less than those described in **Sections 4.7.1.2** and **4.7.2.2**. Thus, Alternative 3 may affect, but is not likely to adversely affect, sea turtles. The USAF received concurrence from NMFS on October 30, 2012, that divert activities on Saipan and Tinian are not likely to adversely affect marine species and received concurrence from USFWS in October 2015 that divert activities may affect, but are not likely to adversely affect, nesting green sea turtles and hawksbill sea turtles on Tinian (USFWS 2015e).

Marine Mammals. Short-term, periodic, minor, direct, adverse impacts on marine biological resources could occur under the Alternative 3 Implementation Phase. A similar or lower number of flights would be conducted from each island under this alternative, and the effects therefore will be similar to or less than those described in **Sections 4.7.1.2** and **4.7.2.2**. As such, this alternative is not expected to result in Level A or Level B harassment as defined by the MMPA, and Alternative 3 may affect, but is not likely to adversely affect, ESA-listed marine mammals. The USAF received concurrence from NMFS on October 30, 2012, that divert activities are not likely to adversely affect marine species.

4.7.4 No Action Alternative

Under the No Action Alternative, none of the above alternatives would occur and the existing conditions discussed in **Sections 3.7.2.1** and **3.7.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions; planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area; and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No new impacts on marine biological resources would be expected as a result of the No Action Alternative. Under the No Action Alternative in Saipan, the 65-dBA DNL contour would occur over Una Agingan but not over Una Obyan (see **Figure 3.1-1**). Under the No Action Alternative in Tinian, the 65-dBA DNL contour would not occur over the Tinian Harbor beaches. Marine biological resources within the Project Areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.8 Cultural Resources

Impact analysis for cultural resources in this EIS focuses on assessing whether an action alternative has the potential to affect cultural resources that are eligible for listing on the NRHP.

The analysis incorporates the USAF's finding of effects pursuant to Section 106 of the NHPA and input received during Section 106 consultation, as discussed in **Section 3.8.**

Impacts on NRHP listed or eligible properties are those that result in the loss of their eligibility, usually by compromising the integrity of the resource. To be considered eligible for the NRHP, a cultural resource must possess the majority, if not all, of seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

Integrity is defined as the authenticity of a property's historic identity, as evidenced by the survival of physical characteristics it possessed in the past, and its capacity to convey information about a culture or people, historic patterns, or architectural or engineering design or technology. Location refers to the place where an event occurred or a property was constructed. Design considers elements such as plan, form, and style of a property. Setting is the physical environment of the property. Materials refer to the physical elements used to construct the property. Workmanship refers to the craftsmanship of the creators of a property. Feeling is the property's ability to convey its historic time and place. Association refers to the link between the property and a historic event or person.

Impacts to cultural resources can occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed.

Under the NHPA, an adverse effect is any action that might directly or indirectly change the characteristics that make the historic property eligible for listing in the NRHP. In the USAF's finding of effects through consultation under Section 106 of the NHPA, physical changes to a property were considered "direct" effects whereas the introduction of new elements altering the character of the property or its setting were considered "indirect" effects. Both constitute adverse effects under Section 106. During consultation, the consulting parties agreed that a distinction between direct effects and indirect effects was not necessary, and both types of effects constitute an adverse effect. Therefore, the decision was made to remove the distinction between direct and indirect impacts in the Final EIS.

All alternatives presented in this EIS could have potential impacts on cultural resources from ground-disturbing activities during construction and from changes to the setting or viewshed of a historic property through the construction of new facilities. Because an adverse effect was identified, PACAF developed measures to avoid, minimize, or mitigate the adverse effects of the Undertaking. The Divert PA, executed among the USAF, CNMI SHPO, and ACHP on June 28, 2016, stipulates these measures that were developed during Section 106 consultation and outlines a process for the USAF to continue consultation if additional adverse effects are identified in the future. Specific mitigation measures in provided for each alternative in **Sections 4.8.1**, **4.8.2**, and **4.8.3**.

4.8.1 Alternative 1–Modified Saipan Alternative

The majority of construction and implementation under Alternative 1 would take place within the boundaries of the Aslito/Isley Field NHLD. Small portions of the Construction and

Implementation Phases of Alternative 1 would take place along roads between the Port of Saipan and Saipan International Airport, which would carry Alternative 1 related truck traffic, and at the Port of Saipan, where aboveground fuel storage tanks would be constructed. Under Alternative 1, the majority of the potential impacts would be on the Aslito/Isley Field NHLD and its contributing structures. Specifically, the Construction Phase of Alternative 1 could result in minor impacts to the landmark's integrity and eligibility.

4.8.1.1 Construction Phase

Construction at the Saipan International Airport proposed under Alternative 1 would not physically impact contributing elements of the Aslito/Isley Field NHLD or other historic properties on Saipan. The proposed construction footprints for several elements, including the proposed cargo pad, parking apron, and hydrant system, are in the general vicinity of a B-29 hardstand network built by U.S. forces during World War II. However, the USAF survey conducted in support of the Section 106 process (**Appendix D**) identified no remains of the B-29 hardstand network in proposed construction areas. The report observed that World War II-era pavements could be very deeply buried or could have been destroyed by vegetation growth, post-war land clearance, or other forces.

The fuel tanks portion of the construction footprint under Alternative 1 could disturb two features recorded by the USAF that are recommended as non-contributing elements of the SNHL: Feature 3, a concrete foundation with a drain, and Feature 9, a concrete foundation. Typically, adverse effects to non-contributing elements of historic districts do not affect the eligibility of the district as a whole; therefore, construction of the fuel tanks would have no impact on the SNHL.

Construction under Alternative 1 at Saipan International Airport could have minor impacts on contributing elements of the Aslito/Isley Field NHLD by introducing new facilities that alter the viewshed of nearby historic structures. Such visual intrusions could impact integrity of setting and feeling of those historic structures, the NHLD as a whole, and the associated portion of the SNHL.

No adverse impacts would be expected on cultural resources from construction of aboveground fuel storage tanks at the Port of Saipan. Although the area of the modern port was the site of Navy Seabee activity during the war, the USAF survey did not observe evidence of this activity and the proposed fuel tank site is well inland from where these activities are thought to have taken place. Construction under Alternative 1 would have no impacts on the Saipan Landing Beaches portion of the NHL, because no modifications would occur to this portion of the NHL.

Transportation of construction materials on existing roads under Alternative 1 would have no impact on the SNHL. A study conducted by the California Department of Transportation in 2002 found that ground vibration from transportation along existing paved roads had virtually no effect on historic buildings located more than 5 meters away and that, in fact, such vibrations dropped below the perception threshold beyond 45 meters (CALTRANS 2002). The study considered heavy trucks as the vehicular source of vibration, similar to the trucks likely to be used during proposed construction, and assumed wood-framed historic buildings and structures. Standing structures in the SNHL are of stronger concrete construction and are even more resistant to vibration effects.

The Construction Phase of Alternative 1 would have minor adverse impacts on contributing elements of the Aslito/Isley Field NHLD and the associated portion of the SNHL due to visual impacts on integrity of setting and feeling. Inadvertent impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction but unlikely given the extent of previous cultural resources survey coverage.

The USAF consulted under Section 106 of the NHPA on the identification of the APE, potential effects, and potential mitigation measures for Alternative 1 with the CNMI SHPO, ACHP, NPS, JRM, FAA, CNMI Governor's office, CNMI Historic Preservation Review Board, and members of the public. Although the USAF consulted on Alternative 1 during the Section 106 process, it was removed from the Divert PA upon request of the Office of the CNMI Governor after identification of Alternative 2 as the Preferred Alternative. The Divert PA requires the USAF to re-initiate Section 106 consultation should Alternative 1 be selected.

Should the USAF select Alternative 1 for the Proposed Action, the USAF would remain committed to mitigating potential adverse effects on historic properties. Potential mitigation measures for Alternative 1 Construction Phase are outlined below.

Isley/Aslito Field Inventory. Prior to the project design phase for construction, the USAF could perform investigations in the Isley/Aslito Field area to assess the extent and condition of remaining cultural resources associated with the Saipan NHL and evaluate whether those resources contribute to the Isley/Aslito Field NHLD or are eligible to the NRHP in their own right. The USAF could develop a research design to support the inventory and consolidate the results of the inventory into a survey report, which would be considered in the project design.

Interpretive Plan. The USAF could develop a plan to document and interpret extant historic features of Isley/Aslito Field for the public, and could seek public input on the plan. Possible interpretive products include but are not limited to: signage at publicly accessible historic features, printed brochures, exhibits and/or displays and electronic products.

Public Access. The USAF could ensure that, to the greatest extent practicable, portions of the NHLD that are currently accessible to the public would remain so. The USAF could develop a Public Access Plan to identify portions of the NHLD that are currently accessible to the public, and specify procedures to be followed by USAF for any such accessible areas that would be excluded from public access during construction or implementation of Divert.

Historic American Landscapes Survey. Prior to starting construction, the USAF could produce Historic American Landscapes Survey (HALS) documentation consistent with the standards of the Department of the Interior. The USAF could produce HALS documentation for the areas affected by the Undertaking, including visual impacts to the broader landscape.

Traditional Cultural Uses. Prior to conclusion of the project design phase for construction, the USAF could engage with traditional cultural practitioners in the identification of TCPs that could be impacted by the Undertaking, particularly those related to traditional plant gathering activities. The USAF could invite traditional cultural practitioners to participate in a survey to identify traditional plant gathering areas within proposed development areas outside the existing airport security fence at Saipan International Airport. The USAF could then organize a field reconnaissance of proposed development areas, produce a report of the survey results that describes background research, field methods, results, evaluations of NRHP eligibility, and findings of effect, and consider the results of the survey in the project design. If the report identifies any new adverse effects not identified in the USAF's Finding of Effect dated 14 August 2015 (included as Attachment 2), USAF will consult with consulting parties.

Curation Management. Although CNMI Public Law (P.L.) 10-5 designates the CNMI Museum of History and Culture as the official repository and custodian of historical and cultural artifacts of the CNMI and tasks the museum with the curation and display of CNMI cultural heritage, that facility does not presently meet minimum federal curation requirements promulgated in 36 CFR Part 79. Therefore, the USAF could propose to the Department of Defense Historic Preservation Working Group that the curation of archaeological materials from DOD activities in the CNMI be a recurring agenda item. The USAF could coordinate with the CNMI concerning curation management of USAF collections as the Undertaking proceeds and provide updates to the Historic Preservation Working Group.

Curation Procedures. Any materials recovered could be stored in a repository determined by the USAF and property owner (CPA) in consultation with and approval from the SHPO. Materials could be temporarily curated by USAF in facilities meeting 36 CFR Part 79 standards until such time the materials can be transferred to a facility within CNMI that meets these standards.

Monitoring Procedures. The USAF could provide qualified archaeologists to monitor all ground disturbing activities during construction of facilities associated with the Undertaking. In the event unanticipated archaeological materials are discovered through construction activities, the USAF would follow pre-established procedures.

Post-Review Discoveries. If historic properties are discovered or unanticipated effects on historic properties are determined, the USAF would follow the procedures outlined in 36 CFR Part 800.13 for post-review discoveries. If the discovery involves historic deposits associated with the Saipan NHL, the USAF would include the NPS in its notifications under 36 CFR Part 800.13(b)(3).

Human Remains. If human skeletal remains (or remains thought to be human) are found during the Undertaking, the USAF could follow pre-established procedures for initial discovery, preliminary identification, and identification.

Artifact Display. While temporarily curated by the USAF, and under an appropriate loan agreement, USAF could make available to CNMI a selection of display quality artifacts, if any such artifacts are acquired during the Undertaking, for displays and educational purposes.

Fencing. The USAF could include in all applicable construction contracts relating to the Undertaking language stipulating that temporary fencing be placed around standing historic structures, archaeological sites, or other known contributing elements to historic properties (e.g., the Japanese air raid bunkers on Saipan) that are immediately adjacent to areas of construction to help prevent inadvertent damage. The USAF would coordinate with the FAA and

CPA any fencing within the airport boundary prior to implementation to assure FAA safety and design standards are not compromised.

4.8.1.1.1 Implementation Phase

The Implementation Phase of Alternative 1 would consist of truck traffic on existing roads, aircraft use of Saipan International Airport, and personnel lodging in commercial facilities. None of these activities would include modification of historic structures or disturbance of ground surfaces. Aircraft noise levels would remain unchanged from current levels and, as with the Construction Phase, congestion and vibration from Implementation Phase-related truck traffic would not impact the SNHL. The Implementation Phase of Alternative 1 is therefore expected to have no impact on cultural resources.

4.8.2 Alternative 2–Modified Tinian Alternative

Under Alternative 2, the vast majority of construction and ongoing activity would take place at Tinian International Airport with much less construction and activity at the seaport. Based on existing information about known cultural resources, as well as historical data about former structures that might remain as archaeological deposits in and around Tinian International Airport, impacts to cultural resources could occur under the Alternative 2 North and South Options. Specifically, construction at Tinian International Airport under the Alternative 2 North and South Options could impact one archaeological site, TN-6-0030 (also sometimes referred to as Site 3005), the American administration-period West Field.

Although Tinian is home to the Tinian Landing Beaches, Ushi Point Field, and North Field NHL, the landmark is well to the north of the APE and the resource will not experience any adverse effects as a result of the Undertaking, nor would any of the TCPs identified by MARFORPAC (Griffin et al. 2015).

4.8.2.1 Construction Phase

4.8.2.1.1 North Option

Construction at Tinian International Airport under the Alternative 2 North Option could result in minor to major adverse impacts to known cultural resources should previously unidentified buildings, structures, or objects associated with West Field (Site TN-6-0030) be identified and disturbed during construction. Construction of the taxiways; parking apron; access road, including relocation of 8th Avenue; fire pump building, tanks, and wells; fuel tanks; fuel truck offload, fill-stands, and refueler parking area; maintenance facility; and cargo pad would involve ground-disturbing activities within the boundaries of West Field. Such disturbance could adversely affect the site’s integrity and potentially compromise the site’s eligibility for the NRHP. Construction at the Tinian International Airport would also have minor impacts on West Field by introducing new elements to the landscape that could diminish the site’s integrity of setting, design, and feeling, and thus NRHP eligibility.

Construction of fuel storage and distribution facilities at the Port of Tinian would have no effects on cultural resources. The port area within the APE does not contain known NRHP-listed or NRHP-eligible properties.

Alternative 2 would involve transportation of construction material on existing roads between the port in San Jose to Tinian International Airport. However, construction traffic would involve no ground-disturbing activity and studies have found that earthborn vibration from transportation along existing paved roads has virtually no impact on historic buildings (CALTRANS 2002); therefore, construction traffic would have no impacts on historic structures along the route such as the Nanyo Kohatsu Kabushiki Kaisha Ice Storage Building.

The Construction Phase of the Alternative 2 North Option could have minor to major adverse impacts on West Field from ground disturbing activities and visual impacts on integrity of setting and feeling. Inadvertent impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction.

The USAF consulted under Section 106 of the NHPA on Alternative 2 with the CNMI SHPO, ACHP, NPS, JRM, FAA, CNMI Governor's office, CNMI Historic Preservation Review Board, and members of the public. The Section 106 process resulted in a *Programmatic Agreement among the Pacific Air Forces, Directorate of the Strategy, Plans, and Programs, the Commonwealth of the Northern Mariana Islands State Historic Preservation Office, and the Advisory Council on Historic Preservation Regarding the Proposed Construction and Operation of Divert Activities and Exercises within the Commonwealth of the Northern Mariana Islands* (Divert PA), executed on June 28, 2016 by PACAF, the CNMI Governor on behalf of the CNMI SHPO, and the ACHP. The FAA and NPS were invited signatories to the Divert PA. The Divert PA stipulates USAF's responsibilities regarding the identification of and resolution of adverse effects to historic properties, including mitigation measures the USAF would take to avoid, minimize, and mitigate adverse effects if Alternative 2 is selected. These measures would apply to both the North and South options and are outlined below and are detailed in the PA provided in **Appendix D**.

Identification of Historic Properties. The USAF would perform cultural resource investigations in the West Field area. The inventory would be conducted prior to completing the project design phase for construction. The investigations would assess the extent and condition of cultural resources associated with the known historic contexts at West Field and evaluate the resources for NRHP eligibility. Completion of the inventory would include development of a research design and a survey report.

Interpretive Plan. The USAF would develop a plan to document and interpret extant historic features of West Field for the public, particularly the history of the 58th Bombardment Wing's use of the field and would seek public input on the plan. Possible interpretive products include but are not limited to: signage at publicly accessible historic features, printed brochures, airport exhibits and/or displays and electronic products.

***Curation Management*.** Although CNMI P.L. 10-5 designates the CNMI Museum of History and Culture as the official repository and custodian of historical and cultural artifacts of the CNMI and tasks the museum with the curation and display of CNMI cultural heritage, that facility does not presently meet minimum federal curation requirements promulgated in 36 CFR Part 79. Therefore, the USAF would propose to the Department of Defense Historic Preservation Working Group that the curation of archaeological materials from DOD activities in the CNMI be a recurring agenda item. The USAF would coordinate with the CNMI concerning curation management of USAF collections as the Undertaking proceeds and provide updates to the Historic Preservation Working Group.

Curation Procedures. Any materials recovered would be stored in a repository determined by the USAF and property owner (CPA) in consultation with and approval from the SHPO. Materials would be temporarily curated by USAF in facilities meeting 36 CFR Part 79 standards until such time the materials can be transferred to a facility within CNMI that meets these standards.

Artifact Display. While temporarily curated by the USAF, and under an appropriate loan agreement, USAF would make available to CNMI a selection of display quality artifacts, if any such artifacts are acquired during the Undertaking, for displays and educational purposes.

Monitoring Procedures. The USAF would provide qualified archaeologists to monitor all ground disturbing activities during construction of facilities associated with the Undertaking. In the event unanticipated archaeological materials are discovered through construction activities, the USAF would follow procedures outlined in the PA.

Post-Review Discoveries. If archaeological materials are discovered or unanticipated effects on historic properties are determined, the USAF would follow the procedures outlined in 36 CFR Part 800.13 for post-review discoveries.

Human Remains. If human skeletal remains (or remains thought to be human) are found during the Undertaking, the USAF would follow procedures in the PA for initial discovery, preliminary identification, and identification.

Fencing. The USAF would include in all applicable construction contracts relating to the Undertaking language stipulating that temporary fencing be placed around standing historic structures, archaeological sites, or other known contributing elements to historic properties that are immediately adjacent to areas of construction to help prevent inadvertent damage. The USAF would coordinate with the FAA and CPA any fencing within the airport boundary prior to implementation to assure FAA safety and design standards are not compromised.

With implementation of these measures, impacts on cultural resources from the Construction Phase of Alternative 2 North Option would be minimized.

4.8.2.1.2 South Option

Construction impacts under the South Option would be consistent with those discussed for the North Option under **Section 4.8.2.1.1**. Construction at Tinian International Airport under the South Option would also occur within West Field (Site TN-6-0030) and could similarly have a major or minor direct impact on that site and any other undocumented features or cultural resources should construction activities disturb unidentified buildings, structures, or objects associated with the site. Such disturbance could adversely affect the site's integrity and potentially compromise the site's eligibility for the NRHP. The construction of new facilities at and near West Field would also introduce new elements to the landscape that could affect the integrity of setting, design, and feeling, and thus NRHP eligibility, of that property, resulting in a minor impact. The Divert PA stipulates USAF's responsibilities regarding the identification of and resolution of adverse effects to historic properties, including mitigation measures the USAF would take to avoid, minimize, and mitigate adverse effects if Alternative 2 is selected for the Proposed Action. These measures would apply to both the North and South options and are outlined in **Section 4.8.1.2** and are detailed in the PA provided in **Appendix D**. With implementation of these measures, impacts on cultural resources from the Construction Phase of Alternative 2 South Option would be minimized.

4.8.2.2 Implementation Phase-North and South Options

The Implementation Phase of Alternative 2 would have no impact on cultural resources. The Implementation Phase of the Alternative 2 North and South Options would consist of truck traffic on existing roads, aircraft use of Tinian International Airport, and personnel lodging in commercial facilities. None of these activities would include modification of historic structures or disturbance of ground surfaces. Historic properties located near the airport such as those associated with the Gurguan Airfield site to the west and the Naval Air Base HQ site to the east of Tinian International Airport lie under the noise effects portion of the APE. Noise effects are normally assessed in terms of interference with appreciation of a property's historical feeling or setting. Since these sites are not widely accessible or interpreted for public visitation, noise effects to these sites would be minimal. Further, proposed aircraft operations at Tinian International Airport would be consistent with historic and current use at the airport and present less activity than historic use at Gurguan and West fields.

4.8.3 Alternative 3–Hybrid Modified Alternative

4.8.3.1 Construction Phase

4.8.3.1.1 Saipan

Construction under Alternative 3 on Saipan is similar to the types of facilities and locations considered in Alternative 1, except that fewer and smaller facilities would be built. Therefore, impacts to cultural resources resulting from construction under Alternative 3 on Saipan are similar to the impacts discussed under construction of Alternative 1 (**Section 4.8.1**).

Construction would not impact the physical, historic fabric of the SNHL or other historic properties at Saipan International Airport. Although proposed construction footprints encompass previously identified B-29 hardstands that contribute to the Aslito/Isley Field NHLD, a recent survey of proposed construction areas did not identify any remains of the hardstands, which could be very deeply buried or could have been destroyed by vegetation growth, post-war land clearance, or other forces. Construction of the fuel tanks at Saipan International Airport could disturb two non-contributing elements of the Aslito/Isley Field NHLD (Features 3 and 9); however, this disturbance would not affect the district's overall NRHP eligibility. Construction would have minor impacts on the Aslito/Isley Field NHLD from the introduction of new facilities that would alter the viewshed of nearby historic structures, potentially affecting the integrity of setting and feeling of those structures and the NHLD as a whole. Construction at the Port of Saipan and construction-related traffic between the seaport and Saipan International Airport would have no impact on cultural resources.

Inadvertent impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction but unlikely given the extent of previous cultural resources survey coverage. Alternative 3 would have a reduced likelihood of inadvertent impacts to unrecorded cultural resources at Saipan International Airport compared to Alternative 1, due to smaller construction footprints.

The USAF consulted under Section 106 of the NHPA on the identification of the APE, potential effects, and potential mitigation measures for Alternative 3 with the CNMI SHPO, ACHP, NPS, JRM, FAA, CNMI Governor's office, CNMI Historic Preservation Review Board, and members of the public. Although the USAF consulted on Alternative 3 during the Section 106 process, it was removed from the Divert PA upon request of the CNMI Governor after identification of Alternative 2 as the Preferred Alternative. The Divert PA requires the USAF to re-initiate Section 106 consultation should Alternative 3 be selected.

If Alternative 3 were selected, the USAF would remain committed to mitigating potential adverse effects on historic properties. Potential mitigation measures for Alternative 3 Construction Phase on Saipan are the same as those for the Alternative 1 Construction Phase, provided in **Section 4.8.1.1**.

4.8.3.1.2 Tinian

Construction under the Alternative 3 North and South Options is similar to the types of facilities and locations considered in Alternative 2, except that fewer and smaller facilities would be built. Therefore, impacts to cultural resources resulting from construction under the Alternative 3 North and South Options are similar to the impacts discussed under construction of Alternative 2 (**Section 4.8.2**). Although Alternative 3 was removed from the PA as described in **Section 4.8.3.1.2**, the USAF would be required to re-initiate Section 106 consultation should Alternative 3 be selected. If Alternative 3 were selected, the USAF would remain committed to mitigating potential adverse effects on historic properties on TInian. Potential mitigation measures for Alternative 3 Construction Phase on Tinian would be similar to those identified in the PA for the Alternative 2 Construction Phase, provided in **Section 4.8.2**.1, and would apply to both the North and South options.

NORTH OPTION

Construction at Tinian International Airport under the Alternative 3 North Option could result in major or minor adverse impacts to known cultural resources should previously unidentified buildings, structures, or objects associated with West Field (Site TN-06-0030) be identified and disturbed during construction. Construction of the taxiways; parking apron; access road, including relocation of 8th Avenue; fire pump building, tanks, and wells; fuel tanks; fuel truck offload, fill-stands, and refueler parking area; maintenance facility; and cargo pad would involve ground-disturbing activities within the boundaries of West Field (Site TN-6-0030). Such disturbance could adversely affect the site's integrity and potentially compromise the site's eligibility for the NRHP. Construction under the Alternative 3 North Option would also have minor impacts on West Field resulting from the introduction of new elements to the landscape that could diminish integrity of setting, design, and feeling, and thus NRHP eligibility.

Construction of fuel storage and distribution facilities at the Port of Tinian would have no effects on cultural resources. The port area within the APE does not contain known NRHP-listed or NRHP-eligible properties.

Inadvertent impacts to unrecorded cultural resources, particularly buried archaeological sites, are possible during construction. The Alternative 3 North Option would have a reduced likelihood of inadvertent impacts to unrecorded cultural resources compared to Alternative 2, due to smaller construction footprints. As discussed in **Section 4.8.3.1.2**, the USAF would be required to re-initiate Section 106 consultation to develop measures to mitigate adverse effects that would be captured in a new agreement document if Alternative 3 were selected.

SOUTH OPTION

Impacts from construction under the Alternative 3 South Option would be consistent with those discussed for the North Option under **Section 4.8.3.1.2.1**. Construction at Tinian International Airport under the South Option would also occur within West Field (Site TN-6-0030) and ground disturbing activities could similarly have a major or minor impact on that site and any other undocumented features or cultural resources. The construction of new facilities at and near West Field could affect the integrity of setting, design, and feeling, and thus NRHP eligibility, of that property, resulting in a minor impact. As discussed in **Section 4.8.3.1.2**, the USAF would be required to re-initiate Section 106 consultation to develop measures to mitigate adverse effects that would be captured in a new agreement document if Alternative 3 was selected.

4.8.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would generally be less than those described under Alternative 3.

4.8.3.2.1 Saipan

Impacts resulting from the Implementation Phase under Alternative 3 on Saipan would be consistent with those discussed under Alternative 1 in **Section 4.8.1.2**. The Implementation Phase on Saipan would have no impact on cultural resources.

4.8.3.2.2 Tinian - North and South Options

Impacts resulting from the Implementation Phase under the Alternative 3 North and South Options would be consistent with those discussed under Alternative 2 in **Section 4.8.2.2**. Specifically, the Implementation Phase of either the North or South Options under Alternative 3 would have no direct impacts to cultural resources.

4.8.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.8.4** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo and tanker aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on cultural resources would be expected as a result of the No Action Alternative. Cultural resources within the Project Areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.9 Recreation

The environmental impacts on recreational resources near a proposed action are assessed based on recreational availability and use. A proposed action is assessed to determine if it would substantially impede access to recreational resources, reduce recreational opportunities, cause conflicts between recreational users, or result in the physical deterioration of recreational resources.

4.9.1 Alternative 1–Modified Saipan Alternative

4.9.1.1 Construction Phase

Short-term, indirect, negligible, adverse impacts would be expected on recreational resources on Saipan during construction under Alternative 1. Recreational resources on Saipan are scattered throughout the island. Construction activities could increase the number of vehicles on roads, increasing travel times to available resources; however, tourists and residents would still have access to recreational opportunities. Construction activities would be within 0.5 mile from the Coral Ocean Point Golf Course, various beaches, cultural attractions described in **Section 3.9.2.1**, and a few highly used dive spots; however, construction activities would be in areas currently associated with higher noise levels (e.g., Saipan International Airport, Saipan Harbor). Therefore, short-term, direct, negligible, adverse impacts from construction noise would be expected on recreational activities.

4.9.1.2 Implementation Phase

4.9.1.2.1 Aircraft Operations

Impacts on recreational resources from implementing Alternative 1 would be expected to be long-term, periodic, direct, minor, and adverse. The majority of the activities associated with the proposed exercises would occur near Saipan International Airport. Noise levels associated with the proposed exercises would be expected to increase, particularly for the recreational resources on the southern tip of the island. Additionally, the exercises would not exceed 8 weeks in duration, exercises would be planned in advance, and the USAF would notify the local government and public in advance of the exercises per existing procedures, as described in **Section 2.3.2**. Military exercises would be conducted from Saipan International Airport, which is land designed for aircraft use. Previous military exercises throughout the region have not precluded fishing or recreational use, even during peak fishing season. The noise contours described in **Section 4.1.1** for Alternative 1 are based on flights by up to 12 KC-135 aircraft during exercise; however, typical exercises would only include two to four aircraft. The noise levels at Coral Ocean Point Golf Course and Ladder Beach would increase to 60–64 and 55–59 dBA DNL, respectively. Therefore, long-term, periodic, direct, minor adverse impacts on recreational resources would be expected from Alternative 1.

4.9.1.2.2 Vehicle Use and Lodging

Initial efforts to transfer 100,000-bbl of fuel would require the use of six fuel trucks working 10-hour shifts for 14 days. During exercises, fuel transfer activity would resume at a similar pace. Traffic along the fuel route could become slightly more congested, and therefore, access to recreational activities across the island could be slightly inhibited; however, access would not be denied. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 1.

Up to 265 personnel would use local facilities to conduct airfield support activities during the 8-week exercise period. Long-term, periodic, minor, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted. During planned exercises, it may become more difficult for tourists to find available lodging. However, local lodging establishments would be informed well in advance and could alert potential tourists to any temporary unavailability of lodging.

4.9.2 Alternative 2–Modified Tinian Alternative

4.9.2.1 Construction Phase

4.9.2.1.1 North Option

Impacts on recreational resources due to construction on the north side of Tinian International Airport would be expected to be similar to those described under Alternative 1 in **Section 4.9.1.1**, but to a greater extent because of the larger construction area associated with Alternative 2 North. The majority of the recreational resources on Tinian are associated with the Ushi Field-North Field Trail, coastal areas islandwide, and in the vicinity of San Jose Village. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways, including tourists. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise on recreation would be expected to be negligible. As a result, short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected from Alternative 2 North.

4.9.2.1.2 South Option

Recreational impacts due to construction on the south side of Tinian International Airport would be expected to be similar to those described under the North Option, but to a lesser extent because of the smaller construction area associated with the South Option. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise on recreation would be expected to be negligible. Therefore, short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected.

4.9.2.2 Implementation Phase- North and South Options

4.9.2.2.1 Aircraft Operations

Noise generated from the airfield would increase within the military area; however, since Tinian International Airport has few recreational opportunities in the surrounding area, impacts on recreational activities due to divert operations and military or humanitarian exercises would be expected to be long-term, periodic, direct, negligible, and adverse. The USAF would notify the local government and public in advance of the exercises per existing procedures as described in **Section 2.3.2**.

4.9.2.2.2 Vehicle Use and Lodging

Fuel trucks would run for 10 hours per day for 30 days, during exercises, to transfer up to 220,000-bbl of fuel to the proposed airport storage tanks. Traffic volumes along the transfer route would increase, and travel to the northern recreational resources could become temporarily inconvenienced. However, visitors and residents would not be denied access to recreational activities. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 2 South Option.

Up to 265 personnel are associated with military exercises. A noticeable increase in use of the main lodging on the island, the Tinian Dynasty Hotel and Casino, would occur. Other potential housing options would include the Fleming Hotel. This could cause a temporary shortfall of hotel rooms available to tourists, a minor adverse impact, although bookings at the Tinian Dynasty are normally well below the 412 room capacity. Personnel might take advantage of recreational facilities or sites on the island during the 8-week exercise period. This would provide a slight increase in use of recreational resources. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted.

4.9.3 Alternative 3–Hybrid Modified Alternative

4.9.3.1 Construction Phase

4.9.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.9.1.1**. Recreational resources on Saipan are scattered throughout the island. Construction activities could increase the number of vehicles on roads, increasing travel times to available resources; however, tourists and residents would still have access to recreational opportunities. Construction activities would be within 0.5 mile from the Coral Ocean Point Golf Course, various beaches, cultural attractions described in **Section 3.9.2.1**, and a few highly used dive spots; however, construction activities would be in areas currently associated with higher noise levels (e.g., Saipan International Airport, Saipan Harbor). Therefore, short-term, direct, negligible, adverse impacts from construction traffic noise would be expected on recreational activities.

4.9.3.1.2 Tinian

NORTH OPTION

Under Alternative 3 Tinian North Option, impacts on recreational resources due to construction on the north side of Tinian International Airport would be expected to be similar to those described under Alternative 1 in **Section 4.9.1.1**, but to a greater extent because of the larger construction area associated with Alternative 3 Tinian North Option. The majority of the recreational resources on Tinian are associated with the Ushi Field-North Field Trail, coastal areas island wide, and in the vicinity of San Jose Village. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise would be expected to be negligible. Short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected from Alternative 3 Tinian North Option.

SOUTH OPTION

Under Alternative 3 Tinian South Option, impacts on recreational resources due to construction on the north side of Tinian International Airport would be expected to be similar to those described under Alternative 1 in **Section 4.9.1.1**, but to a greater extent because of the larger construction area associated with Alternative 3 Tinian South. The majority of the recreational resources on Tinian are associated with the Ushi Field-North Field Trail, coastal areas island wide, and in the vicinity of San Jose Village. Construction activities would increase congestion on north-south thoroughfares on the island, which could inconvenience travelers using these roadways. Fewer recreational resources are found in the immediate vicinity of Tinian International Airport, and therefore impacts from construction noise would be expected to be negligible. Short-term, direct, negligible to minor, adverse impacts on recreational resources would be expected from Alternative 3 Tinian South Option.

4.9.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. Impacts on recreation would be similar, but greater than, those under Alternatives 1 and 2 because personnel could occupy both islands at once.

4.9.3.2.1 Saipan

AIRCRAFT OPERATIONS

Under Alternative 3 Saipan, the same number of aircraft operations could occur as described under Alternative 1. The majority of the activities associated with the proposed exercises would occur near Saipan International Airport. Noise levels associated with the proposed exercises would be expected to increase; however, the exercises would not exceed 8 weeks in duration, exercises would be planned in advance, and the USAF would notify the local government and public in advance of the exercises per existing procedures, as described in **Section 2.3.2**. The noise contours described in **Section 4.1.1** for Alternative 1 are based on flights by up to 12 KC-135 aircraft during exercise; however, typical exercises would only include two to four aircraft. The noise levels at Coral Ocean Point Golf Course and Ladder Beach would increase to 60–64 and 55–59 dBA DNL, respectively. Therefore, long-term, periodic, direct, minor adverse impacts on recreational resources would be expected from Alternative 3 Saipan.

VEHICLE USE AND LODGING

Initial efforts to transfer fuel into the 100,000-bbl bulk storage tank would require the use of six fuel trucks working 10-hour shifts for 14 days. During exercises, fuel transfer activity would resume at a similar pace. Traffic along the fuel route would become more congested, and therefore, access to recreational activities across the island would be slightly inhibited; however, access would not be denied. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 3 Saipan.

Up to 265 personnel would use local facilities to conduct airfield support activities during the 8-week exercise period. Long-term, periodic, minor, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted.

4.9.3.2.2 Tinian North and South Options

AIRCRAFT OPERATIONS

Under the Alternative 3 Implementation Phase on Tinian, impacts on recreational resources would be expected to be similar to, but less extensive, than those described in Alternative 2. Noise generated from the airfield would increase noise levels within the military area; however, since Tinian International Airport has few recreational opportunities immediately surrounding the airport area, impacts on recreational activities due to divert operations and military or humanitarian exercises would be expected to be long-term, periodic, direct, negligible, and adverse.

VEHICLE USE AND LODGING

The fuel transfer process for Alternative 3 Tinian would be similar to, but greater than, the transfer process described for Alternative 1. Fuel trucks would run for 10 hours per day for 17 days, during exercises to fill the 120,000-bbl bulk storage tank at the airport. Traffic volumes along the transfer route would increase, and travel to the northern recreational resources would be prolonged. However, visitors and residents would not be denied access to recreational activities. Therefore, long-term, periodic, minor, adverse impacts would be expected from the use of fuel trucks under Alternative 3 Tinian.

Up to 265 personnel are associated with military exercises. Personnel could use recreational facilities on the island during the 8-week exercise period. This would provide a slight increase in use of recreational resources. Therefore, long-term, periodic, negligible, adverse impacts would be expected from the use of recreational facilities by support personnel while exercises are being conducted.

4.9.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on Saipan or Tinian and the existing conditions discussed in **Sections 3.9.2.1** and **3.9.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on recreation would be expected as a result of the No Action Alternative. Access to recreational resources within the Project Areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.10 Land Use

Land Use and Ownership. A comparative methodology is used to determine potential impacts on land use. Construction or modification activities and operations associated with each alternative are examined and compared to existing land use conditions. Impacts are evaluated as they relate to the following:

- Compatibility of the proposed activities with existing land use and land use designations at the proposed project sites and in the surrounding areas
- Availability of sufficient land within the appropriate land use zone for the proposed activities.

Land use compatibility is defined here as the ability of two or more land uses to coexist without conflict. Examples of conflicts include interference of proposed activities with existing activities; insufficient availability of facilities, infrastructure, or resources to safely accommodate a proposed activity; and activities resulting in human health and safety issues due to poor siting.

Frequently, compatibility between land uses exists in varying degrees based on the frequency, duration, and intensity of a proposed activity. The land use zone designations preclude proposed activities from being located within a designated zone that would be incompatible with the current or proposed uses. However, an activity could be collocated within a land use zone that it is not normally associated with based on evaluation of its compatibility with nearby activities, including consideration of the availability of facilities and infrastructure, safety of personnel, and sensitive environments. Potential impacts on land use compatibility are based on qualitative assessments. Land disturbance within a given land use zone is not considered a land use impact under these criteria unless the disturbance results from a project that is incompatible with the land use designation.

Coastal Zone and Submerged Lands. Impacts on the coastal zone were evaluated by examining the consistency of the Proposed Action with the APCs on Tinian and Saipan. The USAF prepared a coastal zone consistency determination for proposed actions on Saipan and Tinian, and it was submitted with the 2012 Draft EIS. Pursuant to 15 CFR Part 930.35(c), since the CNMI CRMO did not respond to the ND within 60 days, the CNMI CRMO concurrence with the ND was presumed. **Appendix C** contains the consistency determination correspondence. The USAF initiated additional correspondence with CNMI CRMO during public review of the 2015 Revised Draft EIS regarding the Modified Alternatives to ensure compliance with the CZMA. The CNMI CRMO did not provide comments in response to this correspondence.

4.10.1 Alternative 1–Modified Saipan Alternative

4.10.1.1 Construction Phase

4.10.1.1.1 Land Use and Ownership

Long-term, minor, direct, adverse impacts on land use or land ownership would be expected during construction under Alternative 1 at Saipan International Airport or the Port of Saipan.

Saipan International Airport. Land required for construction of the parking apron, hydrant system, cargo pad, maintenance facility, and fuel tanks at the Saipan International Airport, and associated buffer areas, would occur on lands managed by the CPA and designated as Industrial by the CNMI Zoning Board. According to Article 4 of the Saipan Zoning Law of 2013, the proposed activities at the airport would be consistent with the designated Industrial land use (CNMI Zoning Board 2013). Approved industrial uses include Airport and Wholesale Gas and Fuel. The Airport designation includes “any public or privately owned or operated ground facility designed to accommodate landing and take-off operations of general aircraft.” The Wholesale Gas and Fuel designation includes “the use of land for bulk storage and wholesale distribution of 2,500 or more gallons of flammable liquid…” All of the proposed construction would be consistent with stipulations of the Saipan Zoning Law, and no impacts on land use would be anticipated.

Alternative 1 at Saipan International Airport would also be consistent with the *2002 Saipan Airport Master Plan*. The proposed construction is consistent with the development plans outlined in the plan and would not preclude future development at the airport. No impacts would be anticipated.

Further, the USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands. To reduce impacts on land use, the USAF could maintain the parking apron and cargo pad as common-use facilities for use by the CPA and other airport users. The total amount of land that would be required to construct and implement Alternative 1 on Saipan is 48.3 acres**.** Total land requirements for Alternative 1 include the construction footprint of all proposed infrastructure, as well as an additional buffer area around the proposed infrastructure to ensure access to and security of the infrastructure. The amount of real property interest acquired could change or increase during negotiations with the current property owner to accommodate potential uneconomic remnants associated with the proposed layout or based on potential changes requested by the FAA during the ALP approval process.

Port of Saipan. Construction of the fuel tanks at the Port of Saipan would occur on lands that have been zoned by the CNMI Zoning Board as Industrial according to the Saipan Zoning Law of 2013. The Industrial designation includes an approved use for Seaport, which includes bulk fuel storage as a designated use. The proposed fuel tank location is adjacent to existing bulk fuel storage facilities at the port. The proposed activities at the port would be consistent with the designated Industrial use. No impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Saipan.

4.10.1.1.2 Coastal Zone and Submerged Lands

USAF would be required to apply for a CRM permit for all actions that occur wholly or partially within an APC. Construction at the Port of Saipan would occur within the Port and Industrial APC; therefore, the USAF would prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential procedures identified in the permit, minor, adverse impacts on APCs on Saipan would be anticipated. As described in **Section 4.10**, the USAF completed a coastal zone consistency determination for the actions included in Alternative 1.

4.10.1.2 Implementation Phase

Long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 1 on Saipan as a result of increased noise levels due to aircraft operations. **Figure 4.10-1** presents AAD noise levels on the most current zoning map at Saipan International Airport. See **Section 4.1.1** for more information on the noise analysis. Under this alternative, the AAD contours above 65 dBA DNL would occur entirely on airport property. Small portions of the 65 dBA DNL contour would extend over the rural zoning district which contains undeveloped land. As discussed in **Section 4.1.1**, there are approximately zero to three residences within the rural zoning district of the 65 dBA DNL contour. All visible structures were considered residences, unless another use was obvious. Therefore, as shown in **Table 4.10-1**, it is assumed that a population of less than 12 would be exposed to the 65 dBA noise level on Saipan.

Table 4.10-1. Residences Affected by Alternative 1-AAD Noise

Noise Contours	Approximate Number of Residences Affected	Approximate Number of People Affected
65–70 dBA DNL	0-3	0-12
70–75 dBA DNL	0	0
75–80 dBA DNL	0	0
80+ dBA DNL	0	0

Source: HDR

AAD noise levels were calculated for noise-sensitive locations around Saipan International Airport. Most of the population around the airport is north of Saipan International Airport. As shown in **Table 4.10-2** and **Figure 4.10-2**, there are numerous noise-sensitive land uses around Saipan International Airport including residences, schools, and recreation areas. Portions of the Coral Ocean Point Golf Course are within the 60 dBA DNL contour, which is a slight increase from 58 dBA DNL existing background levels.

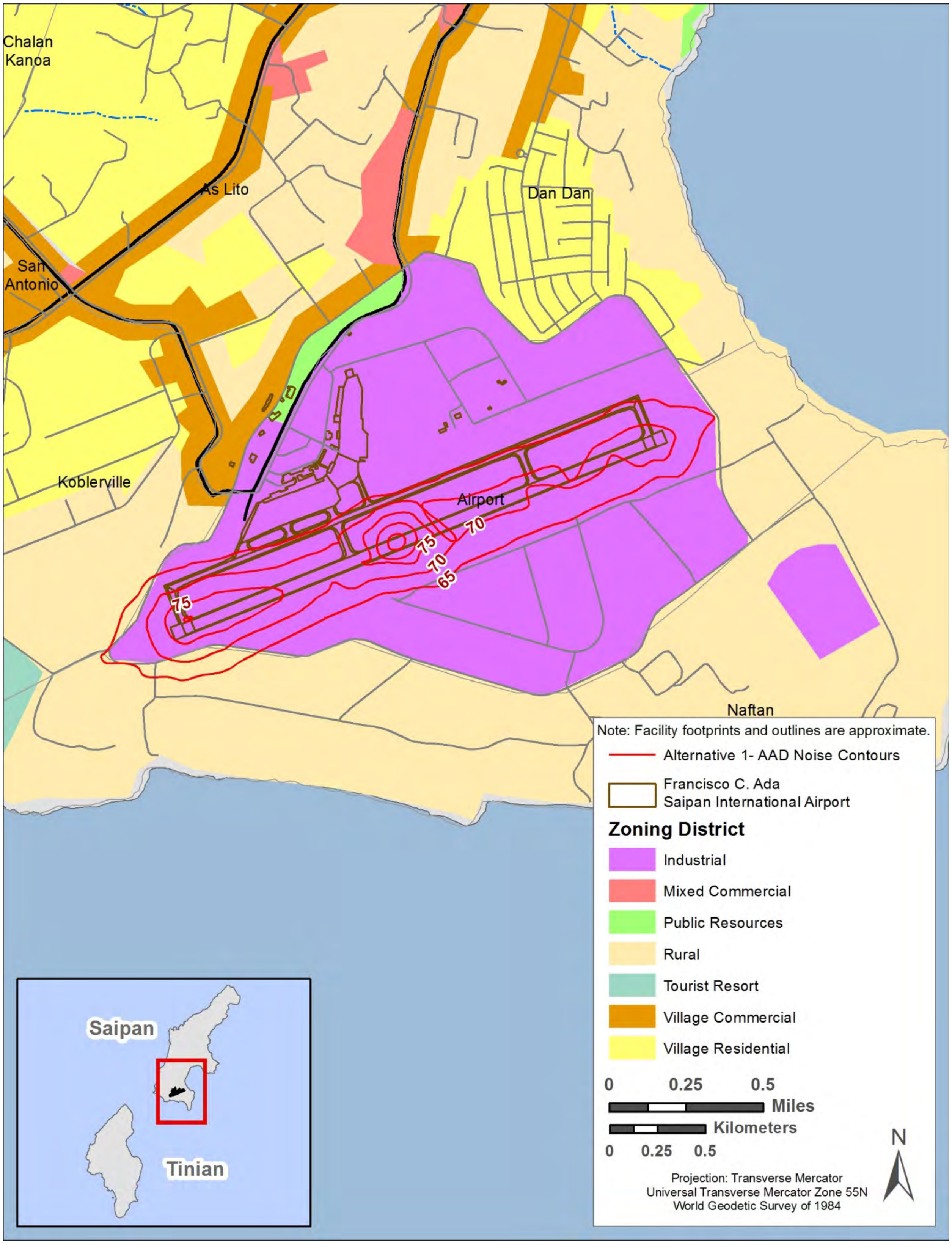


Figure 4.10-1. Alternative 1-AAD Noise Contours on the Saipan International Airport Zoning Map (2012)

Table 4.10-2. Alternative 1-AAD Noise Levels at Noise-Sensitive Locations around Saipan International Airport

Land Use	Existing DNL Noise Level	Proposed DNL Noise Level
Coral Ocean Point Golf Course	58 dBA	60 dBA
Dandan Elementary School	44 dBA	44 dBA
Village Residential	53 dBA	54 dBA
Koblerville Elementary School	47 dBA	48 dBA
Saipan Southern High School	48 dBA	48 dBA
Lao Lao Bay Golf Course	37 dBA	37 dBA
Ladder Beach	55 dBA	55 dBA
Forbidden Island	44 dBA	46 dBA
Babui Beach on Tinian	46 dBA	47 dBA

Source: HDR

According to a DOD policy memorandum published in 2009, populations exposed to noise greater than 80 dBA DNL are at the greatest risk of hearing loss (DOD 2009). To assess the effects on mental and physical health, populations that would be impacted by the noise under the Proposed Action were evaluated. There are no schools that would be exposed to noise levels at or above 65 dBA DNL and only noise levels at Koblerville Elementary School would be expected to increase, an estimated increase of 1 dBA DNL. Additionally, none of the noise sensitive locations identified **Table 4.10-2** would be within or above 65 dBA DNL. All noise sensitive locations would experience an increase of 0-2 dBA DNL under Alternative 1. Consequently, extensive mental and physical health effects are not expected and impacts on children's health or learning also would not be expected. No impacts on land use are expected under Alternative 1.

As previously discussed in **Section 3.1**, DNL represents the energy average of the noise events that occur during a prescribed time period; it is not the sound level heard at any given time. As a result, single-event noise levels are also given to show the maximum noise level that is estimated to be heard. Single sound events for aircraft noise are measured using the sound exposure level (SEL) metric. SEL is a measure of the total sound exposure of an event compressed into a 1-second time interval. Thus, it takes in the sound energy of the event and represents it as a steady noise level that lasts for 1 second. The SEL metric represents the sound of an aircraft flyover. Under the Proposed Action, the KC-135 produces 92 dBA SEL during departure when it is directly overhead, and 91 dBA SEL during arrival when it is directly overhead, based on standard weather conditions of 77.9 degrees Fahrenheit and 68 percent relative humidity.

ABD noise levels were also calculated for Alternative 1 to illustrate the land uses that could be exposed to noise during an exercise activity. **Figure 4.10-3** presents ABD noise levels on the most current zoning map available for the area around Saipan International Airport. The 65-70 dBA DNL contour would extend over the rural zoning district, which contains undeveloped land, and the tourist resort zoning district (i.e., Coral Ocean Point Golf Course). Small portions of the 70-75 dBA DNL contour would extend over the rural zoning district to the east of the

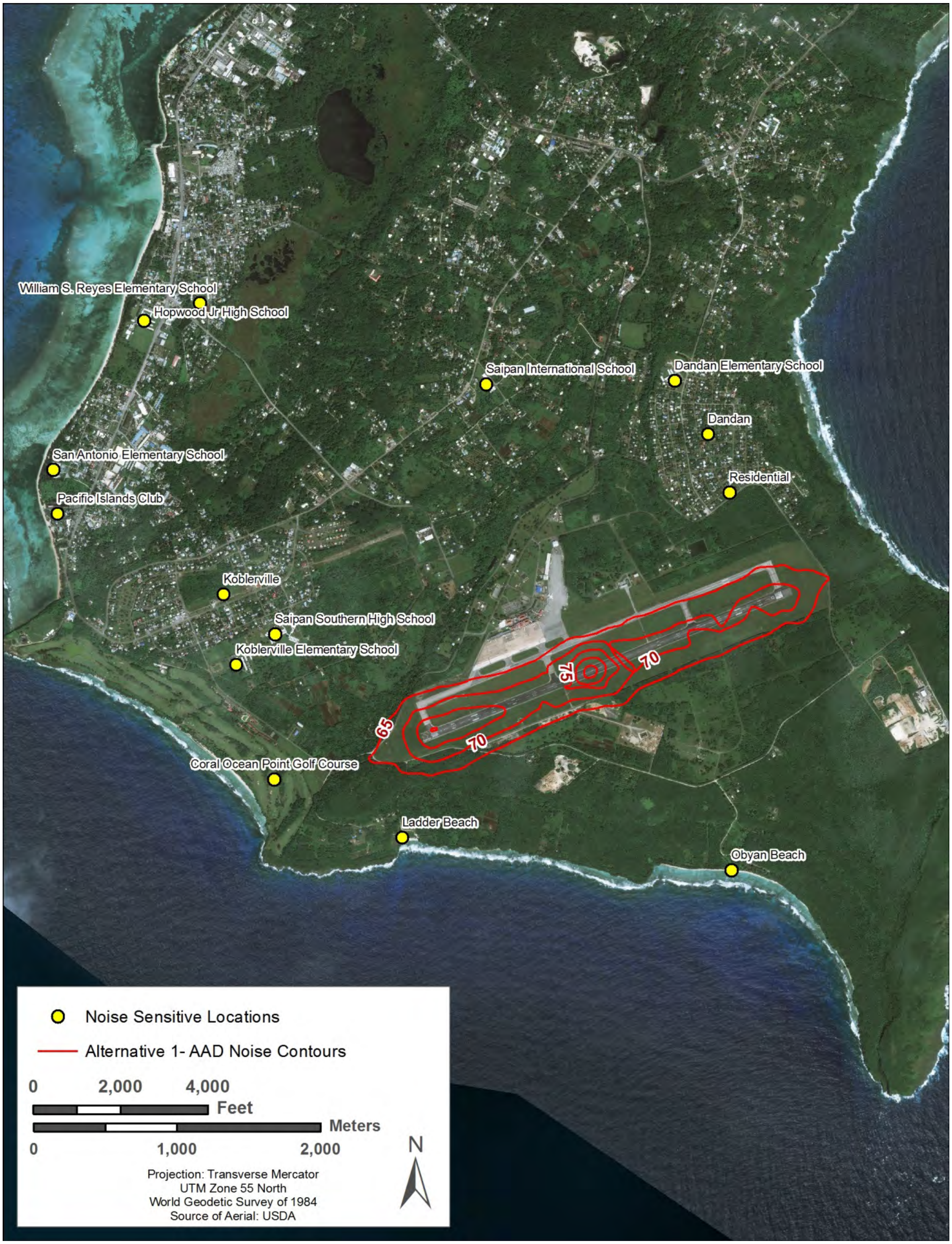


Figure 4.10-2. Noise Sensitive Locations near Saipan International Airport with Alternative 1-AAD Noise Contours

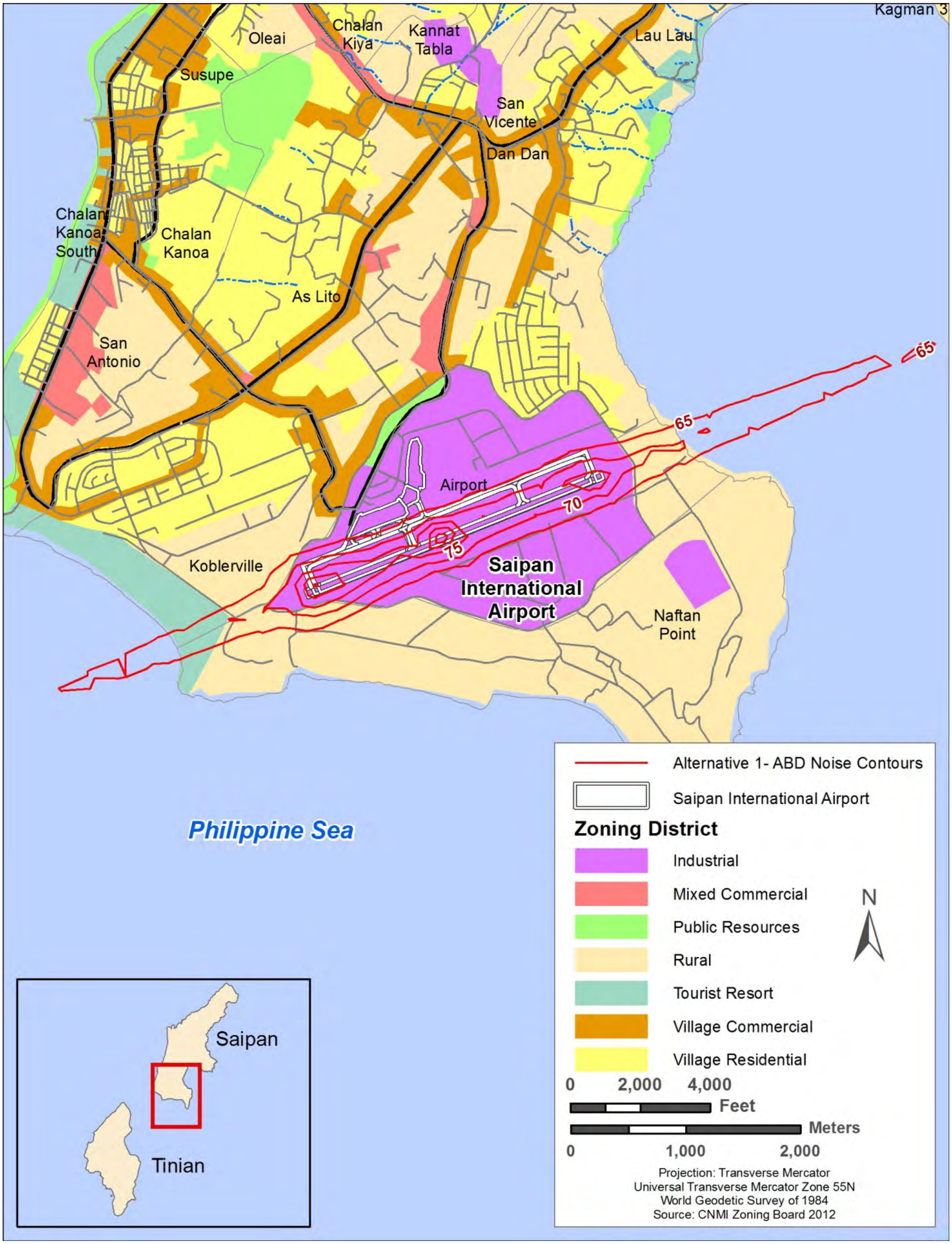


Figure 4.10-3. Alternative 1-ABD Noise Contours on the Saipan International Airport Zoning Map (2012)

airport. As discussed in **Section 4.1.1**, there are approximately zero to seven residences within the 65-70 dBA DNL ABD noise contour, which is in the rural zoning district. All visible structures were considered residences, unless another use was obvious. Therefore, as shown in **Table 4.10-3**, it is assumed that a population of less than 28 would be exposed to the 65 dBA noise level during an exercise activity on Saipan.

Table 4.10-3. Residences Affected by Alternative 1-ABD Noise

Noise Contours	Approximate Number of Residences Affected	Approximate Number of People Affected
65–70 dBA DNL	0-7	0-28
70–75 dBA DNL	0	0
75–80 dBA DNL	0	0
80+ dBA DNL	0	0

Source: HDR

As shown in **Table 4.10-4** and **Figure 4.10-4**, portions of the Coral Ocean Point Golf Course are within the 65 dBA DNL ABD contour, which is an increase from 58 dBA DNL existing background levels. There are no schools under the ABD noise levels that would be exposed to noise levels at or above 65 dBA DNL and only noise levels at Koblerville Elementary School would be expected to increase, an estimated increase of 1 dBA DNL.

Table 4.10-4. Alternative 1-ABD Noise Levels at Noise-Sensitive Locations around Saipan International Airport

Land Use	Existing DNL Noise Level	Proposed DNL Noise Level
Coral Ocean Point Golf Course	58 dBA	64 dBA
Dandan Elementary School	44 dBA	44 dBA
Village Residential	53 dBA	54 dBA
Koblerville Elementary School	47 dBA	48 dBA
Saipan Southern High School	48 dBA	48 dBA
Lao Lao Bay Golf Course	37 dBA	37 dBA
Ladder Beach	55 dBA	55 dBA
Forbidden Island	44 dBA	50 dBA
Babui Beach on Tinian	46 dBA	52 dBA

Source: HDR

4.10.2 Alternative 2–Modified Tinian Alternative

4.10.2.1 Construction Phase

4.10.2.1.1 North Option

LAND USE AND OWNERSHIP

Minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, North Option at Tinian International Airport or the Port of Tinian.

Figure 4.10-4. Noise Sensitive Locations near Saipan International Airport with Alternative 1-ABD Noise Contours

Tinian International Airport. Land required for the construction of the parking apron, cargo pad, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks, and the associated buffer areas, at the Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use and no impacts on land use would be anticipated.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and could maintain the parking apron and cargo pad common-use facilities for use by the CPA and other airport users in order to reduce potential impacts on land use. The total amount of land that would be required to construct and implement Alternative 2 on Tinian under the North Option is 165 acres**.** Total land requirements for Alternative 2 include the construction footprint of all proposed infrastructure, as well as an additional buffer area around the proposed infrastructure to ensure access to and security of the infrastructure. The amount of real property interest acquired could change or increase during negotiations with the current property owner to accommodate potential uneconomic remnants associated with the proposed layout or based on potential changes requested by the FAA during the ALP approval process. .

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use. No impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Tinian.

COASTAL ZONE AND SUBMERGED LANDS

Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF would prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential procedures identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated. As described in **Section 4.10**, the USAF completed a coastal zone consistency determination for the actions included in Alternative 2.

4.10.2.1.2 South Option

LAND USE AND OWNERSHIP

Minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, South Option at Tinian International Airport or the Port of Tinian.

Tinian International Airport. Land required for the construction of the parking apron, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks, and associated buffer areas, at Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and could maintain the parking apron and cargo pad as common-use facilities for use by the CPA and other airport users. The total amount of land that would be required to construct and implement Alternative 2 on Tinian under the South Option is 105.8 acres**.** Total land requirements for Alternative 2 include the construction footprint of all proposed infrastructure, as well as an additional buffer area around the proposed infrastructure to ensure access to and security of the infrastructure. The amount of real property interest acquired could change or increase during negotiations with the current property owner to accommodate potential uneconomic remnants associated with the proposed layout or based on potential changes requested by the FAA during the ALP approval process.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use. No significant impacts on land use or land ownership would be expected from construction or operation of the fuel tanks at the Port of Tinian.

COASTAL ZONE AND SUBMERGED LANDS

Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF would prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential procedures identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated. As described in **Section 4.10**, the USAF completed a coastal zone consistency determination for the actions included in Alternative 2.

4.10.2.2 Implementation Phase - North and South Options

Long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 2 on Tinian as a result of increased noise levels due to aircraft operations. **Figure 4.10-5** presents the Alternative 2-AAD noise analysis at Tinian International Airport on the most current land use map. See **Section 4.1.2** for more information on the noise analysis. Under Alternative 2, the 65 dBA DNL contour would occur entirely on airport property. Therefore, as shown in **Table 4.10-5**, existing residences and population on Tinian would not be exposed to these noise levels.

Table 4.10-5. Residences Affected by Alternative 2-AAD Noise

Noise Contours	Approximate Number of Residences Affected	Approximate Number of People Affected
65–70 dBA DNL	0	0
70–75 dBA DNL	0	0
75–80 dBA DNL	0	0
80+ dBA DNL	0	0

Source: HDR

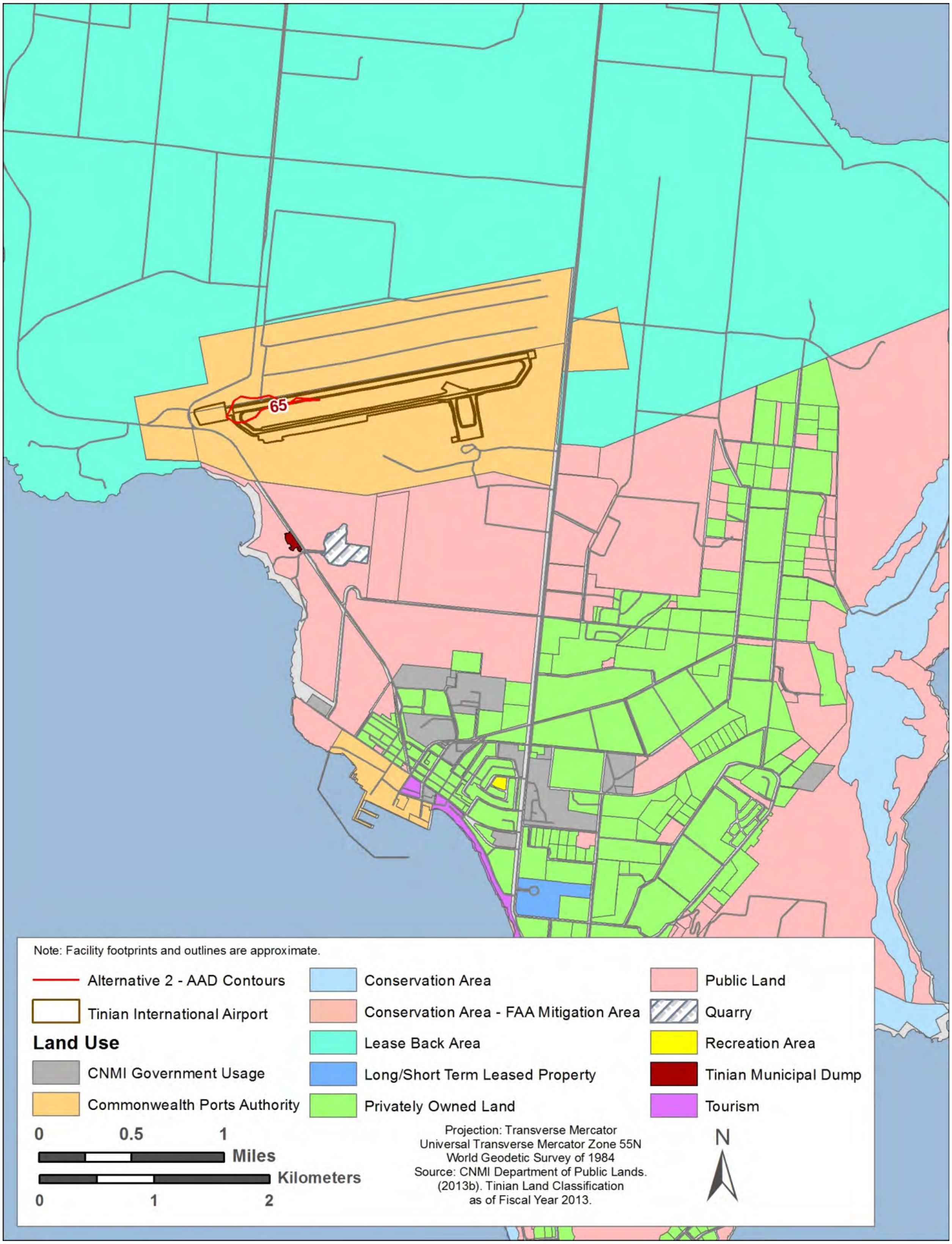


Figure 4.10-5. Alternative 2-AAD Noise Contours on the Tinian International Airport Land Use Map

AAD noise levels were calculated for noise-sensitive locations around Tinian International Airport. Since the land north of the airport is leased for military use, the areas on Tinian that are sensitive to noise are south of Tinian International Airport. As shown in **Table 4.10-6** and **Figure 4.10-6**, the residential areas, Marpo Heights and private land, and the Old San Jose Bell Tower would be exposed to very low noise levels from aircraft operations under Alternative 2 and would be consistent with noise levels under existing conditions. As discussed in **Section 3.1.3** noise levels below 45 dBA DNL are well below the typical ambient levels in a quiet suburban area. Therefore, no significant impacts on land use are expected under Alternative 2.

Table 4.10-6. Alternative 2-AAD Noise Levels at Noise-Sensitive Locations around Tinian International Airport

Land Use	Existing DNL Noise Level	Proposed DNL Noise Level
Marpo Heights–Residential	< 45 dBA	< 45 dBA
Private Land	< 45 dBA	< 45 dBA
Old San Jose Bell Tower	< 45 dBA	< 45 dBA

Source: HDR

ABD noise levels were also calculated for Alternative 2 to illustrate the land uses that could be exposed to noise during an exercise activity. **Figure 4.10-7** presents ABD noise levels on the most current land use map at Tinian International Airport. Except for two very small areas to the west of Tinian International Airport, the 70-75 dBA DNL contour would occur entirely on airport property. The 65-70 dBA DNL contour would extend over the LBA to the west and east of the airport covering approximately 135 acres of off-airport property. As discussed in **Section 4.1.2**, there are zero residences within the 65-70 dBA DNL contour, and no structures are present in this area. However, people could be present in this area of the LBA for grazing or agricultural purposes. These people would be able to hear the departures and arrivals of the KC-135s during the 8 weeks of exercises and would be exposed to the 65 dBA DNL. Some people may find this new noise source annoying to varying degrees, depending on their degree of noise sensitivity.

As shown in **Table 4.10-7** and **Figure 4.10-8**, the residential areas, Marpo Heights and private land, and the Old San Jose Bell Tower are south of Tinian International Airport, and would be exposed to very low ABD noise levels during exercise activities under Alternative 2. Private land, east/southeast of the airport, would be exposed to 51 dBA DNL noise levels, although the use of this land is unknown.

Table 4.10-7. Alternative 2-ABD Noise Levels at Noise-Sensitive Locations around Tinian International Airport

Land Use	Existing DNL Noise Level	Proposed DNL Noise Level
Marpo Heights–Residential	< 45 dBA	<45 dBA
Private Land	< 45 dBA	51 dBA
Old San Jose Bell Tower	< 45 dBA	<45 dBA

Source: HDR

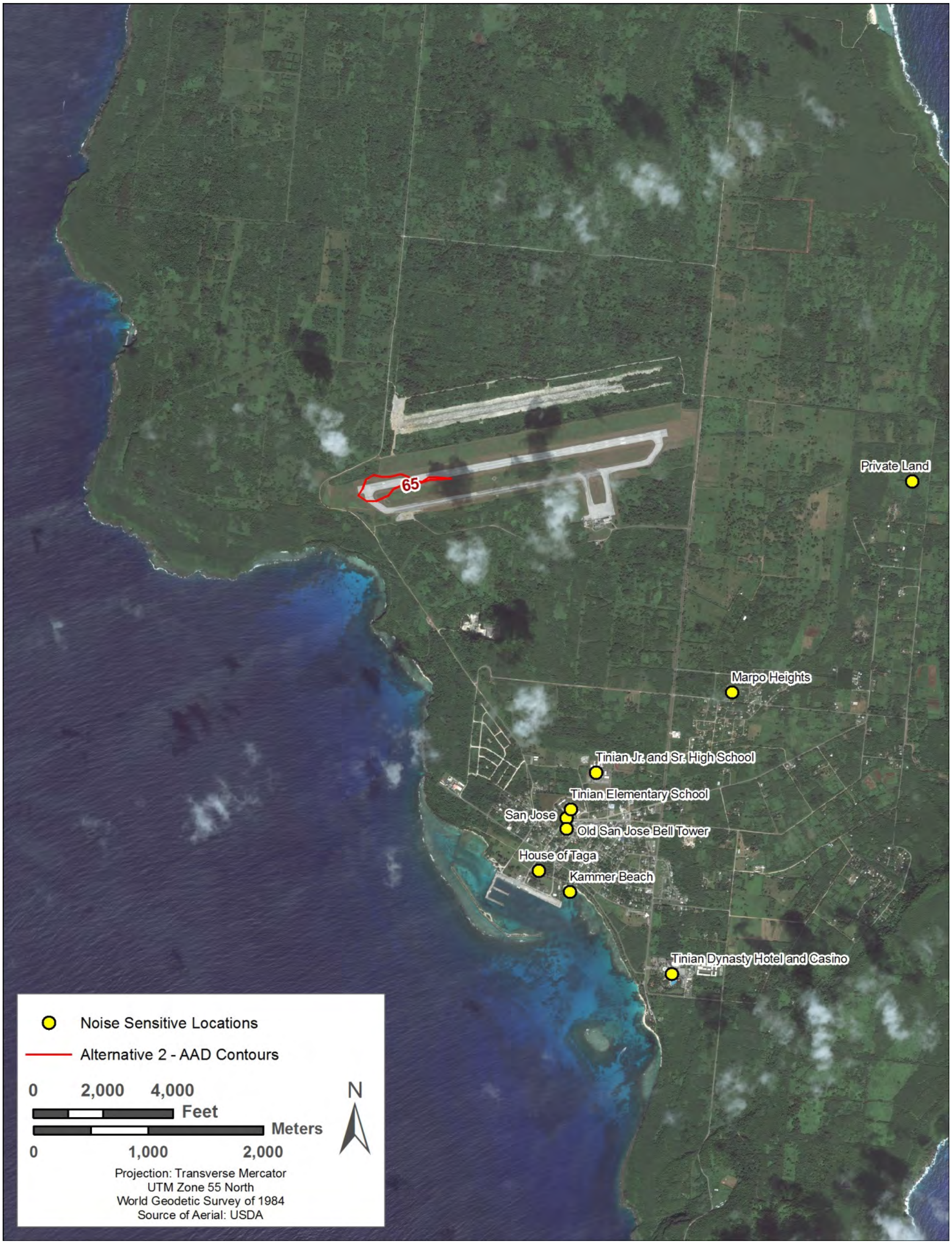


Figure 4.10-6. Noise Sensitive Locations near Tinian International Airport with Alternative 2-AAD Noise Contours

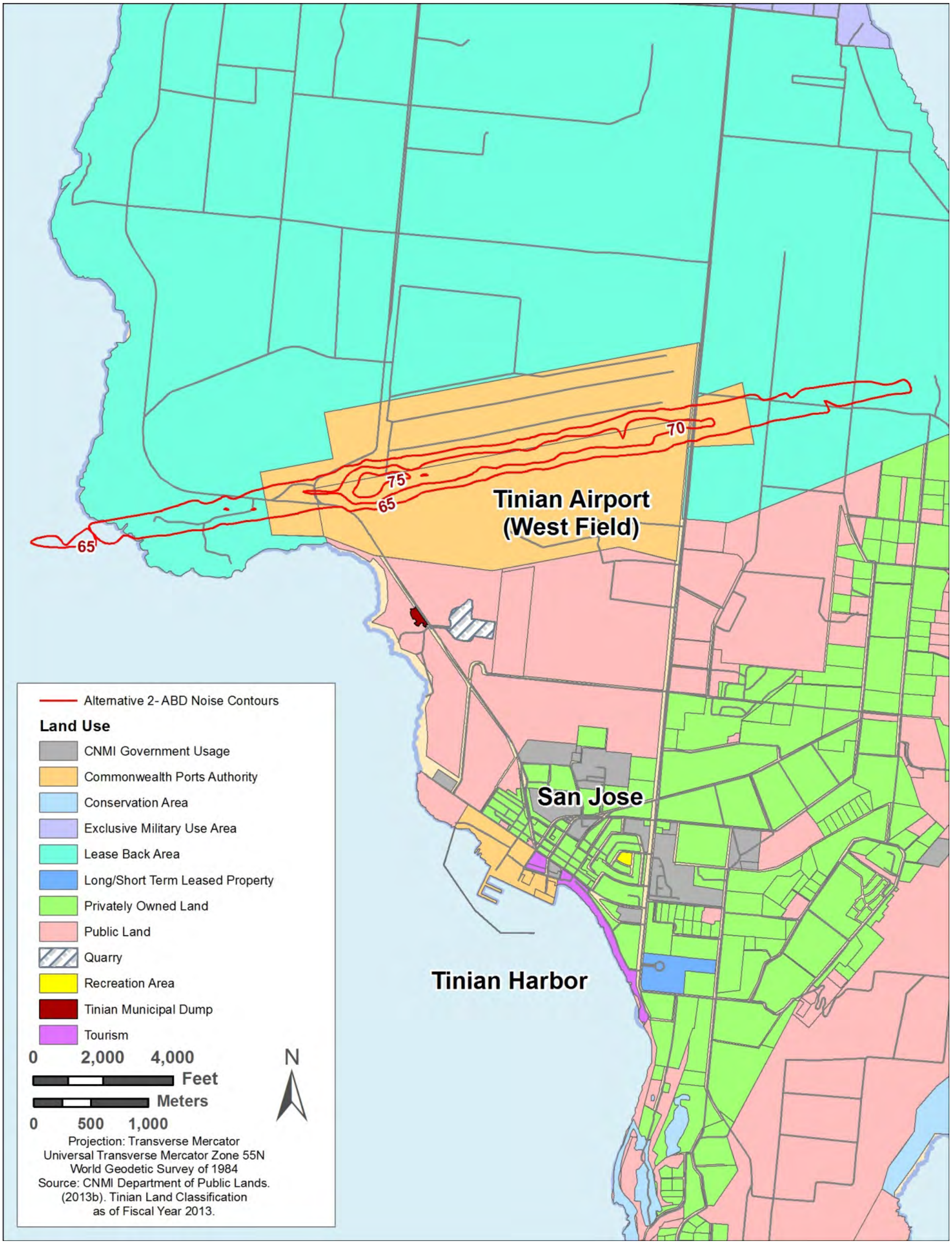


Figure 4.10-7. Alternative 2-ABD Noise Contours on the Tinian International Airport Land Use Map

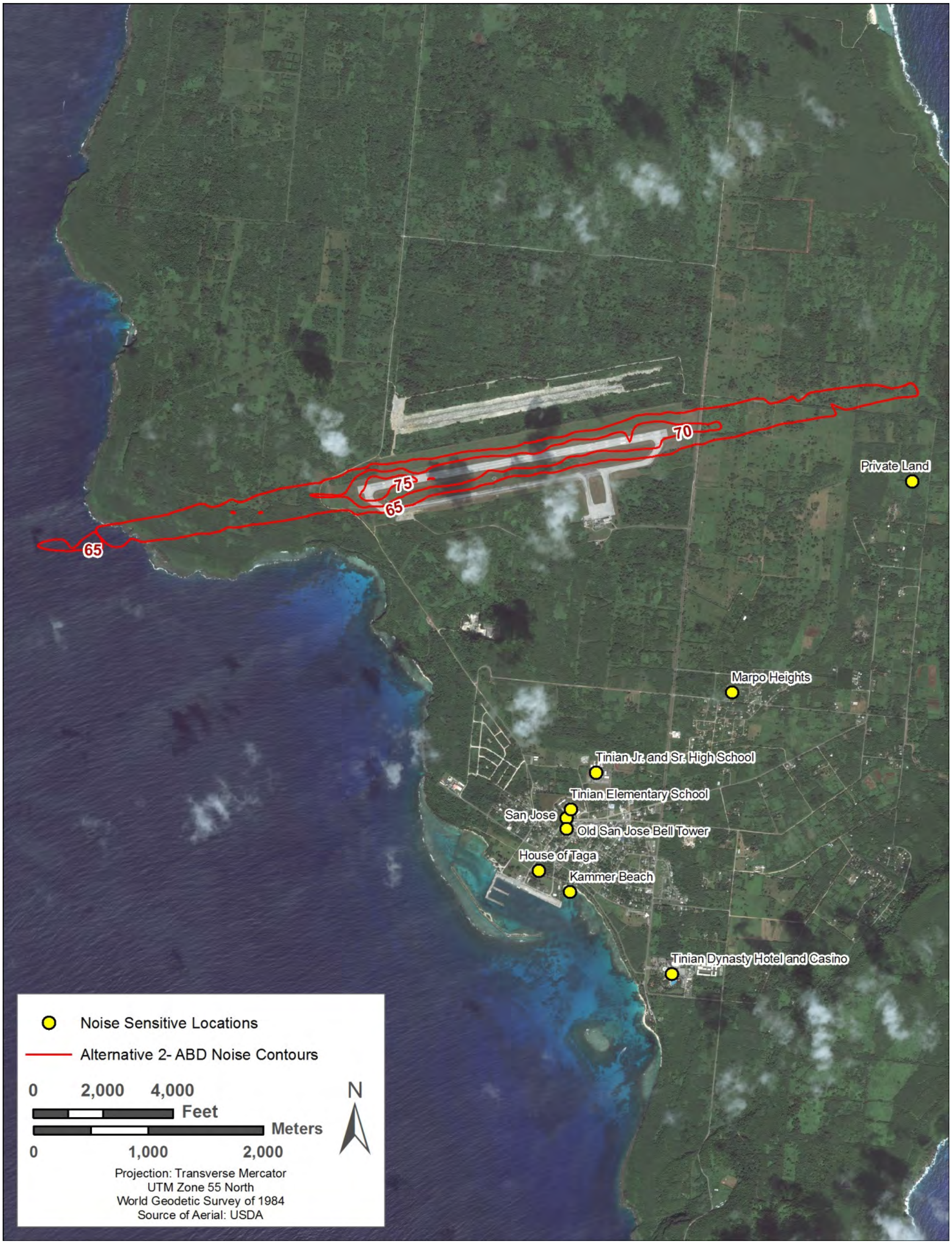


Figure 4.10-8. Noise Sensitive Locations near Tinian International Airport with Alternative 2-ABD Noise Contours

4.10.3 Alternative 3–Hybrid Modified Alternative

4.10.3.1 Construction Phase

4.10.3.1.1 Saipan

Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.1.1.1**. Therefore, negligible, direct, adverse impacts on land use or land ownership would be expected during construction under Alternative 3 at Saipan International Airport or the Port of Saipan.

Saipan International Airport. Land required for the construction of the cargo pad, maintenance facility, and fuel tanks, and associated buffer areas, at Saipan International Airport would occur on lands managed by the CPA and designated as Industrial by the CNMI Zoning Board. The proposed activities at the airport would be consistent with the designated Industrial land use (CNMI Zoning Board 2013). Approved industrial uses include Airport and Wholesale Gas and Fuel. The Airport designation includes "any public or privately owned or operated ground facility designed to accommodate landing and take-off operations of general aircraft." The Wholesale Gas and Fuel designation includes "the use of land for bulk storage and wholesale distribution of 2,500 or more gallons of flammable liquid…" All of the proposed construction activities would be consistent with stipulations of the Saipan Zoning Law, and no impacts on land use would be anticipated.

Alternative 3 at Saipan International Airport would also be consistent with the *2002 Saipan Airport Master Plan*. The proposed construction is consistent with the development plans outlined in the plan and would not preclude future development at the airport. Further, the USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and could maintain the cargo pad as common-use facilities for use by the CPA and other airport users. The total amount of land that would be required to construct and implement Alternative 3 on Saipan is 17.5 acres. Total land requirements for Alternative 3 include the construction footprint of all proposed infrastructure, as well as an additional buffer area around the proposed infrastructure to ensure access to and security of the infrastructure. The amount of real property interest acquired could change or increase during negotiations with the current property owner to accommodate potential uneconomic remnants associated with the proposed layout or based on potential changes requested by the FAA during the ALP approval process.

COASTAL ZONE AND SUBMERGED LANDS

No construction would occur at the Port of Saipan under Alternative 3; therefore, no impacts on APCs on Saipan would be expected.

4.10.3.1.2 Tinian

NORTH OPTION

LAND USE AND OWNERSHIP

Under Alternative 3 Tinian North Option, the construction footprint would be less than that described under Alternative 2, Modified Tinian in **Section 4.1.2.1**. Therefore, minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, North Option at Tinian International Airport or the Port of Tinian.

Tinian International Airport. Land required for the construction of the parking apron, cargo pad, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks, and associated buffer areas, at Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and could maintain the parking apron and cargo pad as common-use facilities for use by the CPA and other airport users. The total amount of land that would be required to construct and implement Alternative 3 under Tinian North is 165 acres**.** Total land requirements for Alternative 3 include the construction footprint of all proposed infrastructure, as well as an additional buffer area around the proposed infrastructure to ensure access to and security of the infrastructure. The amount of real property interest acquired could change or increase during negotiations with the current property owner to accommodate potential uneconomic remnants associated with the proposed layout or based on potential changes requested by the FAA during the ALP approval process.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use.

Coastal Zone and Submerged Lands

Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF would prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential procedures identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated. As described in **Section 4.10**, the USAF completed a coastal zone consistency determination for the actions included in Alternative 3.

SOUTH OPTION

Land Use and Ownership

Under the Alternative 3 Tinian South Option, the construction footprint would be less than that described under Alternative 2 in **Section 4.1.2.1**. Therefore, minor, direct, adverse impacts on land use or land ownership would be expected from construction of the Alternative 2, South Option at Tinian International Airport or the Port of Tinian.

Tinian International Airport. Land required for the construction of the parking apron, cargo pad, maintenance facility, access road, fire water system, fuel pumps, fill stands, hydrant system, and fuel tanks, and associated buffer areas, at the Tinian International Airport would occur on lands managed by the CPA and designated as urban/built-up by the CNMI DPL. All of the proposed construction activities would be consistent with this designated Industrial land use.

The USAF would obtain the necessary authority or minimum property interest necessary to construct the facilities on public lands and could maintain the parking apron and cargo pad as common-use facilities for use by the CPA and other airport users. The total amount of land that would be required to construct and implement Alternative 3 under Tinian South is 105.8 acres**.** Total land requirements for Alternative 3 include the construction footprint of all proposed infrastructure, as well as an additional buffer area around the proposed infrastructure to ensure access to and security of the infrastructure. The amount of real property interest acquired could change or increase during negotiations with the current property owner to accommodate potential uneconomic remnants associated with the proposed layout or based on potential changes requested by the FAA during the ALP approval process.

Port of Tinian. Construction of the fuel tanks at the Port of Tinian would occur on lands currently owned and operated by the CPA and designated as undeveloped/site in natural state and urban/built-up by the CNMI DPL. The proposed activities at the port would be consistent with the designated land use.

Coastal Zone and Submerged Lands

Construction at Tinian International Airport would not occur within any designated APCs; therefore, a CRM permit would not be required for this portion of construction. Construction at the Port of Tinian would occur within the Port and Industrial APC and the Shoreline APC. Therefore, the USAF would prepare a CRM permit for this portion of construction. Pending completion of this permit and implementation of any potential procedures identified in the permit, minor, adverse impacts on APCs on Tinian would be anticipated. As described in **Section 4.10**, the USAF completed a coastal zone consistency determination for the actions included in Alternative 3.

4.10.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts would be to land use would occur on both islands.

4.10.3.2.1 Saipan

Under Alternative 3 Saipan, the same number of aircraft operations could occur as described under Alternative 1. Therefore, long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 3 on Saipan, as described in **Section 4.10.1.2**, as a result of increased noise levels due to aircraft operations. See **Section 4.1.1** for more information on the noise analysis.

4.10.3.2.2 Tinian North and South Options

Under Alternative 3 at Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, long-term, direct, negligible, adverse impacts on land use or land ownership would be expected from implementation of Alternative 3 on Tinian, as described in **Section 4.10.2.2**, as a result of increased noise levels due to aircraft operations. See **Section 4.1.2** for more information on the noise analysis.

4.10.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.1.4** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on land use would be expected as a result of the No Action Alternative. Land use on Saipan and Tinian would not be impacted by construction activities. The No Action Alternative would result in a continuation of existing conditions.

4.11 Transportation

Various construction and implementation activities that could lead to transportation impacts were evaluated based on traffic volume and existing LOS. Impacts were considered minor if LOS would not degrade as a result of the additional traffic or if the increase in traffic volume was less than 10 percent. Impacts were considered major if LOS would degrade as a result of the additional traffic and the increase in traffic volumes was greater than 10 percent. Additionally, major impacts could occur with a relatively small traffic volume increase if the existing LOS was “F.” Short-term impacts on the ground transportation network were considered to be those occurring during construction and immediately thereafter (approximately 1- to 4-year timeframe) and long-term impacts were considered to occur and continue starting from approximately 5 years from start of construction.

Several possible activities associated with the Proposed Action could impact the transportation network, including construction, transporting fuel from the seaport, and the movement of personnel during construction and subsequent to implementation of the Proposed Action. The impacts of these activities were qualitatively assessed based on information from the CNMI Comprehensive Master Plan and estimated number of trips generated by the activities associated with the Proposed Action. The impacts discussed in the subsequent sections are identified as direct, adverse impacts unless otherwise noted.

4.11.1 Alternative 1–Modified Saipan Alternative

4.11.1.1 Construction Phase

Short-term, direct, minor, adverse impacts would be expected on the local transportation network in Saipan due to construction under Alternative 1. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction activities at Saipan International Airport and the Port of Saipan. It is estimated that the number of construction workers associated with Alternative 1 would not exceed 75 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the local construction workforce, it is assumed that all of these workers would be local residents.

It is assumed that the estimated 75 local construction worker residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 25 trips would be generated in the morning and 25 trips would be generated in the evening, totaling 50 daily trips as a result of local worker travel during the Construction Phase.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials, including concrete, and other miscellaneous trips occurring by inspectors, project managers, and other personnel that might visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 75 workers are on site, this would equate to 6 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that an additional 1,900 yearly truck trips, or approximately 5 trips per day, would occur when concrete is being poured.

Table 4.11-1 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-1. Estimated Maximum Daily Trips – Alternative 1 Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	50	Morning and afternoon
Miscellaneous Trips	6	All day
Concrete and Cement Truck Trips	5	All day
Total Additional Trips per Day	**61**	

Source: HDR extrapolated

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

While the transportation network of Saipan is rather limited, it is assumed that the local traffic generated by construction activities would be distributed, preventing major impact on any one roadway. Thus, it is anticipated that additional traffic generated during the Construction Phase would result in only minor increases in delay and no changes to existing LOS. One roadway segment to note is Isa Drive north of Chalan Monsignor Gurerrero. This segment currently operates at LOS D with an ADT of 7,530 vehicles. Capacity of this segment is 10,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Isa Drive, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS. Traffic operations impacts could be minimized by requiring construction activities to begin and end outside of peak travel periods.

According to the CNMI Comprehensive Highway Master Plan, current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 1 would occur outside of typical peak hours.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the Project Area. For roadways that currently carry 20,000 vehicles per day or more, the deterioration would be minor since the additional traffic (at peak construction) would be less than 0.3 percent of the existing volume. For roadways that carry less than 20,000 vehicles per day, the deterioration would be slightly more pronounced because the additional traffic would be close to a 0.6 percent increase over the existing volume. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. These routes could also be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

Indirect impacts could occur on corridors not directly impacted by the worker routes as a result of existing congestion. However, impacts could be minimized if construction activities occurred outside of peak travel periods and therefore a majority of the worker transport activities would also occur outside of peak periods.

4.11.1.2 Implementation Phase

Minor, direct, adverse impacts would be expected on the local transportation network in Saipan under the Alternative 1 Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned military exercises. Transportation impacts as a result of the Implementation Phase include fuel truck traffic, daily transport of personnel, and miscellaneous trips, including deliveries to and from Saipan International Airport as a result of Alternative 1. Fuel tanks at the airport would be filled from the fuel tanks constructed at the seaport. It is anticipated that 6 fuel trucks (10,000-gallon capacity) making 5 round trips to and from the seaport each day for 14 days would be necessary to fill the new tank. This would result in 60 additional daily trips. During exercises, it is anticipated the same amount of fuel truck traffic would be necessary to maintain adequate fuel storage at Saipan International Airport. The proposed truck route is shown in **Figure 3.11-1** in **Section 3.11**.

Temporary lodging for up to 265 personnel would be required to support Alternative 1. Buses would be used to transport personnel to and from Saipan International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport: Chalan Pale Arnold, Chalan Monsignor Guerrero, Tun Herman Pan, and Airport Road (see **Figure 3.11-1** in **Section 3.11**).

In addition to trips associated with fuel delivery and personnel travel, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 1. It is assumed that one additional round trip would be generated for every 50 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-2. Estimated Maximum Daily Trips – Alternative 1 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

Table 4.11-2 summarizes the estimated daily trips expected during implementation.

The daily trips generated during the Implementation Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

According to the CNMI Comprehensive Highway Master Plan current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 1 will occur outside of typical peak hours.

Traffic congestion is of concern for one segment of the proposed fuel truck route, Beach Road. Beach Road carries the highest volume of traffic in the vicinity of the Project Area and is currently experiencing some congestion issues. Based on the analysis conducted for the CNMI Comprehensive Master Plan, the ADT capacity for this segment is 30,000 vehicles per day and the existing estimated ADT is 39,890 vehicles per day, almost 10,000 vehicles more than capacity. At this LOS, relatively minor increases in traffic can cause major impacts on current traffic operations. The total traffic generated as a result of the Alternative 1 is less than 0.25 percent of the daily traffic on Beach Road and less than half of those trips would use Beach

Road. Therefore, it is anticipated that delay and congestion impacts on Beach Road related to Alternative 1 would be intermittent short-term, minor, and adverse.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck and bus traffic resulting from implementation with negligible roadway deterioration.

4.11.2 Alternative 2–Modified Tinian Alternative

4.11.2.1 Construction Phase

4.11.2.1.1 North Option

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 2 North Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction, including the reroute of 8th Avenue. It is estimated that the number of construction workers associated with Alternative 2 North Option would not exceed 150 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 50 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 80 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 23 trips would be generated in the morning and 23 trips would be generated in the evening, totaling 46 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor) or the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and Casino via Broadway during the Construction Phase (see **Figure 2.5-8**). If lodging for all non-resident workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 4 round trips (2 round trips in the morning and 2 round trips in the afternoon) would be required to transport the non-resident workers, totaling 8 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 150 workers are on site, this would equate to 12 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that an additional 6,842 yearly truck trips, or approximately 19 trips per day, would occur when concrete is being poured. For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-3 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-3. Estimated Maximum Daily Trips – Alternative 2 North Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	46	Morning and afternoon
Non-Local Worker Transport	8	Morning and afternoon
Miscellaneous Trips	12	All day
Concrete and Cement Truck Trips	19	
Total Additional Trips per Day	**85**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Under this alternative the USAF proposes to reroute 8th Avenue. Traffic along 8th Avenue would be maintained during construction of the relocated 8th Avenue. Minor impacts would be expected for a few days when the existing 8th Avenue route is decommissioned and routed onto the relocated roadway section.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the Project Area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes could be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.2.1.2 South Option

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 2 South Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction. It is estimated that the number of construction workers associated with the Alternative 2 South Option would not exceed 100 at any given time for the South Option. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 20 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 80 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 23 trips would be generated in the morning and 23 trips would be generated in the evening, totaling 46 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor) or the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and Casino via Broadway during the Construction Phase (see **Figure 2.5-8**). If lodging for all the workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 2 round trips (1 round trips in the morning and 1 round trips in the afternoon) would be required to transport the non-resident workers, totaling 4 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 100 workers are on site, this would equate to 8 trips per day. It is anticipated that an additional 4,323 yearly truck trips, or approximately 12 trips per day, would occur when concrete is being poured.

For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-4 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

Table 4.11-4. Estimated Maximum Daily Trips – Alternative 2 South Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	46	Morning and afternoon
Non-Local Worker Transport	4	Morning and afternoon
Miscellaneous Trips	8	All day
Concrete and Cement Truck Trips	12	
Total Additional Trips per Day	**70**	

Source: HDR 2012

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the Project Area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.2.2 Implementation Phase- North and South Options

Minor, direct, adverse impacts would be expected on the local transportation network in Tinian under the Alternative 2 North and South Options Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned joint military exercises. Transportation impacts as a result of the Implementation Phase of Alternative 2 include fuel truck traffic and miscellaneous trips including deliveries to and from Tinian International Airport. The fuel tanks at the airport would be filled from the fuel tank constructed at the seaport. It is anticipated that 6 fuel trucks (10,000-gallon capacity) making 5 round trips to and from the seaport each day for 30 days would be necessary to fill the airport tanks. This would result in 60 additional daily trips. During exercises, it is anticipated the same number of fuel truck traffic would be necessary to maintain adequate fuel storage at Tinian International Airport. The proposed truck route is shown in **Figure 2.5-8**.

Temporary lodging for up to 265 personnel would be required to support Alternative 2. Buses would be used to transport personnel to and from Tinian International Airport during the

Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport (**Figure 2.5-8**).

In addition to trips associated with fuel delivery, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 2. It is assumed that one additional round trip would be generated for every 25 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-5 summarizes the estimated daily trips expected during implementation.

Table 4.11-5. Estimated Maximum Daily Trips – Alternative 2 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

According to the CNMI Comprehensive Highway Master Plan current traffic operations on all Tinian roadway segments are LOS A. While proportionally the additional number of trips could be high for some of the roadway segments, all of the Tinian roadway facilities have substantial excess capacity; therefore, minor, direct, adverse impacts are anticipated under Alternative 2.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck traffic resulting from implementation with negligible roadway deterioration.

4.11.3 Alternative 3–Hybrid Modified Alternative

4.11.3.1 Construction Phase

4.11.3.1.1 Saipan

Short-term, direct, negligible, adverse impacts would be expected on the local transportation network in Saipan due to construction under Alternative 3 on Saipan. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction activities at Saipan International Airport. There would be no construction at the Port of Saipan. It is estimated that the number of construction workers associated with Alternative 3 would not exceed 50 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the local construction workforce, it is assumed that all of these workers would be local residents.

It is assumed that the estimated 50 local construction worker residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 14 trips would be generated in the morning and 14 trips would be generated in the evening, totaling 28 daily trips as a result of local worker travel during the Construction Phase.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials, including concrete, and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 50 workers are on site, this would equate to 4 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that an additional 597 yearly truck trips, or approximately 2 trips per day, would occur when concrete is being poured. For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-6 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-6. Estimated Maximum Daily Trips – Alternative 1 Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	28	Morning and afternoon
Miscellaneous Trips	4	All day
Concrete and Cement Truck Trips	2	
Total Additional Trips per Day	**34**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

While the transportation network of Saipan is rather limited, it is assumed that the local traffic generated by construction activities would be distributed, preventing major impact on any one roadway. Thus, it is anticipated that additional traffic generated during the Construction Phase would result in only negligible increases in delay and no changes to existing LOS. One roadway segment to note is Isa Drive north of Chalan Monsignor Guerrero. This segment currently operates at LOS D with an ADT of 7,530 vehicles. Capacity of this segment is 10,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Isa Drive, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS. Traffic operations impacts could be minimized by requiring construction activities to begin and end outside of peak travel periods.

According to the CNMI Comprehensive Highway Master Plan, current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 3 would occur outside of typical peak hours.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the Project Area. For roadways that currently carry 20,000 vehicles per day or more, the deterioration would be minor since the additional traffic (at peak construction) would be less than 0.2 percent of the existing volume. For roadways that carry less than 20,000 vehicles per day, the deterioration would be slightly more pronounced because the additional traffic would close to a 0.3 percent increase over the existing volume. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. These routes could also be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

Indirect impacts could occur on corridors not directly impacted by the worker bus routes as a result of existing congestion. However, impacts could be minimized if construction occurred outside of peak travel periods and therefore a majority of the worker transport activities would also occur outside of peak periods.

4.11.3.1.2 Tinian

NORTH OPTION

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 3 Tinian North Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction, including the reroute of 8th Avenue. It is estimated that the number of construction workers associated with Alternative 3 North Option would not exceed 125 at any given time. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the limited local construction workforce, it is assumed that 40 percent of these workers would not be local Tinian residents.

It is assumed that the estimated 80 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 23 trips would be generated in the morning and 23 trips would be generated in the evening, totaling 46 daily trips as a result of local worker travel during the Construction Phase.

Non-local workers would most likely be housed at the Tinian Dynasty Hotel and Casino (located adjacent to the Tinian Harbor). Other potential housing options would include the Fleming Hotel. Buses would be used to transport the workers to and from the Tinian Dynasty Hotel and

Casino via Broadway during the Construction Phase (see **Figure 2.5-8**). If lodging for all the workers were provided at the Tinian Dynasty Hotel and Casino and assuming 50 people per bus, approximately 2 round trips (1 round trips in the morning and 1 round trips in the afternoon) would be required to transport the non-resident workers, totaling 4 daily trips. It is assumed that a majority of the workers would remain on site for all breaks.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 125 workers are on site, this would equate to 10 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that an additional 5,448 yearly truck trips, or approximately 15 trips per day, would occur when concrete is being poured. For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-7 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-7. Estimated Maximum Daily Trips – Alternative 3 Tinian North Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	46	Morning and afternoon
Non-Local Worker Transport	4	Morning and afternoon
Miscellaneous Trips	10	All day
Concrete and Cement Truck Trips	15	
Total Additional Trips per Day	**75**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Under this alternative the USAF proposes to reroute 8th Avenue. Traffic along 8th Avenue would be maintained during construction of the relocated 8th Avenue. Minor impacts would be expected for a few days when the existing 8th Avenue route is decommissioned and routed onto the relocated roadway section.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the Project Area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

SOUTH OPTION

Short-term, minor, direct, adverse impacts would be expected on the local transportation network in Tinian due to construction under Alternative 3 Tinian South Option. Transportation impacts during the Construction Phase are limited to traffic added to the existing roadway network as a result of construction. It is estimated that the number of construction workers associated with the Alternative 3 South Option would not exceed 75 at any given time for the South Option. This maximum number of workers would be limited to several months during the 24- to 36-month construction period. Considerably fewer workers would be required during the remaining months. Based on the local construction workforce, it is assumed that all of these workers would be local Tinian residents.

It is assumed that the estimated 75 local residents would carpool and the average vehicle occupancy would be three to four people. It is estimated that 22 trips would be generated in the morning and 22 trips would be generated in the evening, totaling 44 daily trips as a result of local worker travel during the Construction Phase.

In addition to worker travel, construction activities would generate additional traffic resulting from delivery of materials including concrete and other miscellaneous trips occurring by inspectors, project managers, and other personnel that visit the site multiple times a day. The number of trips associated with deliveries and miscellaneous trips was estimated as one round trip for every 25 workers on site. During the peak construction period when 75 workers are on site, this would equate to 6 trips per day. These construction-related trips would be dispersed throughout the day. It is anticipated that an additional 2,954 yearly truck trips, or approximately 8 trips per day, would occur when concrete is being poured. For the remaining construction days, it is anticipated that substantially fewer construction-related trips would occur.

Table 4.11-8 summarizes the estimated daily trips expected during the Construction Phase. It should be noted that this is the estimated maximum number of trips expected to occur only for several months during the peak of construction activity.

Table 4.11-8. Estimated Maximum Daily Trips – Alternative 3 Tinian South Option Construction Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Local Worker Transport	44	Morning and afternoon
Miscellaneous Trips	6	All day
Concrete and Cement Truck Trips	8	
Total Additional Trips per Day	**58**	

Source: HDR 2012

The daily trips generated during the Construction Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

The proposed bus route to transport non-local workers would use Broadway. Broadway currently operates at LOS A with an ADT of 1,470 vehicles. Capacity of this segment is 8,000 vehicles per day (CNMI DPW 2009). If all construction-generated trips used Broadway, vehicular delay would increase, but the segment LOS would not change because the delay increase would not be enough to degrade the LOS.

Roadway surfaces have a limited lifespan and deteriorate incrementally over time. The amount of deterioration is in part a function of the materials used to construct the roadway, the amount of vehicular traffic, and the mix of vehicles (trucks vs. cars). The additional vehicular traffic during the Construction Phase, specifically truck traffic resulting from deliveries, would likely increase the normal deterioration of the roadways in the vicinity of the Project Area. Although deterioration is expected to varying degrees, it is not possible to estimate the extent of the deterioration because current pavement condition and the existing vehicle mix are unknown.

To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. Additionally, these routes would be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.

4.11.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.11.3.2.1 Saipan

Minor, direct, adverse impacts would be expected on the local transportation network in Saipan under the Alternative 3 Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned military exercises. Transportation impacts under the Implementation Phase include fuel truck traffic, daily transport of personnel, and miscellaneous trips, including deliveries to and from Saipan International Airport. Fuel tanks at the airport would be filled from the fuel tanks constructed at the seaport. It is anticipated that 6 fuel trucks (10,000-gallon capacity) making 5 round trips to and from the seaport each day for 14 days would be necessary to fill the new tank. This would result in 60 additional daily trips. During exercises, it is anticipated the same amount of fuel truck traffic would be necessary to maintain adequate fuel storage at Saipan International Airport. The proposed truck route is shown in **Figure 3.11-1** in **Section 3.11**.

Temporary lodging for up to 265 personnel would be required to support Alternative 3. Buses would be used to transport personnel to and from Saipan International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport: Chalan Pale Arnold, Chalan Monsignor Guerrero, Tun Herman Pan, and Airport Road (see **Figure 3.11-1** in **Section 3.11**).

In addition to trips associated with fuel delivery and personnel travel, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 3. It is assumed that one additional round trip would be generated for every 50 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-9 summarizes the estimated daily trips expected during implementation.

Table 4.11-9. Estimated Maximum Daily Trips – Alternative 3 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

The daily trips generated during the Implementation Phase have the potential to impact the existing transportation network in two ways: by increasing congestion and delay on local roadways, thereby reducing LOS, and by causing additional stress on roadway surfaces resulting in deterioration (e.g., rutting, cracking, pavement breakup) of the driving surface.

According to the CNMI Comprehensive Highway Master Plan current traffic operations on some roadway segments on the island are at or exceed capacity based on a daily volume analysis. Traffic operations along these segments might be poor during peak periods and poor operations can cause extended peak periods, but failing LOS does not typically mean that the facility is operating poorly during all hours of the day. It is estimated that more than half of the trips generated by Alternative 3 will occur outside of typical peak hours.

Traffic congestion is of concern for one segment of the proposed fuel truck route, Beach Road. Beach Road carries the highest volume of traffic in the vicinity of the Project Area and is currently experiencing some congestion issues. Based on the analysis conducted for the CNMI Comprehensive Master Plan, the ADT capacity for this segment is 30,000 vehicles per day and the existing estimated ADT is 39,890 vehicles per day, almost 10,000 vehicles more than capacity. At this LOS, relatively minor increases in traffic can cause major impacts on current traffic operations. The total traffic generated under Alternative 3 is less than 0.25 percent of the daily traffic on Beach Road and less than half of those trips would use Beach Road. Therefore, it is anticipated that delay and congestion impacts on Beach Road related to Alternative 3 would be intermittent short-term, minor, and adverse.

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck and bus traffic resulting from implementation with negligible roadway deterioration.

4.11.3.2.2 Tinian North and South Options

Minor, direct, adverse impacts would be expected on the local transportation network in Tinian under the Alternative 3 North and South Options Implementation Phase. These impacts are expected on a long-term basis, but would only occur periodically (e.g., 3 weeks at a time) during planned joint military exercises. Transportation impacts under the Implementation Phase of Alternative 3 include fuel truck traffic and miscellaneous trips including deliveries to and from Tinian International Airport. The fuel tanks at the airport would be filled from the fuel tank constructed at the seaport. It is anticipated that 6 fuel trucks (10,000-gallon capacity) making 5 round trips to and from the seaport each day for 17 days would be necessary to fill the airport tank. This would result in 60 additional daily trips. During exercises, it is anticipated the same number of fuel truck traffic would be necessary to maintain adequate fuel storage at Tinian International Airport. The proposed truck route is shown in **Figure 2.5-8**.

Temporary lodging for up to 265 personnel would be required to support Alternative 3. Buses would be used to transport personnel to and from Tinian International Airport during the Implementation Phase. Assuming 50 people per bus, approximately 6 round trips would be required to transport personnel. It is assumed that this would generate 24 daily trips (6 round trips in the morning and 6 round trips in the afternoon). The proposed bus route would follow the same route outlined for the fuel trucks destined for the seaport (**Figure 2.5-8**).

In addition to trips associated with fuel delivery, miscellaneous trips are expected to occur for deliveries and other activities associated with Alternative 3. It is assumed that one additional round trip would be generated for every 25 personnel. This would equate to approximately 10 additional trips per day.

Table 4.11-10 summarizes the estimated daily trips expected during implementation.

According to the CNMI Comprehensive Highway Master Plan current traffic operations on all island roadway segments are LOS A. While proportionally the additional number of trips could be high for some of the roadway segments, all of the Tinian roadway facilities have substantial excess capacity; therefore, minor, direct, adverse impacts are anticipated under Alternative 3.

Table 4.11-10. Estimated Maximum Daily Trips – Alternative 3 Implementation Phase

Trip Source	Daily One-Way Trips	Trip Timeframe
Fuel Truck Trips	60	All day
Personnel Transport	24	Morning and afternoon
Miscellaneous Trips	10	All day
Total Additional Trips per Day	**94**	

Source: HDR 2012

Based on repairing, overlaying, or reinforcing the roadway surfaces prior to the Construction Phase, it is assumed that the pavement on the proposed fuel truck route would be adequate to handle additional truck traffic resulting from implementation with negligible roadway deterioration.

4.11.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.11** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on traffic or transportation would be expected as a result of the No Action Alternative. Traffic levels on Saipan and Tinian would not increase due to construction traffic, planned military exercises, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.12 Hazardous Materials and Wastes

Impacts associated with hazardous materials and wastes were assessed to determine if the Proposed Action would result in the following:

- Noncompliance with applicable Federal or CNMI regulations.
- Increases in the amounts generated or procured beyond current waste management procedures and capacities.
- The disturbance or creation of contaminated sites that cause negative impacts on human health or the environment.

- Impacts that include actions that make it more difficult or costly to remediate hazardous substance clean-up sites.

The USAF would implement mitigation measures during the Construction Phase and the Implementation Phase of Alternative 1, Alternative 2, and Alternative 3, regardless of alternative, to minimize or avoid hazardous materials and wastes impacts. The mitigation measures applicable to all alternatives are described in the following paragraphs.

Mitigation Measures During Construction and Implementation for Hazardous Materials and Wastes

Fuel Storage Design and Management Standards. To reduce the likelihood of spills during construction and during implementation, as well as the impact of spills (e.g., spill migration to nearshore waters) in the unlikely event that one should occur, all proposed fuels infrastructure would be constructed and managed according to the most stringent applicable Federal and CNMI requirements. Specific standards include:

- *Standard 1:* Design and Construction. The USAF would follow the API Standard 650 for material, design, fabrication, erection and inspection for POL storage tanks. Construction would follow design calculations that conform to API 650 and would include design calculations for seismic, internal and external pressures, and wind loading.
- *Standard 2:* Tank Integrity Testing. The USAF would conduct periodic integrity testing of all ASTs, including visual inspection and where deemed appropriate, another form of nondestructive testing. The frequency and type of inspection and testing would take into account container size and design and industry standards.
- *Standard 3:* Secondary Containment. The USAF would construct POL storage tanks with a secondary means of containment, such as a dike capable of holding the entire contents of the tank, plus an extra 10 percent in capacity, to allow for precipitation and expansion of product. Permeability of containment areas will be a maximum of the permeability of a 1-meter layer of compacted clay that would not allow liquid to pass through in 200 years. Drainage of storm water from containment areas would be controlled by a valve that is locked closed when not in active use. Storm water would be inspected for petroleum sheen before being drained from containment areas. If petroleum sheen is observed it would be collected with sorbent materials prior to drainage.
- *Standard 4*: Valves and Piping. The USAF would periodically inspect all aboveground valves, piping, and appurtenances associated with POL storage tanks in accordance with API 570 which is the recognized industry standards. Buried piping would be tested for integrity and leaks at the time of installation, modification, construction, relocation, or replacement.
- *Standard 5*: Loading/Unloading. The USAF would design loading and unloading racks to handle discharges of at least the maximum capacity of any single compartment of a storage tank truck loaded or unloaded at the racks. The USAF would construct appropriate containment and/or diversionary structures (dikes, berms, culverts, spill

diversion ponds, etc.) or use equipment (sorbent materials, weirs, booms, other barriers, etc.) at loading/unloading areas to prevent a discharge of POL.

- *Standard 6*: Vehicle Warning Systems. The USAF would design and construct means to provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle break interlock system at loading/unloading racks to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines.
- *Standard 7*: Personnel Training. The USAF would annually train all personnel handling POL in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; and general facility operations.
- *Standard 8:* Equipment Testing. The USAF would maintain all petroleum equipment in good functioning order, including regular testing and checking for any failure. This greatly adds to the effectiveness of spill prevention control and countermeasures.
- *Standard 9:* On-site Personnel. The USAF would provide a full-time onsite person or persons to inspect and maintain all POL infrastructures, in accordance with USAF requirements. These personnel would also provide the USAF with spill planning preparedness and response capability thereby potentially upgrading island-wide capability for spill response thorough cooperative spill response agreements that could be developed.

SPCC Plan. The USAF would develop and implement an SPCC Plan for the construction phase and for the implementation phase (as required by Section 311(j)(1)(C) of the CWA) to control the potential for contamination from the unlikely event of a spill. All proposed fuel tanks would include secondary containment to eliminate the potential for spills.

The SPCC Plan would be prepared, maintained, and implemented to prevent, control, counteract, and report of all spills. The SPCC Plan would provide measures to prevent, and to the maximum extent practicable, to remove a worst case discharge from proposed facilities. The plan would be certified by an appropriately licensed or certified technical authority ensuring that the plan considers applicable industry standards for spill prevention and environmental protection, and that the plan is prepared in accordance with good engineering practice and is adequate for the proposed facilities. Specifically, the SPCC Plan would include:

- *Prevention Section.* The prevention section of the plan would contain information on the facility; charts of drainage patterns; designated water protection areas; maps showing locations of various infrastructure which store, handle, and transfer POL that could produce a spill; critical water resources; land uses; and possible migration pathways. Maps would also be included, as appropriate, to predict direction and rate of flow, as well as the total quantity of substances that might be spilled as a result of a major failure.
- *Arrangements for Emergency Services.* The plan would describe arrangements with local police departments, fire departments, hospitals, contractors, and emergency response teams to coordinate emergency services. The plan would include a list of all emergency equipment, such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination

equipment, at each site where this equipment is required; an evacuation plan and a designated meeting place.

- *Spill Control Section.* The control section of the plan would identify resources for cleaning up spills, and directions on how to provide assistance to other agencies when requested. This section of the plan would contain a prioritized list of various critical water and natural resources that will be protected in the event of a spill. The plan would identify other resources addressed in prearranged agreements that are available to cleanup or reclaim a large spill, if such spill exceeds the response capability of the facility.

FRP. The USAF would also develop an FRP, per the OPA of 1990 which amended the CWA, which would address an accidental "catastrophic" spill and would minimize potential impacts from such a spill. The FRP would include the resources of all industrial activities and would provide direction on how to handle an incident of the scale beyond any single individual facility's capability to respond.

Operation, Inspection, and Monitoring of Fuel Systems. To ensure continued proper operation of all fuel infrastructure and minimize the potential for spills, the USAF would follow Technical Order 37-1-1, *General Operations and Inspection of Installed Fuel Storage and Dispensing Systems* and UFC 3-460-03, *Operation and Maintenance: Maintenance of Petroleum Facilities*. The safe, efficient, and economical operation of petroleum storage, dispensing systems, and associated infrastructure depends largely on an effective and proactive recurring maintenance program. UFC 3-460-03 establishes the required frequency intervals for the recurring maintenance. For example, all above ground storage tanks must be inspected a minimum of once per year.

Hazardous Material Handling. To avoid or minimize impacts from hazardous materials, all hazardous materials would be imported, collected, stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations. Contractors would be responsible for the storage, handling, and disposal of hazardous wastes in accordance with Federal, CNMI, and USAF hazardous waste management regulations. All collection, storage, and management of hazardous wastes by the contractor would be defined in the actual contract with the construction contractor, in coordination with CPA and the CNMI government.

Mitigation Measures During Construction for Hazardous Materials and Wastes

AST Permit**.** Onsite storage of petroleum products would likely be accomplished through the installation of temporary diesel and gasoline ASTs as necessary. To avoid or minimize impacts related to the operation of fuel tanks, contractors would obtain an AST Permit to Install and an AST Permit to Operate from the CNMI BECQ for all ASTs needed to support construction.

Existing Contamination Procedures. To avoid or minimize impacts that could occur by disturbing existing contamination areas, the USAF could implement the following procedures. A visual survey of the areas proposed to be disturbed could be conducted prior to conducting any soil-disturbing activities. If environmental contamination is discovered during construction, the contractor would immediately stop work at the affected area, report the discovery to the USAF, property owner, and CNMI, as necessary, and implement appropriate safety measures. If environmental contamination is identified, construction site plans should be revised to avoid the contamination areas or remediate them as practicable. Commencement of field activities should not resume in the affected area until the issue is investigated and resolved.

ACM Procedures. To avoid or minimize impacts that could occur by disturbing ACMs, the USAF could implement the following procedures. A visual survey of the proposed disturbance areas could be conducted prior to conducting any soil-disturbing activities. If potential ACMs are observed, the applicable sites should be classified as areas with potential asbestos-containing soils/materials, the notification process should be implemented. If potential ACMs are not observed during the visual survey, construction would move forward as planned. However, if any potential ACMs are encountered during the soil-disturbing activities, all site work should cease and the site should be re-evaluated. Any ACMs encountered during soil-disturbing activities would be handled in accordance with established Federal, CNMI, and USAF regulations and would be disposed of at an asbestos-permitted landfill.

The USAF would not use ACM for proposed construction. AFI 32-1023, *Designing and Constructing Military Construction Projects*, requires that a substitution study be conducted whenever the use of an ACM in construction, maintenance, or repair is considered. If the study determines that the ACM is superior in cost and performance characteristics, and has minimal actual or potential health hazards, only then should the ACM should be used. In all other cases, non-ACMs should be used.

LBP Procedures. To avoid or minimize impacts that could occur by disturbing LBP, the USAF could implement the following procedures. Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. Should debris containing potential LBP be discovered during the survey, site preparation, or excavation, work should stop immediately and measures would be taken to secure the area and prevent the release of lead. Debris containing LBP would be removed and disposed of in accordance with applicable Federal and CNMI regulations.

Air Force Policy and Guidance on Lead-Based Paint in Facilities, 24 May 1993, states that paint containing more than the regulated amount for nonindustrial facilities (i.e., LBP) will not be used on industrial or nonindustrial facilities; therefore, the structures proposed for construction would not contain LBP. AFI 32-1042, *Standards for Marking Airfields*, states that lead-free pavement marking paints are to be used at airfields; therefore, the proposed airfield pavement areas would not contain LBP.

PCB Removal. To avoid or minimize impacts, if any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels requires removal, then this equipment would be removed and handled in accordance with Federal and CNMI hazardous waste regulations.

Radon-resistant Construction. Radon-resistant construction techniques would be implemented during construction to reduce the potential for radon intrusion during occupancy, as applicable.

Mitigation Measures During Construction for Hazardous Materials and Wastes

Radon Testing. The USAF would test facilities that have known radon intrusion issues based on location periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon levels greater than 4 pCi/L.

4.12.1 Alternative 1–Modified Saipan Alternative

4.12.1.1 Construction Phase

Hazardous Materials and Hazardous Wastes. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities proposed under Alternative 1. Construction activities would require the use and onsite storage of hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Additionally, some construction vehicles and heavy equipment would use hazardous materials such as hydraulic fluids and lead-acid batteries. It is anticipated that the quantities of hazardous materials needed during the construction would be minimal, their use would be limited to the period of construction, and the USAF and their contractors would follow hazardous material management regulations as described in **Section 4.12**.

Construction activities would generate minor quantities of hazardous wastes from the use of hazardous materials. As such, Saipan International Airport's RCRA SQG status would not be affected. Because only limited quantities of hazardous wastes would be generated during construction of Alternative 1, the additional hazardous wastes would not be expected to exceed the capacities of existing hazardous waste disposal streams available to Saipan. No hazardous materials or hazardous wastes are known to be stored within the Alternative 1 areas; therefore, no hazardous materials or hazardous wastes would need to be removed prior to construction.

Petroleum Products. Short-term, direct, minor, adverse impacts due to petroleum product use would be expected from construction activities proposed under Alternative 1. Minimal quantities of liquid fuels, such as diesel and gasoline, would be needed to fuel construction vehicles, concrete and material haul trucks, and other equipment. Additionally, construction vehicles and equipment would use minimal quantities of oils and lubricants.

Onsite storage of petroleum products would likely be accomplished through the installation of temporary diesel and gasoline ASTs as necessary. These ASTs would be removed following the completion of construction and all contractors would implement the mitigation measures, such as obtaining AST permits and adherence to an SPCC, as described in **Section 4.12** to prevent releases from the ASTs. All petroleum products needed for the construction of Alternative 1 would be delivered to the Port of Saipan by ship and trucked to Saipan International Airport. Waste petroleum products would be disposed of through the hazardous waste disposal streams available to contractors at Saipan International Airport.

To support Alternative 1, upgrades in aircraft refueling capability at the Saipan International Airport would be required. The USAF would construct a Hydrant Refueling System adjacent to the proposed jet fuel storage tanks. This refueling system would tie into the proposed parking apron via an underground hydrant fuel pipeline. Other fuel infrastructure that would be constructed includes 100,000 bbl (4.2 million gallons) of jet fuel storage, likely configured using two 50,000-bbl (2.1 million-gallon) jet fuel ASTs, on Saipan International Airport-owned property and on federally leased land at the Port of Saipan (i.e., 100,000 bbl [4.2 million gallons] at each location). The USAF would obtain the necessary permits from the CNMI BECQ for construction, as appropriate. No petroleum products or associated infrastructure are located within the Alternative 1 areas; therefore, no petroleum products or associated infrastructure would need to be removed prior to construction.

Impacts from the operation of the proposed refueling infrastructure are discussed in **Section 4.12.1.2**, and impacts with respect to infrastructure improvements are discussed in **Sections 4.11.1.1** and **4.11.1.2**.

Existing Contamination Areas. Short-term, direct, minor, adverse impacts associated with existing contamination areas could occur during the construction activities proposed for Alternative 1. While no known areas of contamination have been identified within the Alternative 1 areas, there is the potential for finding contamination at Saipan International Airport due to the former use of these areas during World War II. Additionally, there is the potential for the discovery of UXO at Saipan International Airport and the seaport dating from the World War II era. The USAF would follow procedures to minimize the potential for impacts on, or from, existing contamination areas, as described in **Section 4.12**. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

Several areas of existing contamination have been identified near the Alternative 1 areas but Alternative 1 is unlikely to affect the majority of these contaminated areas because they are primarily soil contamination sites and ground-disturbing activities would not occur at these sites. However, the Puerto Rico Dump has soil and groundwater contamination. The Puerto Rico Dump is 200 feet west of and seaward of the Alternative 1 seaport bulk fuel storage area; therefore, it is assumed that any groundwater contamination associated with the Puerto Rico Dump has and would flow towards the ocean and not impact the Alternative 1 seaport bulk fuel storage area. As described in **Sections 4.4** and **4.5**, potential storm water runoff during construction at the Alternative 1 seaport bulk fuel storage area would be minimized through the development and implementation of site-specific mitigation measures and would not be expected to add to the contamination of groundwater from the Puerto Rico dump.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts are associated with ACMs that could be encountered during the construction activities proposed for Alternative 1. Because the Alternative 1 areas at Saipan International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris potentially buried in surface or near-surface soils. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, ACM as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 1. Because the Alternative 1 areas at Saipan International Airport are associated with former facilities from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, LBP as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.***Polychlorinated Biphenyls.*** Short-term, direct, negligible, adverse impacts are associated with PCBs that could be encountered from the construction of Alternative 1. Alternative 1 does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that are proposed for removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the construction activities proposed under Alternative 1.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 1. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction.

4.12.1.2 Implementation Phase

Hazardous Materials and Hazardous Wastes. Long-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from implementation of Alternative 1. This alternative would increase the number of personnel, aircraft, aircraft maintenance operations, vehicles, and other equipment on Saipan and, specifically, at Saipan International Airport. This increase in personnel, equipment, and maintenance operations would increase the quantities of hazardous materials, such as hydraulic fluids, lead-acid batteries, solvents, and other chemicals, needed at Saipan International Airport during the proposed exercises. Most hazardous materials would be stored at the proposed maintenance facility at Saipan International Airport.

The increase in the quantities of hazardous materials needed during the proposed exercises would result in an increase in the quantities of hazardous wastes generated. The additional quantities of hazardous wastes would be mostly stored at the proposed maintenance facility at Saipan International Airport. These hazardous wastes would be disposed of by the USAF and transported to Andersen AFB for disposal through the installation's DLA Disposition Service. Implementation of Alternative 1 might require Saipan International Airport to reevaluate its RCRA SQG status should any changes in the amounts and types of hazardous wastes stored and generated at Saipan International Airport exceed SQG threshold limits. The USAF and their contractors would follow hazardous material management regulations as described in **Section 4.12**.

Petroleum Products. Long-term, direct, minor to moderate, adverse impacts from petroleum products would be expected due to implementation of Alternative 1. The demand for petroleum products, such as jet fuel, gasoline, diesel, oils and lubricants, and other miscellaneous petroleum products, would increase during exercises, and additional quantities of these petroleum products would need to be delivered to Saipan by ocean-going tankers. Small amounts of oils and lubricants for aircraft maintenance would likely be delivered via cargo ship or aircraft. The additional quantities of petroleum products that are delivered to Saipan in bulk, such as jet fuel, gasoline, and diesel, would be off-loaded from the tanker vessels using the existing fuel transfer infrastructure available at the Port of Saipan and stored in the existing and proposed fuel storage tanks.

Alternative 1 would increase the demand for other liquid fuel petroleum products on Saipan. The added military personnel during exercises would require additional truck, car, and bus traffic during the up to 8 weeks each year when exercises would occur. The added vehicle traffic would increase the amounts of gasoline and diesel consumed. Additionally, Alternative 1 could include the use of an electrical generator. This generator would provide emergency electrical power to operate the refueling hydrant system. The generator fuel type would be either diesel or JP-8 fuel and would depend on what is available and which type of fuel the USAF procures.

Alternative 1 would increase the amounts of oils and lubricants needed at Saipan International Airport for aircraft- and infrastructure-maintenance operations. The use of oils and lubricants would predominantly occur during the up to 8 weeks each year when exercises would occur, and most oils and lubricants would be stored at the proposed maintenance facility at Saipan International Airport. Waste oils and lubricants, including those collected from the proposed oil/water separator at the bulk storage area at Saipan International Airport, would be disposed of through the hazardous waste disposal streams available to the USAF.

Alternative 1 would increase the amounts of petroleum products used, stored, and transported on Saipan. The additional quantities of petroleum products and liquid fuel storage infrastructure would increase the chance for a release of petroleum products as compared to existing conditions. Additionally, the increase in fuel truck traffic on Saipan would slightly increase the risk of a release due to the added volumes of liquid fuels being transported over public roadways. To limit the potential for a release of petroleum products, all proposed petroleum product storage and transfer infrastructure, including storage tanks, piping, and hydrants, would be constructed new and in accordance with manufacturer design specifications. The USAF would implement all applicable mitigation measures, such as an SPCC Plan and FRP, as described in **Section 4.12** to avoid or minimize the potential for a spill and the impacts from a spill, should one occur.

Existing Contamination Areas. Implementation of Alternative 1 would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 1. As noted in **Section 4.12.1.1**, USAF regulations restrict the use of ACMs for new construction. ACM only would be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 1. LBP and PCBs would not be used during operations.

Pesticides. Impacts from the proposed use of pesticides would not be expected during the implementation phase of Alternative 1.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 1. Although radon-resistant construction techniques would be implemented during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. Radon testing and removal equipment, as described in **Section 4.12** would reduce or eliminate this potential impact.

4.12.2 Alternative 2–Modified Tinian Alternative

4.12.2.1 Construction Phase

4.12.2.1.1 North Option

Hazardous Materials and Hazardous Wastes. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities proposed under Alternative 2 North Option. Construction activities would require the use and onsite storage of hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Additionally, some construction vehicles and heavy equipment would use hazardous materials such as hydraulic fluids and lead-acid batteries. It is anticipated that the quantities of hazardous materials needed during the construction would be minimal, their use would be limited to the period of construction, and the USAF and their contractors would follow hazardous material management regulations as described in **Section 4.12**.

Construction activities would generate minor quantities of hazardous wastes from the use of hazardous materials. Because only limited quantities of hazardous wastes would be generated during construction of Alternative 2 North Option, the additional hazardous wastes would not be expected to exceed the capacities of existing hazardous waste disposal streams available to Tinian.

No hazardous materials or hazardous wastes currently are stored within the Alternative 2 North Option areas; therefore, no hazardous materials and hazardous wastes would need to be removed prior to construction.

Petroleum Products. Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities proposed under Alternative 2 North Option. Minimal quantities of liquid fuels, such as diesel and gasoline, would be needed to fuel construction vehicles, concrete and material haul trucks, and other equipment. Additionally, construction vehicles and equipment would use minimal quantities of oil and lubricants. Onsite storage of petroleum products would likely be accomplished through the installation of temporary diesel and gasoline ASTs as necessary. These ASTs would be removed following the completion of construction, and all contractors would implement the mitigation measures, such as obtaining AST permits and adherence to an SPCC, as described in **Section 4.12** to prevent releases from the ASTs. All petroleum products needed for the construction of Alternative 2 North Option would be delivered to the Port of Tinian by ship and trucked to the Tinian International Airport. Waste petroleum products would be disposed of through the hazardous waste disposal streams available to contractors on Tinian International Airport.

To support Alternative 2 North Option, construction of jet fuel receiving, storing, and dispensing infrastructure on Tinian would be required. The USAF would construct 220,000 bbl of jet fuel storage at Tinian International Airport, likely configured as two 60,000-bbl (2.5 million-gallon) and one 100,000-bbl (4.2 million-gallon) fuel tanks; and 100,000 bbl of jet fuel storage at the Port of Tinian, configured as two 50,000-bbl (2.1 million-gallon) fuel tanks. Additionally, the USAF would construct fuel pumps and fill stands, truck offload area, refueler parking, and possibly a fuel pump house at Tinian International Airport. The USAF would obtain necessary permits from the CNMI BECQ for construction, as appropriate. No petroleum products or associated infrastructure are located within the Alternative 2 North Option areas; therefore, no petroleum products or associated infrastructure would need to be removed prior to construction.

Impacts from the operation of this refueling infrastructure are discussed in **Section 4.12.2.2**, and impacts with respect to infrastructure improvements are discussed in **Sections 4.11.2.1** and **4.11.2.2**.

Existing Contamination Areas. Short-term, direct, minor, adverse impacts associated with existing contamination areas could be encountered during the construction activities proposed for Alternative 2 North Option. While no known areas of contamination have been identified within the North Option areas, there is the potential for finding contamination at Tinian International Airport due to the former use of these areas during World War II. Additionally, there is the potential for the discovery of UXO at Tinian International Airport and the Port of Tinian dating from the World War II era. The USAF would follow procedures to minimize the potential for impacts on, or from, existing contamination areas, as described in **Section 4.12**. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

One Formerly Used Defense Site is approximately 1,000 feet from the nearest component of Alternative 2 North Option; however, based on the distance, construction of Alternative 2 North Option would be unlikely to affect this site.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 2 North Option. Because the North Option areas at Tinian International Airport are associated with former development from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris potentially buried in surface or near-surface soils. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, ACM as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 2 North Option. Because the North Option construction areas at Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, LBP as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 2 North Option. The North Option does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that would require removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the construction activities proposed under Alternative 2 North Option.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 2 North Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy, as applicable.

4.12.2.1.2 South Option

Hazardous Materials and Hazardous Wastes. Construction activities under Alternative 2 South Option would be the same as those described under the North Option, but would occur south of Tinian International Airport. Therefore, short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Construction activities and fuel infrastructure constructed under Alternative 2 South Option would be the same as those described under the North Option, but would occur south of Tinian International Airport. Therefore, short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Short-term, direct, minor, adverse impacts associated with existing contamination areas could be encountered during the construction activities proposed for Alternative 2 South Option. No known areas of contamination have been identified within the areas proposed for the South Option. However, there is the potential for finding contamination in the proposed areas south of Tinian International Airport and for the discovery of UXO at Tinian International Airport and the Port of Tinian due to the former use of these areas during World War II. As described in **Section 4.12**, pre-construction visual surveys could be conducted and applicable procedures followed if environmental contamination is observed prior to construction or discovered during construction of Alternative 2 South Option. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

One Formerly Used Defense Site is approximately 800 feet from the nearest component of Alternative 2 South Option; however, based on the distance, construction of Alternative 2 South Option would be unlikely to affect this site.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts are associated with ACMs that could be encountered during the construction activities proposed for Alternative 2 South Option. Because areas south of Tinian International Airport are associated with former development from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris potentially buried in surface or near-surface soils. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, ACM as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 2 South Option. Because areas south of Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. As described in **Section 4.12**, pre-construction visual surveys could be conducted and procedures followed if potential LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 2 South Option. Similar to the North Option, the South Option does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that would require removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the construction activities proposed under Alternative 2 South Option.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 2 South Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.2.2 Implementation Phase- North and South Options

Hazardous Materials and Hazardous Wastes. Long-term, minor, direct adverse impacts associated with hazardous materials and hazardous wastes would be expected from the implementation of Alternative 2. This alternative would increase the number of personnel, aircraft, aircraft maintenance operations, vehicles, and other equipment on Tinian and, specifically, at Tinian International Airport. This increase in personnel, equipment, and maintenance operations would increase the quantities of hazardous materials, such as hydraulic fluids, lead-acid batteries, solvents, and other chemicals, needed at Tinian International Airport. Most hazardous materials would be stored and used at the proposed aircraft hangar and maintenance facility at the Tinian International Airport.

The increase in the quantities of hazardous materials needed during the proposed exercises would result in an increase in the quantities of hazardous wastes generated. The additional quantities of hazardous wastes would be mostly stored at the proposed maintenance facility at Tinian International Airport. These hazardous wastes would be disposed of by the USAF and transported to Andersen AFB for disposal through the installation's DLA Disposition Service. Implementation of Alternative 2 might require Tinian International Airport to obtain an RCRA hazardous waste generator permit and be classified as a hazardous waste generator should the changes in the amounts and types of hazardous wastes stored and generated at Tinian

International Airport meet applicable regulatory thresholds. The USAF and their contractors would follow hazardous material management regulations as described in **Section 4.12**.

Petroleum Products. Long-term, direct, minor to moderate, adverse impacts from petroleum products would be expected due to implementation of Alternative 2. The demand for petroleum products, such as gasoline, diesel, oils and lubricants, and other miscellaneous petroleum products, would increase during exercises, and additional quantities of these petroleum products would need to be delivered to Tinian by ocean-going vessels. Jet fuel, which currently is not delivered to Tinian, would also require delivery to and storage on Tinian. Small amounts of oils and lubricants for aircraft maintenance would likely be delivered via cargo ship or aircraft.

This alternative would increase the demand for other liquid fuel petroleum products on Tinian. The added military personnel during exercises would require additional truck, car, and bus traffic during the up to 8 weeks each year when exercises occur. The added vehicle traffic would increase the amounts of gasoline and diesel fuels consumed. There would be no changes in the use of 100 Low Lead Aviation Gasoline, which currently is the only aviation fuel available to Tinian International Airport.

This alternative would increase the amounts of oils and lubricants needed at Tinian International Airport for aircraft- and infrastructure-maintenance operations. The use of oils and lubricants would predominantly occur during the up to 8 weeks each year when exercises occur, and most oils and lubricants would be stored at the proposed maintenance facility on Tinian International Airport. Waste oils and lubricants, including those collected from the proposed oil/water separator, would be disposed of through the hazardous waste disposal streams available to the USAF.

Alternative 2 would increase the amounts of petroleum products used, stored, and transported on Tinian. The additional quantities of petroleum products and liquid fuel storage infrastructure would increase the chance for a release of petroleum products as compared to existing conditions. Additionally, the increase in fuel truck traffic on Tinian would slightly increase the risk of a release due to the added volumes of liquid fuels being transported over public roadways. To limit the potential for a release of petroleum products, all proposed petroleum product storage and transfer infrastructure would be constructed new and in accordance with manufacturer design specifications. The USAF would implement all applicable mitigation measures, such as an SPCC Plan and FRP, as described in **Section 4.12** to avoid or minimize the potential for a spill and the impacts from a spill, should one occur.

Existing Contamination Areas. Implementation of Alternative 2 would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 2. As noted in **Section 4.12.2.1**, USAF regulations restrict the use of ACMs for new construction. ACM would only be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 2. LBP and PCBs would not be used during operations.

Pesticides. Impacts from the proposed use of pesticides would be not expected from the implementation phase of Alternative 2.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 2. Although radon-resistant techniques would be implemented during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. Radon testing and removal equipment, as described in **Section 4.12** would reduce or eliminate this potential impact.

4.12.3 Alternative 3–Hybrid Modified Alternative

4.12.3.1 Construction Phase

4.12.3.1.1 Saipan

Hazardous Materials and Hazardous Wastes. Under Alternative 3 on Saipan, construction activities would be similar to those described under Alternative 1, but would likely require use of less hazardous materials and generation of smaller quantities of hazardous wastes due to construction of less infrastructure and a smaller construction footprint. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Under Alternative 3 on Saipan, construction activities would be similar to those described under Alternative 1, but would likely require use of less petroleum products and generation of smaller quantities of waste petroleum products due to construction of less infrastructure and less construction vehicle trips. Additionally, a hydrant system and fuel storage at the Port of Saipan would not be required under Alternative 3 on Saipan. Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Under Alternative 3 on Saipan, construction would occur in similar areas at Saipan International Airport to those described under Alternative 1, except the hydrant system and parking apron would not be constructed. Additionally, the fuel storage area at the Port of Saipan would not be constructed. Therefore, short-term, direct, minor, adverse impacts associated with potential existing contamination areas at Saipan International Airport due to the former use of this area during World War II could be encountered during construction activities. The remediation of any existing contamination area would be a long-term, minor, beneficial effect. No impacts from contamination at the Puerto Rico Dump would be expected during construction.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 3 on Saipan. Because areas at Saipan International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris potentially buried in surface or near-surface soils. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, ACM as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 3 on Saipan. Because areas at Saipan International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Similar to Alternative 1, pre-construction visual surveys could be conducted and procedures followed if potential LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 3 on Saipan. Similar to Alternative 1, this alternative does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs requiring removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the construction activities proposed under Alternative 3 on Saipan.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 3 on Saipan. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.3.1.2 Tinian

NORTH OPTION

Hazardous Materials and Hazardous Wastes. Under Alternative 3 North Option, construction activities would be similar to those described under Alternative 2 North Option, but would likely require use of less hazardous materials and generation of smaller quantities of hazardous wastes due to construction of less infrastructure and a smaller construction footprint. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Under Alternative 3 North Option, construction activities would be similar to those described under Alternative 2 North Option, but would likely require use of less petroleum products and generation of smaller quantities of waste petroleum products due to construction of less infrastructure and less construction vehicle trips. Additionally, this alternative would only require construction of 120,000 bbl (5 million gallons) of fuel storage (likely configured as two 60,000-bbl [2.5 million-gallon] storage tanks). Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Under Alternative 3 North Option, construction activities would occur in similar areas at Tinian International Airport and the Port of Tinian to those described under Alternative 2 North Option. Therefore, short-term, direct, minor, adverse impacts associated with potential existing contamination areas due to the former use of these areas during World War II could be encountered during construction activities. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 3 North Option. Because areas north of Tinian International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris potentially buried in surface or near-surface soils. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, ACM as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 3 North Option. Because areas north of the Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. Similar to Alternative 2 North Option, pre-construction visual surveys could be conducted and procedures followed if LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 3 North Option. Similar to Alternative 2 North Option, this alternative does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that require removal would be limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the construction activities proposed under Alternative 3 North Option on Tinian.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 3 North Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

SOUTH OPTION

Hazardous Materials and Hazardous Wastes. Under Alternative 3 South Option, construction activities would be similar to those described under Alternative 2 South Option and Alternative 3 North Option, but would require use of less hazardous materials and generation of smaller quantities of hazardous wastes due to construction of less infrastructure and a smaller construction footprint. Short-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected from the construction activities.

Petroleum Products. Under Alternative 3 South Option, construction activities would be similar to those described under Alternative 2 South Option and Alternative 3 North Option, but would require use of less petroleum products and generation of smaller quantities of waste petroleum products due to construction of less infrastructure and fewer construction vehicle trips. This alternative would only require construction of 120,000 bbl (5 million gallons) of fuel storage (likely configured as two 60,000-bbl [2.5 million-gallon] storage tanks). Short-term, direct, minor, adverse impacts due to petroleum products would be expected from the construction activities.

Existing Contamination Areas. Under Alternative 3 South Option, construction activities would occur in similar areas at the Tinian International Airport and the Port of Tinian to those described under Alternative 2 South Option and Alternative 3 North Option. Therefore, short-term, direct, minor, adverse impacts associated with potential existing contamination areas due to the former use of these areas during World War II could be encountered during construction activities. The remediation of any existing contamination area would be a long-term, minor, beneficial effect.

Asbestos-Containing Materials. Short-term, direct, minor, adverse impacts associated with ACMs could be encountered during the construction activities proposed for Alternative 3 South Option. Because areas south of Tinian International Airport are associated with former facilities from the World War II era, there is the potential for asbestos to be present in abandoned utility lines and previous demolition debris potentially buried in surface or near-surface soils. The USAF would follow procedures and regulations to minimize the potential for impacts on, or from, ACM as described in **Section 4.12**. Long-term, minor, beneficial impacts would be expected from the removal of any ACMs.

Lead-Based Paint. Short-term, direct, minor, adverse impacts associated with LBP could be encountered during the construction activities proposed for Alternative 3 South Option. Because areas south of Tinian International Airport are associated with former development from the World War II era, there is the potential for buried debris containing LBP and lead-contaminated soil to be present in surface or near-surface soil. As described in **Section 4.12**, pre-construction visual surveys could be conducted and procedures followed if potential LBP is discovered prior to or during construction. Long-term, minor, beneficial impacts would be expected from the removal of any LBP.

Polychlorinated Biphenyls. Short-term, direct, negligible, adverse impacts associated with PCBs could be encountered from the construction of Alternative 3 South Option. Similar to Alternative 2 South Option and Alternative 3 North Option, this alternative does not entail building demolition; therefore, the quantity of equipment possibly containing PCBs that require removal is limited. Long-term, minor, beneficial impacts would be expected from the removal of any PCB-containing equipment.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the construction activities proposed under Alternative 3 South Option on Tinian.

Radon. No impacts associated with radon would be expected from the construction activities proposed under Alternative 3 South Option. Most construction activities would occur outdoors or inside of buildings with ample fresh air circulation during construction. Radon-resistant construction techniques would be implemented during construction to limit the potential for radon intrusion during occupancy.

4.12.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up the 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.12.3.2.1 Saipan

Hazardous Materials and Hazardous Wastes. Implementation of Alternative 3 on Saipan would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same and long-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected.

Petroleum Products. Implementation of Alternative 3 on Saipan would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same and long-term, direct, minor to moderate, adverse impacts associated with petroleum products would be expected.

Existing Contamination Areas. Implementation of Alternative 3 on Saipan would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 3 on Saipan. As noted in **Section 4.12.1.1**, USAF regulations restrict the use of ACMs for new construction. ACM only would be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 3 on Saipan. LBP and PCBs would not be used during operations.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the implementation phase of Alternative 3 on Saipan.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 3 on Saipan. Although radon-resistant construction techniques would be implemented during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. Radon testing and removal equipment, as described in **Section 4.12** would reduce or eliminate this potential impact.

4.12.3.2.2 Tinian North and South Options

Hazardous Materials and Hazardous Wastes. Implementation of Alternative 3 on Tinian would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would the same and long-term, direct, minor, adverse impacts associated with hazardous materials and hazardous wastes would be expected.

Petroleum Products. Implementation of Alternative 3 on Tinian would include the same number of aircraft, personnel, and aircraft operations as described under Alternative 2. Alternative 3 on Tinian would require fewer fuel truck trips than Alternative 2, which would use less fuel. However, impacts during the Implementation Phase would be the same as described for Alternative 2 and long-term, direct, minor to moderate, adverse impacts associated with petroleum products would be expected.

Existing Contamination Areas. Implementation of Alternative 3 on Tinian would not affect any existing contamination areas because these areas would be remediated or avoided during the Construction Phase.

Asbestos-Containing Materials. No impacts associated with ACMs would be expected from implementation of Alternative 3 on Tinian. As noted in **Section 4.12.2.1**, USAF regulations restrict the use of ACMs for new construction. ACM would only be used if a study determines that the ACM is superior in cost and performance characteristics and has minimal actual or potential health hazards.

Lead-Based Paint and Polychlorinated Biphenyls. No impacts associated with LBP and PCBs would be expected from implementation of Alternative 3 on Tinian. LBP and PCBs would not be used in any of the buildings or infrastructure proposed for construction.

Pesticides. Impacts from the proposed use of pesticides would not be expected from the implementation phase of Alternative 3 on Tinian.

Radon. Long-term, direct, negligible to minor, adverse impacts associated with radon could be encountered during implementation of Alternative 3 on Tinian. Although radon-resistant techniques would be used during construction, it is possible that the proposed facilities would encounter radon intrusion following construction. Radon testing and removal equipment, as described in **Section 4.12** would reduce or eliminate this potential impact.

4.12.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.12.2.1** and **3.12.2.2** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo and tanker aircraft and associated support personnel for periodic exercises, or humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts associated with hazardous materials and wastes would be expected as a result of the No Action Alternative. The quantities of hazardous materials used and the quantities of hazardous wastes generated at Saipan and Tinian would remain unchanged under the No Action Alternative.

4.13 Infrastructure and Utilities

Impacts on infrastructure are evaluated based on their potential for disruption, excessive use, or improvement of the existing utilities, and solid waste management. Impacts might arise from physical changes to utility needs created by either direct or indirect changes related to the Proposed Action. Assessing impacts on utilities entails a determination of utilities that would be used or improved as a result of the Proposed Action. Effects on infrastructure were assessed to determine if the Proposed Action would result in the following impacts:

- Exceed the capacity of a utility
- Result in a long-term interruption of a utility
- Result in a violation of a permit condition
- Result in a violation of an approved plan for a utility.

Potential impacts on transportation systems are provided in **Section 4.11**. Potential impacts on the airfield and operations at the airfield are provided in **Section 4.3**.

The USAF would implement mitigation measures during the Construction Phase and the Implementation Phase of Alternative 1, Alternative 2, and Alternative 3, regardless of alternative, to minimize or avoid infrastructure and utilities impacts. The mitigation measures applicable to all alternatives are described in the following paragraphs.

Mitigation Measures During Construction for Infrastructure and Utilities

Waste would be recycled per EO 13693 *Planning for Federal Sustainability in the Next Decade* and DOD requirements. Additionally, waste from vegetation clearing for construction would be composted, as practicable. The USAF would obtain all necessary permits for solid waste management and processing, including recycling, and green waste processing. Required permits could include the BECQ Solid Waste Collection and Solid Waste Processing permits. Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site.

Mitigation Measures During Implementation for Infrastructure and Utilities

Energy Efficiency. New facilities would be designed to achieve Leadership in Energy and Environmental Design (LEED) Silver certification; therefore, state-of-the-art energy efficiency would be expected and impacts on the electrical supply would be reduced. The USAF would follow DOD Energy Conservation goals and therefore impacts on the electrical supply during implementation would be reduced.

Water Supply. The USAF would coordinate with local regulatory authorities and CUC to avoid any localized impacts on the water supply during military exercises.

Recycling. The USAF would recycle materials generated during exercises per EO 13693 *Planning for Federal Sustainability in the Next Decade* and DOD requirements.

Mitigation measures provided in **Section 4.4** would be implemented for erosion and sediment control both during and after construction, and would minimize impacts on potable water resources by controlling sedimentation. **Section 4.5** includes potential impacts on and mitigation measures for storm water systems. Mitigation measures for spill prevention and control are provided in **Section 4.12.**

4.13.1 Alternative 1–Modified Saipan Alternative

4.13.1.1 Construction Phase

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 1. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity.

Electrical Supply**.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines. These impacts would be temporary because the Construction Phase would last approximately 3 years. Additional short-term, negligible, adverse impacts would be expected from potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. New electrical lines at the Saipan International Airport and Port of Saipan would be connected to existing electrical transmission lines. Long-term, direct, minor, beneficial impacts would be expected from the upgrades provided to the electrical system. The addition of new electrical systems on the Saipan power grid would not exceed the existing capacity of the Saipan.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

Central Heating and Cooling**.** No impacts on heating or cooling systems would be expected because there are no cooling or heating systems within the Project Area and Alternative 1 does not include a connection to existing heating and cooling systems.

Natural Gas Supply**.** No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 1 does not include the installation of natural gas infrastructure.

Liquid Fuel Supply**.** Short-term, direct, negligible, adverse impacts on the liquid fuel supply would be expected from the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel at Saipan International Airport and the seaport would result from Alternative 1. The Port of Saipan currently has an aviation fuel storage capacity of 1,134,000 gallons.[3] Alternative 1 would increase the bulk storage capacity of the Port of Saipan and the airport by 100,000 bbl (4.2 million gallons) of fuel each. The proposed construction improvements to jet fuel infrastructure at Saipan International Airport (i.e., storage tanks and fuel hydrant system including pipeline) and the seaport would be expected to involve limited disruptions to the existing Jet A fuel system. Short-term, direct, negligible, adverse impacts on the liquid fuel supply lines at the seaport would be expected during connection of the proposed fuel tanks.

Cement trucking from the Port of Saipan to the concrete batch plant would involve dump trucks driving 7 miles per trip to the concrete batch plant in Obyan, Saipan. Approximately 102 cement truck trips would be expected per year. Concrete trucking from the batch plant to Saipan International Airport would involve concrete mixer trucks driving 2 miles per trip to Obyan, Saipan resulting in approximately 1,798 concrete truck trips per year. Therefore 4,310 miles would be driven transporting cement and concrete per year. The average medium-sized construction truck has a fuel economy of approximately 6.4 miles per gallon of diesel fuel, resulting in an estimated 673 gallons of diesel fuel consumed per year for 3 years.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction activities. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 6-inch water connections for the fire water line and 1.5-inch domestic water line connections.

No impacts are expected on the water supply from the construction workforce because, as described in **Section 2.5.1.1,** it is assumed that the entire construction workforce under Alternative 1 would be from Saipan.

Short-term, direct, negligible, adverse impacts on the water supply would be expected from the water used during construction for dust suppression and for static testing of fuel tanks. An estimated 500 gallons/acre/day could be used for dust suppression during construction activities. Alternative 1 would involve about 28.5 acres of construction therefore resulting in the use of about 15,000 gallons of water per day, which would be spread out over the course of 36 months. Static testing for fuel tanks would require approximately 4,200,000 gallons of water for the fuel tanks at the airport, and 4,200,000 gallons of water for the fuel tanks at the seaport. It is assumed that this testing would not take place over entire 3-year construction period, but would occur once construction of all tanks is complete over the course of a year. This equates to a total of 23,014 gpd of water required for fuel tank static testing during a one-year period.

---

[3] Each AST has a “safe fill” level of 504,000 gallons limiting the actual storage capacity to 1,008,000 gallons.

It is assumed that water required to mix cement for construction would be obtained through the cement company's existing water supply chain. Negligible amounts of water would also be needed for washing construction vehicles and equipment and wetting base and subgrade to optimize moisture content for compaction, and continuously spraying aggregate stockpiles to maintain a saturated surface-dry state. No other measureable water use is proposed to support construction activities.

Because the CUC estimates that approximately 75 to 80 percent of CNMI's potable water supply is lost as a result of leaks in the piping system, it is possible that only a total of 2 million gpd is ultimately available in the Saipan water system, from the approximately 10 million gpd that it produces. The total amount of water required on Saipan during construction including static testing, 38,014 gpd, is negligible (less than 2 percent) compared to the approximate 2 million gpd that is produced and available on Saipan. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

***Sanitary Sewer and Wastewater Treatment*.** Short-term, direct, negligible to minor, adverse impacts on the sewer system would be expected from the temporary shutoff of sewer lines during the connection of a 6-inch sewer line from the proposed maintenance facility to the sewer main line. Existing sanitary sewer pipes within the Alternative 1 area would be relocated and upgraded as necessary. It is assumed that the construction workers would use portable toilets at the site.

Storm Water. Short-term, direct, minor, adverse impacts on the storm water management system would be expected from construction activities associated with Alternative 1. Construction under Alternative 1 would create approximately 1,245,382 ft^2 of new impervious surfaces. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. Mitigation measures to control sediment described in **Section 4.4.** would reduce these impacts. The discharge of stormwater runoff from construction activities at Saipan International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Saipan International Airport and the Seaport, and the high infiltration rates of the island, the impacts on storm water would not be significant.

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system would occur as the permanent facilities at Saipan International Airport are connected to the existing telephone line system at the airport.

***Solid Waste*.** Short-term, direct, minor, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials and therefore, to minimize impacts on the solid waste system, it would be managed as described in **Section 4.13**. The MSWF uses state-of-the-art waste reduction and diversion technologies and implements recycling programs. However, debris that cannot be recycled would be landfilled, which would be a long-term, irreversible, adverse effect. The estimated amounts of debris that would be generated from the proposed construction activities are provided in **Table 4.13-1.**

Table 4.13-1. Estimated Debris Generated from the Proposed Construction Activities for Alternative 1

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated (pounds)	Debris Generated (tons)
Parking Apron	502,682	1	502,682	0.25
Cargo Pad	250,470	1	250,470	0.125
Maintenance Facility	6,100	4.34	26,474	0.013
Jet Fuel Systems	131,987	4.34	572,823	286
Hydrant System	161,172	4.34	699,486	0.35
Total	**1,052,411**	**N/A**	**2,051,935**	**1,025**

Source: USEPA 2009

The debris generated from the proposed construction activities associated with Alternative 1 would total an estimated 1,025 tons over a period of approximately 3 years. Considering that the MSWF can process at least 40,000 tons of solid waste per year and uses state-of-the-art waste reduction and diversion technologies, there is sufficient solid waste processing infrastructure to divert most of the construction debris and landfill the remaining material.

4.13.1.2 Implementation Phase

Port. No impacts on the port infrastructure would be expected from implementation of Alternative 1.

Electrical Supply. Long-term, indirect, minor, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional facilities and water consumption. The impacts would be considered minor because the central power plant and the Kiya Substation have an electrical capacity well above its current load. Saipan has an electrical generation capacity 12 MW above its peak load. Although Saipan International Airport's electricity is supplied by the Kiya Substation, which has an electrical capacity of more than double its current load of approximately 16 MW, the generators supplying the Kiya Substation are in poor condition and the additional demand could stress their condition further, thus reducing their long-term reliability. In addition, a more expansive high-voltage transmission backbone would be needed to tap into this potential for many areas of Saipan International Airport. Extending transmission might be necessary and would result in increased maintenance needs.

Minor impacts would be expected because the increase in population and energy demand for exercises would be no more than 8 weeks per year and facilities would be energy efficient as described in **Section 4.13**.

Central Heating and Cooling. No impacts on central heating or cooling would be expected because the airport has its own separate cooling system. The proposed buildings would use self-contained, electrically powered air conditioning units.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 1 does not include the use of natural gas.

***Liquid Fuel Supply*.** Long-term, direct, minor, adverse impacts on jet fuel would be expected from Alternative 1 due to the increase in fuel that would need to be delivered to the island. Long-term, direct, minor to moderate, beneficial impacts would also be expected from the increased liquid fuel supply of 100,000 bbl (4.2 million gallons) at both the seaport and Saipan International Airport, respectively.

***Water Supply*.** Long-term, direct, minor, adverse impacts on the water supply would be expected under Alternative 1 due to periodic use of an already strained system. Saipan lacks a continuous potable water supply in areas and the water supply system is highly inefficient. However, the temporary slight increase in population is negligible compared to the 48,220 people that currently populate Saipan. Based on up to 265 personnel using an average of 98 gpd per person (USGS 2009b), implementation of Alternative 1 would result in the consumption of up to 25,970 gpd, which is 0.5 percent of the water production capacity in Saipan, and 1.2 percent of the water likely available on Saipan, based on the assumption of an 80 percent loss. Because it is assumed that exercises would not occur continuously for 8 weeks per year and the USAF would coordinate with local authorities as described in **Section 4.13**, significant localized impacts on water supply are not expected. Thus, the projected increase in potable water demand is not expected to result in substantial withdrawals from or impacts on the potable water supply.

***Sanitary Sewer and Wastewater Treatment*.** Long-term, indirect, minor, adverse impacts on sanitary sewer and wastewater treatment would be expected from implementation of Alternative 1. The *2009 Comprehensive Economic Development Strategic Plan for the U.S. Commonwealth of the Northern Mariana Islands* highlighted that the existing wastewater and sewer systems need major rehabilitation and upgrades in order to be USEPA-compliant and achieve sufficiency. It is assumed that the constructed facilities would also be connected to the existing sewer system on Saipan. Alternative 1 would add additional input into a deficient wastewater treatment system. However, the wastewater resulting from the additional personnel increase for only 8 weeks per year would be minor compared to the wastewater produced by Saipan's current population.

Storm Water. Long-term, direct, minor, adverse impacts on storm water would result from Alternative 1. Implementing Alternative 1 would increase impervious surfaces by 1,245,382 ft^2. As a result, there would be an increase in runoff and a reduction of groundwater recharge. Storm water from the impervious surfaces of Alternative 1 would be partially handled by the existing ditches, swales, and culverts that transport storm water to the 20-million-gallon water-catchment reservoir east of Taxiway D; however, due to the proposed large increase in impervious surfaces, these storm water management features could be re-sized or supplemented to accommodate the increase in storm water runoff from the improved areas. As described in **Section 4.5.**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface water associated with the permanent increase in impervious surfaces. Alternative 1 would involve the use of low-impact development strategies to comply with EISA Section 438 and would be designed in accordance with the *CNMI BECQ/GEPA Storm Water Management Manual* (CNMI BECQ and GEPA 2006), as described in **Section 4.5**. The discharge of storm water runoff from construction activities at Saipan

International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**.

***Communications*.** Long-term, direct, minor, adverse impacts on communications would result from Alternative 1. Communication systems at the Saipan International Airport would be upgraded on an as-needed basis and the upgrades would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

***Solid Waste*.** Long-term, direct, negligible, adverse impacts on solid waste would be expected from the periodic population increase associated with Alternative 1. The solid waste generated by personnel related to Alternative 1 would be approximately 0.2 percent of the solid waste generated by the 48,220 people at Saipan. Saipan has sufficient solid waste processing infrastructure to divert a considerable amount of solid waste and landfill the remaining material that is not recycled, as described in **Section 4.13**.

4.13.2 Alternative 2–Modified Tinian Alternative

4.13.2.1 Construction Phase

4.13.2.1.1 North Option

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 2 North Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity.

***Electrical Supply*.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines under Alternative 2 North Option. These short-term impacts could include potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. However, long-term, direct, minor, beneficial impacts would be expected from the upgrades provided to the electrical system.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 2 North Option does not include the use of natural gas.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities.

The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian to the concrete batch plant would involve six dump trucks driving 1.7 miles per trip for a total of 364 trips per year. In addition, concrete trucking from the batch plant to Tinian International Airport would involve 10 concrete mixer trucks driving 2.3 miles per trip for a total of 6,478 trips per year. Therefore 15,518 miles would be driven transporting cement and concrete per year. The average medium-sized construction truck has a fuel economy of approximately 6.4 miles per gallon of diesel fuel, resulting in an estimated 2,425 gallons of diesel fuel consumed per year for 3 years.

Tinian International Airport has no capacity to receive, store, and distribute A1 jet fuel. Construction of the proposed jet fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel tanks at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 2 North Option, which would increase fuel storage capacity at Tinian International Airport by 220,000 bbl (9.24 million gallons) of fuel. Fuel storage capacity at the Port of Tinian would increase by 100,000 bbl (4.2 million gallons.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes within the Project Area would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Short-term, direct, minor to moderate, adverse impacts would be expected on the water supply from the water needed to support the additional construction workforce that would be from off-island, construction activities, and static testing of storage tanks. An additional 70-80 construction workers could be on-island during the 3-year construction period under the Alternative 2 North Option. Based on up to 80 personnel using an average of 98 gpd per person (USGS 2009b), construction worker water usage for Alternative 2 would result in the consumption of up to 7,840 gpd.

An estimated 500 gallons/acre/day could be used for dust suppression during construction activities. Alternative 2 North Option would involve approximately 103 acres of construction resulting in about 51,500 gallons of water spread out over the course of 36 months.

It is assumed that water required to mix cement for construction would be obtained through the cement company's existing water supply chain. As the cement company's existing supply chain on Tinian is the CUC water system, it is estimated that an additional 35 gallons of water per cubic yard of concrete, would be required to support construction. Therefore, a total of 2,975,000 gallons of water would be needed to mix 85,000 cubic yards of concrete, or approximately 2,717 gpd over 3 years.

Static testing for storage tanks at the airport would require approximately 6,720,000 gallons of water for the fuel tanks and 200,000 gallons of water for the water tanks. Static testing would also be conducted for the fuel tanks at the seaport and would require approximately 4,200,000 gallons of water. It is assumed that this testing would not take place over the entire 3-year construction period, but would occur once construction of the tanks is complete over the course of a year. It is also assumed that the seaport tanks and airport tanks would not be tested in the same year. Therefore, this equates to a total of 18,959 gpd of water required for tank static testing during a one-year period for the airport tanks, and 11,507 gpd of water required for the seaport tanks during a separate one-year period.

Negligible amounts of water would also be needed for washing construction vehicles and equipment and wetting base and subgrade to optimize moisture content for compaction, and continuously spraying aggregate stockpiles to maintain a saturated surface-dry state. No other measureable water use is proposed to support construction activities.

Tinian is able to generate 1,260,000 gallons of water per day; however, it is estimated, as described in **Section 3.13.3.2**, that up to 80 percent of this water is lost and therefore only approximately 252,000 gpd of potable water would be available on Tinian. Given these assumptions of water loss, proposed water usage during construction could deplete the current Tinian water surplus. The maximum potential impact would occur if water was needed for dust suppression for the entire construction footprint, 103 acres, during each day of construction and if dust suppression water was also required at the same time as the airport static tank testing. Under this scenario, a total of approximately 32 percent of the assumed Tinian water availability could be required under the Alternative 2 North Option.

Improvements to the water system to meet the water demand during and after construction would reduce or avoid short and long term impacts on the potable water system and are presented in **Section 4.13.2.2.** Improvements to the water system are based on the implementation phase, as more water would be required during the implementation phase than the construction phase. However, improvements would occur at the start of the construction phase to support all water demands during construction. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

***Sanitary Sewer and Wastewater Treatment*.** No impacts on sewer or wastewater treatment would be expected from the construction associated Alternative 2 North Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the construction site and non-local workers would use existing wastewater infrastructure at their place of lodging.

Storm Water. Short-term, direct, minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 2 North Option. Construction under Alternative 2 North Option would create approximately 4,483,194 ft^2 of new impervious surfaces. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. Mitigation measures to control sediment described in **Section 4.4** would reduce these impacts. The discharge of stormwater runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Tinian International Airport and the Seaport, and the high infiltration rates of the island, the impacts on storm water would not be significant.

Communications. Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

Solid Waste. Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials and therefore, to minimize impacts on the solid waste system, it would be managed as described in **Section 4.13**. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. The estimated amounts of debris generated from the proposed construction activities are provided in **Table 4.13-2.**

Table 4.13-2. Estimated Debris Generated from the Proposed Construction Activities for Alternative 2 North Option

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated (pounds)	Debris Generated (tons)
Access Road	128,924	1	128,924	64
Road Reroute	40,585	1	40,585	20
Taxiways	1,385,300	1	1,385,300	692
Parking Apron	1,729,805	1	1,729,805	864
Cargo Pad	299,754	1	299,754	149
Maintenance Facility	7,570	4.34	26,040	16
Airport Fuel Storage	527,437	4.34	2,951,200	1,475
Seaport Fuel Storage	230,587	4.34	2,903,460	1,451
Fuel Pump Tanks and Wells	83,705	4.34	363,279	181
Fire Water System	49,527	4.34	214,947	107
Total	**4,483,194**	**N/A**	**10,043,294**	**5,020**

Source: USEPA 2009

The debris generated from the proposed construction activities associated with Alternative 2 North Option would total an estimated 5,020 tons over a period of 3 years. There is a lack of municipal solid waste facilities on Tinian; therefore, the construction debris would have to be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships until a permitted municipal solid waste facility is constructed.

4.13.2.1.2 South Option

Port. Short-term, direct, negligible, adverse impacts on the Port of Tinian would be expected from the disruption caused by construction activities associated with Alternative 2 South Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity.

***Electrical Supply*.** Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines. These short-term impacts could include potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. However, long-term, direct, minor, beneficial impacts would be expected from the upgrades provided to the electrical system.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 2 South Option does not include the use of natural gas.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian to the concrete batch plant would involve 6 dump trucks driving 1.7 miles per trip for a total of 230 trips per year. In addition, concrete trucking from the concrete batch plant to Tinian International Airport would involve 10 concrete mixer trucks driving 2.3 miles per trip for a total of 4,093 trips per year. Therefore 9,805 miles would be driven transporting cement and concrete per year. The average medium-sized construction truck has a fuel economy of approximately 6.4 miles per gallon of diesel fuel, resulting in an estimated 1,532 gallons of diesel fuel consumed per year for 3 years.

The proposed fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel storage tanks and fuel line at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 2 South Option. Similar to the North Option, Alternative 2 South Option would increase the fuel storage at the airport by 220,000 bbl (9.24 million gallons) of fuel. Fuel storage capacity at the Port of Tinian would increase by 100,000 bbl (4.2 million gallons).

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Short-term, direct, negligible to minor, adverse impacts would be expected on the water supply from the water needed to support the additional construction workforce that would be from off-island construction activities, and static testing for storage tanks. An additional 20 to 25 construction workers could be on-island during the 3-year construction period under the Alternative 2 South Option. Based on up to 25 personnel using an average of 98 gpd per person (USGS 2009b), construction worker water usage for Alternative 2 would result in the consumption of up to 2,450 gpd. The resulting water demand for construction workers is minor compared to the population of Tinian (3,136 people).

An estimated 500 gallons/acre/day could be used for dust suppression during construction activities. Alternative 2 South Option would involve about approximately 65 acres of construction resulting in about 32,500 gallons of water per day over the course of 3 years.

It is assumed that water required to mix cement for construction would be obtained through the cement company's existing water supply chain. As the cement company's existing supply chain on Tinian is the CUC water system, it is estimated that an additional 35 gallons of water per cubic yard of concrete would be required to support construction. Therefore, a total of 1,890,000 gallons of water would be needed to mix 54,000 cubic yards of concrete, or approximately 1,726 gpd over 3 years.

Static testing for storage tanks at the airport would require approximately 6,720,000 gallons of water for the fuel tanks and 200,000 gallons of water for the water tanks. Static testing would also be conducted for the fuel tanks at the seaport and would require approximately 4,200,000 gallons of water. It is assumed that this testing would not take place over entire 3-year construction period, but would occur once construction of the tanks is complete over the course of a year. It is also assumed that the seaport tanks and airport tanks would not be tested in the same year. Therefore, this equates to a total of 18,959 gpd of water required for tank static testing during a one-year period for the airport tanks, and 11,507 gpd of water required for the seaport tanks during a separate one-year period.

Negligible amounts of water would also be needed for washing construction vehicles and equipment and wetting base and subgrade to optimize moisture content for compaction, and continuously spraying aggregate stockpiles to maintain a saturated surface-dry state. No other measureable water use is proposed to support construction.

Tinian is able to generate 1,260,000 gallons of water per day; however, it is estimated, as described in **Section 3.13.3.2**, that up to 80 percent of this water is lost and therefore only approximately 252,000 gpd of potable water would be available on Tinian. Given these assumptions of water loss, proposed water usage during construction could deplete the current Tinian water surplus. The maximum potential impact would occur if water was needed for dust suppression for the entire construction footprint, 65 acres, during each day of construction and if dust suppression water was also required at the same time as the airport static tank testing. Under this scenario, a total of approximately 22 percent of the assumed Tinian water availability could be required under the Alternative 2 South Option.

Improvements to the water system to meet the water demand during and after construction would reduce or avoid short- and long-term impacts on the potable water system and are presented in **Section 4.13.2.2.** Improvements to the water system are based on the implementation phase, as more water would be required during the implementation phase than the construction phase. However, improvements would occur at the start of the construction phase to support all water demands during construction. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected from the construction associated with Alternative 2 South Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the site and non-local workers would use existing wastewater infrastructure at their place of lodging.

Storm Water. Short-term, direct, negligible to minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 2 South Option. Construction under Alternative 2 South Option would create approximately 2,832,615 ft^2 of new impervious surfaces. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities. Mitigation measures to control sediment described in **Section 4.4** would reduce these impacts. The discharge of storm water runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Tinian International Airport and the Seaport, and the high infiltration rates of the island, the impacts on storm water would not be significant.

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials and therefore, to minimize impacts on the solid waste system, it would be managed as described in **Section 4.13**. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. The estimated amounts of debris generated from the proposed construction activities are provided in **Table 4.13-3.**

The debris generated from the proposed construction activities associated with Alternative 2 South Option would total an estimated 2,948 tons over a period of 3 years. There is a lack of municipal solid waste facilities on Tinian; therefore, the construction debris would have to be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships until a permitted municipal solid waste facility is constructed.

Table 4.13-3. Estimated Debris Generated from the Proposed Construction Activities for Alternative 2 South Option

Project	Total Square Footage	Multiplier (pounds/ft²)	Debris Generated (pounds)	Debris Generated (tons)
Roadway Improvements	177,294	1	177,294	88
Parking Apron	1,508,251	1	1,508,251	754
Cargo Pad	230,165	1	230,165	115
Maintenance Facility	7,972	4.34	34,624	17
Airport Fuel Storage	542,464	4.34	2,354,293	1177
Seaport Fuel Storage	230,587	4.34	1,000,747	500
Fuel Pump Tanks and Wells	82,230	4.34	356,878	178
Fire Water System	53,652	4.34	232,849	116
Total	**2,832,615**	**N/A**	**5,895,101**	**2,948**

Source: USEPA 2009

4.13.2.2 Implementation Phase - North and South Options

Port. No impacts on the port infrastructure would be expected from implementation of Alternative 2 because the USAF is not proposing to increase the number of fuel tanker trips to the harbor or to improve the harbor.

***Electrical Supply*.** Long-term, indirect, minor, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings, temporary population, and water consumption. The impacts would be considered minor because Tinian has an electrical capacity well above its current load. The energy infrastructure has a maximum capacity of about 20 MW, while the current load is below 5 MW. In addition, the energy infrastructure is in good condition and is well-maintained. Although an electrical line runs along the east end of the airport property, there is currently no access to commercial power at the Project Areas (AFCEE/PACAF 2010). A more expansive electrical grid would be needed to tap into this potential for the Project Areas due to Tinian International Airport's limited feeder distribution network (CNMI 2011). This expansion would result in slightly increased maintenance needs. The increased electrical demand would also affect DOD Energy Conservation goals to reduce energy consumption by 3 percent every year for a cumulative reduction of 30 percent by 2015. Minor impacts would be expected because the increase in population and energy demand for exercises would be no more than 8 weeks per year and facilities would be energy efficient as described in **Section 4.13**.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because the airport has its own separate cooling system. The proposed buildings would use self-contained, electrically powered air conditioning units.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 2 does not include the use of natural gas.

Liquid Fuel Supply. Long-term, minor, adverse impacts on jet and diesel fuel would be expected from Alternative 2 due to the increase in fuel that would need to be delivered to the island. Long-term, major, beneficial impacts on the capacity to receive, store, and distribute aviation fuel would result from Alternative 2 implementation, which would increase the jet fuel bulk storage capacity at Tinian International Airport by 220,000 bbl (9.24 million gallons) and include the installation of a hydrant fuel system. Similarly, Alternative 2 would increase fuel storage capacity at the Port of Tinian.

Water Supply. Long-term, direct, minor, adverse impacts on the water supply would be expected from implementation of Alternative 2 due to the temporary increase in population (up to 265 personnel) and the fire suppression system. The resulting water demand for exercises would only be on an as-needed basis totaling no more than 8 weeks per year. Based on up to 265 personnel using an average of 98 gpd per person (USGS 2009b), implementation of Alternative 2 would result in the consumption of up to 25,970 gpd. The proposed fire suppression system on Tinian would require groundwater withdrawal to initially fill the associated water tanks. The calculated water storage to meet the requirement for fire suppression is 240,000 gallons; therefore, two 120,000-gallon water storage tanks would need to be filled. Requirements for fire suppression include the ability to replenish the water storage tanks within 24 hours, which therefore equates to 240,000 gpd. The total consumption of water for support personnel and the fire suppression water tanks in one day, as a conservative estimate, would be approximately 265,970 gpd should exercises and fire suppression replenishment occur in the same day. After the initial fill of the fire suppression tanks during the implementation phase, they would only need to be refilled after a fire emergency.

Tinian is able to generate 1,260,000 gallons of water per day; however, it is estimated, as described in **Section 3.13.3.2**, that up to 80 percent of this water is lost and therefore only approximately 252,000 gpd of potable water would be available on Tinian. Given these assumptions of water loss, proposed water usage during implementation could deplete the current Tinian water surplus.

The CUC system is not able to provide this amount of water without an extensive upgrade to their system. To rectify the impacts on the CUC potable water system, the USAF would obtain CPA board approval to install two water wells to meet USAF water requirements, each approximately 350 feet deep. The USAF discussed water requirements for Alternative 2 with the CUC in February 2016 and would continue to coordinate well siting, installation and operation with CUC to prevent impacts to CUC water supplies during times the USAF wells are used. The USAF would also coordinate the design and permitting of water wells with CNMI BECQ and would follow CNMI BECQ Well Regulations. The wells would be positioned to lessen aquifer drawdown and minimize any increase in water salinity. Pumping rates from the wells would be developed during the first project design in coordination with CUC; the USAF would manage draw rates from the existing and proposed wells to ensure that water supply is not exceeded. The water wells would be constructed at the beginning of the construction phase and would be able to support the remainder of construction if the CUC supply could not meet the demand.

Sanitary Sewer and Wastewater Treatment. No impacts would be expected on the existing wastewater system because residents and businesses on Tinian have individual septic tanks.

Under Alternative 2, one or more septic systems would be used to handle the needs of up to 265 personnel. The septic systems would require long-term maintenance.

Storm Water. Long-term, direct, adverse, negligible to minor impacts would be expected on stormwater. As discussed in **Section 4.13.2.1**, Alternative 2 would create up to 4,483,194 ft^2 of new impervious surfaces and therefore could substantially increase the volume and composition of storm water runoff. As described in **Section 4.5**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface water associated with the permanent increase in impervious surfaces. Alternative 2 would involve the use of low-impact development strategies to comply with EISA Section 438 and would be designed in accordance with the *CNMI BECQ/GEPA Storm Water Management Manual* (CNMI BECQ and GEPA 2006), as described in **Section 4.5**. The discharge of stormwater runoff from construction at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**.

Communications. Long-term, direct, minor, adverse impacts on communications would result from Alternative 2. Communication systems at the Tinian International Airport would be upgraded on an as-needed basis and would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

Solid Waste. Long-term, direct, minor, adverse impacts on solid waste would be expected from the lack of municipal solid waste facilities on Tinian. All solid waste that is not recycled, as described in **Section 4.13,** would be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships until a permitted municipal solid waste facility was constructed. The solid waste generated by up to 265 people 8 weeks per year under Alternative 2 would be approximately 3 percent of the solid waste generated by 3,136 people at Tinian 52 weeks per year.

4.13.3 Alternative 3–Hybrid Modified Alternative

4.13.3.1 Construction Phase

4.13.3.1.1 Saipan

Port. No impacts on the port would be expected because construction is not proposed at the Port under Alternative 3 on Saipan.

Electrical Supply. Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected at Saipan International Airport from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines. These impacts would be temporary because the Construction Phase would last approximately 3 years. However, long-term, direct, minor, beneficial impacts would be expected from the upgrades provided to the electrical system. Additional short-term, negligible, adverse impacts would be expected from potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction. New electrical lines at the Saipan International Airport would be connected to existing electrical transmission lines.

The addition of new electrical systems on the Saipan power grid would not exceed the existing capacity of the Saipan power grids.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on heating or cooling systems would be expected because Alternative 3 does not include a connection to existing airport cooling system.

***Natural Gas Supply*.** No impacts on natural gas would be expected because there is no natural gas infrastructure on Saipan and Alternative 3 does not include the use of natural gas.

***Liquid Fuel Supply*.** Short-term, direct, negligible, adverse impacts on the liquid fuel supply would be expected from the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel at Saipan International Airport would result from Alternative 3. The proposed construction improvements to jet fuel infrastructure at Saipan International Airport (i.e., storage tanks) would be expected to involve limited disruptions to the existing fuel system.

Cement trucking from the Port of Saipan to the concrete batch plant and from the batch plant to the airport would be same as routes described in **Section 4.13.1.1**.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction activities. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 6-inch water connections for the fire water line and 1.5-inch domestic water line connections.

No impacts are expected on the water supply from the construction workforce because, as described in **Section 2.5.1.1,** it is assumed that the entire construction workforce under Alternative 3 would be from Saipan.

Short-term, direct, negligible, adverse impacts on the water supply would be expected from the water used during construction for dust suppression and for static testing of fuel tanks. However, under Alternative 3 on Saipan, the construction footprint would be less than that described under the Alternative 1 in **Section 4.13.1.1** and thus would require less water for dust suppression or construction purposes. Additionally, fuel tanks are not proposed at the seaport under Alternative 3, and therefore less water would be required for static testing of storage tanks.

It is assumed that water required to mix cement for construction would be obtained through the cement company’s existing water supply chain. Negligible amounts of water would also be needed for washing construction vehicles and equipment and wetting base and subgrade to optimize moisture content for compaction, and continuously spraying aggregate stockpiles to maintain a saturated surface-dry state. No other measureable water use is proposed to support construction activities.

The total amount of water required under Alternative 3 on Saipan during construction including static testing is negligible and less than Alternative 1, which is less than 2 percent of that produced and available on Saipan. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

***Sanitary Sewer and Wastewater Treatment*.** Short-term, direct, negligible to minor, adverse impacts on the sewer system would be expected from any temporary shutoff during proposed construction. Existing sanitary sewer pipes would be relocated and upgraded as necessary. It is assumed that the construction workers would use portable toilets at the site.

Storm Water. Short-term, direct, negligible to minor, adverse impacts on the storm water management system would be expected from construction activities associated with Alternative 3 on Saipan. However, impacts under Alternative 3 on Saipan would be less than that described under Alternative 1 in **Section 4.13.1.1** because there would be less impervious surface associated with the alternative. A temporary increase in stormwater runoff, erosion, and sedimentation would be expected during the proposed construction activities. Mitigation measures to control sediment described in **Section 4.4.** would reduce these impacts. The discharge of stormwater runoff from construction activities at Saipan International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Saipan International Airport and the Seaport, and the high infiltration rates of the island, the impacts on storm water would not be significant.

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, negligible to minor, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials and therefore, to minimize impacts on the solid waste system, it would be managed as described in **Section 4.13**. The MSWF uses state-of-the-art waste reduction and diversion technologies and implements recycling programs. However, debris that cannot be composted or recycled would be landfilled, which would be a long-term, irreversible, adverse effect. The estimated amounts of debris under Alternative 3 on Saipan would be less than that described under Alternative 1 in **Section 4.13.1.1** because less infrastructure would be constructed. Therefore, negligible impacts on solid waste on Saipan during the Construction Phase would be expected.

4.13.3.1.2 Tinian

NORTH OPTION

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 3 North Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel storage tanks would have to be permanently relocated.

Electrical Supply. Short-term, direct, negligible, adverse impacts on the existing electrical system would be expected from the extension of electrical lines to and the relocation or upgrading of any buried electrical lines within the airport and seaport. However, long-term, direct, minor, beneficial impacts would be expected from any upgrades provided to the electrical system. Additional short-term, negligible, adverse impacts would be expected due to potential power disruptions when new facilities and lighting systems are connected to the power grid and when power lines are deactivated during construction.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

Central Heating and Cooling. No impacts on central heating or cooling would be expected because Alternative 3 North Option does not involve connecting to the airport's cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 North Option does not include the use of natural gas.

Liquid Fuel Supply. Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian, to the concrete batch plant, and then to Tinian International Airport would be same as the routes described in **Section 4.13.2.1**.

Long-term, minor, adverse impacts on jet and diesel fuel would be expected from Alternative 3 North Option due to the increase in fuel that would need to be delivered to the island. Tinian International Airport has no capacity to receive, store, and distribute A1 jet fuel. The proposed jet fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel storage tanks at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 3 North Option, which would increase fuel storage capacity at the Tinian International Airport by 120,000 bbl (5.04 million gallons) of fuel.

Water Supply. Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

Short-term, direct, minor, adverse impacts would be expected on the water supply from the water needed to support the additional construction workforce that would be from off-island construction activities, and static testing of storage tanks. An additional 40-50 construction workers could be on-island during the 3-year construction period under the Alternative 3 North Option. Based on up to 50 personnel using an average of 98 gpd per person (USGS 2009b), construction worker water usage for Alternative 3 would result in the consumption of up to 4,900 gpd.

Impacts associated with water use for dust suppression and for concrete mixing under Alternative 3 North Option would be less than those mentioned under Alternative 2 in **Section 4.13.2** because the construction footprint for Alternative 3 would be smaller than that for Alternative 2. Impacts associated with static testing under Alternative 3 North Option would also be less than those mentioned under Alternative 2 in **Section 4.13.2** because the fuel tanks for Alternative 3 would have less capacity than that for Alternative 2.

Negligible amounts of water would also be needed for washing construction vehicles and equipment and wetting base and subgrade to optimize moisture content for compaction, and continuously spraying aggregate stockpiles to maintain a saturated surface-dry state. No other measureable water use is proposed to support construction activities.

As described under Alternative 2 in **Section 4.13.2.1** and **Section 4.13.2.2**, improvements would be made to the Tinian water system under Alternative 3 to meet the water demand during and after construction and would reduce or avoid short and long term impacts on the potable water system. Improvements to the water system are based on the implementation phase, as more water would be required during the implementation phase than the construction phase. However, improvements would occur at the start of the construction phase to support all water demands during construction. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

Sanitary Sewer and Wastewater Treatment. No impacts would be expected from the construction associated with Alternative 3 North Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the site and non-local workers would use existing wastewater infrastructure at their place of lodging.

Storm Water. Short-term, direct, minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 3 North Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities; however, these impacts would be less than those mentioned under **Section 4.13.2.1**. Mitigation measures to control sediment described in **Section 4.4** would reduce these impacts. The discharge of stormwater runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Tinian International Airport and the Seaport, and the high infiltration rates of the island, the impacts on storm water would not be significant.

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials and therefore, to minimize impacts on the solid waste system, it would be managed as described in **Section 4.13**. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Impacts on solid waste management under Alternative 3 North Option would be less than those mentioned under Alternative 2 in **Section 4.13.2.1** because the construction footprint for Alternative 3 would be smaller than that for Alternative 2.

SOUTH OPTION

Port. Short-term, direct, negligible, adverse impacts on the port would be expected from the disruption caused by construction activities associated with Alternative 3 South Option. Long-term, direct, minor, beneficial impacts on the port would be expected because of additional fuel storage capacity. Any buried utility lines on the site of the proposed fuel storage tanks would have to be permanently relocated.

***Electrical Supply*.** Under Alternative 3 South Option, the construction footprint on the south portion of Tinian International Airport would be less than that described under Alternative 2 South Option and Alternative 3 North Option in **Sections 4.13.2.1.2** and **4.13.3.1.2.1**, respectively. Therefore, negligible to minor impacts on the electrical supply at Tinian International Airport during the Construction Phase would be expected.

It is assumed that the construction contractors would primarily use diesel- or battery-powered equipment. Any construction equipment that is powered via electricity would likely receive power from a portable generator or a temporary electrical panel.

***Central Heating and Cooling*.** No impacts on central heating or cooling would be expected because Alternative 3 South Option does not involve connecting to the airport's cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 South Option does not include the use of natural gas.

***Liquid Fuel Supply*.** Under Alternative 3 South Option, the construction footprint on the south portion of Tinian International Airport would be less than that described under Alternative 2 South Option and Alternative 3 North Option in **Sections 4.13.2.1.2** and **4.13.3.1.2.1**, respectively. Therefore, less construction equipment would be necessary and less fuel for the construction equipment would also be needed. Short-term, direct, negligible, adverse impacts on liquid fuel supply would be expected due to the minimal amounts of petroleum that would be required for construction equipment and cement and concrete transportation during the proposed construction activities. The required petroleum would be brought on site by contractors and removed when construction activities are complete.

Cement trucking from the Port of Tinian, to the concrete batch plant, and then to Tinian International Airport would be same as those routes described in **Section 4.13.2.1.2**.

Long-term, minor, adverse impacts on jet and diesel fuel would be expected from Alternative 3 South Option due to the slight increase in fuel that would need to be delivered to the island. Tinian International Airport has no capacity to receive, store, and distribute A1 jet fuel. The proposed jet fuel infrastructure improvements would be expected to involve no disruptions to commercial aircraft fueling operations. Likewise, the seaport has no A1 jet fuel storage and distribution system, so construction of the proposed fuel storage tanks at the seaport would not interrupt existing liquid fuel operations.

Long-term, direct, major, beneficial impacts on the capacity to receive, store and distribute aviation fuel would result from Alternative 3 South Option, which would increase the fuel storage capacity at Tinian International Airport by 100,000 bbl (4.2 million gallons) of fuel.

***Water Supply*.** Short-term, direct, negligible, adverse and long-term, direct, moderate, beneficial impacts on the water supply would be expected from the temporary shutoff, relocation, extension, upgrade, and connection of water lines during construction. Any existing water pipes would be relocated and upgraded as necessary. The proposed maintenance facility would require permanent 1.5-inch water connections for domestic water use and a 6-inch water line for fire suppression systems.

No impacts are expected on the water supply from the construction workforce because, as described in **Section 2.5.3.1.1,** it is assumed that the entire construction workforce under the Alternative 3 South Option would be from Tinian.

Impacts under Alternative 3 South Option related to dust suppression and for concrete mixing would be less than those mentioned under Alternative 2 South Option in **Section 4.13.2.1.2** because the construction footprint is smaller, and therefore, would be less than 2.5 percent of the Tinian daily water production.

Impacts associated with static testing under Alternative 3 North Option would also be less than those mentioned under Alternative 2 in **Section 4.13.2** because the fuel tanks for Alternative 3 would have less capacity than that for Alternative 2.

Negligible amounts of water would also be needed for washing construction vehicles and equipment and wetting base and subgrade to optimize moisture content for compaction, and continuously spraying aggregate stockpiles to maintain a saturated surface-dry state. No other measureable water use is proposed to support construction activities.

As described under Alternative 2 in **Sections 4.13.2.1** and **4.13.2.2**, improvements would be made to the Tinian water system under Alternative 3 to meet the water demand during and after construction and would reduce or avoid short and long term impacts on the potable water system. Improvements to the water system are based on the implementation phase, as more water would be required during the implementation phase than the construction phase. However, improvements would occur at the start of the Construction Phase to support all water demands during construction. Additionally, if non-potable water is available for dust suppression, the effect on the potable water supply would be even less.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected from the construction associated with Alternative 3 South Option because residents and businesses on Tinian have individual septic tanks. It is assumed that the construction workers would use portable toilets at the site and non-local workers would use existing wastewater infrastructure at their place of lodging.

Storm Water. Short-term, direct, negligible to minor, adverse impacts on the storm water management system would be expected from the construction activities associated with Alternative 3 South Option. A temporary increase in storm water runoff, erosion, and sedimentation would be expected during the proposed construction activities; however, these impacts would be less than those mentioned under Alternative 2 South Option described in **Section 4.13.2.1.2**. Mitigation measures to control sediment described in **Section 4.4** would reduce these impacts. The discharge of stormwater runoff from construction at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**. Due to the development and implementation of the storm water management measures and a SWPPP, as described in **Section 4.5**, the vegetated surrounding area of Tinian International Airport and the Seaport, and the high infiltration rates of the island, the impacts on storm water would not be significant.

***Communications*.** Short-term, direct, negligible, adverse impacts on the communications system could occur as the proposed facilities are connected to the existing communication systems in the vicinity of the airport.

***Solid Waste*.** Short-term, direct, moderate, adverse impacts on solid waste management would be expected from the generation of construction debris. Construction debris is generally composed of clean materials and therefore, to minimize impacts on the solid waste system, it would be managed as described in **Section 4.13**. However, debris that is not recycled would be landfilled, which would be considered a long-term, irreversible, adverse effect. Impacts on solid waste under Alternative 3 South Option would be less than those mentioned under the Alternative 3 North Option in **Section 4.13.3.1.2.1** because the construction footprint is smaller for the South Option.

4.13.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.13.3.2.1 Saipan

Port. No impacts on the Port of Saipan infrastructure would be expected from the implementation of Alternative 3.

Electrical Supply**.** Long-term, indirect, negligible, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings, airfield lighting, population, and water consumption; however, the current electrical capacity would not be exceeded.

Negligible impacts would be expected because the slight increase in population and energy demand for exercises would be no more than 8 weeks per year and facilities would be energy efficient as described in **Section 4.13**.

Central Heating and Cooling**.** No impacts on central heating or cooling would be expected because Alternative 3 does not involve connecting to the airport's cooling system.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 does not include the use of natural gas.

Liquid Fuel Supply**.** Long-term, moderate, beneficial impacts on the capacity to receive and store aviation fuel would result from the Alternative 3 Implementation Phase, which would increase jet fuel storage at Saipan International Airport by 100,000 bbl (4.22 million gallons) of storage. It would take 6 standard fuel trucks (10,000 gallons each) 14 days working approximately 10 hours per day to initially to fill the jet fuel storage tanks at the airport.

Water Supply**.** Long-term, direct, minor, adverse impacts on the water supply would be expected under Alternative 3 on Saipan due to periodic use of an already strained system. Saipan lacks a continuous potable water supply in areas and the water supply system is highly inefficient. However, the temporary slight increase in population is negligible compared to the 48,220 people that currently populate Saipan. Based on up to 265 personnel using an average of 98 gpd per person (USGS 2009b), implementation of Alternative 3 on Saipan would result in the consumption of up to 25,088 gpd, which is 0.5 percent of the water production capacity in Saipan, and 1.2 percent of the water likely available on Saipan, based on the assumption of an 80 percent loss. Because it is assumed that exercises would not occur continuously for 8 weeks straight per year and the USAF would coordinate with local authorities as described in **Section 4.13**, significant localized impacts on water supply are not expected. Thus, the projected increase in potable water demand is not expected to result in substantial withdrawals from or impacts on the potable water supply.

Sanitary Sewer and Wastewater Treatment**.** Long-term, indirect, minor, adverse impacts on sanitary sewer and wastewater treatment would be expected from implementation of Alternative 3 on Saipan. The *2009 Comprehensive Economic Development Strategic Plan for the U.S. Commonwealth of the Northern Mariana Islands* highlighted that the existing wastewater and sewer systems need major rehabilitation and upgrades in order to be USEPA-compliant and achieve sufficiency. It is assumed that the constructed facilities would also be connected to the existing sewer system on Saipan. Alternative 3 on Saipan would add additional input into a deficient wastewater treatment system. However, the wastewater resulting from the additional personnel increase for only 8 weeks per year would be minor compared to the wastewater produced by Saipan's current population. The USAF would coordinate with the CUC to determine how to use the wastewater and sewer system in a manner that would not contribute to noncompliance with the NPDES permit requirements.

Storm Water. Long-term, direct, minor, adverse impacts on storm water would result from the Alternative 3 Implementation Phase. Implementing Alternative 3 on Saipan would increase impervious surfaces by 388,557 ft^2. As a result, there would be an increase in runoff and a reduction of groundwater recharge. Storm water from the impervious surfaces of Alternative 3 Implementation Phase would be partially handled by existing drainage ditches. As described in **Section 4.5**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface water associated with the permanent increase in impervious surfaces. Alternative 3 would involve the use of low-impact development strategies to comply with EISA Section 438 and would be designed in accordance with the *CNMI BECQ/GEPA Storm Water Management Manual* (CNMI BECQ and GEPA 2006), as described in **Section 4.5**. The discharge of storm water runoff from construction activities at Saipan International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**.

Communications**.** Long-term, direct, minor, adverse impacts on communications would result from the Alternative 3 Implementation Phase. Communication systems at the Saipan International Airport would be upgraded on an as-needed basis and would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

Solid Waste**.** Long-term, direct, negligible, adverse impacts on solid waste would be expected from the periodic population increase associated with the Alternative 3 Implementation Phase. The solid waste generated by up to 265 people 8 weeks per year under the Alternative 3 Implementation Phase would be approximately 0.2 percent of the solid waste generated by the 48,220 people at Saipan 52 weeks per year. Saipan has sufficient solid waste processing infrastructure to divert a considerable amount of solid waste and landfill the remaining material that is not recycled, as described in **Section 4.13**.

4.13.3.2.2 Tinian North and South Options

Port. No impacts on the port infrastructure would be expected from the implementation of Alternative 3 on Tinian because the USAF does not propose to measurably increase the number of fuel tanker trips to the harbor or to improve the harbor.

Electrical Supply**.** Long-term, indirect, minor, adverse impacts on electrical supply would be expected because energy demand would increase due to the additional buildings, population, and water consumption. The impacts would be considered minor because Tinian has an electrical capacity well above its current load. The energy infrastructure has a maximum capacity of about 20 MW, while its current load is below 5 MW. In addition, the energy infrastructure is in good condition and is well-maintained. Although an electrical line runs along the east end of the airport property, a more expansive electrical grid would be needed and would result in slightly increased long-term maintenance needs.

Minor impacts would be expected because the increase in population and energy demand for exercises would be no more than 8 weeks per year and facilities would be energy efficient as described in **Section 4.13**.

Central Heating and Cooling**.** No impacts on central heating or cooling would be expected because Alternative 3 would not involve the airport's cooling system. The proposed buildings would use self-contained, electrically powered air conditioning units.

Natural Gas Supply. No impacts on natural gas would be expected because there is no natural gas infrastructure on the island and Alternative 3 does not include the use of natural gas.

Liquid Fuel Supply**.** Long-term, major, beneficial impacts on the capacity to receive, store, and distribute aviation fuel would result from Alternative 3 on Tinian, which would increase the fuel storage capacity at Tinian International Airport by 120,000 bbl (5.04 million gallons) and include the installation of a hydrant fuel system. Similarly, Alternative 3 would increase the fuel storage capacity of the Port of Tinian by 100,000 bbl (4.2 million gallons).

Water Supply**.** Long-term, direct, minor, adverse impacts on the water supply would be expected from implementation of Alternative 3 due to the increase in population (up to 265 personnel) and the fire suppression system. The resulting water demand for exercises would only be on an as-needed basis totaling no more than 8 weeks per year Based on up to 265 personnel using an average of 98 gpd per person (USGS 2009b), implementation of Alternative 2 would result in the consumption of up to 25,970 gpd. The proposed fire suppression system on Tinian would require groundwater withdrawal to initially fill the associated water tanks. The calculated water storage to meet the requirement for fire suppression is 240,000 gallons; therefore, two 120,000-gallon water storage tanks would need to be filled. Requirements for fire suppression include the ability to replenish the water storage tanks within 24 hours, which therefore equates to 240,000 gpd. The total consumption of water for support personnel and the fire suppression water tanks in one day, as a conservative estimate, would be approximately 265,970 gpd should exercises and fire suppression replenishment occur in the same day. After the initial fill of the fire suppression tanks during the implementation phase, they would only need to be refilled after a fire emergency.

As described in **Section 4.13.2.2,** Tinian is able to generate 1,260,000 gallons of water per day; however, it is estimated, as described in **Section 3.13.3.2**, that up to 80 percent of this water is lost and therefore only approximately 252,000 gpd of potable water would be available on Tinian. Given these assumptions of water loss, proposed water usage during implementation could deplete the current Tinian water surplus. To mitigate the impacts on the Tinian potable water supply under Alternative 3, the USAF would install two water wells exactly as described under Alternative 2 in **Section 4.13.2.2**. The water wells would be constructed at the beginning of the construction phase and would be able to support the remainder of construction if the CUC supply could not meet the demand.

***Sanitary Sewer and Wastewater Treatment*.** No impacts would be expected on the existing wastewater system because residents and businesses on Tinian have individual septic tanks. Under Alternative 3, one or more septic systems would be used to handle the needs of up to 265 personnel. The septic systems would require long-term maintenance.

Storm Water. Long-term, direct, moderate, adverse impacts on storm water would result from Alternative 3 on Tinian. Implementing Alternative 3 would increase impervious surfaces on Tinian by up to 3,569,972 ft^2, which would result in a long-term increase in runoff and a reduction of groundwater recharge. As described in **Section 4.5.**, storm water management controls would be designed and implemented consistent with permit requirements and storm water standards to minimize potential adverse impacts on surface water associated with the permanent increase in impervious surfaces. Alternative 3 would involve the use of low-impact development strategies to comply with EISA Section 438 and would be designed in accordance with the *CNMI BECQ/GEPA Storm Water Management Manual* (CNMI BECQ and GEPA 2006), as described in **Section 4.5**. The discharge of stormwater runoff from construction activities at Tinian International Airport and the seaport would be authorized by CNMI and USEPA permits described in **Section 4.5**.

***Communications*.** Long-term, direct, minor, adverse impacts on communications would result from implementation of Alternative 3 on Tinian. Communications systems at the Tinian International Airport would be upgraded on an as-needed basis and would be minimal. Communications would be provided from local commercial telephone and internet service providers. It is anticipated that the existing telephone company infrastructure would have the capacity to support any additional, necessary communication lines.

***Solid Waste*.** Long-term, direct, minor, adverse impacts on solid waste would be expected from the lack of municipal solid waste facilities on Tinian. All solid waste that is not recycled, as described in **Section 4.13**, would be collected and transported off the Island of Tinian using commercial solid waste haulers and commercial barges or ships. The solid waste generated by up to 265 people 8 weeks per year under Alternative 3 would be approximately 3 percent of the solid waste generated by 3,136 people at Tinian 52 weeks per year.

4.13.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.13** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, or similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

Impacts on existing infrastructure from the No Action Alternative would be long-term, direct and indirect, minor to moderate and adverse because the existing infrastructure would continue to degrade in quality over time.

4.14 Socioeconomics and Environmental Justice

Impacts on socioeconomics and environmental justice were assessed to determine if the Proposed Action or alternatives resulted in any of the following:

- Substantial change in the local or regional population; and housing, community general services (health, police, and fire services), or social conditions from the demands of additional population/population shifts
- Substantial change in the local or regional economy, employment, or spending or earning patterns
- Disproportionately high and adverse human health and environmental impacts on minority or low-income populations.

4.14.1 Alternative 1–Modified Saipan Alternative

4.14.1.1 Construction Phase

Population Characteristics. Short-term, negligible to minor, adverse impacts on the population of Saipan would result from construction of Alternative 1. Construction would be phased over 3 years, and it is assumed that 75 workers would be the peak number of workers required for construction. An addition of 75 people to Saipan would increase the 2010 population by 0.15 percent; however, it is assumed that the average number of construction workers would generally be lower during non-peak construction periods and that all construction workers would be from Saipan.

In 2010, the construction workforce in the CNMI was 1,786 people with 1,554 people from Saipan and an additional 232 people from other parts of the CNMI. However, it is not known how federalization of CNMI immigration affected the availability of foreign construction workers. It should be noted that CW-1 permit program for nonimmigrant transitional foreign workers is being phased out by the end of 2019. Therefore, foreign workers holding CW-1 permits would need to obtain nonimmigrant or immigrant status to stay in the CNMI. While the specific source of construction workers is unknown, it is assumed that all workers would be from Saipan but that Tinian and Rota could be a secondary sources of workers, and Guam and the Federated States of Micronesia being tertiary sources of workers. It is anticipated that local construction workers would be available; however, construction workers from outside of the CNMI could be required during peak work periods and for some specialty tasks.

Housing. Short-term, minor, adverse impacts on housing could occur during construction of Alternative 1. It is assumed that 75 workers would be the peak number of workers required for construction.

Depending on the quantity of construction workers from outside of Saipan, it is anticipated that a maximum of 38 hotel rooms would be needed for workers' temporary housing during peak construction periods. However, this figure would likely be lower because local workers from Saipan could return to their residence at the end of the day. Workers from Guam and the Federated States of Micronesia would need housing and it is assumed they would not return to their home location until the completion of the construction period. All travel to and from Guam or the Federated States of Micronesia would be on existing commercial flights or carriers, and additional flights would not be required. Workers from Tinian and Rota might be able to commute to Saipan daily; however, this is likely not feasible due to the cost to commute, and it is assumed they would also need to be housed on Saipan. The number of workers that would commute daily is assumed to be negligible, and that the majority would remain on Saipan. Any transport between Saipan and Rota or Tinian would be within the confines of existing charter flight operations.

In the event that some or all construction workers were not from Saipan, they could be accommodated in hotels in Saipan, likely in the villages of Garapan and Susupe. Based on the 2013 average hotel occupancy rate of 83.0 percent and assuming a total supply of 3,000 hotel rooms on Saipan, there would an average of 510 hotel rooms available at any given time. This should provide sufficient supply of available hotel rooms to house workers temporarily, even during peak construction periods, especially if two workers occupied each room. However, the ability of the Saipan hotel market to provide the necessary amount of hotel rooms for sustained periods of time would likely decrease the longer the overall duration of construction and the longer the peak level of hotel rooms was needed. Construction contractors would coordinate with local hotels to secure the required number of hotel rooms prior to construction to minimize impacts and avoid supply issues.

Economic Characteristics. Short-term, minor, direct and indirect, adverse and short-term, negligible to moderate, direct and indirect, beneficial impacts on the Saipan economy would occur from construction of Alternative 1.

Short-term, negligible to minor, direct and indirect, adverse impacts on the local economy could result from construction activities associated with Alternative 1. Construction activities might cause temporary disruption of airport services possibly limiting the use of the runway and other areas of Saipan International Airport. As described in **Section 4.3.1.1,** the USAF would implement mitigation measures, such as development of a Safety Management System (SMS) Plan, to avoid or minimize impacts on airport operations. The plan could identify a mutually agreeable construction schedule that allows for disruptions to occur in non-peak hours and modifications to flight schedules to avoid construction delays.

Installation of the bulk fuel storage tanks at the Port of Saipan would not disrupt any port operations; therefore, no adverse economic impact would result from construction at the seaport.

Short-term, moderate, beneficial impacts on the local economy would be expected from construction of Alternative 1. Construction activities would result in increases of employment, purchase of goods and services, and tax revenue. Impacts on economic conditions would be concentrated in Saipan due to the presence of construction workers and locations where materials would be sourced (likely Saipan and Guam). The Construction Phase of Alternative 1 would require hiring up to 75 construction workers for 3 years, although it is assumed that the average quantity of workers on Saipan would be lower during non-peak construction periods.

The increase of employment resulting from Alternative 1 would result in increased wages paid. Based on *2014 CNMI Prevailing Wage & Workforce Assessment Study*, construction and extraction occupations earned average wages of $6.67 per hour on Saipan with other specialized, technical, and managerial positions earning more (CNMI Department of Commerce, Central Statistics Division 2015). Therefore, it is assumed that each worker would be paid at least $266.80 per week. Increased wages would, in turn, increase government revenue from employment taxes (wage and salary tax [Chapter 2 tax] and Northern Marianas territorial income tax [NMTIT]). Construction at Saipan International Airport and the Port of Saipan would increase demand for and purchase of local and regional supplies, materials, and services. While some materials and supplies might be sourced from Guam, it is anticipated that fuel and some construction supplies (e.g., concrete and structural fill) would be purchased from local distributors. Local contractors would provide services such as construction equipment/vehicle maintenance and disposal of solid, liquid, and hazardous wastes from work sites. Other purchases in the local economy would include spending on hotels for temporary housing, food, and leasing buses to transport workers to and from construction sites. It is likely that sales of construction materials and other goods and services would increase the longer construction lasts and the more workers that are present. Construction of Alternative 1 would result in moderate, beneficial impacts on the Saipan economy.

The potential increase of new people to Saipan in the form of construction workers could also create a short-term, negligible to minor, indirect, beneficial impact on the local economy by increasing local business sales volume and spending on tourist activities. Although, if there are any foreign construction workers, their expenditures would be minimal because foreign workers send much of their incomes back to their home countries through remittances (U.S. GAO 2000). However, local construction workers from the CNMI might be more inclined to buy products and services in the local economy when they are earning a steady income. Based on the volume of increased sales, there could be secondary increases in employment and income generated from local businesses.

Other potential income for the CNMI Treasury would be realized from the Business Gross Revenue Tax (BGRT) levied on businesses' gross revenues sourced within the CNMI and the corporate NMTIT. Additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes could also be realized.

Public Services. Short-term, minor, adverse impacts on public services could result from increased demand placed on local health and medical, law enforcement, and firefighting services from the influx of new construction workers to Saipan. If 75 non-Saipan residents are hired and brought to the island, it would increase the population by 0.15 percent; however, it is assumed that the average number of construction workers would generally be lower and some would include mostly existing Saipan residents. It is assumed that 75 workers would be the peak number of workers for construction. Therefore, Saipan would need to accommodate the increased demands for public services, including law enforcement and firefighting services, associated with a 0.15 percent population increase for a limited time.

Depending on the frequency and level of health services required by new construction workers, it is possible that the CHC would not be able to manage the increased demand adequately. However, there are several other medical clinics throughout Saipan that could accommodate the health needs of new construction workers.

The magnitude of the impact on public services is based on the largest population increase and not necessarily the duration over which these increases would need to be sustained. Therefore, the impacts on public services would be minor during construction of Alternative 1.

Sociocultural Issues. Short-term, negligible, adverse sociocultural issues could occur during construction of Alternative 1. At Saipan International Airport, construction would occur on land managed by the CPA. At the Port of Saipan, construction would occur on land currently leased by the U.S. government. While the Construction Phase could require up to 75 construction workers during peak work periods, it is likely that a majority of these workers would be from Saipan or the CNMI and be respectful of local culture and customs. Therefore, there would not likely be any significant conflicts with local residents.

Environmental Justice. Disproportionately high and adverse environmental justice impacts would not be expected during construction of Alternative 1. Approximately 98 percent of the population of Saipan is considered a minority, and approximately 53 percent of the population is low-income. Districts 1 and 2 within the Alternative 1 area of impact have disproportionately high minority and low-income populations. Possible adverse impacts from construction activities include increased traffic and noise levels, and decreased air quality in Districts 1 and 2. Increased demands on healthcare/medical, law enforcement, and firefighting services could decrease the quality of service at CHC, which could impact all populations on Saipan. Elevated noise levels could be experienced in the vicinity of the construction activities, but a noise level of 67–71 dBA could be intermittently heard at the border of the village of Dandan, which is in District 1. The village of Dandan is the only area that could experience increased noise exposure levels; therefore, the minority population living at this location could be disproportionately affected by noise generated from construction activities. However, this impact would be negligible to minor, short-term and intermittent, and less than significant.

4.14.1.2 Implementation Phase

Population Characteristics. Long-term, negligible, adverse impacts on Saipan's population would under the Alternative 1 Implementation Phase. Up to 265 personnel would be on Saipan for up to 8 weeks per year for proposed military exercises. This quantity of personnel represents a population increase of 0.6 percent. Because the exercises would likely not occur during a continuous 8-week period, the population increases would be spread throughout the year, likely in 1- to 3-week increments. Therefore, implementation of Alternative 1 would cause temporary, intermittent increases in Saipan's population of up to 0.6 percent throughout each year.

No permanent population increases would occur during implementation of Alternative 1. One or two security guards could be needed for the infrastructure at the Saipan International Airport when no exercises are occurring. During exercises, additional security would be required for personnel and aircraft at the Saipan International Airport, but this would be supplied by USAF security forces.

Housing. Long-term, negligible to minor, adverse impacts on housing could occur during implementation of Alternative 1. Up to 265 personnel would require housing for several 1- to 3-week periods (not to exceed a total of 8 weeks) per year. These personnel would be housed in local hotels, most likely in the villages of Garapan and Susupe. Given the 2010 average hotel occupancy rate of 83.0 percent and assuming a supply of 3,000 hotel rooms on Saipan, there would be an average of 510 hotel rooms available at any given time. This should provide sufficient supply to house personnel, especially if double occupancy rooms are used. The USAF would also coordinate with hotels to secure the required number of hotel rooms prior to exercises to avoid supply issues.

Economic Characteristics. Both long-term, negligible to minor, direct, adverse and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Saipan economy would occur from implementation of Alternative 1.

Long-term, negligible to minor, adverse impacts on the local economy could result from conducting military exercises under Alternative 1 at Saipan International Airport. Exercises, which would occur for up to a total 8 weeks every year, might cause temporary intermittent disruption of airport operations. As described in **Section 4.3.1.2**, the USAF would reduce potential impacts by conducting take-offs and landings around existing commercial airliner schedules on a first come, first served basis and only intermittent, negligible impacts would be expected on small civilian carriers arriving and departing from Saipan International Airport.

Siting of proposed facilities at Saipan International Airport would be on lands managed by the CPA and designated as Industrial by the CNMI Zoning Board. According to Article 4 of the Saipan Zoning Law of 2013, the proposed activities at the airport would be consistent with the designated Industrial land use (CNMI Zoning Board 2013). Siting of the proposed project infrastructure in areas outside of the airport fence would preclude future development by other commercial uses; however, it should be noted that these areas were not developed even during the peak growth periods for the CNMI economy and the tourism industry.

Siting of the bulk fuel storage tanks at the Port of Saipan would not disrupt any port operations. Thus, there would be no adverse economic impact from implementation of Alternative 1 at the seaport.

Long-term, minor, beneficial impacts on the local economy would be expected from implementation of Alternative 1. Impacts on economic conditions would be concentrated in Saipan due to use of Saipan International Airport for military exercises and the presence of up to 265 additional military personnel. Conducting intermittent exercises could result in increased purchase of goods and services. Buses to transport personnel to and from Saipan International Airport and hotels would be leased from local businesses. Food would be purchased by military personnel from local retail outlets. The USAF would pay to lease or purchase land required from the CPA; thus, the CPA would realize long-term annual revenue increases. Under a mutual use agreement with the CPA, the USAF could work with the CPA to address costs for ongoing maintenance of the proposed infrastructure and additional costs for TSA security program requirements.

Minimal permanent jobs would be directly created due to implementation of Alternative 1. One or two security guards could for the proposed infrastructure areas at Saipan International Airport when exercises are not occurring. The increase of employment resulting from Alternative 1 would result in negligible increased wages paid. Based on a survey of wages and salaries in Saipan, the median wage for protective service was $7.45 per hour (CNMI Department of Commerce, Central Statistics Division 2015).

Long-term, negligible, beneficial impacts on the local economy could result from increases in tourism spending. Some of the up to 265 military personnel that would be in Saipan for up to a total of 8 weeks every year could decide to take leave or liberty in Saipan before or after exercises. While the increase in tourism spending from military personnel would likely be minimal as compared to existing visitor expenditures, the increase could result in secondary increases in employment and sales of retail products and services. Increased purchases by personnel could also lead to additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes. Although negligible adverse impacts could be expected on tourism due to noise at some popular tourist destinations (see **Section 4.9.1.2**) during the 8 weeks of exercises per year, these adverse impacts would be outweighed by the increase in tourism from military personnel.

Public Services. Long-term, negligible to minor, adverse impacts on public services could result from increased demand placed on local health/medical, law enforcement, and fire services from the presence of up to 265 military personnel in Saipan and the occurrence of military exercises at Saipan International Airport. Medical care would be provided by USAF personnel at CHC under an agreement between the military and CHC. Similar to that discussed in **Section 4.14.1.1**, it is possible that CHC would not be able to manage the increased demand for medical services adequately. However, this issue would be minimized during the Implementation Phase because USAF personnel would provide the medical staff and supplies. USAF security personnel would accompany the exercises that occur at Saipan International Airport; therefore, there would be a negligible impact on DPS or CPA law enforcement services. The presence of up to 265 military personnel and the additional USAF aircraft at Saipan International Airport could increase ARFF requirements. Meeting these increased requirements and rectifying potential impacts on the Saipan ARFF could be accomplished through negotiated agreements between the USAF and the CPA.

Sociocultural Issues. Long-term, minor, adverse sociocultural issues could occur during implementation of Alternative 1. All proposed infrastructure at Saipan International Airport would be sited on airport property managed by the CPA. Use of this land for Alternative 1 would preclude its future use by Chamorros and Carolinians and other CNMI residents; however, this land has never been developed even when the CNMI's economy was steadily growing. The presence of up to 265 military personnel would not create any significant conflicts with local residents as their presence would be intermittent and temporary throughout the year. Noise from exercises could result in minor impacts on the island's general tranquility and standard of living, but only in the areas that fall within the 65 dBA DNL contour and higher. Under

Alternative 1, only airport property would fall within the 65 dBA DNL contour, as indicated in **Section 4.10.1.2**. Aircraft operations would be similar to existing commercial aircraft operating from Saipan International Airport. Additionally, exercises would be periodic and only occur for a maximum of 8 weeks per year. Therefore, significant impacts are not expected.

Environmental Justice. Adverse impacts could occur on minority and low income populations during implementation of Alternative 1 due to noise generation. However, these impacts would not be significant. Approximately 98 percent of the population of Saipan is considered a minority, and approximately 53 percent of the population is low-income. Districts 1 and 2 within the Alternative 1 area of impact have disproportionately high minority and low-income populations. Possible adverse impacts from implementation of Alternative 1 include increased traffic and noise levels in Districts 1 and 2.

Significant impacts and elevated noise levels were identified in the 2012 Draft EIS on the communities in Districts 1 and 2 due to the consideration of fighter aircraft in the proposal. Community outreach to potentially impacted communities with high minority and low-income populations on Saipan occurred in the form of special notices and two community outreach meetings the weekend prior to the 2012 Draft EIS public hearing on Saipan. Informational flyers which provided notice of these community outreach meetings were distributed by hand at local stores and other locations within the potentially affected neighborhoods. Local convenience stores are centers for community information as they contain local community bulletin boards and are a general gathering place for the community. A fact sheet focused on noise was developed for the meetings and meeting attendees were provided the opportunity to comment. A general informal town meeting format was used to provide the best interaction with the public.

After release of the 2012 Draft EIS, the USAF reevaluated their proposal and removed all fighter aircraft operations from the Proposed Action and each of the three Modified Alternatives. The removal of fighter aircraft operations, as described in **Section 4.1.1.2** resulted in a major reduction in expected noise levels on the communities in Districts 1 and 2. Noise impacts on land use are presented in **Section 4.10.1.2**, which describes that under the AAD, the villages of Koblerville and Dandan would fall outside of the 65 dBA DNL. Although elevated noise levels beyond baseline conditions, which could occur during nighttime hours, would be expected on disproportionately high minority and low-income populations, they would remain below the 65 dBA DNL and would only occur intermittently for up to 8 weeks per year. Therefore, significant adverse impacts would not be expected on disproportionately high minority and low-income populations.

4.14.2 Alternative 2–Modified Tinian Alternative

4.14.2.1 Construction Phase

4.14.2.1.1 North Option

Population Characteristics. Short-term, moderate, adverse impacts on the population of Tinian would result from construction of Alternative 2. Construction would be phased over 3 years, and it is assumed that 150 workers would be the peak number of workers required for construction. An addition of 150 people to Tinian would increase the 2010 population by 4.8 percent, which would represent a moderate increase to the local population. However, it is assumed that 50 percent of construction workers would be Tinian residents and the number of workers would generally be less than 150 people during non-peak construction periods. Therefore, increases of the Tinian population of up to approximately 4.8 percent would be experienced during construction, but this increase would be sustained for a limited time. There is precedent for large, temporary population increases on Tinian as approximately 1,800 mostly foreign workers spent 18 months on the island during construction of the Tinian Dynasty Hotel and Casino in the late 1990s (DON 2010d).

Due to the small population of Tinian and an even smaller quantity of construction workers (approximately 79 in 2010), approximately 50 percent of the workers would be from off-island. While the specific source of construction workers is unknown, it is assumed that most workers would be from the CNMI, and Guam and the Federated States of Micronesia. It is not known how federalization of CNMI immigration affected the availability of foreign construction workers. It should be noted that CW-1 permit program for nonimmigrant transitional foreign workers is being phased out by the end of 2019 and foreign workers holding CW-1 permits would need to obtain nonimmigrant or immigrant status to stay in the CNMI. Therefore, it is likely that the majority of construction workers would be from CNMI, but workers from outside of the CNMI would be required during peak work periods and for some specialty tasks.

Housing. Short-term, moderate, adverse impacts on housing could occur during the Construction Phase of Alternative 2. It is assumed that 150 workers would be the peak number of workers required for construction.

Because some construction workers would be from outside of Tinian, temporary housing would need to be secured for most workers, which could be up to 150 people. Local workers from Tinian could return to their residence at the end of the day; however, workers from Guam, other CNMI islands, and the Federated States of Micronesia would need housing. It is assumed that workers from Guam and the Federated States of Micronesia would not return to their home location until the completion of the construction period. All travel to and from Guam or the Federated States of Micronesia would be on existing commercial flights or carriers, and additional flights would not be required. Workers from Saipan and Rota might be able to commute to Tinian daily; however, this is likely not feasible due to the cost to commute, and it is assumed they would also need to be housed on Tinian. The number of workers that would commute daily is assumed to be negligible and that the majority would remain on Tinian. Any transport between Saipan and Tinian would be within the confines of existing charter flight operations.

Depending on the quantity of workers requiring housing, it is assumed that all workers could be housed at the Tinian Dynasty Hotel and Casino or other hotel on Tinian in double occupancy rooms. If there is not sufficient housing stock to house all proposed workers needed to construct Alternative 2, the impact on housing could be major. The ability of the Tinian hotel market to provide the necessary amount of hotel rooms for sustained periods of time would decrease the longer construction lasts and the longer the peak level of hotel rooms was needed. To minimize impacts, prior to construction, the construction contractor would coordinate with the Tinian Dynasty Hotel and Casino or other hotel to secure the required number of hotel rooms.

Economic Characteristics. Short-term, minor to moderate, direct and indirect, adverse and short-term, moderate, direct and indirect, beneficial impacts on economies of Tinian and the CNMI would occur from construction of Alternative 2.

No adverse impacts on the local economy due to temporary disruption of airport services at Tinian International Airport would be expected from construction. As described in **Section 4.3.2.1,** the USAF would implement mitigation measures, such as development of a SMS Plan, to avoid or minimize impacts on airport operations. The plan could identify a mutually agreeable construction schedule that allows for disruptions to occur in non-peak hours and modifications to flight schedules to avoid construction delays.

Rerouting of 8th Avenue could cause delays for delivery trucks and persons traveling north to visit cultural and historic sites, but this would not result in an adverse impact on the local economy. The rerouted portion of 8th Avenue would be constructed prior to closing the existing route.

Installation of the bulk fuel tanks at the Port of Tinian would not disrupt any port operations. Thus, there would be no adverse economic impact from construction at the seaport.

Short-term, moderate, beneficial impacts on the local economy would be expected from construction of Alternative 2. Construction activities would result in increases of employment, purchase of goods and services, and tax revenue. Impacts on economic conditions would occur in Tinian due to the presence of construction workers and in Saipan or Guam where most construction materials would be sourced. The Construction Phase of Alternative 2 would require hiring of up to 150 construction workers for up to 3 years. The increase in employment resulting from this alternative would result in increased wages paid. Based on a survey of wages and salaries in Tinian, construction and extraction occupations earned an average wage of $7.04 per hour with other specialized, technical, and managerial positions earning more (CNMI Department of Commerce, Central Statistics Division 2015). Therefore, it is assumed that each worker would be paid at least $281.60 per week. Increased wages would in turn increase government revenue from employment taxes (wage and salary tax [Chapter 2 tax] and NMTIT).

Construction at Tinian International Airport and the Port of Tinian would increase demand for and purchase of local and regional supplies, materials, and services. Most supplies, such as construction supplies and materials (e.g., concrete and structural fill), would need to be purchased in Saipan or Guam and shipped to Tinian. However, some supplies including food, water, and fuel could be purchased from local businesses. Local contractors would provide services such as construction equipment/vehicle maintenance; bus transportation of workers; and disposal of solid, liquid, and hazardous wastes from work sites. In addition, the need for temporary housing would require several rooms at the Tinian Dynasty Hotel and Casino or other hotel.

The increase of up to 150 additional people to Tinian in the form of construction workers could also create a short-term, moderate, beneficial impact on the local economy by increasing local business sales volume and spending on tourist activities. Local construction workers from the CNMI might be more inclined to buy products and services in the local economy when they are earning a steady income. However, it is likely that expenditures by foreign construction workers would be minimal as foreign workers send much of their incomes back to their home countries through remittances (U.S. GAO 2000). Based on the volume of increased sales, there could be secondary increases in employment and income generated from local businesses.

Other potential income for the CNMI Treasury would be realized from the BGRT levied on businesses' gross revenues sourced within the CNMI and the corporate NMTIT. Additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes could also be realized.

Public Services. Short-term, moderate, adverse impacts on public services could result from increased demand placed on local health/medical, law enforcement, and firefighting services from the influx of new construction workers to Tinian. The demand on these services created by the addition of up to 150 people, or a 4.8 percent increase above the 2010 population, would be moderate. However, it is assumed that the average number of construction workers would generally be lower and would include some existing Tinian residents. It is assumed that 150 workers would be the peak number of workers for construction. Therefore, Tinian would need to accommodate the increased demands for public services associated with a 4.8 percent population increase for the limited time.

Due to the small scale of the Tinian Health Center, it would not be able to manage the increased demand adequately. To minimize the impacts on the Tinian Health Center, the construction contractor would be responsible for medical care for construction personnel during peak construction work periods. Similarly, the DPS would experience increased demands for law enforcement and firefighting services. While there is precedent for continuing to provide adequate police and firefighting services during periods when the island's population experiences large increases (i.e., during construction of the Tinian Dynasty Hotel and Casino), it is possible that additional security and fire personnel could be required to rectify the increased demand during construction of Alternative 2.

The magnitude of the impact on public services is based on the largest population increase and not necessarily the duration over which these increases would need to be sustained. Therefore, the impacts on public services would be moderate during construction of Alternative 2.

Sociocultural Issues. Short-term, minor, adverse sociocultural impacts could occur during construction of Alternative 2. Some construction activities at Tinian International Airport would occur on public land managed by the CPA and acquired by the USAF; however, some construction would occur on land within the LBA. At the Port of Tinian, construction would occur on CPA land leased by the USAF.

While construction would bring up to 150 people to Tinian during peak work periods, it is likely that a majority of these workers would be from the CNMI and respectful of local culture and customs. Therefore, it is unlikely that there would be any significant conflicts with local Tinian residents. However, there are historical reports of conflicts between construction workers and local residents during construction of the Tinian Dynasty Hotel and Casino (DON 2010d). Any potential conflicts could be minimized by contracting additional security personnel, as described under the public services analysis, to supplement the existing law enforcement provided by the DPS.

Environmental Justice. Disproportionately high and adverse environmental justice impacts would not be expected during construction of Alternative 2. Short-term, minor to moderate, adverse environmental justice impacts could occur during construction of Alternative 2 due to moderately increased population that could result in housing shortage and increased demands on health care/medical, law enforcement, and firefighting services. Approximately 98 percent of the population of Tinian is considered a minority, and 44 percent of the population is low-income. Tinian (District 6) has a disproportionately high minority population. Possible adverse impacts from construction activities include increased traffic and noise levels, decreased air quality, and increased population. During peak work periods, 150 workers could move to Tinian resulting in a 4.8 percent increase of population. This level of population increase could increase demands on health care/medical, law enforcement, and firefighting services. A potential increase in demand of medical services at the Tinian Health Center of approximately 4.8 percent would be manageable but could decrease the quality of service at the health care center, which could impact minority populations. Increases in demand for these services could be minimized by requiring the construction contractor to hire additional medical, security, and firefighting personnel to supplement the existing staff during peak construction periods. Therefore, the impact on minority populations would be less than significant.

4.14.2.1.2 South Option

Population Characteristics. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (100 workers at peak construction periods). An increase of 100 construction workers would represent a 3.1 percent increase of the population of Tinian. Therefore, short-term, minor to moderate, adverse impacts on the population of Tinian would be expected during the Construction Phase.

Housing. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (100 workers at peak construction periods). However, short-term, moderate, adverse impacts on housing would still be expected during the Construction Phase.

Economic Characteristics. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (100 workers at peak construction periods). Therefore, short-term, moderate, direct and indirect, beneficial impacts on the economies of Tinian would be expected during the Construction Phase. No adverse impacts would be expected.

Public Services. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (100 workers at peak construction periods). Therefore, short-term, minor to moderate, adverse impacts on public services would be expected during the Construction Phase.

Sociocultural Issues. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (100 workers at peak construction periods). Therefore, short-term, negligible to minor, adverse sociocultural impacts would be expected during the Construction Phase.

Environmental Justice. Under Alternative 2 South Option, construction would be similar to that described under the North Option, except fewer workers would be required (100 workers at peak construction periods). Therefore, short-term, minor to moderate, adverse environmental justice impacts on minority populations could occur during the Construction Phase.

4.14.2.2 Implementation Phase - North and South Options

Population Characteristics. Long-term, minor, adverse impacts on Tinian's population would occur under the Alternative 2 Implementation Phase. Up to 265 personnel would be on Tinian for up to 8 weeks per year for proposed military exercises. This quantity of personnel represents a population increase of 8.5 percent. Because the annual exercises would not occur during a continuous 8-week period, the population increases would be spread throughout the year, likely in 1- to 3-week increments. Therefore, implementation of Alternative 2 would cause temporary, intermittent increases in Tinian's population throughout each year.

No permanent population increases would occur during implementation of Alternative 2. One or two security guards could be hired for the infrastructure at Tinian International Airport when no exercises are occurring. During exercises, additional security would be required for personnel and aircraft at Tinian International Airport, but this would be supplied by USAF security forces.

Housing. Long-term, minor, adverse impacts on housing could occur during implementation of Alternative 2. Up to 265 personnel would require housing for 1- to 3-week periods (not to exceed a total of 8 weeks) per year. These personnel would be housed in local hotels, most likely Tinian Dynasty Hotel and the Fleming Hotel. Assuming a supply of at least 700 hotel rooms on Tinian, there should be sufficient supply to house personnel, especially if double occupancy rooms are used. The USAF would also coordinate with hotels to secure the required number of hotel rooms prior to exercises to avoid supply issues.

Economic Characteristics. Long-term, negligible, direct, adverse impacts and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Tinian economy would occur from implementation of the Alternative 2 North and South Options. Long-term, negligible to moderate, direct, adverse impacts on the local economy would occur during implementation of the Alternative 2 North Option.

Long-term, negligible, adverse impacts on the local economy could result from conducting military exercises under Alternative 2 at Tinian International Airport. Exercises, which would occur for up to 8 weeks every year, might cause temporary intermittent disruption of airport operations. As described in **Section 4.3.2.2**, adverse impacts on the immediate approach and departure airspace could occur as there is no ATCT to provide positive control instructions to aircraft and vehicles operating on the airfield. However, the USAF could rectify impacts on approach and departure airspace by installing a mobile ATCT during military exercises which would assist with aircraft separation and prevent delays. While potential disruptions are unlikely to require flight cancellations or decreased flight volume, they could result in flight delays and other nuisance problems such as traffic congestion.

Siting of the bulk fuel tanks at the Port of Tinian would not disrupt any port operations; thus, there would be no adverse economic impact from implementation of Alternative 2 at the seaport.

Long-term, minor, beneficial impacts on the local economy would be expected from implementation of Alternative 2. Impacts on economic conditions would be concentrated in Tinian due to use of Tinian International Airport for military exercises and to the presence of up to 265 additional military personnel. Conducting intermittent exercises could result in increased purchase of goods and services. Buses to transport personnel to and from Tinian International Airport and hotels would be leased from local businesses. Food, fuel, and other sustainment supplies would be purchased from local distributors. Additionally, the USAF would pay to lease or purchase land required from the CPA; thus, the CPA would realize long-term annual revenue increases. Under a mutual use agreement with the CPA, the USAF could work with the CPA to address costs for ongoing maintenance of the proposed infrastructure and additional costs for TSA security program requirements.

Minimal permanent jobs would be directly created due to implementation of Alternative 2. One or two security guards could be hired to watch the proposed infrastructure at Tinian International Airport when exercises do not occur. The increase of employment resulting from this alternative would result in negligible increased wages paid. Based on a survey of wages and salaries in Tinian, the median wage for protective service was $7.88 per hour (CNMI Department of Commerce, Central Statistics Division 2015).

Long-term, minor, beneficial impacts on the local economy could result from increases in tourism spending. Some of the 265 military personnel in Tinian for up to 8 weeks every year could decide to take leave or liberty in Tinian before or after exercises. While the increase in tourism spending from military personnel is unknown, it would likely amount to a noticeable increase over current spending. This increased tourism spending could result in secondary increases in employment and sales of retail products and services. Increased purchases by personnel could also lead to additional tax revenues from fuel, beverage container, alcoholic beverage, and hotel occupancy taxes.

Public Services. Long-term, negligible, adverse impacts on public services could result from increased demand placed on local law enforcement and firefighting services from the presence of up to 265 military personnel in Tinian and the occurrence of military exercises at Tinian International Airport. Medical care would be provided by USAF personnel at the Tinian Health Center under an agreement between the military and Commonwealth Healthcare Corporation. Similar to that discussed in **Section 4.14.2.1.1**, Tinian Health Center might not be able to manage the increased demand for medical services adequately. However, this issue would be minimized during the Implementation Phase because USAF personnel would provide the medical staff and supplies. USAF security personnel would accompany the exercises that occur at Tinian International Airport; therefore, there would be a negligible impact on DPS or CPA law enforcement services. The presence of 265 military personnel and the additional USAF aircraft at Tinian International Airport could increase ARFF requirements. These increased requirements could be satisfied through negotiated agreements between the USAF and the CPA.

Sociocultural Issues. Long-term, negligible, adverse sociocultural issues could occur during implementation of the Alternative 2 North Option. The presence of up to 265 military personnel would not create any significant conflicts with local residents as their presence would be intermittent and temporary throughout the year.

Environmental Justice. Disproportionately high and adverse environmental justice impacts would not be expected during implementation of Alternative 2. Short-term, minor to moderate, adverse environmental justice impacts could occur during implementation of Alternative 2 due to moderately increased population and related traffic. Approximately 98 percent of the population of Tinian is considered a minority, and 44 percent of the population is low income. Tinian (District 6) has a disproportionately high minority population. During implementation, 265 personnel could be Tinian for a total of 8 weeks per year, resulting in a temporary increase in population and traffic. This level of population increase could increase demands on health care/medical, law enforcement, and firefighting services; however, these services would be provided by the USAF. As described in **Section 4.11.12.2**, the additional amount of traffic could be proportionally high for some of the roadway segments; however, all the Tinian roadway facilities have substantial excess capacity. Therefore, the impact on minority populations would be less than significant.

4.14.3 Alternative 3–Hybrid Modified Alternative

4.14.3.1 Construction Phase

Under the Construction Phase of Alternative 3, socioeconomic and environmental justice impacts could occur on both Saipan and Tinian; because these impacts would occur on both islands, the economy of the CNMI could also be affected.

4.14.3.1.1 Saipan

Population Characteristics. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (50 workers at peak construction periods). Therefore, short-term, negligible, adverse impacts on the population of Saipan would be expected during the Construction Phase.

Housing. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (50 workers at peak construction periods). Therefore, short-term, negligible, adverse impacts on housing would be expected during the Construction Phase.

Economic Characteristics. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (50 workers at peak construction periods). Therefore, short-term, minor, direct and indirect, adverse and short-term, negligible to minor, direct and indirect, beneficial impacts on the Saipan economy would still occur during the Construction Phase.

Public Services. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (50 workers at peak construction periods). Therefore, short-term, negligible, adverse impacts on public services would be expected during the Construction Phase.

Sociocultural Issues. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (50 workers at peak construction periods). However, short-term, negligible, adverse sociocultural issues could still occur during the Construction Phase.

Environmental Justice. Under Alternative 3 on Saipan, construction would be similar to that described under Alternative 1, except fewer workers would be required (50 workers at peak construction periods). The minority population near Saipan International Airport could still be disproportionately affected by noise during the Construction Phase. However, this impact would be negligible to minor, short-term and intermittent, and less than significant.

4.14.3.1.2 Tinian

NORTH OPTION

Population Characteristics. Under the Alternative 3 Tinian North Option, construction would be similar to that described under the Alternative 2 North Option, except fewer workers would be required (125 workers at peak construction periods). Therefore, short-term, moderate, adverse impacts on the population of Tinian would be expected during the Construction Phase.

Housing. Under the Alternative 3 Tinian North Option, construction would be similar to that described under the Alternative 2 North Option, except fewer workers would be required (125 workers at peak construction periods). Therefore, short-term, moderate, adverse impacts on housing would be expected during the Construction Phase.

Economic Characteristics. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option, except fewer workers would be required (125 workers at peak construction periods). Therefore, short-term, minor to moderate, direct and indirect, adverse and short-term, moderate, direct and indirect, beneficial impacts on economies of Tinian and the CNMI would be expected during the Construction Phase.

Public Services. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option, except fewer workers would be required (125 workers at peak construction periods). Therefore, short-term, moderate, adverse impacts on public services would be expected during the Construction Phase.

Sociocultural Issues. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option, except fewer workers would be required (125 workers at peak construction periods). Therefore, short-term, minor, adverse sociocultural impacts could be expected during the Construction Phase.

Environmental Justice. Under the Alternative 3 on Tinian North Option, construction would be similar to that described under the Alternative 2 North Option, except fewer workers would be required (125 workers at peak construction periods). Therefore, short-term, minor to moderate, adverse environmental justice impacts could be expected during the Construction Phase. These impacts would not be expected to be disproportionately high or significant.

SOUTH OPTION

Population Characteristics. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except fewer workers would be required (75 workers at peak construction periods). However, short-term, minor to moderate, adverse impacts on the population of Tinian would still be expected during the Construction Phase.

Housing. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except fewer workers would be required (75 workers at peak construction periods). However, short-term, moderate, adverse impacts on housing would still be expected during the Construction Phase.

Economic Characteristics. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except fewer workers would be required (75 workers at peak construction periods). However, short-term, moderate, direct and indirect, beneficial impacts on the economies of Tinian would still be expected during the Construction Phase.

Public Services. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except fewer workers would be required (75 workers at peak construction periods). However, short-term, minor to moderate, adverse impacts on public services would still be expected during the Construction Phase.

Sociocultural Issues. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except fewer workers would be required (75 workers at peak construction periods). However, short-term, negligible to minor, adverse sociocultural impacts would still be expected during the Construction Phase.

Environmental Justice. Under the Alternative 3 on Tinian South Option, construction would be similar to that described under the Alternative 2 South Option, except fewer workers would be required (75 workers at peak construction periods). Short-term, minor to moderate, adverse environmental justice impacts would still be expected during the Construction Phase. These impacts would not be expected to be disproportionately high or significant.

4.14.3.2 Implementation Phase

Under the Implementation Phase of Alternative 3, socioeconomic and environmental justice impacts could occur on both Saipan and Tinian; because these impacts could occur on both islands, the economy of the CNMI could also be affected.

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on the economy of CNMI would be similar to those described under Alternative 3.

4.14.3.2.1 Saipan

Population Characteristics. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible, adverse impacts on Saipan's population would be expected.

Housing. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible to minor, adverse impacts on housing would be expected.

Economic Characteristics. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same and long-term, negligible to minor, direct, adverse and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Saipan economy would be expected.

Public Services. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same duration of aircraft operations as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible to minor, adverse impacts on public services would be expected.

Sociocultural Issues. Under Alternative 3 on Saipan, the same number of personnel would be present on Saipan for the same number and duration of aircraft operations as described under Alternative 1. However, less land outside of the Saipan International Airport fence would be used; therefore, more of this land would be available for future CNMI commercial use. Impacts during the Implementation Phase would be the same, and long-term, minor, adverse sociocultural issues could occur.

Environmental Justice. Under Alternative 3 on Saipan, the same number and duration of aircraft operations as described under Alternative 1 would occur. Therefore, impacts during the Implementation Phase would be the same as those described under Alternative 1 in **Section 4.14.1.2.** Although elevated noise levels beyond baseline conditions, which could occur during nighttime hours, would be expected on disproportionately high minority and low-income populations, they would remain below the 65 dBA DNL and would only occur intermittently for up to 8 weeks per year. Therefore, significant adverse impacts would not be expected on disproportionately high minority and low-income populations.

4.14.3.2.2 Tinian North and South Options

Population Characteristics. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same and long-term, minor, adverse impacts on Tinian's population would be expected.

Housing. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same, and long-term, minor, adverse impacts on housing could occur.

Economic Characteristics. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, the same long-term, negligible, direct adverse impacts and long-term, negligible to minor, direct and indirect, beneficial impacts on the CNMI and Tinian economy would be expected to occur during the Implementation Phase.

Public Services. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same duration of aircraft operations as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same, and long-term, negligible, adverse impacts on public services could occur.

Sociocultural Issues. Under Alternative 3 on Tinian, the same number of personnel would be present on Tinian for the same number and duration of aircraft operations as described under Alternative 2. Therefore, long-term, negligible, adverse sociocultural issues could occur during implementation of the Alternative 3.

Environmental Justice. Under Alternative 3 on Tinian, the same number and duration of aircraft operations as described under Alternative 2 would occur. Therefore, disproportionately high and adverse environmental justice impacts would not be expected during implementation of Alternative 3. Short-term, minor to moderate, adverse environmental justice impacts could occur during implementation of Alternative 3 due to moderately increased population and related traffic.

4.14.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Section 3.14.4** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on socioeconomics or environmental justice would be expected as a result of the No Action Alternative. Socioeconomics within the Project Areas would remain unchanged. The No Action Alternative would result in a continuation of existing conditions.

4.15 Human Health and Safety

Any increase in safety risks would be considered an adverse impact on health and safety. Impacts are assessed to determine if a proposed action would provide any of the following results:

- Substantially increase risks associated with the safety of construction personnel, contractors, military personnel, or the local community
- Substantially hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

4.15.1 Alternative 1–Modified Saipan Alternative

4.15.1.1 Construction Phase

Contractor Health and Safety. Short-term, negligible to minor, adverse impacts on health and safety could occur on contractor health and safety during the proposed construction activities. Construction poses an increased risk of construction-related accidents, but these potential impacts would be avoided or minimized by adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. Contractors would be required to establish and maintain health and safety programs for their employees.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 1. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Saipan International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Short-term, minor, adverse impacts on airfield safety could occur during construction activities. As described in **Section 4.3.1.1,** construction activities would be coordinated with Saipan International Airport personnel to prevent airfield obstructions and safety hazards. Refer to **Section 4.3** for additional information on safety impacts from proposed construction at Saipan International Airport associated with Alternative 1.

4.15.1.2 Implementation Phase

Contractor Health and Safety. Long-term, negligible, adverse impacts on contractor health and safety could occur during implementation of Alternative 1. The primary contractor activities would involve transporting and handling Jet A1 fuel for aircraft operations. The potential impacts on health and safety associated with these activities would be avoided or minimized by mandatory training and adherence to established Federal and CNMI safety regulations.

Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Fuel vehicles would use an established, safe route to transport the fuel. Contractors would be required to establish, maintain, and comply with health and safety programs for their employees.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Long-term, negligible, adverse impacts on public health and safety would be expected under the Implementation Phase of Alternative 1. Alternative 1 would add approximately 720 aircraft operations per year, which would be a 1 percent increase above the existing number of air operations at Saipan International Airport. This increase in air operations would have a negligible effect on the ability of the ARFF unit to respond to aircraft emergencies.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 1. **Section 4.3.2.1** provides information on safety impacts from the additional aircraft operations at Saipan International Airport. **Section 4.6.1.2** provides information regarding BASH at Saipan International Airport.

4.15.2 Alternative 2–Modified Tinian Alternative

4.15.2.1 Construction Phase

4.15.2.1.1 North Option

Contractor Health and Safety. Short-term, negligible to minor, adverse impacts on health and safety could occur on contractor health and safety during the proposed construction activities. Construction poses an increased risk of construction-related accidents, but these potential impacts would be avoided or minimized by adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. Contractors would be required to establish and maintain health and safety programs for their employees.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 2 North Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Short-term, minor, adverse impacts on airfield safety could occur during construction activities. As described in **Section 4.3.2.1,** construction activities would be coordinated with Tinian International Airport personnel to prevent airfield obstructions and safety hazards. Refer to **Section 4.3** for additional information on safety impacts from proposed construction at Tinian International Airport associated with Alternative 2.

4.15.2.1.2 South Option

Contractor Health and Safety. Under Alternative 2 South Option, the construction footprint would be less than that described under Alternative 2 North Option in **Section 4.15.2.1.1**. Therefore, negligible impacts on contractor health and safety during the Construction Phase would be expected. Construction poses an increased risk of construction-related accidents, but these potential impacts would be avoided or minimized by adherence to established Federal and CNMI safety regulations and requirements provided in **Section 4.15.2.1.1**.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 2 South Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Under Alternative 2 South Option, the construction footprint would be less than that described under the Alternative 2 North Option in **Section 4.15.2.1.1**. Therefore, negligible to minor impacts on airfield safety during the Construction Phase would be expected. As described in **Section 4.3.2.1,** construction activities would be coordinated with Tinian International Airport personnel to prevent airfield obstructions and safety hazards. Refer to **Section 4.3** for additional information on safety impacts from proposed construction at Tinian International Airport associated with Alternative 2.

4.15.2.2 Implementation Phase - North and South Options

Contractor Health and Safety. Long-term, negligible, adverse impacts on contractor health and safety could occur during implementation of Alternative 2. The primary contractor activities would involve transporting and handling Jet A1 fuel for aircraft operations. The potential impacts on health and safety associated with these activities would be avoided or minimized by mandatory training and adherence to established Federal and CNMI safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Fuel vehicles would use an established, safe route to transport the fuel. Contractors would be required to establish, maintain, and comply with health and safety programs for their employees.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Long-term, minor, adverse impacts on public health and safety would be expected under the Implementation Phase of Alternative 2. Alternative 2 would add approximately 720 aircraft operations per year, which would be a 5.5 percent increase above the existing number of air operations at Tinian International Airport. This increase in air operations would have a minor effect on the ability of the ARFF unit to respond to aircraft emergencies.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 2.

Section 4.3 provides information on safety impacts from the additional aircraft operations at Tinian International Airport. **Section 4.6** provides information regarding BASH at Tinian International Airport.

4.15.3 Alternative 3–Hybrid Modified Alternative

4.15.3.1 Construction Phase

4.15.3.1.1 Saipan

Contractor Health and Safety. Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.15.1**. Therefore, negligible to minor impacts on contractor health and safety during the Construction Phase on Saipan would be expected. Construction poses an increased risk of construction-related accidents, but these potential impacts would be avoided or minimized by adherence to established Federal and CNMI safety regulations and requirements provided in **Section 4.15.1**.

Military Health and Safety. No health and safety impacts on military personnel on Saipan would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 3 on Saipan. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Saipan International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Under Alternative 3 on Saipan, the construction footprint would be less than that described under Alternative 1 in **Section 4.15.1**. Therefore, negligible to minor impacts on airfield safety during the Construction Phase on Saipan would be expected because there would be less construction occurring at Saipan International Airport. Refer to **Section 4.3** for additional information on safety impacts from proposed construction at Saipan International Airport associated with Alternative 3.

4.15.3.1.2 Tinian

NORTH OPTION

Contractor Health and Safety. Under Alternative 3 North Option, the construction footprint would be less than that described under Alternative 2 in **Section 4.15.2**. Therefore, negligible to minor impacts on contractor health and safety during the Construction Phase would be expected. Construction poses an increased risk of construction-related accidents, but these potential impacts would be avoided or minimized by adherence to established Federal and CNMI safety regulations and requirements provided in **Section 4.15.2.1**.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 3 North Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Short-term, minor, adverse impacts on airfield safety could occur during construction activities. As described in **Section 4.3.3.1,** construction activities would be coordinated with Tinian International Airport personnel to prevent airfield obstructions and safety hazards. Refer to **Section 4.3** for additional information on safety impacts from proposed construction at Tinian International Airport associated with Alternative 3.

SOUTH OPTION

Contractor Health and Safety. Under Alternative 3 South Option, the construction footprint would be less than that described under Alternative 2 and Alternative 3 North Option in **Section 4.15.2** and **Section 4.15.3.1.2.1**, respectively. Therefore, negligible impacts on contractor health and safety during the Construction Phase would be expected. Construction poses an increased risk of construction-related accidents, but these potential impacts would be avoided or minimized by adherence to established Federal and CNMI safety regulations and requirements provided in **Section 4.15.2.1**.

Military Health and Safety. No health and safety impacts on military personnel would occur because they would not be involved with the construction, beyond some oversight visits.

Public Health and Safety. No health and safety impacts on the public would be expected under Alternative 3 South Option. As previously noted, construction areas would be fenced and appropriately marked with signs to prevent trespassing. Construction would be coordinated with Tinian International Airport personnel to ensure the ability of the ARFF unit to respond to emergencies.

Airfield Safety. Under Alternative 3 South Option, the construction footprint would be less than that described under Alternative 3 North Option in **Section 4.15.3.1.2.1**. Therefore, negligible to minor impacts on airfield safety during the Construction Phase would be expected. As described in **Section 4.3.3.1,** construction activities would be coordinated with Tinian International Airport personnel to prevent airfield obstructions and safety hazards. Refer to **Section 4.3** for additional information on safety impacts from proposed construction at Tinian International Airport associated with Alternative 3.

4.15.3.2 Implementation Phase

Under the Alternative 3 Implementation Phase, the USAF would typically divide up to 265 personnel and 720 take-offs or landings between Saipan and Tinian. While the USAF intends to distribute expected operations between the two airports, the analysis assumes that all 720 annual operations (take-offs or landings) could occur at either location, in the event that one of the airports is unavailable for exercises. If operations were split between both airports, impacts on each island would be less than those described under Alternative 3.

4.15.3.2.1 Saipan

Contractor Health and Safety. Under Alternative 3 at Saipan, the same number of aircraft operations could occur as described under Alternative 1. Therefore, impacts during the Implementation Phase would be the same, and negligible impacts would be expected. Potential impacts on health and safety associated with these activities would be avoided or minimized by mandatory training and adherence to established Federal and CNMI safety regulations and requirements described in **Section 4.15.1.2**.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Long-term, negligible, adverse impacts on public health and safety would be expected under the Implementation Phase of Alternative 3. Alternative 3 would add approximately 720 aircraft operations per year, which would be a 1 percent increase above the existing number of air operations at Saipan International Airport. This increase in air operations would have a negligible effect on the ability of the Aircraft Rescue and Fire Fighting unit to respond to aircraft emergencies.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 3. **Section 4.3** provides information on safety impacts from the additional aircraft operations at Saipan International Airport. **Section 4.6** provides information regarding BASH at Saipan International Airport.

4.15.3.2.2 Tinian North and South Options

Contractor Health and Safety. Under Alternative 3 on Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same and minor impacts on noise would be expected. Potential impacts on health and safety associated with these activities would be avoided or minimized by mandatory training and adherence to established Federal and CNMI safety regulations and requirements described in **Section 4.15.2.2**.

Military Health and Safety. Long-term, minor, beneficial impacts on military health and safety would be expected due to improved and expanded facilities for divert operations, joint exercises, and training for humanitarian/disaster relief activities. These activities already occur, but the improved and expanded facilities specifically designed for these activities would improve safety.

Public Health and Safety. Under Alternative 3 on Tinian, the same number of aircraft operations could occur as described under Alternative 2. Therefore, impacts during the Implementation Phase would be the same, and negligible impacts on noise would be expected.

Airfield Safety. Long-term, minor, beneficial impacts on airfield safety would be expected under the Implementation Phase of Alternative 3 on Tinian. **Section 4.3** provides information on safety impacts from the additional aircraft operations at Saipan International Airport. **Section 4.6** provides information regarding BASH at Saipan International Airport.

4.15.4 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur on either Saipan or Tinian and the existing conditions discussed in **Sections 3.15** would continue. The USAF would not develop or construct facilities and infrastructure at an existing airport or airports to support divert operations, a combination of cargo, tanker, and similar aircraft and associated support personnel for periodic exercises, or in support of humanitarian assistance and disaster relief in the western Pacific. The USAF would continue to conduct divert landings at appropriate airports (i.e., A.B. Won Pat International Airport, Saipan International Airport, and Rota International Airport) in accordance with 36th WI 13-204, Airfield Operations Instructions, planned joint military exercises would continue to take place using Andersen AFB and surrounding airspace and range area, and humanitarian airlift staging would continue to use existing airfields such as Andersen AFB and A.B. Won Pat International Airport, Guam. The No Action Alternative would provide no benefit or detriment to the existing conditions currently experienced on Saipan and Tinian.

No impacts on the existing health and safety environment would be expected as a result of the No Action Alternative. Existing health and safety conditions on Saipan and Tinian would not increase due to construction traffic, planned military exercises, and support personnel traffic. The No Action Alternative would result in a continuation of existing conditions.

4.16 Mitigation Measures

The Proposed Action, under Alternative 1, Alternative 2, and Alternative 3, has the potential to result in adverse environmental impacts as described in **Sections 4.1** through **4.15**. Mitigations would be implemented to minimize, avoid, or compensate for potential impacts on specific resource areas. Mitigations include specific management actions and BMPs required or recommended by regulation or USAF policy for a particular environmental resource. In accordance with CEQ regulations, mitigation measures are also considered for adverse environmental impacts and are the result of the USAF's commitments made through consultations and subsequent agreements. Mitigations would be implemented and managed as required for a particular impacted resource. These resource-specific mitigations are summarized for all alternatives in **Table 4.16-1**.

1 **Table 4.16-1. Mitigation Measures for Alternatives 1, 2, and 3**

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
NOISE						
<u>Construction Equipment</u> • The USAF could restrict construction activities to between sunrise and sunset to reduce the annoyance to adjacent populations • Common measures such as using equipment exhaust mufflers would minimize noise impacts	X		X		X	
AIR QUALITY						
<u>Fugitive Dust</u> • Mitigation measures would be employed during construction to reduce and control fugitive dust and to suppress emissions. Specific fugitive dust control measures could include watering the construction surface and phasing work to limit dust, setting up wind fences to limit wind blown dust, and limiting vehicle speed to 15 mph or less at construction sites on unpaved roads.	X		X		X	
<u>Construction Permitting</u> • The USAF would coordinate with CNMI BECQ to obtain the necessary stationary source permits prior to commencing construction of any potential stationary source, to include the bulk fuel storage areas.	X		X		X	
AIRSPACE AND AIRFIELD ENVIRONMENT						
<u>Airfield Operations</u> • To avoid or rectify any potential insignificant impacts on airfield operations during construction, the USAF would develop a Construction Safety Phasing Plan in accordance with Advisory Circular 150/5370-2F. • Additionally, aircraft located on the parking apron could impede ARFF's line-of-sight to the approach end of the runway. If ARFF's line-of-sight would be impeded by aircraft participating in divert exercises, the USAF could implement mitigation measures to rectify the impact and restore line-of-sight, which could include installing a tower on the ARFF facility to increase visibility; adding surveillance cameras on the airfield; or requesting a waiver for surveillance of movement area criteria. • Adverse impacts on airfield operations during construction due to construction equipment or vehicles immediately adjacent to the active parallel taxiway or runway, within the Runway Safety Area, could be reduced by temporarily modifying aircraft movement procedures.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• FAR Part 77 establishes the requirements to provide notice to the FAA of certain proposed construction or the alteration of existing structures and determination of obstructions impact on air navigation. To avoid impacts on air navigation, proposed infrastructure would be submitted to FAA in accordance with the FAR requirements; however, proposed infrastructure does not exceed any of the Part 77 criteria.						
Safety Management System Plan • To avoid or rectify any potential impacts on airfield operations, the USAF would develop a Safety Management System (SMS) Plan.	X	X	X	X	X	X
Scheduling • The USAF would reduce potential impacts by conducting take-offs and landings around existing commercial airliner schedules on a first come, first served basis		X				X
Fueling • To minimize impacts related to incidental fuel spills, all fueling and defueling of aircraft must be conducted from fuel systems and in accordance with FAA Advisory Circular 150/5230-4 *Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports*. In accordance with 14 CFR Part 139 requirements, only airlines, the fuel system operator, and fixed base operators are authorized to perform into-plane fueling services.		X		X		X
Mobile ATCT • The USAF could rectify impacts on approach and departure airspace by installing a mobile ATCT during military exercises which would assist with aircraft separation and prevent delays				X		X
GEOLOGICAL RESOURCES AND SOILS						
Erosion and Sediment Control Measures • To minimize impacts on geological resources from soil erosion, the USAF would follow standards for erosion and sediment control recommended by the 2006 *CNMI and Guam Storm Water Management Manual* (CNMI BECQ and GEPA 2006). • The USAF would keep waste materials, stockpiles, and building supplies tied down or covered to protect from wind or storm water. • The USAF would minimize grading, filling, clearing of vegetation or other disturbance of the soil during inclement weather and for the resulting period of time when the site is in a saturated, muddy or unstable condition.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• Additional erosion and sediment control mitigation measures could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. • Construction would follow the guidelines provided in Federal and CNMI permitting processes. • A CNMI BECQ Noncommercial Earthmoving permit would be submitted prior to the start of any construction activities.						
Erosion and Sediment Control Plan • The USAF would develop and implement an ESCP.	X	X	X	X	X	X
Geologic Hazards • Because development would occur in Seismic Zone 3, all buildings and other structures would be designed and constructed to meet the engineering requirements in the 2012 International Building Code. This would minimize potential for adverse impacts on human life associated with earthquakes. • Structures would be able to withstand maximum winds of at least 155 mph and withstand the minimum horizontal and uplift pressures set forth in the regulations adopted by the Building Safety Official in accordance with the Building Safety Code (CNMI 1988).	X		X		X	
WATER RESOURCES						
Water Quality • The USAF would ensure that any storm water runoff or release from the project is consistent with CNMI Water Quality Standards.	X	X	X	X	X	X
NPDES and SWPPP • The USAF would manage storm water runoff during construction and for operation of the proposed facilities after construction is complete in compliance with a USEPA NPDES permit. • A SWPPP would be developed to support the NPDES permits in compliance with USEPA Guidelines.	X	X	X	X	X	X
Storm Water Management during Construction • The USAF would design all construction site storm water management measures to accommodate (safely convey without creating erosive conditions) the 10-year frequency storm.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• The USAF site-specific storm water management measures would include some, or all, of the following to manage storm water runoff from the 10-year frequency storm: stabilized construction entrances, silt fencing, berms and swales, check dams, vegetated channels, basins and traps, stabilization, erosion control blankets, inlet protection, outlet protection, and level spreaders.						
Storm Water Management after Construction • To prevent adverse impacts of storm water runoff after construction is complete, the USAF would seek to include performance standards, as recommended by the 2006 *CNMI and Guam Storm Water Management Manual* (CNMI BECQ and GEPA 2006), to the maximum extent technically feasible, in the design of the project. • The USAF would focus on the use of strategically placed berms to intercept surface water flows from impervious surfaces and promote rapid infiltration to maintain pre-development hydrological conditions and avoid an increase in the runoff of sediment and fresh water. • The USAF would implement LID technologies for storm water management which would be consistent with LID requirements of UFC 3-210-01 *Low Impact Development.* • Storm water management systems would be designed to capture, at a minimum, the 95th percentile rainfall event. The storm water management system and features, developed consistent with UFC 3-210-01, *Low Impact Development,* would also be designed to meet water quality criteria, overland erosion and channel protection criteria, overbank flood control/receiving stream criteria, and recharge criteria. A downstream analysis would also be conducted. • Additional LID site features that the USAF could deploy include rain gardens, vegetated filter strips, downspout disconnection, reduced impervious area, tree preservation or re-vegetation using native plants, soil amendments.		X		X		X
Monitoring before and during Construction • Prior to the start of construction, baseline percolation rates and other parameters necessary to properly design and permit the storm water management system would be measured at the areas proposed for construction. Preconstruction water quality also would be measured. • Should additional potential impacts be identified during baseline sampling, the USAF would coordinate with the Natural Resources Trustees, and USEPA Region 9, the permitting authority, to ensure resources are appropriately protected.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• All storm water management structures and practices would be inspected and maintained during all stages of the construction process in accordance with the SWPPP and CNMI regulations to ensure proper function. Inspections would be conducted by on-site USAF or contractor personnel. At a minimum, those inspections would occur following major rainfall events to ensure that storm water control structures are functioning as designed and remain effective. During events that cause sufficient surface flows, water quality would be sampled at the outfall of existing drainage systems. • The USAF would implement an adaptive management approach that would be based on information obtained during regular monitoring and inspection of construction storm water management controls. • The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. • The USAF would follow Engineering Technical Letter (ETL) 14-1 *Construction and Operation and Maintenance Guidance for Storm Water Systems*.						
<u>Monitoring after Construction</u> • The USAF would conduct post-construction site visits to inspect the system and assess the as-built LID features and validate if they have been constructed according to plans and specifications. • All storm water management structures and practices would be inspected and maintained in accordance with the SWPPP and CNMI regulations to ensure proper function. Inspections would be conducted by on-site USAF or contractor personnel. At a minimum, those inspections would occur following major rainfall events to ensure that storm water control structures are functioning as designed and remain effective. During events that cause sufficient surface flows, water quality would be sampled at the outfall of the airport storm water drainage system. • The USAF would also implement an adaptive management approach that would be based on information obtained during regular monitoring and inspection of permanent storm water management controls. The USAF would identify any structures that are damaged or are not functioning in accordance with applicable standards and repair them. • The USAF would follow ETL 14-1 which provides inspection checklists and schedules for each type of storm water management control.		X		X		X

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
TERRESTRIAL BIOLOGICAL RESOURCES						
Brown Treesnake and Invasive Species Control As further described in the Biological Opinion for this project (USFWS 2013, 2015e), which is contained in Appendix B, the USAF is committed to implement the following measures to prevent the spread of brown treesnakes and other invasive species. • Inspect 100 percent of all outgoing cargo and aircraft that are leaving from Guam associated with the Divert project, and 100-percent redundant inspections upon arrival in the CNMI. • Route inbound personnel and cargo for tactical approach exercises or humanitarian operations (that require an uninterrupted flow of events) directly to CNMI training locations to avoid Guam seaports and airfields. If Guam cannot be avoided, the USAF would implement appropriate interdiction methods that may include redundant inspections or other interdiction methods. • Establish and maintain snake-free quarantine areas (barriers) for cargo traveling from Guam to CNMI and other brown treesnake-free areas. • Develop procedures and protocols specific to Divert training events that will support a rapid response action in the event of a brown treesnake sighting resulting from Divert activities, and provide agreed-upon logistical support as needed. • Working in collaboration with the USFWS and USDA-WS, decide how best to implement the Brown Treesnake Control Plan (BTS TWG 2009, 37 pp.) relevant to Divert activities. • Provide invasive species awareness training for all military and contractor personnel prior to all training activities. • Coordinate closely with the USFWS, U.S. Department of Agriculture (USDA), CNMI DLNR, and JRM staff responsible for managing their brown treesnake program, on planning for training activities in the CNMI. • An HACCP plan would be developed and implemented to reduce or eliminate the spread of unwanted species during specific processes or practices or in materials or products.	X	X	X	X	X	X

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• The USAF is a participating agency in the development of the Micronesia Biosecurity Plan[4]. Once completed, any portions of the Micronesia Biosecurity Plan determined to be applicable to Divert construction and training activities, will be implemented when such procedures do not unduly interfere with military training. buffer zones should be installed to protect nightingale reed-warblers using buffer zones or areas of connectivity.						
<u>Migratory Birds during Construction</u> • To comply with the MBTA, surveys and/or monitoring for nesting birds during construction would be conducted and areas where active nests are found would be avoided, or other measures would be taken to avoid harming any migratory birds, nests, or eggs.	X		X		X	
<u>Bird Strike</u> • The USAF could implement measures indicated in the WHA to remove or modify features attractive to wildlife at the airport and/or would implement measures that are currently employed at the airport in accordance with FAA requirements to minimize the likelihood of bird strikes.		X				
<u>Nightingale Reed Warbler</u> To avoid or minimize impacts on nightingale reed-warblers from construction of facilities at Saipan International Airport, the USAF would implement the following impact-minimization measures identified by the USFWS (USFWS 2008b) for construction activities within nightingale reed-warbler habitat on Saipan. • Clearing of vegetation would only occur between October through December or April through June, when nightingale reed-warbler nesting activity is not at its peak. • Laydown yards and other temporary construction facilities would not be located within 50 m of nightingale reed-warbler habitat. • The use of very noisy (greater than 60 dBA) heavy machinery would be limited the peak breeding season or temporary noise barriers or buffer zones would be installed. • Temporary fencing would be installed to prevent entry of personnel and equipment into habitat that is to be avoided.	X				X	

[4] Since completion of the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI*, the Micronesia Biosecurity Plan has been renamed to the Regional Biosecurity Plan for Micronesia and Hawai‘i.

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• Construction personnel would receive environmental awareness training. • A litter-control program would be implemented during construction. The USAF would implement all other mitigation measures required as a result of the ESA consultation process as indicated in the *Biological Opinion for Divert Activities and Exercises at Saipan International Airport, CNMI* provided in Appendix B (USFWS 2013).						
MARINE BIOLOGICAL RESOURCES						
Mitigation measures identified for geological resources and soils, water resources, and hazardous materials and wastes would avoid or minimize impacts on marine biological resources. Please refer to those sections for mitigation measures that would also be applicable to marine biological resources.						
CULTURAL RESOURCES						
<u>Potential Mitigation Measures Applicable to Alternatives 1 and 3</u> • Prior to the project design phase for construction, the USAF could perform investigations in the Isley/Aslito Field area to assess the extent and condition of remaining cultural resources associated with the Saipan NHL and evaluate whether those resources contribute to the Isley/Aslito Field NHLD or are eligible to the NRHP in their own right. The USAF could develop a research design to support the inventory and consolidate the results of the inventory into a survey report, which would be considered in the project design. • The USAF could develop a plan to document and interpret extant historic features of Isley/Aslito Field for the public, and could seek public input on the plan. Possible interpretive products include but are not limited to: signage at publicly accessible historic features, printed brochures, exhibits and/or displays and electronic products. • The USAF could ensure that, to the greatest extent practicable, portions of the NHLD that are currently accessible to the public would remain so. The USAF could develop a Public Access Plan to identify portions of the NHLD that are currently accessible to the public, and specify procedures to be followed by USAF for any such accessible areas that would be excluded from public access during construction or implementation of Divert. • Prior to starting construction, the USAF could produce Historic American Landscapes documentation consistent with the standards of the Department of the Interior. The USAF could produce HALS documentation for the areas affected by the Undertaking, including visual impacts to the broader landscape.	X				X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• Prior to conclusion of the project design phase for construction, the USAF could engage with traditional cultural practitioners in the identification of Traditional Cultural Properties (TCPs) that could be impacted by the Undertaking, particularly those related to traditional plant gathering activities. The USAF could invite traditional cultural practitioners to participate in a survey to identify traditional plant gathering areas within proposed development areas outside the existing airport security fence at Saipan International Airport. The USAF could then organize a field reconnaissance of proposed development areas, produce a report of the survey results that describes background research, field methods, results, evaluations of NRHP eligibility, and findings of effect, and consider the results of the survey in the project design. If the report identifies any new adverse effects not identified in the USAF's Finding of Effect dated 14 August 2015 (included as Attachment 2), USAF will consult with consulting parties. • Although CNMI Public Law (P.L.) 10-5 designates the CNMI Museum of History and Culture as the official repository and custodian of historical and cultural artifacts of the CNMI and tasks the museum with the curation and display of CNMI cultural heritage, that facility does not presently have curation facilities that meet minimum federal requirements promulgated in 36 CFR Part 79. Therefore, the USAF could propose to the Department of Defense Historic Preservation Working Group that the curation of archaeological materials from DOD activities in the CNMI be a recurring agenda item. The USAF could coordinate with the CNMI concerning curation management of USAF collections as the Undertaking proceeds and provide updates to the Historic Preservation Working Group. • Any materials recovered could be stored in a repository determined by the USAF and property owner (CPA) in consultation with and approval from the SHPO. Materials could be temporarily curated by USAF in facilities meeting 36 CFR Part 79 standards until such time the materials can be transferred to a facility within CNMI that meets these standards. • The USAF could provide qualified archaeologists to monitor all ground disturbing activities during construction of facilities associated with the Undertaking. In the event unanticipated archaeological materials are discovered through construction activities, the USAF would follow pre-established procedures. • If human skeletal remains (or remains thought to be human) are found during the Undertaking, the USAF could follow pre-established procedures for initial discovery, preliminary identification, and identification. • While temporarily curated by the USAF, and under an appropriate loan agreement, USAF could make available to CNMI a selection of display quality artifacts, if any such artifacts are acquired during the Undertaking, for displays and educational purposes.						

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• The USAF could include in all applicable construction contracts relating to the Undertaking language stipulating that temporary fencing be placed around standing historic structures, archaeological sites, or other known contributing elements to historic properties (e.g., the Japanese air raid bunkers on Saipan) that are immediately adjacent to areas of construction to help prevent inadvertent damage. The USAF would coordinate with the FAA and CPA any fencing within the airport boundary prior to implementation to assure FAA safety and design standards are not compromised. • If historic properties are discovered or unanticipated effects on historic properties are determined, the USAF would follow the procedures outlined in 36 CFR Part 800.13 for post-review discoveries. If the discovery involves historic deposits associated with the Saipan NHL, the USAF would include the NPS in its notifications under 36 CFR Part 800.13(b)(3).						
<u>Potential Mitigation Measures Applicable to Alternative 3</u> • The USAF could perform cultural resource investigations in the West Field area. The inventory could be conducted prior to completing the project design phase for construction. The investigations could assess the extent and condition of cultural resources associated with the known historic contexts at West Field and evaluate the resources for NRHP eligibility. Completion of the inventory could include development of a research design and a survey report. • The USAF could develop a plan to document and interpret extant historic features of West Field for the public, particularly the history of the 58th Bombardment Wing's use of the field and could seek public input on the plan. Possible interpretive products include but are not limited to: signage at publicly accessible historic features, printed brochures, airport exhibits and/or displays and electronic products. • Although CNMI P.L. 10-5 designates the CNMI Museum of History and Culture as the official repository and custodian of historical and cultural artifacts of the CNMI and tasks the museum with the curation and display of CNMI cultural heritage, that facility does not presently have curation facilities that meet minimum federal requirements promulgated in 36 CFR Part 79. Therefore, the USAF could propose to the Department of Defense Historic Preservation Working Group that the curation of archaeological materials from DOD activities in the CNMI be a recurring agenda item. The USAF could coordinate with the CNMI concerning curation management of USAF collections as the Undertaking proceeds and provide updates to the Historic Preservation Working Group.					X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• Any materials recovered could be stored in a repository determined by the USAF and property owner (CPA) in consultation with and approval from the SHPO. Materials would be temporarily curated by USAF in facilities meeting 36 CFR Part 79 standards until such time the materials can be transferred to a facility within CNMI that meets these standards. • While temporarily curated by the USAF, and under an appropriate loan agreement, USAF would make available to CNMI a selection of display quality artifacts, if any such artifacts are acquired during the Undertaking, for displays and educational purposes. • The USAF would provide qualified archaeologists to monitor all ground disturbing activities during construction of facilities associated with the Undertaking. In the event unanticipated archaeological materials are discovered through construction activities, the USAF would follow procedures outlined in the PA. • If archaeological materials are discovered or unanticipated effects on historic properties are determined, the USAF would follow the procedures outlined in 36 CFR Part 800.13 for post-review discoveries. • If human skeletal remains (or remains thought to be human) are found during the Undertaking, the USAF would follow procedures in the PA for initial discovery, preliminary identification, and identification. • The USAF would include in all applicable construction contracts relating to the Undertaking language stipulating that temporary fencing be placed around standing historic structures, archaeological sites, or other known contributing elements to historic properties that are immediately adjacent to areas of construction to help prevent inadvertent damage. The USAF would coordinate with the FAA and CPA any fencing within the airport boundary prior to implementation to assure FAA safety and design standards are not compromised.						
<u>PA Stipulations Applicable to Alternative 2</u> • The USAF would perform cultural resource investigations in the West Field area. The inventory would be conducted within 12 months of executing ROD. The investigations would assess the extent and condition of cultural resources associated with the known historic contexts at West Field and evaluate the resources for NRHP eligibility. Completion of the inventory would include development of a research design and a survey report. • The USAF would develop a plan to document and interpret extant historic features of West Field for the public, particularly the history of the 58th Bombardment Wing's use of the field and would seek public input on the plan. Possible interpretive products include but are not limited to: signage at publicly accessible historic features, printed brochures, airport exhibits and/or displays and electronic products.			X			

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• Although CNMI P.L. 10-5 designates the CNMI Museum of History and Culture as the official repository and custodian of historical and cultural artifacts of the CNMI and tasks the museum with the curation and display of CNMI cultural heritage, that facility does not presently have curation facilities that meet minimum federal requirements promulgated in 36 CFR Part 79. Therefore, the USAF would propose to the Department of Defense Historic Preservation Working Group that the curation of archaeological materials from DOD activities in the CNMI be a recurring agenda item. The USAF would coordinate with the CNMI concerning curation management of USAF collections as the Undertaking proceeds and provide updates to the Historic Preservation Working Group. • Any materials recovered would be stored in a repository determined by the USAF and property owner (CPA) in consultation with and approval from the SHPO. Materials would be temporarily curated by USAF in facilities meeting 36 CFR Part 79 standards until such time the materials can be transferred to a facility within CNMI that meets these standards. • The USAF would provide qualified archaeologists to monitor all ground disturbing activities during construction of facilities associated with the Undertaking. In the event unanticipated archaeological materials are discovered through construction activities, the USAF would follow procedures outlined in the PA. • If archaeological materials are discovered or unanticipated effects on historic properties are determined, the USAF would follow the procedures outlined in 36 CFR Part 800.13 for post-review discoveries. • If human skeletal remains (or remains thought to be human) are found during the Undertaking, the USAF would follow procedures in the PA for initial discovery, preliminary identification, and identification. • While temporarily curated by the USAF, and under an appropriate loan agreement, the USAF would make available to CNMI a selection of display quality artifacts, if any such artifacts are acquired during the Undertaking, for displays and educational purposes. • The USAF would include in all applicable construction contracts relating to the Undertaking language stipulating that temporary fencing be placed around standing historic structures, archaeological sites, or other known contributing elements to historic properties that are immediately adjacent to areas of construction to help prevent inadvertent damage. The USAF would coordinate with the FAA and CPA any fencing within the airport boundary prior to implementation to assure FAA safety and design standards are not compromised.						

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
RECREATION						
No mitigation measures have been specified for potential impacts on recreation.						
LAND USE						
Common Use of Facilities • To reduce impacts on land use, the USAF could some facilities, dependent on Alternative, as common-use facilities for use by the CPA and other airport users.	X		X		X	
CRM Permit • USAF would apply for a CRM permit, and follow procedures identified in the permit, for all actions that occur wholly or partially within an APC.	X		X		X	
TRANSPORTATION						
Road Congestion • Traffic operations impacts could be minimized by requiring construction activities to begin and end outside of peak travel periods. • Impacts could be minimized if construction activities occurred outside of peak travel periods and therefore a majority of the worker transport activities would also occur outside of peak periods.	X				X	
Road Deterioration • To help rectify potential roadway deterioration, the roadways that would be used for construction could be repaired, overlaid, and reinforced as needed to accommodate the additional traffic prior to the start of substantial construction activities. These routes could also be repaired and overlaid as needed upon completion of construction to restore the pavement condition to pre-construction levels.	X	X	X	X	X	X
HAZARDOUS MATERIALS AND WASTE						
Fuel Storage Design and Management Standards • To reduce the likelihood of spills during construction and during military exercises, as well as the impact of spills (e.g., or spill migration to nearshore waters) in the unlikely event that one should occur, all proposed fuels infrastructure would be constructed according to the most stringent applicable Federal and CNMI requirements.	X	X	X	X	X	X

Mitigation Measure	Alternative 1 Construction	Alternative 1 Implementation	Alternative 2 Construction	Alternative 2 Implementation	Alternative 3 Construction	Alternative 3 Implementation
SPCC Plan • The USAF would develop and implement an SPCC Plan (as required by Section 311(j)(1)(C) of the CWA) to control the potential for contamination from the unlikely event of a spill. All fuel tanks proposed as a part of the Project would include secondary containment to eliminate the potential for spills that could ultimately find their way into nearshore waters. • The SPCC Plan would be prepared, maintained, and implemented to prevent, control, counteract, and report of all spills. The SPCC Plan will provide measures to prevent, and to the maximum extent practicable, to remove a worst case discharge from the facility.	X	X	X	X	X	X
FRP • The USAF would also develop an FRP which would address an accidental "catastrophic" spill and would minimize potential impacts from such a spill.	X	X	X	X	X	X
Operation, Inspection, and Monitoring of Fuel Systems. • To ensure proper operation of all fuel infrastructure and minimize the potential for spills, the USAF would follow Technical Order 37-1-1, General Operations and Inspection of Installed Fuel Storage and Dispensing Systems and UFC 3-460-03, *Operation and Maintenance: Maintenance of Petroleum Facilities*.	X	X	X	X	X	X
Hazardous Material Handling • To avoid or minimize impacts from hazardous materials, all hazardous materials would be imported, collected, stored and handled in accordance with applicable Federal, CNMI, and USAF hazardous materials management regulations. • Contractors would be responsible for the storage, handling, and disposal of hazardous wastes in accordance with Federal, CNMI, and USAF hazardous waste management regulations. All collection, storage, and management of hazardous wastes by the contractor will be defined in the actual contract with the contractor, in coordination with CPA and the CNMI government.	X	X	X	X	X	X
AST Permit • Contractors would obtain an AST Permit to Install and an AST Permit to Operate from the CNMI BECQ for all ASTs needed to support construction.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
Environmental Condition of Property • Prior to conducting any soil-disturbing activities, a visual survey of the areas proposed to be disturbed could be conducted. • If environmental contamination is discovered during construction, the contractor would immediately stop work at the affected area, report the discovery to the USAF, property owner, and CNMI, as necessary, and implement appropriate safety measures. • If environmental contamination is identified, construction site plans should be revised to avoid the contamination areas or remediate them as practicable. Commencement of field activities should not resume in the affected area until the issue is investigated and resolved.	X		X		X	
ACM Procedures • Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. If potential ACMs are observed, the applicable sites should be classified as areas with potential asbestos-containing soils/materials, the notification process should be implemented. If potential ACMs are not observed during the visual survey, construction would move forward as planned. • If any potential ACMs are encountered during the soil-disturbing activities, all site work should cease and the site should be re-evaluated. • Any ACMs encountered during soil-disturbing activities would be handled in accordance with established Federal, CNMI, and USAF regulations and would be disposed of at an asbestos-permitted landfill. • The USAF would not use ACMs for proposed construction.	X		X		X	
LBP Procedures • To avoid or minimize impacts that could occur by disturbing LBP, the USAF could implement the following procedures. Prior to conducting any soil-disturbing activities, a visual survey of the proposed disturbance areas should be conducted. Should debris containing potential LBP be discovered during the survey, site preparation, or excavation, work should stop immediately and measures would be taken to secure the area and prevent the release of lead. • Debris containing LBP would be removed and disposed of in accordance with applicable Federal and CNMI regulations.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• *Air Force Policy and Guidance on Lead-Based Paint in Facilities*, 24 May 1993, states that paint containing more than the regulated amount for nonindustrial facilities (i.e., LBP) will not be used on industrial or nonindustrial facilities; therefore, the structures proposed for construction would not contain LBP. • AFI 32-1042, *Standards for Marking Airfields*, states that lead-free pavement marking paints are to be used at airfields; therefore, the proposed airfield pavement areas would not contain LBP.						
PCB Removal • To avoid or minimize impacts, if any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels requires removal, then this equipment would be removed and handled in accordance with Federal and CNMI hazardous waste regulations.	X		X		X	
Radon-resistant Construction • Radon-resistant construction techniques would be implemented during construction to reduce the potential for radon intrusion during occupancy, as applicable.	X		X		X	
Radon Testing • The USAF would test facilities that have known radon intrusion issues based on location periodically to verify that no unacceptable radon gas buildup occurs. As appropriate, radon gas removal equipment would be installed at buildings that consistently show indoor radon levels greater than 4 pCi/L.		X		X		X
INFRASTRUCTURE AND UTILTIES						
Construction Debris • Waste would be recycled per EO 13693 *Planning for Federal Sustainability in the Next Decade* and DOD requirements. • Waste from vegetation clearing for construction would be composted, as practicable. • The USAF would obtain all necessary permits for solid waste management and processing, including recycling, and green waste processing. Required permits could include the BECQ Solid Waste Collection and Solid Waste Processing permits. • Contractors hired for the various construction projects would be responsible for the removal and disposal of their construction wastes generated on site.	X		X		X	

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
Energy Efficiency • New facilities would be designed to achieve LEED Silver certification; therefore, state-of-the-art energy efficiency would be expected and impacts on the electrical supply would be reduced. • The USAF would follow DOD Energy Conservation goals and therefore impacts on the electrical supply during implementation would be reduced.		X		X		X
Water Supply • The USAF would coordinate with local regulatory authorities and CUC to avoid any localized impacts on the water supply during this time.		X		X		X
Recycling • The USAF will recycle materials generated during exercises per EO 13693 *Planning for Federal Sustainability in the Next Decade* and DOD requirements.		X		X		X
Water Wells • To rectify impacts on the CUC potable water system, the USAF would install two water wells to meet their water requirements, each approximately 350 feet deep. The USAF would coordinate well installation and operation with CUC to prevent impacts to CUC water supplies during times the USAF wells are used. • The wells would be positioned to lessen aquifer drawdown and minimize any increase in water salinity. The design and permitting of water wells would follow CNMI BECQ Well Regulations. • Pumping rates from the wells have not been defined but would be developed during the first project design in coordination with CUC; the USAF would manage draw rates from the existing and proposed wells to ensure that water supply is not exceeded. • Water wells would be constructed at the beginning of the construction phase and would be able to support the remainder of construction if the CUC supply could not meet the demand as well as the activities proposed during implementation.			X	X	X	X
SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE						
Hotel Availability • USAF personnel and their contractors would coordinate with local hotels to secure the required number of hotel rooms prior to proposed use (e.g., during construction or during exercises) to minimize impacts and avoid supply issues.	X	X	X	X	X	X
ARFF		X		X		

Mitigation Measure	Alternative 1		Alternative 2		Alternative 3	
	Construction	Implementation	Construction	Implementation	Construction	Implementation
• Potential impacts on the airport ARFF due to an increase in personnel and aircraft could be accomplished through negotiated agreements between the USAF and the CPA.						
Public Services • To minimize the impacts on the Tinian Health Center, the construction contractor would be responsible for medical care for construction personnel. • Additional security and fire personnel could be required to rectify the increased demand due to an increase in island population.			X		X	
HUMAN HEALTH AND SAFETY						
Construction Contractors • Potential impacts on construction contractor health and safety would be avoided or minimized by adherence to established Federal and CNMI safety regulations. • Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. • Construction areas would be fenced and appropriately marked with signs to prevent trespassing. • Construction equipment and associated trucks transporting material to and from the project sites could be directed to roads and streets that have a smaller volume of traffic. • Contractors would be required to establish and maintain health and safety programs for their employees.	X		X		X	
ARFF • Construction would be coordinated with airport personnel to ensure the ability of the ARFF unit to respond to emergencies.	X		X		X	
Fuel Contractors • Potential impacts on fuel contractor health and safety would be avoided or minimized by mandatory training and adherence to established Federal and CNMI safety regulations. • Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. • Fuel vehicles would use an established, safe route to transport the fuel. • Contractors would be required to establish, maintain, and comply with health and safety programs for their employees.		X		X		X

This page intentionally left blank.