



**UNITED STATES MARINE CORPS**

MARINE CORPS BASE CAMP BLAZ

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**SUBJECT: FISCAL YEAR 2023 (FY23) ANNUAL REPORT FOR BIOLOGICAL OPINIONS  
01EPIF00-2015-F-0025 AND 01EPIF00-2016-F-0185**

This correspondence is submitted to satisfy the FY23 (covering October 1, 2022 to September 30, 2023) annual reporting requirements (Terms and Conditions L.5.a, p. 158) of the U.S. Fish and Wildlife Service (FWS) Biological Opinion (BO) for the Department of the Navy's (DON) Relocation of the U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam, initially issued on July 31, 2015 (01EPIF00-2015-F-0025) with a re-initiation completed on July 19, 2017 (01EPIF00-2016-F-0185), an amendment completed on October 30, 2018, and clarifications completed on March 27, 2020 and June 24, 2020. The conservation measures and terms and conditions implemented are described in the enclosed report.

If you have any questions regarding this annual report, the DON's technical point of contact is Ms. Lauren Gutierrez. She can be reached at (671) 686-1299 or email at [lauren.e.gutierrez7.civ@us.navy.mil](mailto:lauren.e.gutierrez7.civ@us.navy.mil).

*Senseramente,*

Albert Thomas T. Borja  
Installation Environmental Program Director  
By Direction of the Commanding Officer

Enclosure 1. Annual Report of the Biological Opinion for the Department of the Navy's Relocation of the U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam

Copy to (via email):  
Chief of Naval Operations (N45)  
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United States Fish & Wildlife Service, Pacific Region

## **Annual Report for the Biological Opinion for the Department of the Navy's Relocation of the U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam**

**Reporting Period – October 1, 2022 to September 30, 2023 (FY 2023)**

**Introduction:** This annual report addresses the implementation of the conservation measures and terms and conditions in fiscal year 2023 (FY23) for the relocation of Marine Corps personnel from Okinawa, Japan, to Guam. The format of the annual report follows the format of the biological opinions, amendments, and clarifications previously published to document this undertaking (2015, 2017, 2018 and 2020).

The various conservation measures and terms and conditions are either programmatic or project-specific, with varying start requirements within the overall multi-year construction program schedule and into the operational phase. Generally, programmatic measures are not specifically tied to construction activities while project-specific requirements involve measures that are prompted by construction activity or habitat removal (e.g., species translocation, green waste reuse, and marking of project limits). Construction-related ground disturbance for the MCBCB main cantonment and ranges began in earnest in calendar year 2018. As of end of FY23, approximately 86% of ground disturbance is complete for the construction phase of the Marine Corps Relocation on Guam (active projects are listed in Appendix I). Operational and training-associated requirements have not begun as the relocation of Marines to Guam is not anticipated to begin until the end of calendar year 2024.

In FY23 the Department of the Navy (DON) successfully executed multiple Biological Opinion (BO) requirements. Initiatives to effectively minimize the risk of invasive species through biosecurity programs and outreach continued throughout this reporting period. Large-scale forest enhancement projects that were pending the establishment of ungulate-free areas such as native plant species outplanting have commenced. Additionally, Endangered Species Act (ESA)-listed plants and butterfly host plants that were grown in nurseries or collected from construction sites were translocated into forest enhancement sites (FES). An overall view of BO conservation measures and terms and conditions implemented at MCBCB is provided as Attachment 2. Challenged with the devastating effects from Typhoon Mawar that made landfall on May 24, 2023, Marine Corps Base Camp Blaz (MCBCB) conservation staff took immediate action pre- and post-typhoon by sheltering native plants at the nursery, using in-house efforts for irrigation system repairs, rapidly assessing damage through difficult debris-strewn landscape, prioritizing temporary ungulate fence repairs and awarding contracts for permanent repairs. All the post-typhoon recovery work was done even while much of the island had no water or power, demands for environmental staff was high to support emergency facility/utility repairs, and procurement activities required compressed timeframes to meet end of fiscal year contracting deadlines in early July 2023.

In addition to fulfilling non-discretionary requirements, the DON also carried out the following FY23 activities to implement BO conservation recommendations from the US Fish and Wildlife Service (FWS), which demonstrates the DON's commitment to natural resources stewardship:

- Joint Region Marianas (JRM) biologists participated in recovery committees for priority ESA-listed species, reviewed draft FWS recovery plans to support conservation planning needs and developed programmatic ESA consultations for efficient conservation implementation.
- MCBCB constructed ungulate control fencing, began ungulate eradication and performed invasive ant eradication efforts at the Haputo Ecological Reserve Area, which is part of the Guam National Wildlife Refuge (GNWR) – JRM Overlay Units.
- MCBCB performed close coordination with GNWR Ritidian Unit and US Geological Survey staff to ensure proper coordination and continuation of Department of Interior conservation missions during range construction while preparing for future range operations.
- MCBCB coordinated command approval of an FWS-sponsored proposal for captive-rearing of snails from the Haputo Ecological Reserve Area.
- MCBCB voluntarily salvaged seventy-four (74) *T. guamense* and two (2) *B. guamense* orchids from Typhoon-Mawar tree debris that fell into the construction project limits. MCBCB awarded the outplanting and maintenance contract for care and translocation of the salvaged orchids.
- MCBCB entered into a formal Memorandum of Agreement (MOA) with the Government of Guam (GovGuam) for joint wildland fire management training, which include performing prescribed burns to control invasive plant infestation.
- JRM implemented its Readiness and Environmental Protection Integration (REPI) conservation MOA with GovGuam that has resulted in \$11M of conservation funds obligated for voluntary and proactive forest enhancement and watershed restoration projects that will benefit GovGuam conservation areas and the local community.
- JRM REPI program staff continued efforts to obtain formal designation of a Guåhan Sentinel Landscape, which would establish a broader framework of collaboration with the US Department of Interior and US Department of Agriculture as well as various non-profit organizations in Guam to support increased conservation and address climate change on Government of Guam and private lands.
- MCBCB conducted full surveys of the Urban Training Complex, beyond that required for development, increasing the Guam-wide knowledge of suitable habitat and distribution of ESA-listed species.
- MCBCB produced with in-house efforts several video and print articles on various listed species conservation work on base to be used for public outreach and education.

**PART I: BIOLOGICAL OPINION 013P1F00-2015-F-0025 OF JULY 31, 2015 (2015 BO)**

**1. General Conservation Measures to Contribute to Recovery of Listed Species**

**Forest Enhancement:** Includes the installation of ungulate fencing, removal of ungulates and invasive plants and outplanting of native plant species on approximately 1,000 acres (ac) in Finegayan. Forest enhancement must begin commensurate with the amount of recovery habitat cleared by the Department of Navy (DON) related projects.

*Note: The 2017 BO later clarifies that the forest enhancement program will require at least a 30-year effort and that the timeline of initiation of individual forest enhancement projects will be based on the construction program timeline as Military Construction (MILCON) funds for conservation measures become available through MILCON project awards (construction phase completion is anticipated by early 2030s).*

**Conservation Measure Implementation:** As of September 30, 2023, the total clearing associated with Guam Micronesian kingfisher and Mariana fruit bat recovery habitat is approximately 690 ac (279 hectares [ha]). An overall map is provided as Attachment 1.

Commensurate forest enhancement began and made substantial progress with the October 2021 completion of ungulate fences and ungulate eradication within 679 ac of the North Finegayan FES (now known as the Caiguat FES), laying the foundation for ongoing native species outplanting and invasive plant removal.

The DON has continued invasive plant removal work, performing mechanical and chemical removal of *Antigonon leptopus* and *Mimosa diplotricha* in the Caiguat (north of main cantonment) and Taguac (south of main cantonment) areas of the MCBCB FES. Following planning and review of on-site conditions, contracts for the propagation, planting, and establishment of dominant and rare native limestone forest species in the southern Caiguat forest enhancement site was awarded in September 2023.

**Impacts of Typhoon Mawar and Recovery Actions:** Typhoon Mawar passed through Northern Guam as a Category 4-equivalent typhoon bringing destructive hurricane-force winds and heavy rain. Mawar was the strongest storm to affect the island since Typhoon Pongsona in 2002. Post-typhoon damage assessment of the forest enhancement and ungulate exclusion sites have been conducted, showing widespread ungulate fence breaches that require repair and re-eradication. Typhoon-related fence repair/re-installation and ungulate re-eradication were procured as a high priority and projects were awarded at end of FY23 and are expected to begin in early FY24.

**a. Guam *Serianthes nelsonii* Adult Tree:** Includes repair and maintenance ungulate exclusion fencing around the adult *Serianthes* tree at Northwest Field (NWF) to protect it from ungulates as well as outplanting of 30 individuals of *Serianthes nelsonii* and access to the *Serianthes* adult tree at NWF for seed collection and seedling rescue. Additionally, fencing and eradication within the overall Mason Live Fire Training Complex (LFTRC) provides secondary ungulate protection to the adult *Serianthes* tree and surrounding habitat.

The 2015 BO included a conservation measure to “ensure that seeds from the Guam adult *Serianthes* tree will be collected by entities specified on recovery permits, provide storage for these seeds, and provide funds for *Serianthes* seed viability testing.”

Conservation Measure Implementation: In March of 2022, 4.1 miles of ungulate fence installation was completed at NWF enclosing and protecting 382 ac of habitat and active ungulate removal is ongoing.

In FY23, a cooperative agreement was awarded to the University of Guam (UoG) to conduct maintenance and monitoring of the mature *Serianthes nelsonii* tree. UoG provided 199 *Serianthes nelsonii* seeds to the Navy from the storage lab for propagation purposes at the MCBCB plant nursery. Of the 199 seeds, twenty-seven propagules have been outplanted at the Caguat FES in FY23 with the remaining 98 propagules to be outplanted in FY24, with the intent to propagate as many as necessary to maintain a minimum of 30 healthy individuals to maturity.

With the completion of the LFTRC ranges in FY23, access to the area that includes the *Serianthes* tree is now managed by MCBCB. Future requests for access to the *Serianthes* adult tree for future seed collection and seedling rescue will be coordinated through MCBCB.

**b. Brown Tree Snake (BTS) Control and Suppression:** Includes implementation of projects in the collaboratively developed BTS Technical Working Group Strategic Plan and installation of BTS barriers.

Conservation Measure Implementation: In accordance with the BO requirement for BTS control and suppression project implementation for 10 years starting from main cantonment construction, JRM has continued to support selected projects identified as priorities in the BTS Technical Working Group Strategic Plan. BTS project funding support specifically from the Marine Corps Relocation began as early as FY13, which is well ahead of main cantonment construction award in August 2017. Prior DON funding supported projects such as artificial bait development, trial eradication of BTS via aerial toxicants, aerial toxicant bait manufacturing improvements, experimental full-scale landscape BTS suppression via aerial toxicants, bait tube trapping and dose improvements, optimized low-density BTS monitoring tools, refurbishment of the USGS BTS Closed Population facility BTS exclusion fence, and fenced/unfenced landscape-scale BTS eradication efficacy studies.

The BO requirement to build a 160 ac BTS exclusion unit was dependent on the DON determination of success of experimental landscape scale BTS suppression activities at the Habitat Management Unit (HMU) near Potts Junction in Dededo. Although the HMU BTS landscape-level suppression success has not been fully evaluated, the DON initiated in FY23 the design and construction of the minimum 160ac multi-species barrier identified in the BO to provide the capability to control BTS, rats, and cats in the Taguac FES in addition to ungulates. The 160ac multi-species barrier construction project was awarded September 19, 2023.

## 2. Conservation Measures to Minimize the Effects of Construction

**a. Contractor Education Program:** Ensure that construction contractor personnel are informed of the biological resources in the project area, including invasive species, special status species, avoidance measures, and reporting requirements.

Conservation Measure Implementation: MCBCB staff provided training to all contractor personnel for all 41 active projects in FY23.

**b. Contractor Plans and Specifications:** Construction will occur within the limits of construction shown in the plans and specifications.

Conservation Measure Implementation: Construction contracts have language included in the Unified Facilities Guide Specifications, under Temporary Environmental Controls SECTION 01 57 19 TEMPORARY ENVIRONMENTAL CONTROL 1.6.1 Preconstruction Survey and Protection of Features, to require the construction contractor to stay within the limits of construction.

In FY23, there have been two non-compliance notices issued by the Navy to project contractors for two projects at the Urban Training Complex (formerly Andersen South) and the Multi-purpose Machine Gun Range (MPMG, largest range under construction at Ritidian Point) where impacts of construction went outside the project limits. The corrective action plans require restoration of damaged vegetation and maintenance and monitoring of restored habitat.

The incident at the Urban Training Complex (J-755 project) involved incursion into disturbed forest habitat that damaged one *Meiogyne cylindrocarpa* tree outside of the project limits. No ESA-listed species were impacted. The contractor began restoration efforts in FY23, including the planting of two native trees, and one year of maintenance and monitoring.

The incident at the MPMG range (P-735 project) was reported to FWS via email on September 19, 2023, and involved sediment runoff outside of project limits from inclement weather. Stormwater overflow resulted in approximately 0.16-ac of forest impacted by sediment runoff, some of which settled in approximately 0.04-ac of the *Serianthes* enclosure, leading to the mortality of five seedlings and leaving behind a dense layer of sediment on 33 other seedlings. The P-735 project contractor acknowledged responsibility for developing a corrective action plan on September 23, 2023, to include retaining UoG Guam Plant Extinction Prevention Program (GPEPP) personnel for the assessment and restoration of potentially up to 38 seedlings with a sufficient period of maintenance to ensure survival and health after outplanting.

Impacts of Typhoon Mawar and Recovery Actions: In May of 2023, typhoon Mawar passed through Northern Guam as a Category 4-equivalent typhoon, bringing hurricane-force winds and heavy rain. The typhoon's impact resulted in construction shipping containers from adjacent construction project sites being blown by strong winds into FES. All shipping containers blown from the typhoon into the FES were removed.

The mature *Serianthes* tree was directly impacted by the typhoon. The canopy, consisting of two branches, snapped, leaving only a 15-foot trunk standing. On June 7, 2023, UoG GPEPP provided a clean cut where the branches were snapped to the reduce potential of disease and rot. The USFWS was notified of the full typhoon damage assessment and stabilization actions on August 28, 2023.

At the MPMG range construction (P-735 project), aggregate eroded outside of the project limits due to scouring by typhoon-driven flooding, impacting approximately 0.15-ac of adjacent forest outside the project limits. No ESA-listed species were impacted. Hand removal of the eroded aggregate is ongoing by the MPMG construction contractor.

At the Water Well Field construction (P-103 project), trees felled by typhoon winds encroached into the construction footprint and were found to contain seventy-four (74) *T. guamense* and two (2) *B. guamense* orchids. MCBCB voluntarily salvaged the orchids from the construction footprint as part of post-disaster recovery actions with in-house staff. In September 2023, MCBCB awarded the outplanting and maintenance contract for care and translocation of the salvaged individuals by end of FY23.

**c. Pre-construction Surveys for the Mariana Fruit Bat:** For projects within or in the vicinity of suitable fruit bat habitat, surveys following the USFWS-approved Joint Region Marianas (JRM) protocol will be conducted one week prior to the onset of work.

Conservation Measure Implementation: To further minimize potential impacts to Mariana fruit bats, MCBCB provides natural resources awareness training to all contractor and DON personnel working within proposed action footprint. Natural resource awareness training aids in the identification of Mariana fruit bats in the field and provides information on reporting protocols for sightings of Mariana fruit bats.

In FY23, MCBCB staff conducted fruit bat surveys prior to vegetation clearing for three construction projects and one cycad outplanting project in the FES. No fruit bats were observed during surveys.

**d. Guam Landscaping Guidelines:** Native or non-invasive species will be planted in all new landscapes.

Conservation Measure Implementation: Guam Landscaping Guidelines are included in all construction specifications awarded to date. The latest revision was distributed to all nurseries on Guam in October 2022 to support the use of native and non-invasive plants in landscaping MCBCB facilities. The Guam Landscaping Guidelines promotes the use of at least 50% native plants in project landscaping plans.

MCBCB staff ensured all landscaping actions associated with 41 projects in FY23 followed the Guam Landscaping Guidelines.

**e. LFTRC Range Berm Controls:** LFTRC range berms will contain native or non-invasive herbaceous vegetation, and other engineering controls.

Conservation Measure Implementation: Clearing and grubbing of the range footprint for all five ranges has been completed. The berms associated with the LFTRC, containing, the four small arms ranges, now have a naturally occurring mix of native and non-native vegetation growth that will require routine grounds maintenance for weed removal. The MPMG range is still under construction.

A contract to further promote native species via the outplanting of butterfly host plants on the MPMG berm was awarded in FY23 and a contract for the remaining four LFTRC berms is planned for award in FY24.

**f. Lighting Installation:** Hooded lights will be used to the maximum extent practicable at all new roads and facilities within fruit bat roost areas.

Conservation Measure Implementation: There are no known fruit bat roost areas in areas where new roads and facilities have been constructed. Hooded lights have been installed at four of the five ranges within the LFTRC. The fifth range is still under construction.

**g. Monitoring Construction Contractors:** The DON will be responsible for oversight of avoidance, minimization, and conservation measure implementation by the contractors for projects associated with the proposed action.

Conservation Measure Implementation: Oversight for BO compliance was completed by MCBCB staff for all active construction projects. MCBCB staff performed inspections of construction equipment and supplies to ensure they are free of invasive species. MCBCB staff inspected all 41 active project sites to ensure impacts to listed species are avoided and impact to their habitats did not occur outside of the designated project footprints.

### **3. Conservation Measures to Minimize the Effects of Invasive Species:**

**a. Onsite Vegetation Waste Management:** Green waste is handled by the contractors at designated laydown areas within the limits of construction. Contractors are required to divert all green waste from disposal. The larger-sized green waste, consisting of trees and stumps, is processed into mulch, while smaller-sized green waste is processed into compost.

Conservation Measure Implementation: Onsite vegetation waste management procedures are included in all construction specifications awarded to date. All green waste generated has been re-used on-site as mulch or compost.

**b. DON's Final Guam Landscaping Guidelines:** The DON has developed a manual providing landscaping design guidelines specific to appropriate plant selection and establishment for all the DON construction activities on Guam.

Conservation Measure Implementation: Guam Landscaping Guidelines are included in all construction specifications awarded to date. The most recent revision was distributed to all nurseries on Guam in October 2022 to support the use of native and non-invasive plants in landscaping MCBCB facilities.

Oversight for BO compliance, including Guam Landscaping Guidelines implementation, was completed by MCBCB staff for all active construction projects.

**c. Biosecurity Outreach and Education:** The DON has initiated, and will continue to implement, a targeted, comprehensive biosecurity outreach and education program for Department of Defense (DoD) and civilian populations. These biosecurity programs focus on prevention. The goal of the biosecurity program is to minimize the effects of invasive species through awareness and outreach to educate individuals on prevention practices. The biosecurity program also addresses invasive species pathways and management techniques.

Conservation Measure Implementation: In FY23, the outreach and education project used TV, radio and social media platforms. Social media efforts exceeded contract requirements. The 30-second public service announcements (PSA) were 101% of contractually required views (355,779 views). The 15-second PSA resulted in 103% of required views (622,353 views).

The DON continued collaboration with Government of Guam's Department of Agriculture (DoAG) Biosecurity Division linking social media ads to DoAG's homepage.

**d. Hazard Analysis Critical Control Point (HACCP) Planning:** HACCP planning is a pathway management tool that provides a comprehensive method to identify risk and focus procedures to prevent spread of species at critical control points along transportation pathways.

Conservation Measure Implementation: All construction contracts contain a requirement to develop a HACCP Plan, which will identify risks and potential pathways for non-native species and will outline procedures for controlling and removing risks identified.

Monthly natural resources inspections were conducted by MCBCB personnel in FY23. HACCP programs have been implemented across all 41 active projects.

**e. Monitoring to Evaluate the Effectiveness of HACCP:** To document the effectiveness of the HACCP implementation at construction sites, the DON has developed and implemented a long-term monitoring program for terrestrial vegetation. If new non-native, invasive plant species are detected, the DON will notify the USFWS and will develop and implement an eradication plan or control effort to prevent infestation.

Conservation Measure Implementation: The requirement to evaluate effectiveness of HACCP has been included in Unified Facilities Guide Specifications under Supplemental Temporary Environmental Controls DPRI Section 01 57 19.04 3.1.4 Biosecurity.

Ongoing construction activities are implementing their approved HACCP plans. No new non-native invasive plant species were detected in FY23 as a result of construction activities.

**f. Brown tree snake Interdiction:** The DON has committed to funding any increase of current federally funded BTS interdiction measures (in Guam, CNMI and Hawaii) where the increase is related to direct, indirect, and induced growth caused by the Marine Corps relocation to Guam.

Conservation Measure Implementation: The DON coordinates regularly with the US Department of Agriculture (USDA) and the USFWS to assess BTS interdiction cost increases. As of September 30, 2023, there has been no measurable increase in interdiction costs according to USDA associated with the Marine Corps relocation.

**g. Coordination with U.S. Geological Survey (USGS) on BTS:** The DON will ensure through briefings or information packages that the personnel using the LFTRC know the importance of the USGS facility and the critical importance of maintaining the integrity of the Closed Population Facility fence. Procedures developed as part of the MCBCB Range Regulations for the LFTRC will ensure range user awareness of protection requirements and that USGS will be immediately notified in the event that the fence is accidentally damaged so the fence can be quickly repaired.

Conservation Measure Implementation: MCBCB has developed maps in support of MCBCB Range Regulations that delineate the USGS-operated research facility as an “off-limits” area of the LFTRC. USGS personnel have coordinated with MCBCB Range Control regarding the importance of the USGS research facility, including schedule of activities that maintain the integrity of the facility fence line.

#### **4. Conservation Measures to Minimize the Effects of Fire**

**a. Fire Management:** Fire management is a key component of range management. The Fire Management Plan will be finalized for the LFTRC prior to operation of the first range at the LFTRC.

Conservation Measure Implementation: In September of 2023, USFWS concurred with the June 2023 version of the Integrated Wildland Fire Management Plan (IWFMP). The June 2023 IWFMP was based on comments received from USFWS in July of 2022. The June 2023 IWFMP is the “final” and will be incorporated into the MCBCB Range Regulations for implementation prior to start of range operations.

#### **5. Conservation Measures Addressed under Part IV.**

#### **6. Other Actions Considered for Analysis**

a. **Guam Micronesian Kingfisher (GMK) Memorandum of Agreement (MOA):**

Since the signing of the GMK MOA in 2015, the DON has funded a number of projects in support of the MOA objectives, including brown tree snake eradication trials, allocating funds for staffing, and planning and compliance activities in support of management actions. In addition, in recognition of the need for long-term planning guidance, the DON awarded the 10-Year GMK MOA Implementation Plan project in FY17, which serves as a foundational reference for cooperative investment and risk management planning that the DON and FWS has relied upon, in conjunction with annual BTS research updates and discussions held with BTS Technical Working Group.

In FY23, the DON coordinated with the Marianas team of the USFWS to discuss projects. The consensus was to continue to fund three BTS suppression and control studies for fenced (i.e., BTS exclusion) and unfenced landscapes. The projects funded in FY23 are: (1) BTS bait procurement/automated delivery system operations and monitoring, (2) multi-tool BTS management/monitoring /analysis, and (3) BTS telemetry/monitoring/analysis.

7. **Terms and Conditions:** Terms and Conditions from the 2015 BO are superseded by the 2017 BO amendment.

**PART II: BIOLOGICAL OPINION 01EPIF00-2016-F-0185 OF JULY 19, 2017 (2017 BO)**

**1. General Conservation Measures to Contribute to Recovery of Listed Species**

a. **Fencing of the Haputo Ecological Reserve Area (ERA) Access Trail, Signage, and Education:** The fencing will prevent overuse by military and civilian personnel and potential damage to terrestrial biological resources within the ERA.

Conservation Measure Implementation: Ungulate fencing of the southern half of the Haputo ERA was completed in FY22, while northern section fence is ongoing. Educational materials have not been developed to date because the Haputo ERA is closed for safety concerns to military and civilian personnel. Educational materials will be developed prior to the re-opening of Haputo ERA, after safety concerns are addressed.

Impacts of Typhoon Mawar and Recovery Actions: Immediately after Typhoon Mawar, damage assessments were completed, recording substantial damage to trail, signage and fencing. The contract for fence and signage repair and replacement was awarded September 14, 2023.

b. **Pre-construction Survey, General Listed Plant Salvage and Translocation:** The DON will conduct pre-construction surveys to identify all listed plant species prior to the commencement of construction activities. If pre-construction surveys identify a listed plant species present in the construction area and the individuals cannot be avoided or translocated, then healthy plant material will be salvaged or available seeds will be collected, and such material will be housed in the native plant nursery or directly transplanted into protected habitat or forest enhancement sites.

Conservation Measure Implementation: In FY23 the DON conducted pre-construction surveys for eleven construction projects to identify all listed plant species prior to the commencement of construction activities. This effort resulted in the salvage and translocation of listed species on two projects: the Multi-Purpose Machine Gun Range and the Water Wells projects.

**c. Native Plant Nursery:** The native plant nursery was developed for the storage and propagation of native and listed plant species associated with the proposed action.

Conservation Measure Implementation: The nursery has been receiving plant material for propagation and ultimate transplanting into forest enhancement areas since 2019. The native plant nursery collected over 83,098 seeds from 31 native plant species. As of September 30, 2023, 941 *Tabernaemontana rotensis* and 15 *Heritiera longipetiolata* have been transplanted into the forest enhancement area. Maintenance and monitoring of the outplanted *Tabernaemontana rotensis* and *Heritiera longipetiolata* plants are ongoing. In FY23, 2,500 host plants for the Mariana Eight Spot Butterfly, 1,101 *Elatostema calcareum* and 1,399 *Procris pedunculata*, were prepared for outplanting in the FES. These plants were propagated from cuttings collected on various construction sites. A new native plant nursery contract was awarded in FY23.

Impacts of Typhoon Mawar and Recovery Actions: The MCBCB nursery sustained major typhoon damage, but in-house pre-storm preparation resulted in minimal loss of listed plant species (*Cycas micronesica*) and butterfly host plants. As a result of the typhoon, there were eight *Cycas micronesica* mortalities documented in the nursery. MCBCB completed temporary repairs of nursery irrigation systems with volunteer labor immediately after the storm.

**c. Authorized Biologist Qualifications and Propagation/Translocation**

**Authorization Process:** Prior to commencing transplantation of the listed species the DON shall submit a statement of qualifications for potential biologists to the USFWS.

Conservation Measure Implementation: No requests for new authorized biologists were submitted this fiscal year. All on-going projects have previously approved authorized biologists.

**d. Annual Reporting of Conservation Measures:** The authorized biologist shall record each observation of each species handled in an annual monitoring report.

Conservation Measure Implementation: All authorized biologists will report in FY24 annual monitoring reports to FWS all species they have handled in support of three projects initiated in FY23 pursuant to agreement with FWS.

**e. Avoidance of Listed Orchid Species in Small Location at Finegayan:** The DON will not construct within the area designated as “No Construction Area” within the main cantonment because the location is not suitable for construction, as it serves as habitat for a large number of ESA-listed orchids. The area is known to contain approximately 816 *T. guamense* and one *D. guamense* orchids.

Conservation Measure Implementation: No construction has occurred within the area.

**f. Forest Enhancement Sites, Ungulate Eradication Areas and BTS Exclusion Fences:** This conservation measure contributes to the recovery of listed species within two FES (Caiguat and South Finegayan), the NWF Ungulate Control Area, and through the installation of two BTS exclusion fences (north unit and south unit).

Conservation Measure Implementation: Forest enhancement and restoration activities conducted to date include:

1. Identification of forest restoration/enhancement blocks (**Complete**);
2. Mapping the proposed forest restoration/enhancement area boundaries (**Complete**);
3. Installation approvals obtained for specific area of forest to be restored or enhanced and vegetation clearance approach for permanent ungulate fences, access-grid trails, and temporary cross fencing (**Complete**);
4. Obtaining clearance for any ground disturbing activities from Unexploded Ordnance (UXO) specialist (**Ongoing/As Needed**);
5. Performing forest inventory for species density and dominance (**Complete**);
6. Constructing permanent ungulate exclusion fence around perimeter of the enhancement sites. **Completed:** Finegayan forest enhancement site (southern Caiguat forest enhancement site) Phase I ungulate fence installation was completed in FY20. Finegayan forest enhancement site (northern Caiguat forest enhancement site) Phase II ungulate fence installation was completed in FY21. **Ongoing:** The multi-species barrier fence for North Taguac FES will also function as a permanent ungulate exclusion fence. A contract to install ungulate fencing to enclose the South Taguac FES was awarded 14 September 2023;
7. When fencing is complete, begin ungulate removal program. Ungulate removal in Caiguat Phase I was completed in October of 2020. Ungulate removal in Caiguat Phase II was completed in October 2021. Fence damage caused by Mawar will require additional removal and restoration activity in this area as noted above to continue eradication (**Ongoing**);
8. Monitor ungulate removal program. Based on ungulate monitoring results, implement further ungulate control activities to achieve ungulate eradication (**Ongoing**);
9. Identify compatible invasive plant removal tools and native plant species planting palettes to be used for individual work plans for forest enhancement projects. A contract for large scale invasive tree removal and native plant outplanting the first two blocks of the Caiguat FES Phase I was awarded in FY23 (**Ongoing**);

10. Survey for listed species within Caiguat FES Phase I was completed in FY22. Surveys for listed species in North Taguac FES was completed in February 2023. Surveys for listed species in Caiguat FES Phase II and South Taguac FES are ongoing. Surveys for listed species are required for avoidance during intrusive work such as excavation for outplanting, irrigation line placement, ungulate net barriers, and establishment of maintenance trails **(Ongoing)**;
11. Although planting during the wet seasons is preferred, irrigation is required for flexibility to perform forest enhancement work during the dry season or during a wet season with less-than-anticipated average rainfall. Prior to outplanting, installation of irrigation lines and access paths to facilitate outplanting and invasive plant control were installed in Caiguat FES Phase I in FY23. Damage to this infrastructure occurred during Typhoon Mawar and a contract to restore the lines and paths was awarded in FY23. Installation of irrigation lines and access paths for Caiguat FES Phase 2 will begin in FY24. A contract for large scale invasive tree removal and native plant outplanting the first two blocks of the Caiguat FES Phase I was awarded in FY23. A contract to provide water to support outplanting in Caiguat and Taguac FES will be awarded FY24 **(Ongoing)**;
12. Conduct vegetation and ungulate monitoring, repair fencing, implement further ungulate removal activities, invasive plant removal and outplanting. A contract to provide irrigation water to support outplanting in Caiguat and Taguac FES will be awarded early FY24. A contract for fencing repairs was awarded in FY23. A contract for large scale invasive tree removal and native plant outplanting the first two blocks of the Caiguat FES Phase I was awarded in FY23 **(Ongoing)**; and
13. If a typhoon occurs during the forest enhancement process, fences will be inspected, repaired and if fences have been breached, conduct necessary ungulate control. A damage assessment was completed immediately after Typhoon Mawar. Ungulate fence repair/re-installation and re-eradication was awarded September 14, 2023 **(Ongoing)**.

**g. Brown tree snake Exclusion Fences:**

Conservation Measure Implementation: Addressed in Part I, item 1.d.

**h. Northwest Field Ungulate Control Area:** Construct an ungulate exclusion fence to exclude feral ungulates from the LFTRC in NWF.

Conservation Measure Implementation: At the Mason LFTRC, 4.1 miles of ungulate exclusion fence installation was completed in March 2022. The ungulate fence and follow-on eradication will exclude ungulates from a total of approximately 382 ac of ESA-listed species habitat: 218 ac (88.2 ha), 66.7 ac (27.0 ha), and 97.1 ac (39.3 ha) of primary limestone forest, secondary limestone forest, and herbaceous scrub, respectively. Following pig collaring for tracking completed in July 2022, ungulate removal continues in the area with 61 pigs and 297 deer removed as of September 2023.

Impacts of Typhoon Mawar and Recovery Actions: Ungulate fence repair/re-installation and continued eradication was awarded in FY23.

## 2. Conservation Measures for Specific Species

**a. Mariana Eight-Spot Butterfly:** The DON will conduct pre-construction surveys to identify any stages of the Mariana eight-spot butterfly prior to the commencement of construction activities. If any life stage of the Mariana eight-spot butterfly is located within a project footprint, it will be relocated onto an appropriate host plant within similar sites away from the project footprint. In addition, DON will plant the Mariana eight-spot butterfly host plants (*P. pedunculata* and *E. calcareum*) within the forest enhancement sites and on the backside of the earthen berms of LFTRC ranges.

Conservation Measure Implementation: No pre-construction surveys were required for Mariana eight-spot butterflies during the FY23 reporting period because no vegetation removal occurred within butterfly habitat. Prior pre-construction surveys of the MPMG project footprint were conducted in October of 2021. Salvage and translocation of Mariana eight-spot butterflies and removal and treatment of their host plants from the project footprint was completed on 26 to 28 October 2021. A total of 231 Mariana eight-spot butterfly life stages were salvaged from 16 salvage sites (210 eggs, 8 larvae, and 23 chrysalises).

In FY23, no Mariana eight-spot butterfly host plants (*P. pedunculata* and *E. calcareum*) were planted on the backside of the earthen berms of LFTRC or MPMG ranges. Neither site is currently suitable for transplanting because ungulate eradication is still in progress. However, in preparation for the planned translocation, the DON has continued to move forward with the contract preparation for transplanting of butterfly host plants on the completed LFTRC berms, with anticipated award early FY24. A contract was awarded for the MPMG berm in FY23. In FY23, MCBCB outplanted over 800 butterfly host plants in the Caguat Forest Enhancement Site (Finegayan FES).

**b. Guam Tree Snails [Guam fragile and humped tree snail]:** Pre-construction surveys will be conducted to identify any Guam tree snail, fragile tree snail, or humped tree snail within the project footprint prior to the commencement of construction activities. If any listed snail is found, the authorized biologist will translocate the listed snail away from the project footprint and into suitable habitat.

Conservation Measure Implementation: No tree snails were translocated in FY23 as none were identified within project footprints during the reporting period.

**c. Mariana Fruit Bat:** Surveys following the USFWS-recommended JRM protocol will be conducted one week prior to the onset of work.

Conservation Measure Implementation: To further minimize potential impacts to Mariana fruit bats, MCBCB provides natural resources awareness training to all contractor and DON personnel working within 41 active projects. Natural resource awareness training aids in the identification of Mariana fruit bat in the field and provides information on reporting protocols for sightings of Mariana fruit bat.

In FY23, MCBCB staff conducted fruit bat surveys prior to vegetation clearing for three construction projects and one FES outplanting project. No fruit bats were observed during surveys.

**d. Listed Plant Species:** Healthy listed plants located within a project footprint will be transplanted into FES or other suitable protected areas (e.g., NWF Ungulate Control Area) prior to clearing. Transplanted plants will be maintained and monitored for a minimum of 12 months.

Conservation Measure Implementation: Plants that were salvaged in FY23 and/or are still being maintained and monitored are listed in Table 1. Plants that have completed their maintenance and monitoring period are listed in Table 2. All plants have exceeded the minimum success criteria of 50% identified by DON as a conservation measure.

**Table 1. Plants salvaged and currently being maintained and monitored.**

Species	# of individuals identified in pre-construction surveys	# individuals being maintained and monitored
<i>Cycas micronesica</i>	1600	681
<i>Heritiera longipetiolata</i>	7	29
<i>Serianthes nelsonii</i>	0	125
<i>Tabernaemontana rotensis</i>	204	941

**Table 2. Plants that have completed maintenance and monitoring and percent survival.**

Species	# Salvaged	# Alive	# Dead	% Survival
<i>Bulbophyllum guamense</i>	173	143	30	83%
<i>Cycas micronesica</i>	33	26	7	79%
<i>Dendrobium guamense</i>	46	44	2	96%
<i>Tuberolabium guamense</i>	9267	6514	2753	70%

**3. Conservation Measures to Minimize the Effects of Construction:** Addressed under the response for the July 31, 2015 Biological Opinion on the Department of the Navy’s Relocation of U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam. See Part I, Paragraph 2 of this report.

**4. Conservation Measures to Minimize the Effects of Invasive Species:** Addressed under the response for the July 31, 2015 Biological Opinion on the Department of the Navy’s Relocation of U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam. See Part I, Paragraph 3 of this report.

**5. Conservation Measures to Minimize the Effects of Fire:** Addressed under the response for the July 31, 2015 Biological Opinion on the Department of the Navy’s Relocation of U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam. See Part I, Paragraph 4 of this report.

**6. Conservation Measures to Minimize the Effects of Training**

**a. & b.** Addressed in Part IV.

**c. Designated No Wildlife Disturbance Areas:** To date there has been no Marine Corps specific training. The DON will ensure that military training units work in close coordination with JRM MITT to clearly define authorized training restrictions, and where appropriate, designate No Wildlife Disturbance (NWD) areas or other designations to prohibit training in sensitive sites. The DON will work closely with DON biologists to identify new areas appropriate for designation as ‘No Wildlife Disturbance’ consistent with USMC combat readiness and training requirements.

**7. Terms and Conditions:**

**a. T&C 1 – Implementation of Conservation Measures:** Addressed in Parts I and II of this report.

**b. T&C 2 – Minimization of the level of incidental take of the Mariana fruit bat, Mariana eight-spot butterfly, Guam tree snail, humped tree snail, and fragile tree snail:**

T&C Implementation: [2.a] On February 27, 2020, the DON requested clarification of this T&C. USFWS responded on March 27, 2020, agreeing with the following clarification regarding the implementation of Term and Condition 2.a. of the 2017 Re-initiation (page 143):

“In areas where noise, light or human activity from construction of the proposed action would result in excessive noise, light or human activity above the ambient level, construction contractor personnel will be required to survey within line of sight (up to 150 m) of construction activities for bats prior to the start of a day's construction activities. Construction work generating noise, light or human activity above the ambient levels will be postponed until the bat(s) has left the area. The construction contractor will document bat surveys in the daily logs.”

In FY23, MCBCB staff conducted fruit bat surveys prior to vegetation clearing for three construction and one outplanting project. No fruit bats were observed during surveys.

[2.b] Hooded lighting is being planned for actions within 482 ft (150 m) of all potential Mariana fruit bat roost habitat. Hooded lights have been installed at four of the five ranges within the LFTRC. The fifth range (MPMG) is still under construction.

[2.c] Educational materials regarding Mariana fruit bat appearance, behavior, and biology have been provided to all pertinent DON personnel so that they can correctly identify any Mariana fruit bats near or within the action construction and operation area.

[2.d] There have been no changes to noise contour as it relates to the action; and, to date, no Mariana fruit bat habitat has been subjected to increased noise levels from aircraft operations. Quarterly fruit bat monitoring for maternity colonies began in FY23 to survey occurrence in areas of concern one year prior to full range and aircraft operations anticipated in calendar year 2025. No maternity colonies were observed in FY23 for LFTRC and aircraft noise-affected areas.

[2.e] There have been no changes to noise contour as it relates to the action; and, to date, no Mariana fruit bat habitat has been subjected to increased noise levels from aircraft operations. Quarterly fruit bat monitoring for roosting sites began in FY23 to functionally capture fruit bat occurrence in areas of concern one year prior to full range and aircraft operations anticipated in calendar year 2025. No roosting sites were observed in FY23 for LFTRC and aircraft noise-affected areas.

[2.f] Noise study at GNWR: The construction contract for the MPMG range was awarded on September 28, 2021. The range is still under construction therefore, operations have not started, and no noise studies at the Guam National Wildlife Refuge and Ritidian Point have been initiated.

[2.g] Snail surveys at Andersen South (now MCBCB Urban Training Complex) were completed in 2020.

[2.h] MCBCB awarded a contract in FY23 for follow-on fieldwork for annual butterfly and host plants biological survey that began in September 2023. The prior fieldwork in FY22 was a twelve month, bi-weekly monitoring of the translocated Mariana eight-spot butterfly life stages that concluded on October 31, 2022. The original FY21 salvage and translocation of Mariana eight-spot butterflies and removal and treatment of host plants from the project footprint of the MPMG was completed on 26 to 28 October 2021. A total of 231 Mariana eight-spot butterfly life stages were salvaged from 16 salvage sites (210 eggs, 8 larvae, and 23 chrysalises). The earliest translocation of Mariana eight-spot butterflies from the earlier LFTRC project occurred in July of 2018 and were monitored quarterly with all life stages observed.

**c. T&C 3 – LFTRC Fence:** DON shall complete the NWF Ungulate Control Fence within two years of awarding the contract for construction of the portion of the LFTRC that removes the existing Ritidian Ungulate Fence.

T&C Implementation: At the LFTRC, 4.1 miles of ungulate fence installation was completed in March 2022. This completed the fencing identified in the conservation measure and term and condition.

Impacts of Typhoon Mawar and Recovery Actions: Repair and re-installation projects addressing damage to the NWF Ungulate Control Fence were awarded by end of FY23 and shall begin in early FY24.

**d. T&C 4 – NWF Ungulate Control:** NWF Ungulate Control: DON shall remove all ungulates from the NWF Ungulate Control Area within six months after completing the NWF ungulate fence. The NWF area in the BO subject to ungulate control is now referred to as MCBCB LFTRC.

T&C Implementation: The DON committed to removing all ungulates from the ungulate control area within six months after completing the ungulate fence however, eradication is taking longer than anticipated as explosive demolition operations and construction is actively occurring within the fenced area (safety exclusion arcs are projected outside MPMG project) and the removal of ungulates involves the use of firearms, which requires coordination with adjacent activities and range safety officers. Population studies and active removal within the LFTRC is ongoing. In addition, due to the impacts from Typhoon Mawar, temporary ungulate netting was damaged and as a result eradication in areas previously eradicated is still ongoing within the Mason LFTRC.

**e. T&C 5 – Take Monitoring Plan (TMP):**

T&C Implementation: DON completed the TMP on September 19, 2017.

### **PART III: BIOLOGICAL OPINION 01EPIF00-2016-F-0185 OF OCTOBER 30, 2018 (2018 BO AMENDMENT)**

**1. General Conservation Measures to Contribute to the Recovery of Listed Plants**  
Addressed in Part II.1.a.

**2. Pre-construction Surveys, General Listed Plant Salvage and Translocation**  
Addressed in Part II.1.b. The letter dated June 24, 2020 from USFWS acknowledged that Section 10(a)(1)(A) permits are not required to implement the conservation measure. The Department of Interior (DOI) Solicitor clarified the definition of “remove and reduce to possession” of federally listed plants and indicated that because none of the translocations in support of the DON actions would reduce a plant to possession, none of the translocations would violate § 9(a)(2)(B) of the ESA.

**3. Native Plant Nursery**

Addressed in Part II.1.c.

**4. Authorized Biologist Qualifications and Translocation Authorization Process**

Addressed in Part II.1.d.

**5. Annual Reporting of Conservation Measures**

Addressed in Part II.1.e.

**6. Avoidance of Listed Orchid Species in a Small Location of Finegayan**

Addressed in II.1.f.

**7. Forest Enhancement Sites, Ungulate Eradication Areas, and BTS Exclusion Fences:**

Addressed in Part II.1.i

**PART IV. CONSERVATION MEASURES FROM SEPARATE INFORMAL CONSULTATIONS:**

**1. Sea Turtle Lighting Installation, Public Outreach and Coordination and Mariana Swiftlet Aviation and Ground Training in Naval Munitions Site (NMS):**

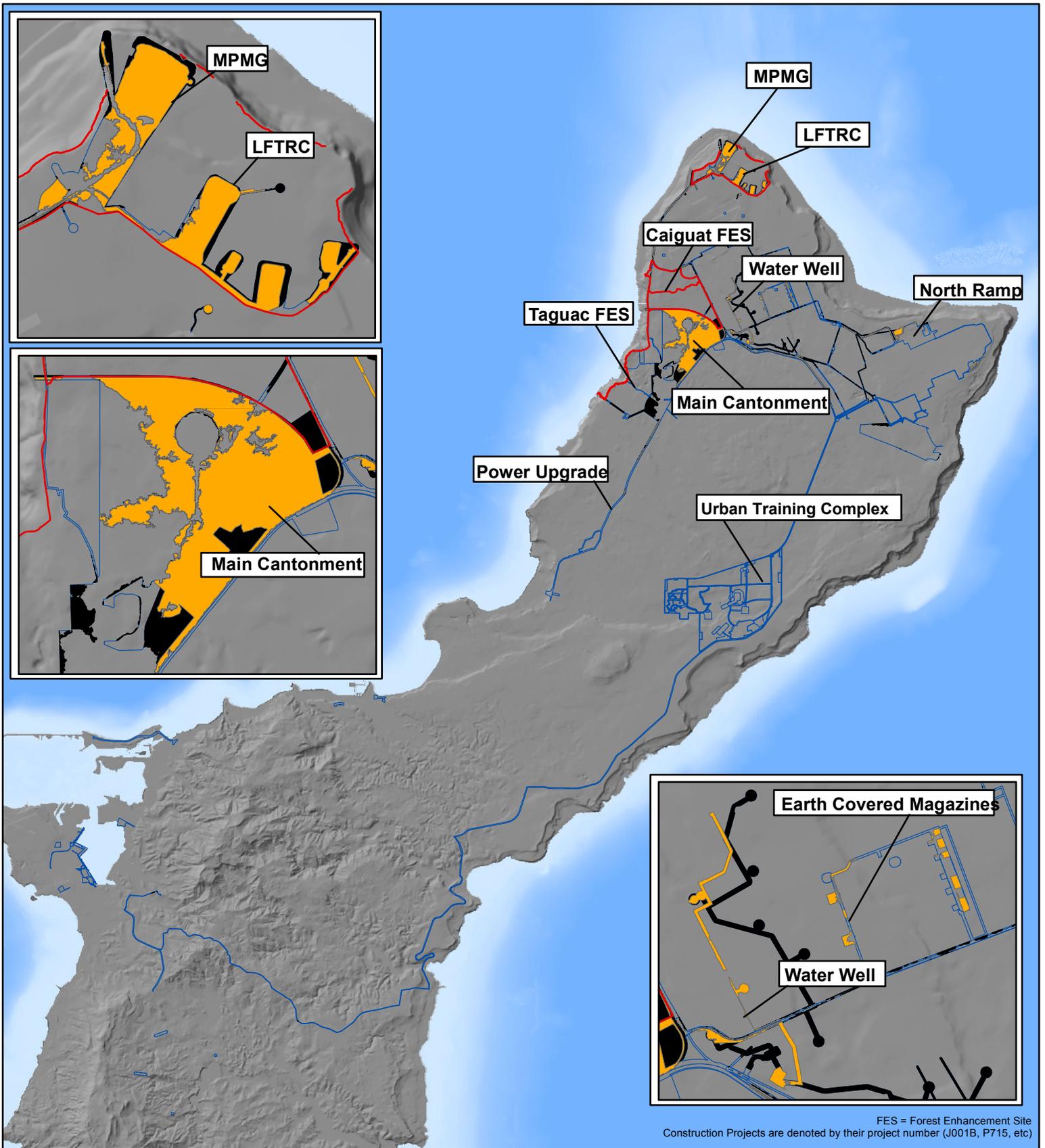
Reporting specific to Mariana swiftlets and sea turtles are not required as these species were addressed through informal consultation. Refer to USFWS letter of March 27, 2020. The conservation measures identified by the DON will be implemented as stated in the informal consultation.

## **APPENDIX I: ON-GOING OR INITIATED CONSTRUCTION PROJECTS**

The following construction projects at MCBCB, Andersen Air Force Base (AAFB), and Naval Base Guam (NBG) were on-going or initiated in FY23:

- 1) H-366/283/375 Andersen House Phase IV, V, & VI, AAFB
- 2) J-001B Utilities and Site Improvements Phase I, MCBCB
- 3) J-006 Apra Medical Clinic, NBG
- 4) J-011 Base Administrative Bldg., MCBCB
- 5) J-014 Physical Training Complex, MCBCB
- 6) J-015 Dining Facility, MCBCB
- 7) J-017 I & III ADNs, MCBCB
- 8) J-017 II Main and Commercial Gate, MCBCB
- 9) J-018 Police Station, MCBCB
- 10) J-023 BOQ A, MCBCB
- 11) J-025 Medical Dental Clinic, MCBCB
- 12) J-031/033 BEQ D and F, MCBCB
- 13) J-032/036/037/038/039 (5-BEQ plex), MCBCB
- 14) J-034 BOQ B, MCBCB
- 15) J-301 Consolidated Headquarters, MCBCB
- 16) J-609 Apra Embarkation Facility, NBG
- 17) J-755 Urban Training Complex, MCBCB
- 18) P-103 Water Wells, AAFB
- 19) P-187 Brown Tree Snake (BTS) Exclusion Barrier South, MCBCB
- 20) P-250/260 MALS Facilities & Corrosion Control Hangar, AAFB
- 21) P-270 Gym/Dining Facility, AAFB
- 22) P-280 Aviation Admin Bldg., AAFB
- 23) P-290 Earth Covered Magazines, AAFB
- 24) P-295 Ordnance Ops., AAFB
- 25) P-296 Ordnance Ops. Admin Facility, AAFB
- 26) P-305 4<sup>th</sup> Marine Regiment Facilities, MCBCB
- 27) P-306 CLB-4 Facilities, MCBCB
- 28) P-307 Consolidated Armory, MCBCB
- 29) P-310 Infantry Battalion Company Headquarters, MCBCB
- 30) P-311 Fuel Station, MCBCB
- 31) P-312/804 Distribution Warehouse/Central Issue Facility, MCBCB
- 32) P-314 Marine Expedition Brigade (MEB) Enablers, MCBCB
- 33) P-317 Fire Station, MCBCB
- 34) P-326 Principal End Item (PEI) Warehouse, MCBCB
- 35) P-459 Bachelor Enlisted Quarters (BEQ), MCBCB
- 36) P-715 LFTRC Known Distance Ranges, MCBCB
- 37) P-735 Multi-Purpose Machine Gun Range, MCBCB
- 38) P-601 Aircraft Hangar, AAFB
- 39) P-802 Base Warehouse, MCBCB
- 40) P-803 Individual Combat Skills Training, MCBCB
- 41) P-871 CBRNE Training, MCBCB

**END OF REPORT**



FES = Forest Enhancement Site  
 Construction Projects are denoted by their project number (J001B, P715, etc)

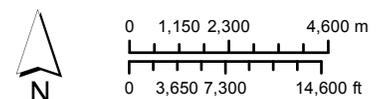
**Legend**

- Ungulate Fence Alignment
- Vegetation Clearing in RH (690ac)
- Recovery Habitat (RH)\*
- Proposed Action

Proposed Action (Acre)	Proposed *	Actual *
	1031	690

**ATTACHMENT 1**

**Construction Projects Completed,  
 On-going or Initiated in FY23**



Map Date: 16 September 2021

Coordinate System: UTM Zone 55 WGS 1984

\* Guam Micronesian Kingfisher and Mariana Fruit Bat Recovery Habitat



FES = Forest Enhancement Site  
 Construction Projects are denoted by their project names

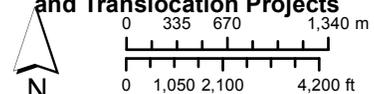
**Legend**

- Mariana eight-spot translocation Area
- T.rotensis and H. longipetiolata Outplanting Area (active)
- C. micronesica Outplanting Area (active)
- S. nelsonii Outplanting Area (active)
- Phase I Blocks
- Access Pathway and Irrigation Lines
- Proposed Action

- Ungulate Fence Alignment
- Mariana eight-spot translocation
- Transplanted Cycads
- Transplanted Ochids
- Transplanted Butterfly Host Plants

**ATTACHMENT 2**

**FES, Salvage, Transplantation, and Translocation Projects**



Map Date: 30 September 2023  
 Coordinate System: UTM Zone 55 WGS 1984