

Draft Environmental Assessment for an Air Tour Management Plan for Hawai'i Volcanoes National Park

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1 PURPOSE AND NEED

1.1 Introduction

The Federal Aviation Administration (FAA) and the National Park Service (NPS) (collectively, the “agencies”) are working together to develop an air tour management plan (ATMP) pursuant to the National Parks Air Tour Management Act of 2000 (the Act) and an Environmental Assessment (EA) for Hawai'i Volcanoes National Park (hereafter referred to as the “Park”). The Act was signed into law on April 5, 2000. The Act applies to all commercial air tour operations over a unit of the National Park System.

The Act requires the FAA, in cooperation with the NPS, to develop an ATMP or Voluntary Agreement for parks and tribal lands where operators have applied to conduct commercial air tours. The Act provided for existing commercial air tour operations occurring at the time the law was enacted to continue until an ATMP for the Park was implemented by expressly requiring the FAA to grant interim operating authority (IOA) to existing operators.^{1, 2} Currently, there are 10 air tour operators conducting air tours over the Park with a combined IOA for 26,664 commercial air tours annually. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator, but does not designate the routes, time-of-day, altitudes, or other conditions for such tours.

The objective of the ATMP, under the Act, is to develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on the Park's natural and cultural resources, Native Hawaiian sacred sites and ceremonial areas, Wilderness character, and visitor experience. The regulations implementing the Act are found in Title 14, Code of Federal Regulations (CFR), Part 136, *Commercial Air Tours and National Parks Air Tour Management* (14 CFR Part 136). This draft EA is being prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code (U.S.C.), 4321 et seq.), Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR Parts 1500-1508), the 2015 FAA 1050.1F Order, *Environmental Impacts: Policies and Procedures*, and NPS NEPA policies and procedures (2015 NPS NEPA Handbook and 2015 NPS NEPA Handbook Supplemental Guidance - *Writing Impact Analysis Sections for EAs and EISs*).

The term commercial air tour operation is defined as any flight conducted for compensation or hire in a powered aircraft, where a purpose of the flight is sightseeing over a park or within ½-

¹ 49 U.S.C. § 40128(c)(2)(A)(i-ii).

² 70 Fed. Reg. 58,778 (Oct. 7, 2005).

mile outside a park's boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (AGL). This area is referred to as the ATMP planning area, see Figure 1.

1.2 Background

On February 14, 2019, Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono filed a petition in the U.S. Court of Appeals for the District of Columbia Circuit requesting that the Court order the agencies to complete ATMPs for seven parks including Hawai'i Volcanoes National Park. On May 1, 2020, the Court granted the petition and ordered the agencies to submit a schedule for bringing 23 eligible parks (based on reported air tour data from 2018) into compliance with the Act within two years or to show specific, concrete reasons why doing so will take longer. Consistent with the Court's order, agencies submitted a proposed plan and schedule (Compliance Plan) on August 31, 2020. On June 21, 2022, the Court ordered the agencies to file a joint supplemental report and propose firm deadlines for bringing each of the parks included in the Compliance Plan into compliance with the Act. On July 21, 2022, the agencies filed their report and provided a deadline of December 31, 2023, to complete the ATMP for the Park.

In order to conduct the planning processes consistent with the Court's decision, the agencies formally terminated longstanding ATMP planning processes for several parks via a September 3, 2020 Federal Register notice.³ The previous planning process for an ATMP for the Park was initiated in 2003. In 2004, the FAA published a notice of the agencies' intent to prepare an environmental assessment for that ATMP.⁴ In 2006, the FAA published a notice of intent to prepare an environmental impact statement for that ATMP.⁵ Due to the passage of the 2012 amendments to the Act, work on the previous planning process was paused until the time it was terminated in order to initiate the current planning process.

On February 28, 2022, the FAA and the NPS initiated a 30-day NEPA public scoping process and put forth four potential alternatives for public and stakeholder review and comment. The comments received were used to further refine or dismiss alternatives as described in this draft

³ Termination of Previously Initiated Processes for the Development of Air Tour Management Plans and Environmental Assessments/Environmental Impact Statements for Various National Park Units and Notice of Intent to Complete Air Tour Management Plans at 23 National Park Units, 85 Fed. Reg. 55,060 (Sept. 3, 2020).

⁴ Environmental Assessments for the Air Tour Management Plan Program at Haleakalā National Park, Hawai'i Volcanoes National Park, Pu'ukoholā Heiau National Historic Site, Kaloko-Honokōhau National Historical Park, Kalaupapa National Historical Park, and Pu'uhonua O Honaunau National Historical Park, 69 Fed. Reg. 9,420 (February 27, 2004).

⁵ Notice of intent to prepare an Environmental Impact Statement (EIS) and initiation of public and agency scoping for the Hawai'i Volcanoes National Park Air Tour Management Plan, 70 Fed. Reg. 44,416 (August 2, 2005).

EA and were also used to inform the environmental analysis. Refer to Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for more information.

1.3 Proposed Action

The proposed action is to implement an ATMP for the Park. The Act defines an ATMP as a plan used to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations upon natural and cultural resources, visitor experiences, and tribal lands. An ATMP describes conditions for the conduct of air tour operations over a park, including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, or other provisions. The Act and implementing regulations found in 14 CFR Part 136 state that the ATMP for a park:

- May prohibit commercial air tour operations over a national park in whole or in part;
- May establish conditions for the conduct of commercial air tour operations, including, but not limited to, commercial air tour routes, maximum number of flights per unit of time, maximum and minimum altitudes, time of day restrictions, restrictions for particular events, and mitigation of noise, visual, or other impacts;
- Shall apply to all commercial air tour operations over a national park or within ½-mile outside the park's boundary;
- Shall include incentives (such as preferred commercial air tour routes and altitudes, relief from caps and curfews) for the adoption of quiet aircraft technology by commercial air tour operators conducting commercial air tour operations at the park;
- Shall provide for the initial allocation of opportunities to conduct commercial air tour operations if the plan includes a limitation on the number of commercial air tour operations for any time period;
- Shall justify and document the need for measures taken pursuant to the items above and include such justifications in the record of decision.

The ATMP will prescribe operating parameters to mitigate impacts from commercial air tours on Park resources. Three alternatives for the Park's ATMP are considered and evaluated in this document.

1.4 Purpose and Need

Purpose: The purpose of the ATMP is to comply with the Act and other applicable laws, consistent with the *Plan and Schedule for Completion of Air Tour Management Plans at Twenty-Three Parks* approved by the U.S. Court of Appeals for the District of Columbia Circuit on November 20, 2020, in Case No. 19-1044, *In Re Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono* (Compliance Plan).

Need: The Act requires an ATMP or voluntary agreement to be developed for the Park. Air tours have the potential to impact natural and cultural resources, Native Hawaiian sacred sites

and ceremonial areas, Wilderness character, and visitor experience. The Act requires that the FAA and the NPS develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on natural and cultural resources, Wilderness character, visitor experience, and Native Hawaiian Traditional Cultural Properties (TCPs) including Native Hawaiian sacred sites and ceremonial areas. In order to address potential impacts from commercial air tours, the agencies have decided to prepare an ATMP for the Park.

1.5 Environmental Impact Categories Not Analyzed in Detail

The following environmental impact categories were considered but not analyzed in detail in this draft EA because:

- the issues do not exist in the analysis area, or would not be affected by the ATMP; or
- the likely impacts are not reasonably expected.

Biological Resources (Fish, Invertebrates and Plants)

The ATMP would not result in ground disturbance or in-water activities that could affect plants, fish or invertebrates. The proposed minimum altitudes included in the alternative under which commercial air tours would be permitted within the ATMP planning area (1,500 to 2,000 ft. AGL) would create sufficient separation between commercial air tours and fish such that impacts are not expected to occur, either directly or indirectly.

Noise from aircraft have been demonstrated to influence the behavior of ecologically significant pollinators and seed dispersers in natural and human altered landscapes (Francis et al., 2012; Gallardo et al., 2021). Specifically, Francis et al. (2012) studied the effect of compressor noise running continuously and generating noise at high amplitudes (greater than 95 decibels at a distance of 1 meter). Within the study, experimental sites were established 125-150 meters from the noise source. Noise exposure had an indirect positive effect on pollination by hummingbirds, but an indirect negative effect on piñon pine seedling establishment by altering the composition of animals preying upon or dispersing seeds. In contrast to the experimental design of this study, commercial air tours do not generate continuous noise, and proposed minimum altitudes in the alternatives in which air tours would be permitted range from 1,500 to 2,000 ft. AGL, which provide much greater spatial separation as compared to the study sites. Therefore, the agencies have determined that noise associated with the ATMP is unlikely to result in impacts to plants or plant pollination.

Native invertebrates in Hawai'i are largely restricted to areas of predominantly native vegetation (Magnacca and Foote, 2006) and insects comprise 87% of the invertebrate fauna of the Park. Many native Hawaiian insects are host-specific, and could be in danger of extirpation because many native Hawaiian host plants are rare or endangered (e.g., Mauna Loa silverswords). These native plant-dependent insects (e.g., *Drosophila*, moths, and

planthoppers) are in turn hosts of native specialist predators and parasitoids (e.g., *Sierola*), which can follow their host into extinction (Fung Associates and SWCA Environmental Consultants, 2019). The proposed altitudes included in the action alternative under which air tours would be permitted within the ATMP planning area (1,500 to 2,000 ft. AGL) create sufficient separation between commercial air tours and invertebrates such that impacts are not expected to occur, either directly or indirectly.

Air tours could result in some effects on air quality, such as emissions or the potential for low-flying aircraft to generate dust, which could indirectly affect plants. While air quality is a topic that is analyzed in detail in this draft EA, the minimum altitudes considered by the alternative in which air tours would be permitted (1,500 to 2,000 ft. AGL) create sufficient separation between plants and aircraft such that it is unlikely that the dust or changes in air quality would have a meaningful effect on plants.

In summary, for these reasons, the agencies have dismissed these environmental impact categories from detailed analysis.

Children's Environmental Health and Safety Risks

The ATMP would not affect products or substances that a child would be likely to come into contact with, ingest, use, or be exposed to, and would not result in environmental health and safety risks that have the potential to lead to a disproportionate health or safety risk to children. Therefore, this environmental impact category has not been analyzed in detail in this draft EA.

Hazardous Materials, Solid Waste, and Pollution Prevention

Applicable FAA air tour regulations include restrictions to protect individuals and property on the ground, and prevent collisions between aircraft, land or water vehicles, and airborne objects. The FAA has issued safety standards for safe air tour operations to reduce the potential for air tour crashes. Even so, there are various circumstances that can lead to an air tour crash or emergency landing, including but not limited to poor weather, pilot error, mechanical failure, or faulty maintenance. The agencies acknowledge that in the unlikely event of an accident, there could be potential impacts to Park resources from associated debris and aircraft fuel. Consistent with 43 CFR 1502.21(c)(1)-(4), the agencies are disclosing that information necessary to analyze site-specific impacts from an air tour crash is not available. The agencies cannot speculate if, where, or when an air tour accident or incident may occur or the degree of Park resource damage.

In order to limit potential impacts to Park resources in the event of an emergency landing inside the Park, once the aircraft has safely landed and any medical or other emergency issues have been addressed, the operator shall immediately notify the Park through Park dispatch of the incident and location. Prior approval from the Park superintendent or designee is required for

the removal or take off of the landed aircraft in order to coordinate joint resources for the safety of visitors and Park resources (36 CFR 2.17). Prior approval from the Park superintendent or designee is required for any non-emergency landing of aircraft within the Park boundaries, including replacement aircraft deployed to retrieve passengers who are not able to exit via ground transportation.

If an air tour crash occurs, the NPS or a cooperating emergency response agency such as Hawai'i County police or fire departments, or the U.S. Coast Guard would respond as soon as possible to provide life-saving search and rescue efforts. If the crash resulted in fire or hazardous materials contamination, responding personnel would attempt to secure the area and control the fire or contain potential contaminants while mitigating impacts to Park resources to the greatest extent possible. The Park's Wildland Fire Management Plan (NPS, 2007) would guide fire response and associated resource protection. Assessment of resource damage, initiation of restoration, and financial compensation sought would be guided by the System Unit Resource Protection Act, 54 U.S.C. § 100721 et seq.

Air tour operators must comply with all applicable federal, state, and local rules and regulations pertaining to the proper storage, handling, and use of hazardous materials. The ATMP would not result in impacts regarding hazardous materials, solid waste, and pollution prevention because it would not 1) violate laws or regulations regarding hazardous materials and/or solid waste management; 2) involve a contaminated site; 3) produce an appreciably different quantity or type of hazardous waste; 4) generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal; 5) exceed local capacity; or 6) adversely affect human health and the environment. Therefore, the ATMP is not expected to result in impacts related to hazardous materials and this environmental impact category has not been analyzed in detail in this draft EA.

Farmlands

The ATMP planning area, as described in Section 2.3, contains soils that are designated as prime/unique farmland soils. However, the ATMP would not involve ground disturbance that would have the potential to convert farmland to non-agricultural uses. Therefore, this environmental impact category has not been analyzed in detail in this draft EA.

Land Use

Land use refers to the general characteristics of how land is allocated among various administrative, preservation, recreational, and development needs. The ATMP would not result in ground-disturbing activities, and commercial air tours would not take off or land within the ATMP planning area. The impacts to land use are not reasonably expected; therefore, land use is not analyzed in detail in this draft EA.

Natural Resources and Energy Supply

Commercial air tours have been ongoing within the ATMP planning area prior to enactment of the Act. The ATMP would not result in the extraction of resources or cause measurable increases in the consumption of energy resources that would exceed available or future supplies of natural or energy resources. Therefore, this environmental impact category is not analyzed in detail in this draft EA.

Visual Effects – Light Emissions

Commercial air tours do not fly at night as it creates safety concerns when flying in areas with little artificial light on the ground surface, and points of interest that could otherwise be seen from an air tour are not visible at night. Any lights from commercial air tour aircraft are not likely to be noticeable. Therefore, light emissions are not expected to occur as a result of the ATMP and this environmental impact category has not been analyzed in detail in this draft EA.

Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Due to the geological substrate which results in a lack of water resources within the Park, including the absence of Wild and Scenic Rivers, absence of ground-disturbing activities, and the proposed altitudes in the alternative that would permit commercial air tours within the ATMP planning area, the ATMP is unlikely to directly or indirectly adversely affect water resources. As noted above in the analysis for Hazardous Materials, Solid Waste, and Pollution Prevention, the agencies are unable to speculate if, where, or when an air tour accident or incident could occur and the Park resource damage that could result, including that related to hazardous material entering water resources within the ATMP planning area. Therefore, water resources are not expected to be impacted as a result of the ATMP and have not been analyzed in detail in this draft EA.

2 ALTERNATIVES

2.1 Alternatives Development

Prior to public scoping, the preliminary alternatives were developed primarily by an NPS interdisciplinary team comprised of subject matter experts from the NPS's Natural Sounds and Night Skies Division, Environmental Quality Division, Pacific West Regional Office, and the Park. In developing the alternatives, the team considered the noise impacts of existing air tour routes and operations, the Park's cultural and natural resources, Native Hawaiian sacred sites and ceremonial areas, the Park's existing and natural acoustic environment, visitor experience, as well as potential protective measures that could be included in an ATMP. The team also considered input received during past ATMP planning efforts and park specific planning and management documents. The alternatives identified by the NPS and justifications for restrictions on commercial air tours were reviewed by the FAA, including the FAA's local Flight Standards District Office (FSDO) who noted any aviation safety concerns.

The agencies also conducted a preliminary environmental analysis earlier in the planning process to identify the appropriate level of NEPA review for a draft ATMP. In 2021, using routes, altitudes, reporting data provided by commercial air tour operators, and other relevant information, the agencies modeled existing air tour conditions over the Park using the FAA's Aviation Environmental Design Tool (AEDT), a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality. This information was then considered, in addition to acoustic monitoring information, and analyzed by the NPS's interdisciplinary planning team. The FAA, in coordination with the NPS, also initiated consultation pursuant to Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 U.S.C §§ 300101 et seq.), including consultation with Native Hawaiian individuals and Native Hawaiian Organizations (NHOs). The input from consultation and preliminary environmental analysis was used to further refine or dismiss potential alternatives prior to the public scoping period. Ultimately, four potential alternatives (No Action Alternative (Alternative 1), Alternative 2 which would not permit air tours within the ATMP planning area, and Alternatives 3 and 4 which would permit limited numbers of air tours in the ATMP planning area on various routes) were released for review and comment during the public scoping period in February 2022. Refer to the public scoping newsletter in Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for details on the alternatives included in public scoping.

As further discussed in Section 2.4, Alternative 1 (No Action Alternative), after the public scoping period, the agencies refined the No Action Alternative to be the three-year average instead of the IOA, recognizing that IOA is not reasonably foreseeable. As a result of the comments received from the February 2022 public scoping period, the agencies also dismissed Public Scoping Alternative 3 from further consideration (see Section 2.2.2, Public Scoping

Alternative 3 for additional details on this dismissal). The FAA and the NPS further refined the time-of-day restrictions, restrictions for particular events, and training and education ATMP elements described in Public Scoping Alternative 4 based on public and stakeholder feedback. There were no changes made to Public Scoping Alternative 1 or 2, no air tours within the ATMP planning area, as shared during public scoping. The three alternatives presented in this draft EA, including the No Action Alternative, represent the refined alternatives following the public scoping period. Refer to Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for additional details on the alternatives that were released for public scoping. Alternatives may be further developed or modified through the NEPA process in response to public, consulting party, and agency comments on this draft EA and draft ATMP.

2.2 Alternatives Considered but Eliminated from Further Study

2.2.1 Air Tours at or above Existing Levels

The agencies considered but eliminated alternatives that would allow air tour operations at or above existing numbers. These alternatives were eliminated from further study because the NPS determined they would result in unacceptable impacts to the Park's natural and cultural resources, Wilderness character, and visitor enjoyment, (NPS Management Policies 1.4.7.1, 2006), and do not meet the purpose and need for the plan.

The NPS determined the existing level of air tours is inconsistent with the Park's purpose and values, as described in its Foundation Document (NPS, 2017), which states:

The purpose of Hawai'i Volcanoes National Park is to protect, study, and provide access to Kīlauea and Mauna Loa, two of the world's most active volcanoes, and perpetuate endemic Hawaiian ecosystems and the traditional Hawaiian culture connected to these landscapes.

The Park's purpose includes perpetuating the traditional Hawaiian cultural connections to the Park's landscapes (NPS, 2017). Noise from the existing level of air tours inhibits the Park's ability to meet this purpose. Noise and visual effects from air tours negatively impact existing Native Hawaiian sacred sites and areas where traditional cultural practices occur within the Park associated with Native Hawaiian people. The NPS Management Policies direct the NPS to avoid adversely affecting the physical integrity of sacred sites to the extent practicable (NPS Management Policies § 5.3.5.3.2, 2006). Additionally, culturally appropriate sounds are important elements of the national park experience in many parks, and therefore, the NPS is directed to "prevent inappropriate or excessive types and levels of sound (noise) from unacceptably impacting the ability of the soundscape to transmit the cultural and historic resource sounds associated with park purposes" (NPS Management Policies § 5.3.1.7, 2006). Native Hawaiians have consistently noted that persistent air tours over the Park unreasonably interfere with Native Hawaiian connections to the Park's sacred areas. Noise and visual

intrusion from air tours also negatively impacts the setting, feeling and association of other historic properties within the Park.

Additionally, existing air tour operations result in frequent and loud noise disruptions in many areas of the Park. Existing air tours over the Park impede the NPS's ability to fully meet the Park's purpose of perpetuating endemic Hawaiian ecosystems and does not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the Park (NPS, 2017). A recent study in Hawai'i documented that loud, frequent helicopter noise results in changes in avian vocalization (Gallardo Cruz et al., 2021). Helicopter noise could detrimentally affect physiology, pairing and breeding success, and territory size of birds by limiting communication between individuals (Habib et al., 2007; Nemeth and Brumm 2010; Halfwerk et al., 2011; Kleist et al., 2018). These effects could have a greater impact on Hawaiian endemics, many of which are federally listed under the Endangered Species Act (ESA) and already face a number of stressors (Atkinson and Lapointe 2009; Pratt and Atkinson, 2009; LaPointe et al., 2010) compared to non-native species. The NPS has determined that the existing level of air tours also diminishes visitor opportunities to learn about and be inspired by Park resources and values and unreasonably interferes with Park programs, activities, the atmosphere of peace and tranquility and the natural soundscapes in Wilderness (see 2006 NPS Management Policies 1.4.7.1). As determined by the NPS, existing air tours repeatedly interrupt and unreasonably interfere with interpretive programs and visitor activities at many sites, including Uēkahuna Bluff, Kīlauea Overlook, Steam Vents, Volcano House, Kīlauea Visitor Center, Kūpina'i Pali, Kīlauea Iki, Devastation, Pu'upua'i, Keanakāko'i, Maunaulu, Puhimau, Kīpukapua'ulu, and Mauna Loa (lookout and trail). Visitor complaints and staff observations indicate that noise from air tours impedes visitors from enjoying and learning about existing Park resources in these and other areas of the Park.

The NPS has determined that the existing air tour operations also unreasonably interfere with the natural soundscape maintained within the Park's four designated Wilderness areas, Mauna Loa, 'Ōla'a, East Rift, and Ka'ū Desert, as well as the eligible (Kahuku) and potential (Great Crack) Wilderness areas (see NPS Management Policies 1.4.7.1). Persistent noise within Wilderness interferes with the opportunity for solitude and detracts from the undeveloped and natural qualities of Wilderness.

Therefore, authorizing commercial air tours at or above the existing level of operations would not meet the objective of an ATMP. The NPS has determined that the existing level of air tours cannot be mitigated to avoid or prevent unacceptable impacts and therefore any alternative that would maintain or increase the existing number of air tours over the Park does not meet the purpose and need for the plan. For all of these reasons, the agencies have considered but dismissed alternatives that would continue air tours at or above existing air tour numbers.

2.2.2 Public Scoping Alternative 3

As noted above, four potential alternatives were released for public comment in February 2022. The public scoping comments ultimately resulted in the dismissal of Public Scoping Alternative 3 (refer to the Public Scoping Newsletter in Appendix J, *Public Scoping Newsletter and Comment Summary Report*, for additional details on this alternative). Specifically, several commenters provided information during public scoping about sensitive resources that would be overflowed by the Northern Route included in that alternative. The NPS considered adjustments to the route which would avoid those sensitive resources, but ultimately found that they were unable to be avoided or minimized by adjusting ATMP route parameters. Therefore, the agencies dismissed Public Scoping Alternative 3 from further consideration because the alternative would not meet the objectives of the ATMP.

2.2.3 Alternatives Authorizing between 1,565 Commercial Air Tours per Year and Existing Conditions

The agencies considered but dismissed alternatives that would authorize fewer air tours than existing conditions but more than the 1,565 annual air tour operations (estimated to be equivalent to five per day on the 313 days when air tours would occur) evaluated in Alternative 3. Based on a preliminary noise modeling analysis, the agencies evaluated a range of daily air tour numbers to determine potential noise impacts to visitor experience, biological resources, Hawaiian cultural connections, and Wilderness character, including the opportunity for solitude and the natural quality of Wilderness. Similar to the description above in Section 2.2.1, these higher numbers of air tours per year would inhibit the NPS's ability to perpetuate traditional Hawaiian cultural connections to the Park's landscapes, impede the NPS's ability to fully meet the Park's purpose of perpetuating endemic Hawaiian ecosystems, and diminish the visitor experience and unreasonably interfere with Park programs, activities, and the atmosphere of peace and tranquility. The agencies also considered whether different routes and a higher number of air tours would meet Park objectives for visitor experience, biological resources and Wilderness protection and found that they would not. The evaluation indicated that daily operations above five per day (on days when air tours would occur) would continue to result in severe noise impacts that would preclude the Park from adequately protecting visitor experience, biological resources, and Wilderness character. Alternatives authorizing air tours above five per day (equivalent to 1,565 air tours per year) were dismissed because the NPS found that the level of impacts to Park resources did not meet Park preservation objectives and the impacts associated with air tours could not be further mitigated.

2.3 ATMP Planning Area for the Development of the Alternatives

An ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL. This is referred to as the ATMP planning area in this document and as the ATMP boundary in the ATMP itself. Air tours outside of the ATMP planning area are not subject to the Act and are therefore not regulated

under the ATMP. As air tours outside of the ATMP planning area are outside the jurisdiction of the ATMP, there would be no limitations on the annual number of such air tours that could occur, and no designated routes could be set outside the ATMP planning area under any alternative. Refer to Figure 1 for a graphic depiction of the ATMP planning area. Although they may occur within the ATMP planning area, general aviation flights, overflights by commercial airlines, and military flights would not be regulated by the ATMP because they are not commercial air tours subject to regulation under the Act.

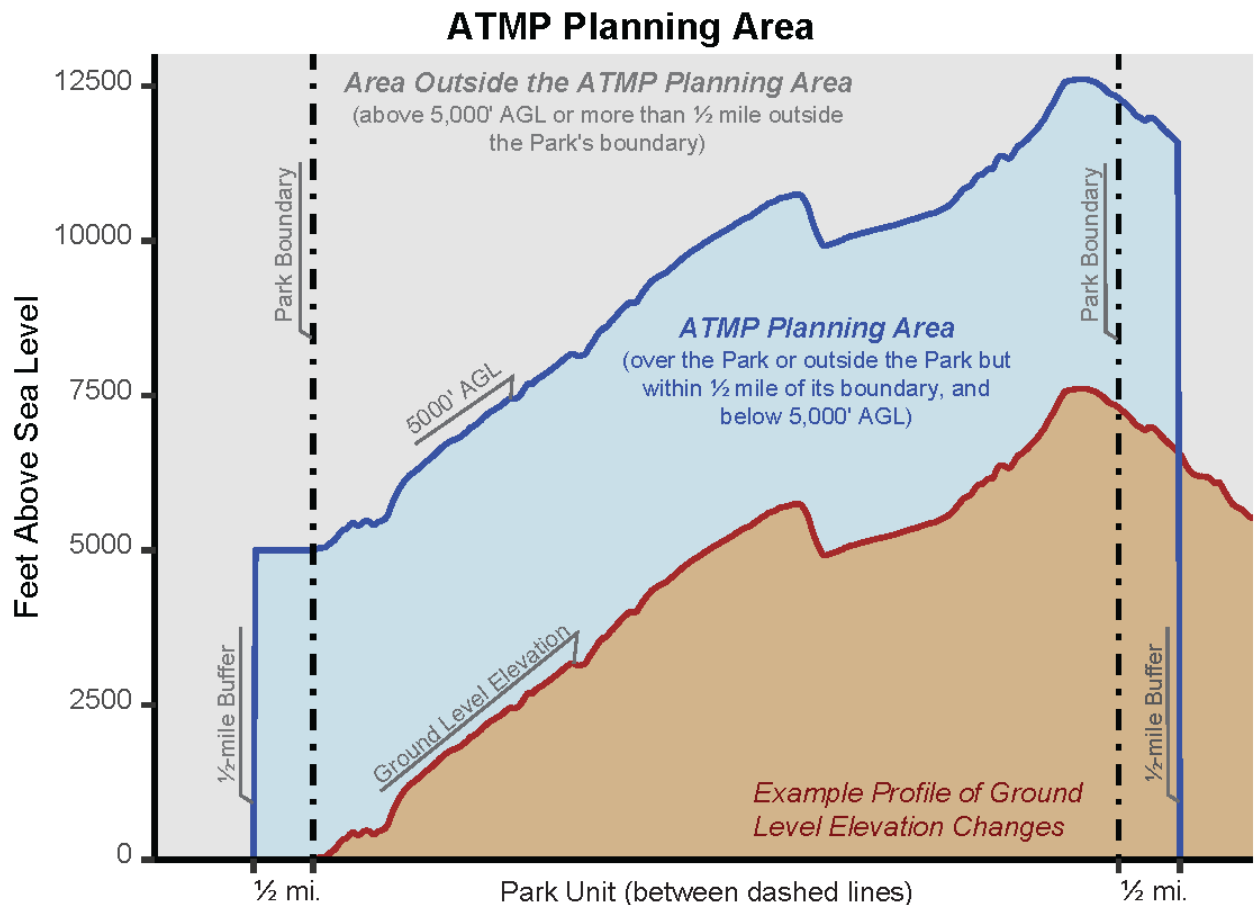


Figure 1. Graphic depiction of the ATMP planning area.

2.4 Alternative 1 (No Action Alternative)

The No Action Alternative represents a continuation of what is currently flown under existing conditions including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai'i (formerly Special Federal Aviation Regulation 71)) and any FAA exceptions issued to individual operators

as outlined by the 2008 FAA Hawai'i Air Tour Common Procedures Manual (Hawai'i Common Procedures Manual).⁶

The No Action Alternative provides a basis for comparison but is not a selectable alternative because it does not meet the purpose and need for the ATMP (refer to Section 1.4, Purpose and Need).

2.4.1 Commercial Air Tours per Year

Ten commercial air tour operators currently hold IOA to fly up to a combined total of 26,664 commercial air tours over the Park each year (see Table 1). The yearly average number of commercial air tours conducted over the Park from 2017-2019 across all operators is 11,376 tours per year. The agencies consider the 2017-2019, three-year average, the existing baseline for the purposes of understanding the existing number of commercial air tours over the Park. The requirement for commercial air tour operators to report annual commercial air tour operations to the agencies was implemented in 2013. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not accurately reflect number of air tours conducted. Flight numbers from a single year were not chosen as the existing baseline because the three-year average accounts for both variation across years and takes into account the most recent pre-pandemic years. Reporting data from 2020 was not used because the 2020 COVID-19 pandemic resulted in lower than normal commercial air tour operations due to travel restrictions and closures in the State of Hawai'i, which does not represent the conditions in a typical year. The agencies also decided against using 2021 or 2022 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 or 2022 during most of the planning effort.

Although 26,664 commercial air tours per year are authorized under IOA, the operations reported by air tour operators reflect an average of 11,376 commercial air tours per year. While it is possible that air tour operations could increase to the level authorized by IOA and thus dramatically change potential impacts to Park resources, the data does not support such changes in the way commercial air tour operations have occurred over the reporting years. The three-year average of commercial air tours from 2017-2019 is 11,376 per year, which is less than 50 percent of IOA, and reflective of data collected. The agencies determined that air tour operations up to current IOA is not reasonably expected to occur within the life of the plan because IOA was based on numbers reported by operators more than 20 years ago and does not represent the most current or reliable operational data. There is no verifiable data demonstrating that operators have ever flown the number of commercial air tours authorized

⁶ Hawai'i Air Tour Common Procedures Manual, FAA Document Number: AWP13-136A, 2008, https://www.faa.gov/about/office_org/field_offices/fsdo/hnl/local_more/media/hawaii_air_tour_common_proc.pdf

by IOA or will fly this number of tours in the future. Thus, the No Action Alternative is a continuation of existing conditions and uses the three-year average of flights from 2017-2019 for this draft EA analysis and impacts of IOA are not analyzed nor included as the baseline condition.

2.4.2 Commercial Air Tour Routes and Altitudes

There are no designated flight routes or no-fly zones under the No Action Alternative. The figure for this alternative (Figure 2) depicts both general route information provided by existing commercial air tour operators and Automatic Dependent Surveillance-Broadcast (ADS-B) flight tracking data of likely commercial air tour operations over and adjacent to the Park. Likely commercial air tour operations are dispersed around the generalized routes provided by operators depicted on Figure 2. The ADS-B tracking data is more reflective of existing operations for various reasons including deviations that may occur due to weather. There are currently no route limitations on air tours and routes may change, depending on an operator's preference to change routes or fly higher or lower than they currently are flying. For purposes of defining the No Action Alternative, the route information in Figure 2 is considered in this draft EA.

Air tour operators authorized to fly below 1,500 ft. AGL (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai'i) within the ATMP planning area must comply with requirements such as training and limitations set forth by the FAA in the Hawai'i Common Procedures Manual. Minimum altitudes for commercial air tours within the ATMP planning area are flown in accordance with the Hawai'i Common Procedures Manual, from 500-1,500 ft. AGL, weather dependent and contingent on location over the island. Refer to Figure 2 for details.

All air tour operators are required to report to the FAA and the NPS,⁷ on a semi-annual basis, the number of commercial air tour operations they have conducted within the ATMP planning area. The operators must provide the date and time each tour occurred, the make/model of aircraft used, and the route on which the tour was conducted.

2.4.3 Commercial Air Tour Operators and Aircraft Types

Seven of the ten operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2020. Five operators fly helicopters, and two operators fly fixed-wing aircraft. Air tours occur year-round on an average of 345 days per year based on 2017-2019 reporting data. Table 1 summarizes each operator's aircraft type, IOA, reported tours, and three-year average number of reported air tours over the Park from 2017-2019:

⁷ See *Air Tour Reporting Guidance Memo* (2020), https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/arc/Air-Tour-Reporting-Guidance.pdf

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Table 1. Commercial air tour operators, aircraft type, reported tours, and IOA

Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 ⁸	2017-2019 Avg.	IOA
Above it All Inc. (Sporty's Academy Hawai'i, Hawai'i Island Hoppers, Hawai'i Airventures, Benchmark Flight Center)	no data	0	0	0	0	0	0	0	0	0	3,878
Big Island Air Inc.	CE-337-T337H, CE-421-C (fixed-wing)	92	74	48	55	102	7	0	0	36	1,643
Hawai'i Helicopters Inc. (Helicopter Consultants of Maui, Inc.)	AS-350-B2 (helicopter)	0	0	0	104	139	50	67	0	85	141
Helicopter Consultants of Maui Inc. (Hawai'i Helicopter, Blue Hawaiian Helicopters)	AS-350-B2, EC-130-B4, EC-130-T2 (helicopter)	12,540	11,815	12,280	12,088	12,300	6,059	7,325	1,018	8,561	12,413
K&S Helicopters (Paradise Helicopters)	BHT-407-407, BHT-430-430, MD-369-D, MD-369-E (helicopter)	108	123	140	650	877	552	248	54	559	1,684
Manuiwa Airways Inc. (Volcano Helicopters, Volcano Heli-Tours)	no data	0	0	0	0	0	0	0	0	0	800
Mokulele Flight Service Inc. (Mokulele Airlines)	C208B (fixed-wing)	0	0	0	0	0	15	0	0	5	60
Safari Aviation Inc. (Safari Helicopter Tours)	AS-350-B2 (helicopter)	1,680	1,431	1,408	1,748	1,977	1,050	995	116	1,341	3,920
Schuman Aviation Company, Ltd. (Makani Kai Helicopters)	no data	0	0	0	0	0	0	0	0	0	25

⁸ Based on unpublished reporting data.

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Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 ⁸	2017-2019 Avg.	IOA
Sunshine Helicopters Inc.	AS-350-BA, EC-130-B4 (helicopter)	990	984	769	844	1,125	600	641	62	789	2,100
TOTAL		15,410	14,427	14,645	15,489	16,520	8,333	9,276	1,250	11,376	26,664

Source: 2013-2019 Annual Reports, "Reporting Information for Commercial Air Tour Operations over Units of the National Park System". See: <https://www.nps.gov/subjects/sound/airtours.htm>.

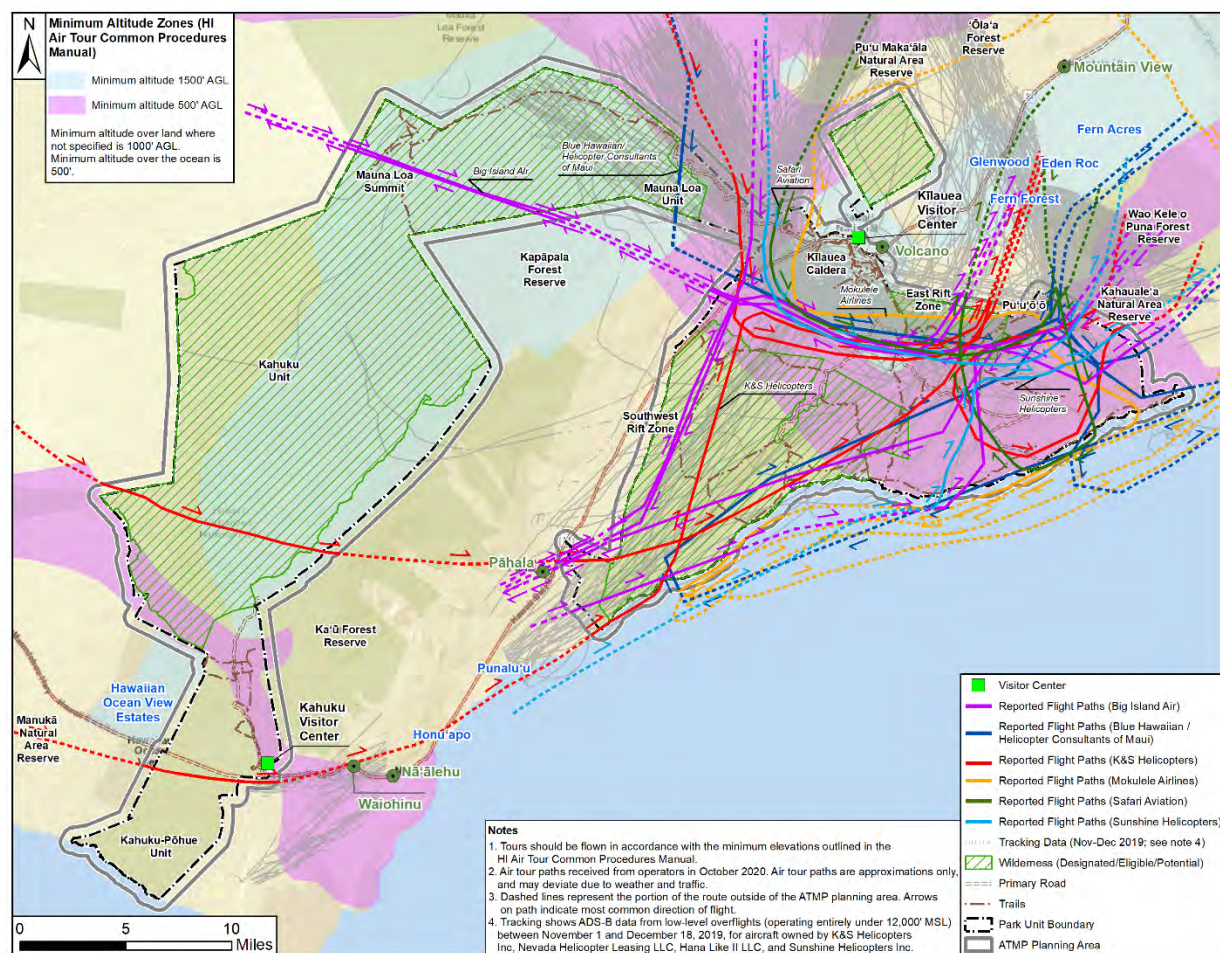


Figure 2. Alternative 1 (No Action)

2.5 Alternative 2

Alternative 2 would provide the greatest level of protection for the purposes, resources, and values of the Park because it would not authorize air tours in the ATMP planning area. Under this alternative, the heart of the Park, including the summit of Kīlauea, all Wilderness areas, and cultural and visitor use areas, would be free of commercial air tours.

Alternative 2 would prohibit commercial air tours within the ATMP planning area no later than 180 days after the ATMP is signed by all required signatories from both agencies (the ATMP's effective date). Operators will be permitted to continue to conduct air tours within the ATMP planning area up to the limit of their IOA until their operations specifications are rescinded or amended to incorporate the ATMP's operating parameters, which will occur no later than 180 days after the effective date of the ATMP.

Air tours outside of the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside the Park boundary) are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the number of air tours that could occur outside the ATMP planning area. Refer to Figure 3 for a depiction of this alternative.

Because air tours outside of the ATMP planning area are not regulated by the ATMP, air tour routes outside of this area are difficult to predict with specificity. Operators could fly routes outside the ATMP planning area similar to existing flight paths, or routes could vary greatly from those currently flown and would depend on operator preference and weather conditions at the time of the tour.

Aircraft monitoring and enforcement would still occur under this alternative to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP by not conducting commercial air tours within the ATMP planning area. The NPS and the FAA would both be responsible for the monitoring and oversight of the ATMP.

All IOA for the Park would terminate by operation of law 180 days after the establishment (effective date) of the ATMP, 49 U.S.C. § 40128(c)(2)(E), after which time no operator could continue to rely on any operations specifications issued under IOA as authority to conduct commercial air tours within the ATMP planning area. Operations specifications will be rescinded or amended to incorporate the operating parameters set forth in the ATMP within 180 days after the effective date of the ATMP.

The FAA reviewed the alternative to ensure it is safe.

2.5.1 Commercial Air Tour Routes and Altitudes

Air tours could be conducted only outside the ATMP planning area. An unknown number of air tours originating on Hawai'i Island from Hilo, Kailua-Kona, Hāpuna and Waikoloa, and airports on Maui and O'ahu may still continue to fly more than ½-mile outside of the Park's boundary at or above minimum altitudes ranging from 500 to 1,500 ft. AGL, depending on location on the island, in accordance with the Hawai'i Common Procedures Manual. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly or fly routes over or around the ATMP planning area similar to existing flights paths but outside of the ATMP planning area. The actual flight path of air tours outside the ATMP planning area would vary based on operator preference, volcanic activity, and weather

conditions at the time of the air tour. For air tours conducted just outside the perimeter of the ATMP planning area, it is reasonably foreseeable that operators would fly just outside of the ATMP planning area surrounding the volcanoes in order to view Kīlauea crater or any active lava. If operators chose to fly above the ATMP planning area, they would be required to maintain altitudes at or above 5,000 ft. AGL while over the ATMP planning area. Operators would likely keep to an altitude close to but just above 5,000 ft. AGL, as flights at higher altitudes would provide limited value to a sightseeing operation. The preciseness of routes and altitudes for air tours flown on alternative routes are generally subject to Visual Flight Rules⁹ which is based on the principle of “see and avoid”, and therefore, may vary greatly.

2.5.2 Monitoring and Enforcement

Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. The NPS would conduct ADS-B aircraft monitoring when possible and work with the FAA to identify and respond to any instances of noncompliance. The agencies would both be responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of noncompliance, the NPS would report such findings to the FAA's Honolulu FSDO. The FSDO would investigate and respond to all written reports consistent with applicable FAA guidance. The public may also report allegations of noncompliance with the ATMP to the FSDO, which may result in an FAA investigation. FAA determination of noncompliance may result in legal enforcement actions. Any violation of operations specifications would be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.

⁹ FAA Advisory Circular 91-36D Visual Flight Rules Flight Near Noise-Sensitive Areas

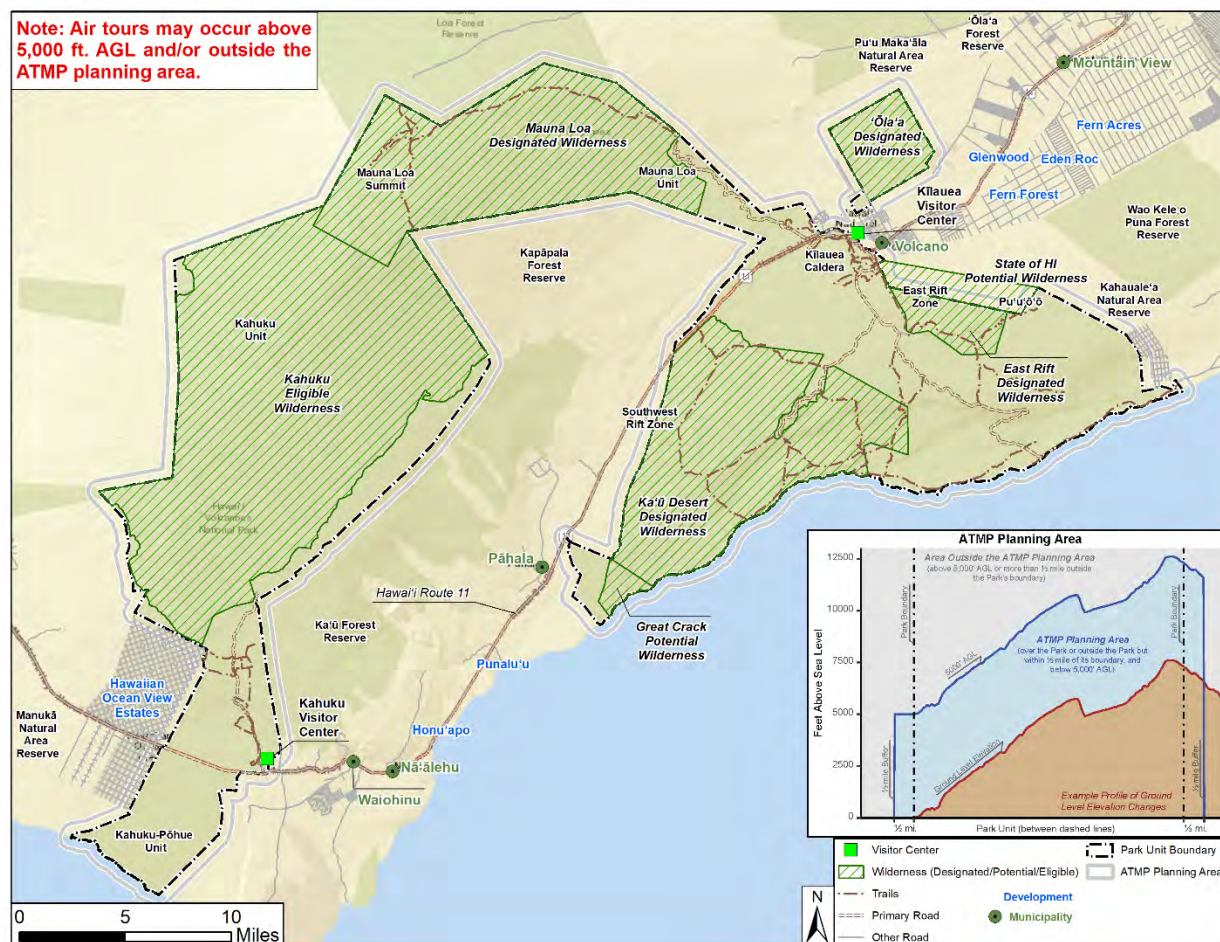


Figure 3. Alternative 2

2.6 Alternative 3 (Preferred Alternative)

The NPS developed Alternative 3 (formerly known as “Public Scoping Alternative 4”), which reflects refined parameters from Public Scoping Alternative 4 to provide an air tour route for access to the historically active east rift zone of Kilauea, a route for air tours across lower Kahuku to allow expansive views of Mauna Loa, and an offshore coastal flight route that would protect Wilderness areas and backcountry campgrounds. The heart of the Park, including the summit of Kilauea, designated Wilderness areas, and key cultural and visitor use areas, would be free of commercial air tours. This alternative would avoid or minimize potential impacts to Park soundscapes based on Park management zones. This alternative would avoid flights over the coastal lands to minimize impacts on coastal backcountry, Wilderness users and sensitive resources (refer to Figure 4).

The FAA reviewed the alternative to ensure it is safe.

2.6.1 Commercial Air Tours per Year

Alternative 3 would authorize 1,565 commercial air tours per year within the ATMP planning area. Thus, it would authorize 14% of the existing number of flights to travel within the ATMP planning area based on the three-year average of reporting data from 2017-2019. The number of flights authorized per year was selected to avoid or minimize impacts to Wilderness values, cultural resources including Native Hawaiian traditional practices and sacred sites, the natural acoustic environment, and visitor experience.

The ATMP would be established and effective as of the date it is signed by all required signatories from both agencies. No later than 180 days after the effective date of the ATMP, the number of flights authorized each year would be proportionally allocated to each of the seven operators that reported operations over the Park in the period from 2017-2019. Each operator's initial allocation would reflect the proportion of their average number of reported flights from 2017-2019 as compared to all operators that reported flying over the Park during this period. The initial allocation would remain in place until a competitive bidding process could occur.

All IOA for the Park would terminate by operation of law 180 days after the establishment (effective date) of the ATMP, 49 U.S.C. § 40128(c)(2)(E), after which time no operator could continue to rely on any operations specifications issued under IOA as authority to conduct commercial air tours within the ATMP planning area. Amended operations specifications that incorporate the operating parameters set forth in the ATMP shall be issued within 180 days of the effective date of the ATMP.

2.6.2 Commercial Air Tour Routes and Altitudes

Figure 4 shows flight routes where air tours could occur within the ATMP planning area. Alternative 3 includes three flight paths with minimum altitude requirements of 1,500 – 2,000 ft. AGL. Air tour routes within the ATMP planning area are represented by a line with a ¼-mile buffer on either side of the route that indicates the acceptable range of deviation that would not trigger enforcement action. The route details are described below:

- **Pu'u'ō'ō Route:** The Pu'u'ō'ō Route consists of a route on the east rift of Kīlauea in the Pu'u'ō'ō area with a single entry and exit over the ocean. As described in Section 2.6.7, Quiet Technology Incentives, operators that have converted to quiet technology aircraft may request to be allowed to conduct air tours using quiet technology aircraft in an expanded fly zone directly west of this route near Pu'u'ō'ō (i.e., the "Pu'u'ō'ō Quiet Technology Zone"). The Pu'u'ō'ō Quiet Technology Zone avoids the designated Wilderness boundary at Nāpau. Commercial air tours conducted on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone would be flown at minimum 1,500 ft. AGL over land and 2,000 ft. AGL over the water. Hovering, loitering, and/or circling for up to five minutes is allowed on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone.

- **Coastal Route:** The Coastal Route runs bi-directionally offshore along the edge of the Park boundary, but within ½-mile of the Park boundary. Air tours on the Coastal Route would maintain 2,000 ft. lateral distance from shore and a minimum altitude of 2,000 ft. AGL. The Coastal Route is available for use only if commercial air tour operators can safely adhere to the required altitude and distance to the shore. If an operator is not able to safely fly offshore in accordance with the prescribed altitude and distance requirements, the operator would not utilize that route. This route provides expansive views of the pali (cliffs) and coastal areas. The route would protect Wilderness areas, backcountry campgrounds, cultural, and sensitive resources within the Park.
- **Kahuku Route:** The Kahuku Route runs bi-directionally across the south side of the Kahuku Unit following Highway 11. Air tours on the Kahuku Route would maintain a minimum altitude of 1,500 ft. AGL. This route would provide access for Kailua-Kona flights and circle island tours to provide expansive views of Mauna Loa from the summit to the sea and past volcanic activity while protecting endangered birds found at higher elevations and eligible Wilderness in Kahuku.

If pilots are on or are entering a route and encounter weather that does not allow them to proceed further along the route at the prescribed altitude, they would be required to safely exit the route and either follow another route where weather conditions allow or would exit the ATMP planning area.

Operators may not deviate from the designated routes and altitudes except as necessary for safe operation of an aircraft as determined under Federal Aviation Regulations requiring the pilot-in-command to take action to ensure the safe operation of the aircraft.

Under Alternative 3, no air tours could occur within the ATMP planning area, except air tours authorized on the designated routes and at designated altitudes described above. Refer to Figure 4 for a depiction of flight routes and altitudes. Because air tours outside of the ATMP planning area are not regulated by the ATMP, air tour routes outside of this area are difficult to predict with specificity. Operators could fly routes outside the ATMP planning area similar to existing flight paths, or routes could vary greatly from those currently flown and would depend on operator preference and weather conditions at the time of the tour.

2.6.3 Commercial Air Tour Aircraft Type

Operators would be limited to using the aircraft types reported in the period from 2017-2019 (see Table 1). Any new or replacement aircraft would not exceed the noise level produced by the aircraft being replaced. Operators would notify the FAA and the NPS in writing of any prospective new or replacement aircraft and obtain concurrence before initiating air tours with the new or replacement aircraft.

2.6.4 Commercial Air Tour Day/Time

Except as provided in Section 2.6.7, air tours could operate from 10:00 AM to 2:00 PM local time on Monday, Tuesday, Thursday, Friday, and Saturday. Air tours would not be allowed on

Sundays. As described in Section 2.6.7, operators that have converted to quiet technology aircraft could request to be allowed to conduct air tours on Wednesdays and 9:00 AM – 5:00 PM Monday through Saturday.

The Sunday no-fly day would provide opportunities for visitor enjoyment, such as bird watching. Sunday was selected as a no-fly day for consistency with the Park's Mission Critical Administrative Aviation Plan and Environmental Assessment, would allow for one weekend flight-free day at the Park, and would address comments and requests from the local community and Native Hawaiian cultural practitioners.

2.6.5 Restrictions for Particular Events

In addition to the weekly no-fly day on Sundays, this alternative would include a mandatory 5-mile standoff for special events that could be impacted by air tours, limited to the day of the event. Special events could include Native Hawaiian events or other natural and cultural resource programs. Two months' notice would be provided to commercial air tour operators prior to the event. The standoff would not extend outside the boundary of the ATMP planning area. If the standoff overlaps with a route, that route cannot be utilized while the standoff is in effect.

2.6.6 Additional Requirements

- Hovering, Loitering, and Circling: Hovering, loitering, and/or circling for up to five minutes would be permitted on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone. Circling aircraft would have to turn away from the advancing blade as much as possible to minimize noise. Hovering, loitering and/or circling is prohibited on the Kahuku Route and the Coastal Route.
- Interpretive Training and Education: When made available by Park staff, operators/pilots would take at least one training course per year conducted by the NPS. The training would include the Park information that operators could use to further their own understanding of Park priorities and management objectives as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients. Helicopter operators would also be required to complete the FAA Introduction to Fly Neighborly training.¹⁰ The Fly Neighborly Noise Abatement Training program, created by the FAA and endorsed by Helicopter Association International, teaches pilots and operators noise abatement procedures and situational awareness tools that can be used to minimize the effects of helicopter noise emissions.
- Annual Meeting: The Park staff, the local FAA FSDO, and all operators would be required to meet once per year to discuss the implementation of the ATMP and any amendments or other changes to the ATMP.

¹⁰ https://www.faa.gov/gslac/ALC/course_content.aspx?cID=500&sID=841&preview=true&d=1

- **Adaptive Management:** Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of Park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Monitoring and adaptive management of the ATMP would occur under this alternative to ensure that the terms and conditions of the ATMP would continue to address Park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.
- **Reporting, Monitoring and Enforcement:** Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. FAA determination of noncompliance may result in loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of operational specifications would be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.

2.6.7 Quiet Technology Incentives

The Act requires that the ATMP include incentives for the adoption of quiet technology by commercial air tour operators. This alternative incentivizes the use of quiet technology aircraft by relaxing the time-of-day restrictions to allow quiet technology aircraft to fly from 9:00 AM to 5:00 PM (four hours more than non-quiet technology aircraft), relaxing the day-of-week restrictions to allow quiet technology aircraft to fly on Wednesdays, and allowing quiet technology aircraft to conduct commercial air tours in additional locations in the Pu'u'ō'ō viewing area (see Figure 4 for a depiction of these areas). In order to qualify for quiet technology incentives, operators would be required to follow a process to be defined by the agencies.

2.6.8 Initial Allocation and Competitive Bidding

The Act states whenever an ATMP limits the number of commercial air tour operations during a specified time frame, a competitive bidding process must occur pursuant to the criteria set forth in 49 U.S.C. § 40128(a)(2)(B). Since the number of flights would be limited for Alternative 3, competitive bidding would be required. Initially, commercial air tour operators would be allocated a certain number of commercial air tours over the Park, referred to as the initial allocation, until a competitive bidding process can be conducted. Table 2 identifies the operators that would be authorized to conduct commercial air tours and annual flight allocations.

Table 2. Initial Allocation of Air Tour Operations by Operator under Alternative 3

Air Tour Operator	Annual Operations
Big Island Air Inc.	5
Hawai'i Helicopters Inc. (Helicopter Consultants of Maui, Inc.)	12
Helicopter Consultants of Maui Inc. (Hawai'i Helicopter, Blue Hawaiian Helicopters)	1,176
K&S Helicopters (Paradise Helicopters)	77
Mokulele Flight Service Inc. (Mokulele Airlines)	1
Safari Aviation Inc. (Safari Helicopter Tours)	185
Sunshine Helicopters Inc.	109

Competitive bidding may also be appropriate to address, for example, a new entrant application; a request by an existing operator for additional operating authority; or consideration by the agencies of Park-specific resources, impacts, or safety concerns. The Act directs the agencies to consider various factors during the competitive bidding process including known resource issues, reporting, and compliance concerns. Competitive bidding may necessitate an amendment to the ATMP, additional environmental review, and/or the issuance of new or amended operations specifications. If operations specifications are required, they would be issued by the FAA.

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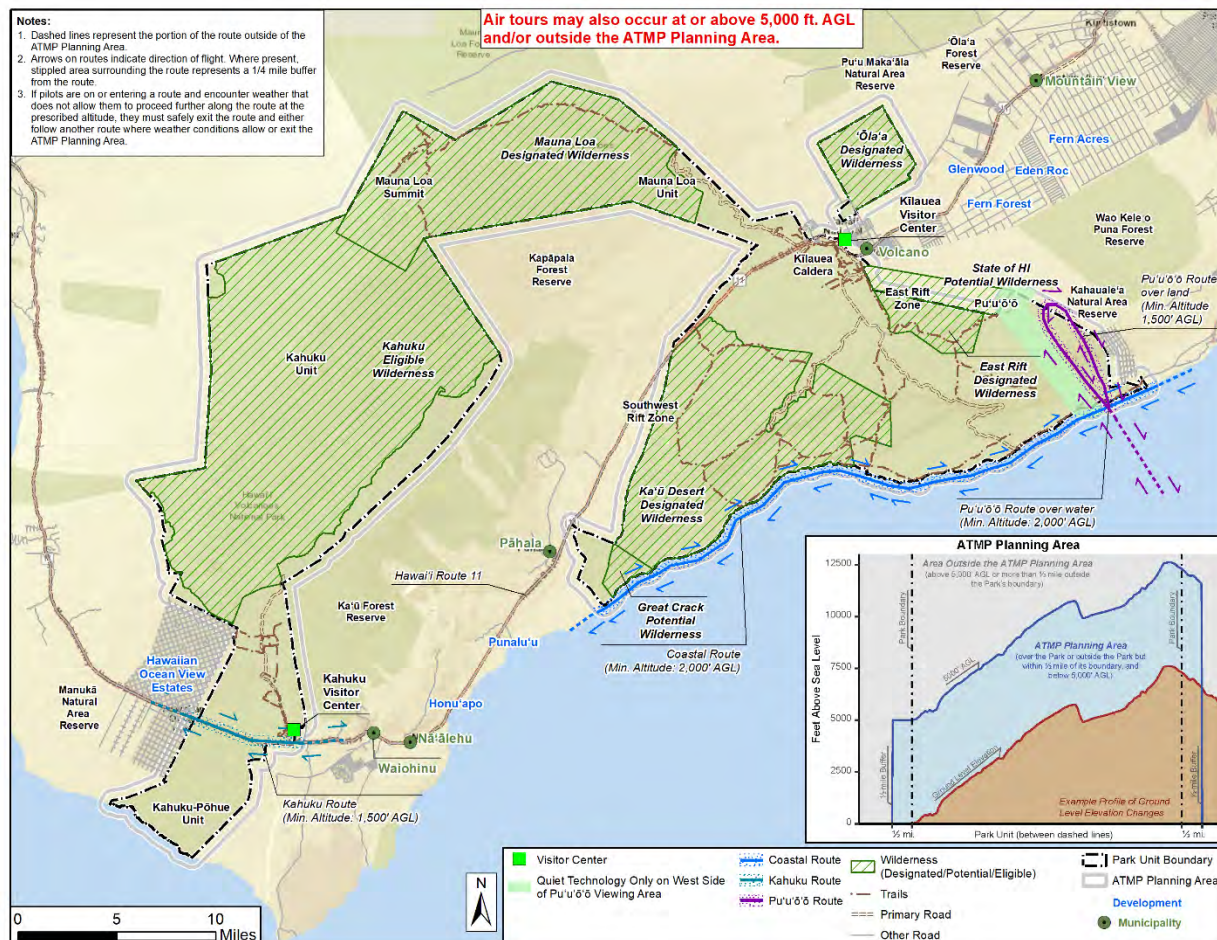


Figure 4. Alternative 3

2.7 Summary Comparison of the ATMP Alternatives

Table 3. Summary Comparison of the ATMP Alternatives

Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
General Description and Objectives	Allows a continuation of air tours without implementation of an ATMP or voluntary agreement. Does not meet the purpose and need for the ATMP.	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could continue to fly outside the ATMP planning area (i.e., above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Three routes provide air tour access over the Park with soundscape mitigations, while keeping the heart of the Park free of air tours. Avoids flights over the summit of Kilauea and minimizes impacts on coastal backcountry users. Air tours could continue to fly outside the ATMP planning area (i.e., above

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Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
			5,000 ft. AGL or more than ½-mile outside of the Park's boundary).
Annual Number of Flights	Considers the three-year average of 11,376 flights per year (based on 2017-2019 reporting) as the existing condition.	None in ATMP planning area.	Authorizes 1,565 flights per year.
Routes	No mandatory routes or no-fly zones. See Figure 2 for depiction of reported routes and actual operations.	None in ATMP planning area. Operators may continue to fly to points of interest on the island outside of the ATMP planning area where they already fly, fly around the ATMP planning area similar to existing flights, or above the ATMP planning area (at or above 5,000 ft. AGL).	Three routes (Kahuku Route, Coastal Route, Pu'u'ō'ō Route).
Minimum Altitudes	Flown in accordance with the Hawai'i Common Procedures Manual, generally between 500-1,500 ft. AGL.	No minimum altitude would be set. However, flights over the Park that are at or above 5,000 ft. AGL would continue to occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary would continue to occur and are also outside the ATMP planning area and are subject to the altitude restrictions of the Hawai'i Common Procedures Manual.	Minimum 1,500 ft. AGL over land and minimum 2,000 ft. AGL over water. Flights outside the ATMP planning area are subject to the altitude restrictions of the Hawai'i Common Procedures Manual.
Time of Day	No Restrictions.	N/A	On days where air tours are permitted: 10:00 AM – 2:00 PM for non-quiet technology flights. 9:00 AM – 5:00 PM for quiet technology flights.
Day of Week	No Restrictions.	N/A	No-fly days on Sunday. Air tours are permitted on the remaining weekdays, except that air tours conducted on Wednesdays must use quiet technology aircraft.

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Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
Hovering, Loitering, and/or Circling	None.	N/A	Permits limited hovering, loitering, and/or circling (up to 5 minutes) on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone .
Quiet Technology Incentives	None.	N/A	Quiet technology flights may fly 9:00 AM – 5:00 PM. Quiet technology flights may fly on Wednesday. Additional fly location in the Pu'u'ō'ō Quiet Technology Zone.
Interpretative Training and Education	None.	N/A	Mandatory.
Annual Meeting	None.	N/A	Mandatory.
Restrictions for Particular Events	None.	N/A	Mandatory 5-mile standoff distance limited to the ATMP planning area. Two months' notice provided to operators.
Adaptive Management	None.	N/A	Monitoring by the NPS would occur to ensure the ATMP addresses park management objectives.
Monitoring and Enforcement	Operators report the number of tours, aircraft type, route, and day/time of tour to the FAA and the NPS on a semi-annual basis.	The NPS would conduct ADS-B aircraft monitoring and work with the FAA to respond to instances of noncompliance. The FAA FSDO would investigate all reports of noncompliance. FAA determination of noncompliance may result in legal enforcement actions.	Operators would provide semi-annual reports, including the flight monitoring data. Additional monitoring and enforcement would occur as described in Alternative 2.
Operators, Initial Allocation of Air Tours, and Aircraft Types	Reflects existing conditions of ten operators with reported data from 2017-2019.	The establishment of the ATMP would result in the termination of IOA for the Park.	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the seven operators that have reported operating in the period from 2017-2019 (see Table 2). Then it would move to competitive bidding. Any new or

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Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
			replacement aircraft must not exceed the noise level produced by the aircraft being replaced. The establishment of the ATMP would result in the termination of IOA for the Park.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter includes a description of each environmental impact category. This chapter also includes the environmental consequences of the alternatives and evaluates how the direct, indirect, and cumulative impacts on those environmental impact categories may change by implementing the No Action Alternative or an action alternative at the Park. The analysis methodology for assessing impacts for each environmental impact category is in Appendix E.

As described in Section 1.1, Introduction, under the Act and its implementing regulations, an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL (ATMP planning area). Air tours outside of the ATMP planning area are not regulated under the ATMP. Unless otherwise noted, the study area, referred to as the ATMP planning area, for each environmental impact category includes the Park and areas outside the Park within ½-mile of its boundary. Environmental impact categories (Cultural Resources, Wilderness, Environmental Justice and Socioeconomics, Visual Effects, and Department of Transportation (DOT) Act Section 4(f) Resources) that considered a study area different from the ATMP planning area are noted as such in that section.

This draft EA analyzes the following environmental impact categories in detail: Noise and Noise-Compatible Land Use; Air Quality and Climate Change; Biological Resources; Cultural Resources; Wilderness; Visitor Use and Experience and Other Recreational Opportunities; Environmental Justice (EJ) and Socioeconomics; Visual Effects; Coastal Resources; and DOT Act Section 4(f) Resources. The FAA, in cooperation with the NPS, considered the impact categories specified in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA, 2015) and NPS Director's Order #12 Conservation Planning, Environmental Impact Analysis, and Decision-making, and other categories identified during the agency and public scoping process. See Section 1.5, Environmental Impact Categories Not Analyzed in Detail, for environmental impact categories not analyzed in detail.

3.1 Noise and Noise-Compatible Land Use

FAA Order 1050.1F, Appendix B, paragraph B-1.3, Affected Environment, requires the FAA to identify the location and number of noise sensitive uses in addition to residences such as schools, hospitals, parks, and other recreation areas, that could be significantly impacted by noise. As defined in Paragraph 11-5.b(10) of FAA Order 1050.1F, a noise sensitive area is "[a]n area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites." Noise sensitive areas within the ATMP planning area include the Park, cultural resources discussed in Section 3.4, parks and Section 4(f) resources discussed in Section 3.10, as well as residential areas outside of the Park boundary but within the ½ mile buffer.

Section 4.9, Soundscape Management, of NPS Management Policies (2006) directs the NPS to preserve the Park's natural soundscape and acoustic environment which refer to the combination of all the natural sounds occurring within the Park, absent the human-caused sounds, as well as the physical capacity for transmitting those natural sounds and the interrelationships among Park natural sounds of different frequencies and volumes. This management policy directs the NPS to preserve soundscapes and the acoustic environment to the greatest extent possible and restore these resources to their natural condition wherever they have become degraded by noise and unwanted sounds. The NPS defines the acoustic environment as the aggregate of all sounds within an area; it is the total acoustic environment in the Park. The soundscape is the human perception of the acoustic environment. In a national park setting, the soundscape can be composed of both natural ambient sound and a variety of human-made sounds.

3.1.1 Affected Environment

The NPS defines acoustic resources as physical sound sources, including both natural sounds (wind, water, wildlife, vegetation) and cultural and historic sounds (battle reenactments, Native Hawaiian ceremonies, quiet reverence). The acoustic environment includes both natural and human generated sounds and the physical capacity for transmitting those natural sounds and the interrelationships among Park natural sounds. Within the Park, natural sounds are considered part of the biological or other physical resource components. Examples of natural sounds include:

- Sounds produced by birds, such as the nēnē (Hawaiian goose), to define territories, communicate with dependent offspring, or aid in attracting mates;
- Sounds produced by bats to locate prey or navigate which are not audible to humans; and
- Sounds produced by physical processes, such as wind in the trees, claps of thunder, falling rain, clinking of lava flows, etc.(NPS Management Policies, 2006, Section 4.9).

Natural sounds are a fundamental resource and value of the Park. The natural soundscape is a highly desired value for Park visitors and low ambient sounds plays a vital role in the health of Park natural ecosystems (NPS, 2017).

One of the natural resources of the Park is the natural soundscape, also referred to as the natural ambient or "natural quiet." The natural ambient includes all naturally occurring sounds, as well as the quiet associated with still nights and certain seasons. It excludes all mechanical, electrical and other human-caused sounds. An important part of the mission of the NPS is to preserve or restore the natural soundscapes associated with units of the National Park System (NPS, 2006).

The term existing ambient refers to the sound level of all sounds in a given area, and includes all natural sounds as well as all mechanical, electrical, and other human-caused sounds. Human-generated noise sources may include wheeled vehicles on roads, such as passenger vehicles and tour buses, and cyclists, and aircraft overflights consisting of high-altitude commercial jet aircraft, occasional NPS flights for research or other purposes, commercial air tour operations, and private general aviation aircraft.

Overall, in the absence of air tours the soundscapes of the Park are characteristically quiet and dominated by natural sound. Buffered by adjoining protected natural environments or rural landscapes, the Park is remote from urban development and its attendant human-caused noise. The Park also instituted quiet zones along the Crater Rim Trail for the benefit of visitor experience and cultural practitioners.

The main sources of anthropogenic noise are vehicles on paved roadways, aircraft from commercial air tours, and, less commonly, administrative activities of the NPS and its partners (NPS, 2015). Park visitors are often concentrated along road corridors, such as along Highway 11 or Crater Rim Drive, and there is minimal military, high-altitude commercial jet aircraft, and general aviation in the airspace over and adjacent to the Park. Air tour noise is most prevalent at the Kīlauea caldera and the Kīlauea summit, the historically active area along the east rift zone from Maunaulu to Nāpau to Pu'u'ō'ō craters, in addition to near 'Āinahou Ranch, along Mauna Loa Road, and past lava viewing areas at the end of Chain of Craters Road. The sites on the higher elevations of Mauna Loa and along Mauna Loa Road such as Kīpukakī are some of the quietest environments in the Park sampled to date (NPS, 2015) in the absence of air tours. Nāpau Crater in the East Rift Wilderness can also be very quiet in the absence of air tours. The Ka'ū Desert area also has some of the quietest natural soundscapes within the Park.

To characterize the natural and existing ambient (both with and without air tours) detailed sound level measurements were conducted at 22 locations across the Park from 2002-2003 (Lee et al., 2016). From the detailed data collected in 2002-2003, an ambient “map” of the natural soundscape of the ATMP planning area was developed to be used in computer modeling (Figure 5). For more explanation of how sound is described, see *Noise Technical Analysis*, (Appendix F, Table 1). These acoustic sampling locations were chosen to be representative of the natural ecological zones or broad ecosystems of the Park and ATMP planning area. Median daytime natural ambient (L_{50}) sound levels¹¹ ranged from 20 decibels

¹¹ Natural Ambient (L_{50}): The sound level exceeded 50 percent of the time determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Ambient data were based on a 12-hour, daytime, time period, 7:00 AM to 7:00 PM, typical operating hours for air tours.

(dB), A-weighted (dBA)¹² in backcountry areas to 54 dBA along the shoreline; median daytime existing ambient (L_{50}) sound levels for these areas exhibit similar variability, ranging from 20 dBA in the backcountry to 54 dBA in the front-country where visitors are more prevalent. The median or L_{50} sound level (in decibels) is the sound level exceeded 50 percent of the day. Table 2 in the *Noise Technical Analysis* (Appendix F) contains additional breakdown of the ambient sound level data by zone.

Additional sound level data was collected at four locations in the Kahuku Unit in 2013 to assist with air tour management planning and to determine ambient sound levels (Beeco and Pipkin, 2018). The locations were chosen to best assess noise impacts to sites at varying elevations and habitats within the Kahuku Unit. It was found that the Kahuku Unit is dominated by natural sounds impacted very little by anthropogenic noise. All four sites had nearly untouched natural soundscapes with no more than 0.3 dBA added to the natural ambient sound level from anthropogenic sound sources. Locations at higher elevations were found to be particularly quiet. Results indicated that the natural ambient sound levels (L_{nat})¹³ during the monitoring period ranged from 16.8 to 27.7 dBA during the daytime.

The contribution of aircraft noise during sound level measurements only provides a snapshot in time at a particular location and is not necessarily a representative characterization of current conditions. Current conditions were determined by adding the noise exposure due to air tours ($L_{Aeq, 12h}$), based on a peak month average day (PMAD) and modeled using the FAA AEDT version 3e, to the Existing Ambient without Air Tours (L_{50})¹⁴ (see Appendix F, *Noise Technical Analysis*, Figure 3). The result of this process is the Cumulative Existing Ambient, Figure 6.

¹² dBA (A-weighted decibels): Sound is measured on a logarithmic scale relative to the reference sound pressure for atmospheric sources, 20 μ Pa. The logarithmic scale is a useful way to express the wide range of sound pressures perceived by the human ear. Sound levels are reported in units of decibels (dB) (ANSI S1.1-1994, American National Standard Acoustical Terminology). A-weighting is applied to sound levels in order to account for the sensitivity of the human ear (ANSI S1.42-2001, Design Response of Weighting Networks for Acoustical Measurements). To approximate human hearing sensitivity, A-weighting discounts sounds below 1 kHz and above 6 kHz.

¹³ It should be noted that different techniques have been used to calculate natural ambient, resulting in two different descriptor notations. Natural ambient L_{50} refers to the natural ambient computation process described in Lee 2016, while L_{nat} refers to the natural ambient process described in Lynch 2012 and Job 2018. Although different, the processes are highly correlated and yield similar results; differences are generally less than 1 dB (Rapoza, 2008).

¹⁴ The Existing Ambient without Air Tours (L_{50}) is defined as the composite, all-inclusive sound associated with a given environment, excluding the sound source of interest, in this case, commercial air tour aircraft. It does include all other human-caused sound sources that were audible at the measurement site; hikers, visitor centers, commercial jets, general aviation aircraft, military aircraft, and administrative aircraft operations. Ambient data were based on a 12-hour, daytime, time period, 7:00 AM to 7:00 PM, typical operating hours for air tours.

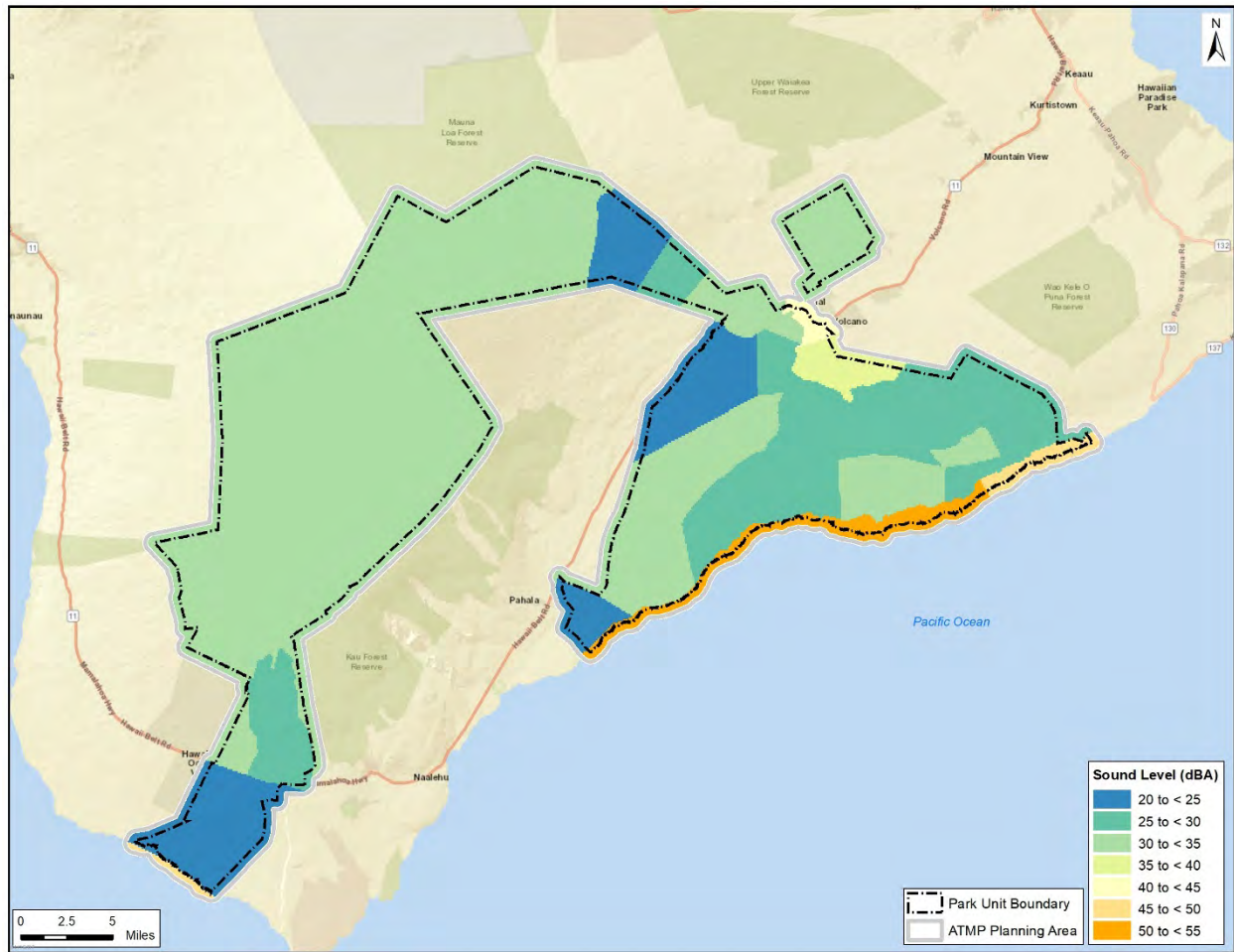


Figure 5. Natural Ambient L_{50}

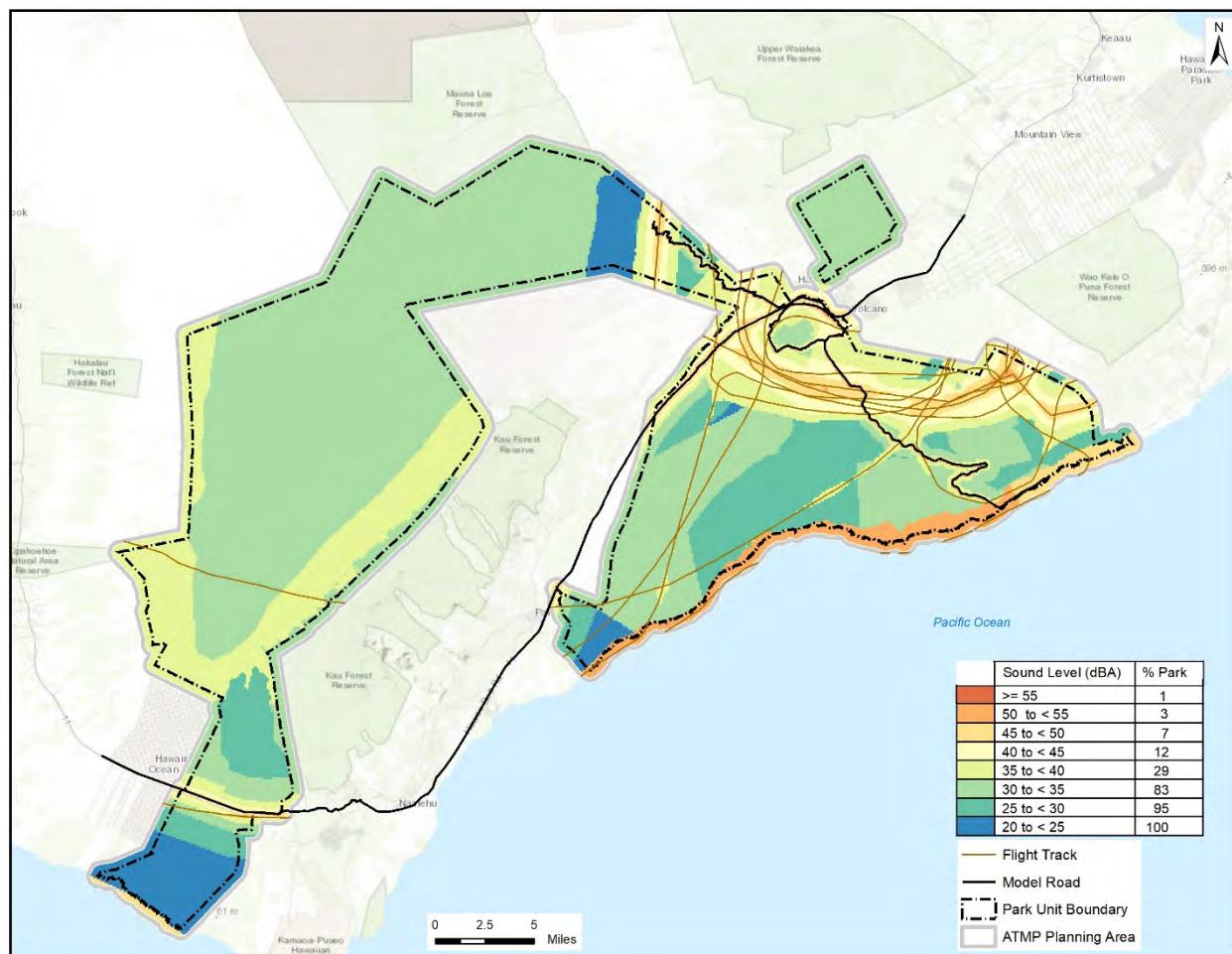


Figure 6. 12-hour Cumulative Existing Ambient Sound Level (Daytime) for Current Conditions

3.1.2 Environmental Consequences

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment, including intensity, duration, and spatial footprint of the noise. The affected environment and impact analysis discloses noise metrics consistent with both FAA and NPS noise guidance. The FAA's primary noise metric established in FAA Order 1050.1F is the yearly Day-night Average Sound Level (DNL, denoted by the symbol L_{dn}) metric; the cumulative noise energy exposure from aircraft over 24 hours. The NPS considers various metrics to analyze impacts to Park resources and values from noise, including equivalent continuous sound level (L_{Aeq}), time audible (the amount of time you can hear air tour aircraft noise), the amount of time that the noise from a commercial air tour operation would be above specific sound levels that relate to different Park management objectives (e.g., 35 and 52 dBA), and maximum sound level (L_{max}). These metrics are discussed further in Table 4; a comparison

of the sound levels noted in Table 4 to values for a range of everyday sounds can be found in Figure 1 of the *Noise Technical Analysis* (Appendix F).

Table 4. Primary Metrics Used for the Noise Analysis

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is 7:00 AM to 7:00 PM to represent typical daytime commercial air tour operating hours.
Day-night average sound level, L_{dn} (or DNL)	The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty on noise events occurring between 10:00 PM and 7:00 AM local time. Note: Both $L_{Aeq, 12\text{hr}}$ and DNL characterize: - Increases in both the loudness and duration of noise events - The number of noise events during specific time period (12 hours for $L_{Aeq, 12\text{hr}}$ and 24-hours for DNL) If there are no nighttime events, then $L_{Aeq, 12\text{hr}}$ is arithmetically three dBA higher than DNL as the events are averaged over 24 hours instead of 12 hours. The FAA's (2015 Exhibit 4-1) indicators of significant impacts are for an action that would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.
Time Audible Natural Ambient	The total time (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. The natural ambient is the sound level exceeded 50 percent of the time L_{50}, determined from the natural sound conditions found in an ATMP planning area, including all sounds of nature (i.e., wind, rain, ocean waves, wildlife, etc.), and excluding all human and mechanical sounds. Time audible does not indicate how loud the event is, only if it might be heard.

Time Above 35 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA). In quiet settings, outdoor sound levels exceeding this level degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007); blood pressure increases in sleeping humans (Haralabidis et al., 2008); maximum background noise level inside classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010).
Time Above 52 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA). At this background sound level, normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters would result in 95% sentence intelligibility (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974). This metric represents the level at which one may reasonably expect interference with Park interpretive programs, activities that require communication from a distance and other general visitor communication.
Maximum sound level, L_{max}	The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. L_{max} does not provide any context of frequency, duration, or timing of exposure.

Acoustic metrics were modeled using the FAA's AEDT, Version 3e and results are described below for each alternative. After completing noise modeling for Alternative 3, a minor altitude adjustment was made for which the impacts are not represented in the *Noise Technical Analysis*. The Pu'u'ō'ō Route minimum altitude was raised from 1,500 ft. to 2,000 ft. AGL over the ocean. The overall result of this would be a slight (< 3 dBA) decrease in the intensity of noise ($L_{Aeq, 12\text{ hr}}$ and L_{max} metrics) and a potential increase in time audible and time above. The *Noise Technical Analysis* in Appendix F contains figures and tables showing the detailed noise results for two types of analyses: 1) contour analysis and 2) representative location point analysis. A noise contour presents a graphical illustration or "footprint" of the area potentially affected by the noise. Location point results present the metric results at specific points of interest.

Alternative 1: No Action

Under the No Action Alternative, the acoustic conditions described in the affected environment would be expected to continue. Air tour noise would vary depending on how many commercial air tours are flown, but because air tour numbers are expected to stay near the three-year

average, noise conditions are likely to be similar to existing conditions. Refer to Section 2.4 and the *Noise Technical Analysis* in Appendix F for additional details on the No Action Alternative. Modeling results for the No Action Alternative are presented in Table 5 below. See Figure 7 and Figure 8 for noise metrics results that would be experienced within the ATMP planning area under the No Action Alternative.

Table 5. Summary of Noise Modeling Metric Results Under the No Action Alternative

Metric	No Action Alternative
12-hour Equivalent Sound Level	• Maximum value approximately 53 dBA • Affected portions of the ATMP planning area will continue to be 35 to <50 dBA (representing 13% of the Park)
Day-night Average Sound Level	• DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore approximately 50 dB
Time Audible Natural Ambient	• The maximum time that air tours may be audible would be between 360 and 480 minutes a day, representing less than 1% of the Park • 27% of the Park would continue to experience audible air tour noise for more than 120 minutes a day (non-contiguous) • 82% of the Park would continue to experience audible air tour noise
Time Above 35 dBA	• The maximum time that noise from air tours would be above 35 dBA equals or exceeds 120 minutes a day, representing less than 1% of the Park • 15% of the Park would continue to experience noise above 35 dBA for more than 30 minutes a day
Time Above 52 dBA	• The maximum time above 52 dBA experienced across all points modeled would be 18.9 minutes • 85% of points modeled would experience time above 52 less than 1 minute
Maximum Sound Level	• The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the

	number of operations) would be 72.0 dBA at Point Location #5 (Cone Peak, Nēnē Area)

For purposes of assessing noise impacts from commercial air tours on the acoustic environment under FAA's policy for NEPA, the analysis indicates that the resultant DNL is expected to be 50 dB and below.

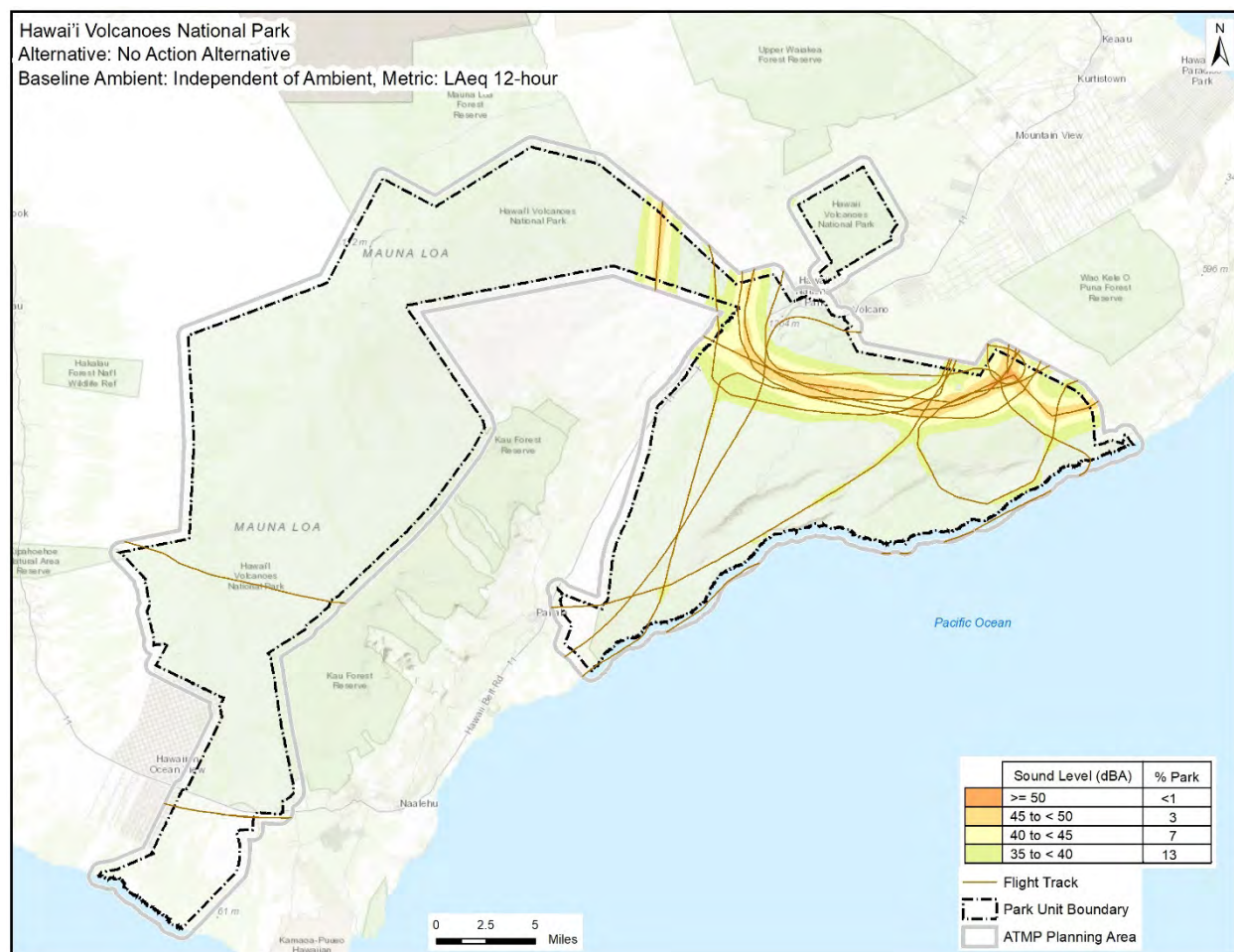


Figure 7. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) for No Action Alternative

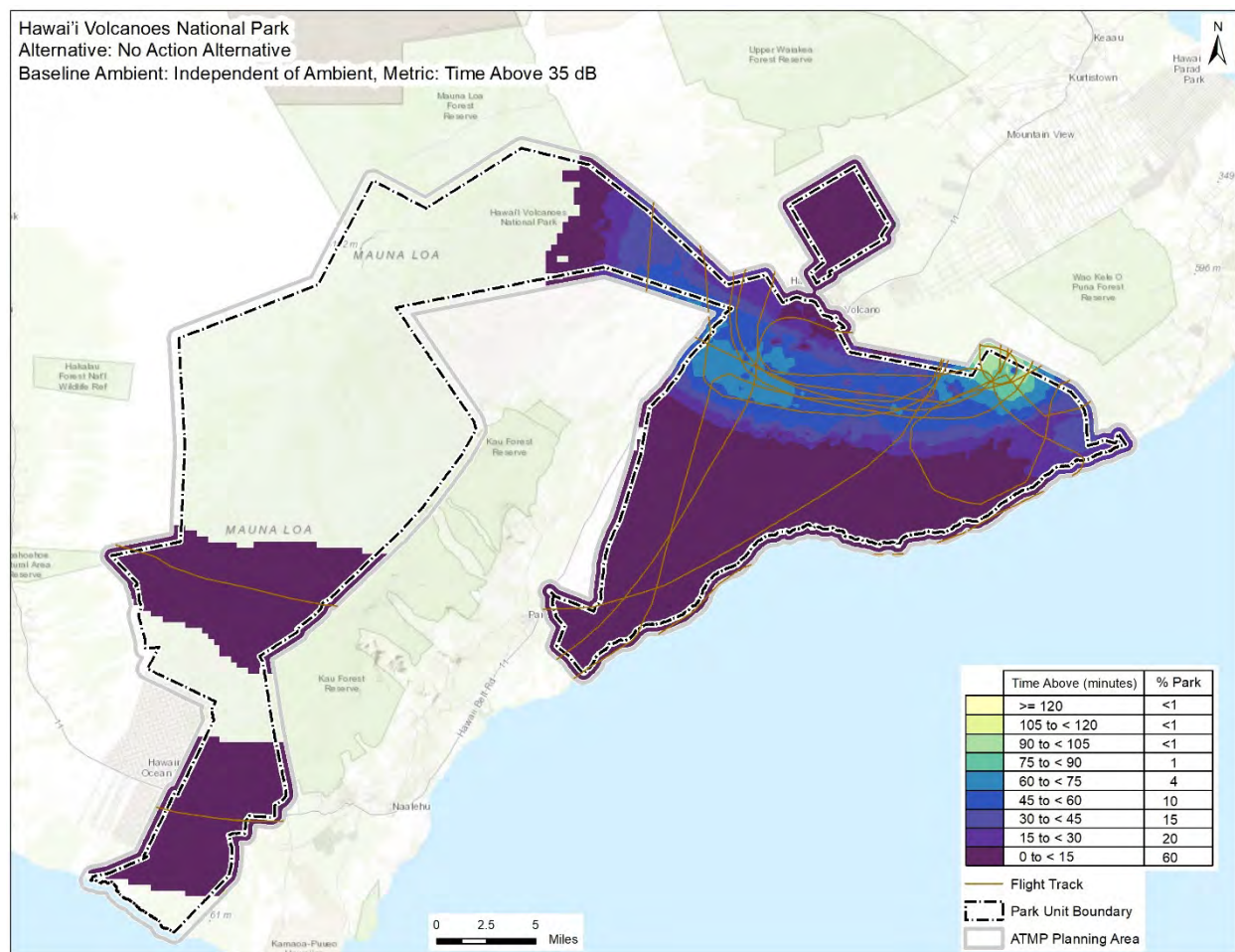


Figure 8. Time Above 35 dBA for No Action Alternative

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area which would reduce this source of noise originating from within the ATMP planning area. Compared to current conditions, Alternative 2 would result in direct beneficial effects on the Park's acoustic environment. The acoustic impacts of Alternative 2 cannot be modeled because, although some speculation about air tour routes can be made, it is unknown where air tours would fly when outside the ATMP planning area. Alternative 2 would provide 365 days per year without noise from air tours within the ATMP planning area and would reduce noise in the most noise sensitive regions of the Park resulting in direct beneficial effects compared to the No Action Alternative and Alternative 3.

Alternative 3

Compared to current conditions, Alternative 3 would result in direct beneficial effects on the Park's acoustic environment. This alternative would provide 52 days per year without air tours within the ATMP planning area and a reduction in the overall noise footprint (average sound level over a 12-hour day) compared to current conditions. Compared to current conditions, Alternative 3 also eliminates or reduces noise in many of the noise sensitive regions of the Park. Alternative 3 contains provisions for both a standard day and a quiet technology-only day and Table 6 summarizes the modeled noise metric results that would be experienced within the ATMP planning area under Alternative 3 during standard days. Figure 9 and Figure 10 display noise metrics results for standard day operations.

Table 6. Summary of Noise Modeling Metric Results for Alternative 3, Standard Days

Metric	Alternative 3 – Standard Day
12-hour Equivalent Sound Level ¹⁵	• Maximum value <45 dBA • Affected portions of the ATMP planning area would generally be 35 to <40 dBA, representing 3% of the Park
Day-night Average Sound Level	• Maximum DNL would be 3 dB less than the maximum 12-hour equivalent sound level, and therefore less than 45 dB
Time Audible Natural Ambient	• The maximum time that air tours could be audible would be less than 150 minutes a day, representing 2% of the Park • 18% of the Park would experience audible air tour noise for at least 60 minutes a day (non-contiguous)
Time Above 35 dBA	• The maximum time that noise from air tours would above 35 dBA is between 30 and 45 minutes a day, representing 1% of the Park • 29% of the Park would experience noise above 35 dBA for at least 0.1 minutes a day
Time Above 52 dBA	• The maximum time above 52 dBA experienced across all points modeled would be 5.8 minutes

¹⁵ If air tours are restricted to operating between 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

	83% of points modeled would not experience sound levels above 52 dBA (i.e., time above 52 dBA is 0 minutes)
Maximum Sound Level	The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the number of operations) would be 63.7 dBA at Point Location #17 ('Āpua Pt. Camp)

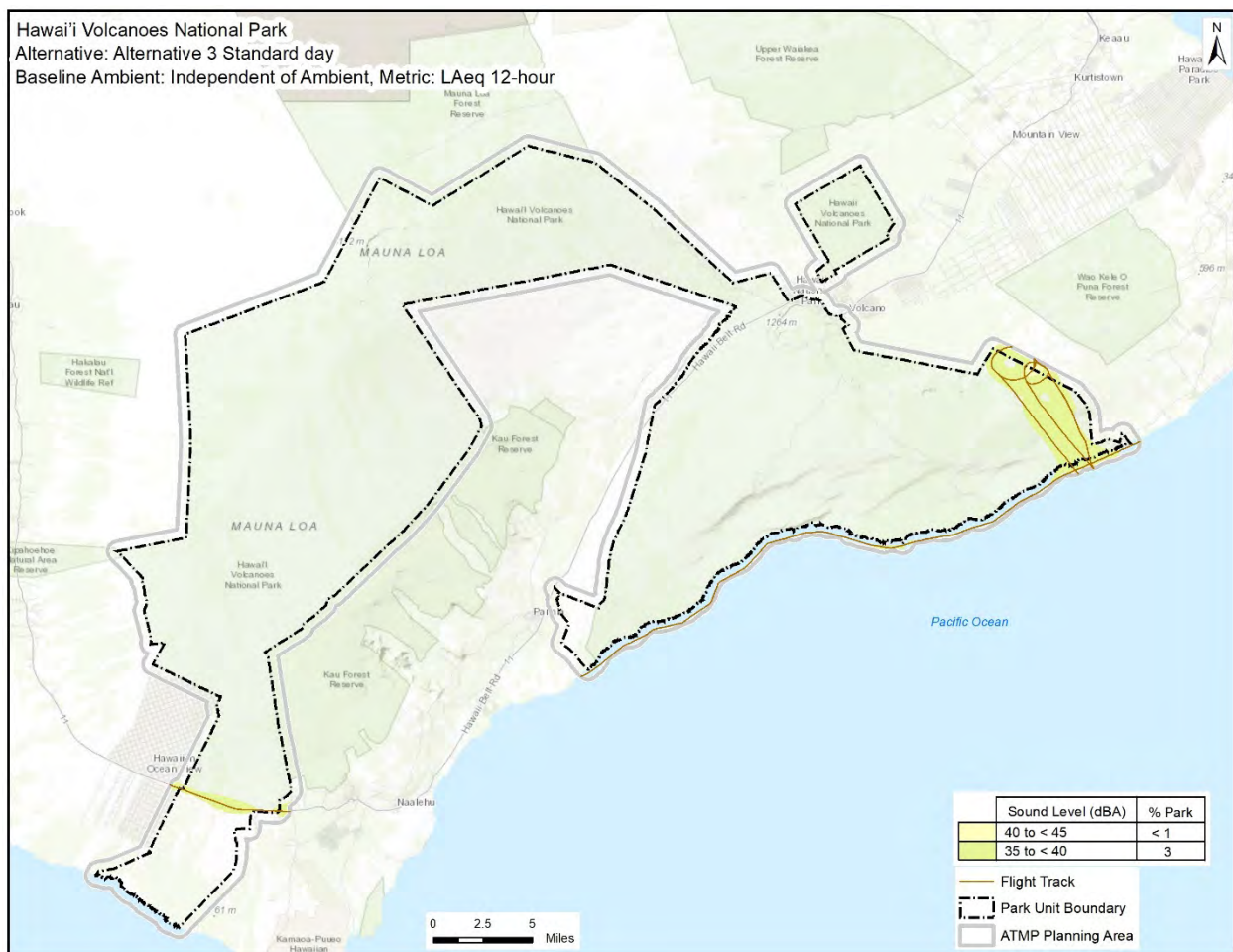


Figure 9. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) for Alternative 3 (Standard Day)

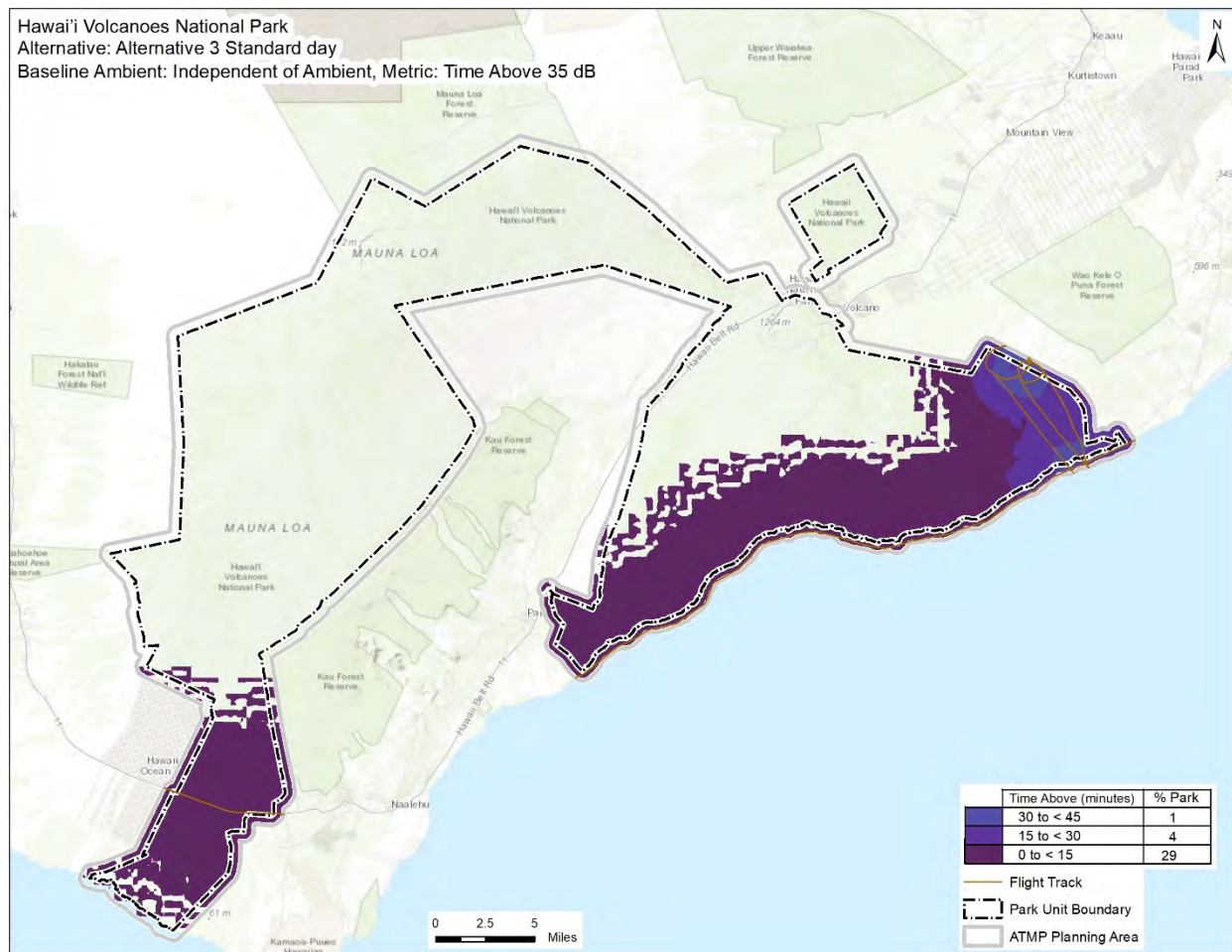


Figure 10. Time Above 35 dBA for Alternative 3 (Standard Day)

Table 7 summarizes the modeled noise metric results that would be experienced within the ATMP planning area under Alternative 3 during quiet technology-only days. Figure 11 and Figure 12 display noise metrics results for quiet technology-only days.

Table 7. Summary of Noise Modeling Metric Results for Alternative 3, Quiet Technology-Only Days

Metric	Alternative 3 – Quiet Technology-Only Day
12-hour Equivalent Sound Level	- Maximum value <45 dBA - Affected portions of the ATMP planning area would generally be 35 to <40 dBA, representing 2% of the Park
Day-night Average Sound Level	DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 45 dB

Time Audible Natural Ambient	• The maximum time that air tours could be audible would equal or exceed 135 minutes a day, representing less than 1% of the Park • 9% of the Park would experience audible air tour noise for at least 60 minutes a day (non-contiguous)
Time Above 35 dBA	• The maximum time that noise from air tours would be above 35 dBA is between 45 and 60 minutes a day, representing less than 1% of the Park • 21% of the Park would experience noise above 35 dBA for at least 0.1 minutes a day
Time Above 52 dBA	• The maximum time above 52 dBA experienced across all points modeled would be 9.7 minutes • 85% of points modeled would not experience sound levels above 52 dBA (i.e., time above 52 dBA is 0 minutes)
Maximum Sound Level	• The maximum sound level (i.e., the loudest sound level generated by the loudest event independent of the number of operations) would be 61.5 dBA at Point Location #9 (Pu'u'ō'ō)

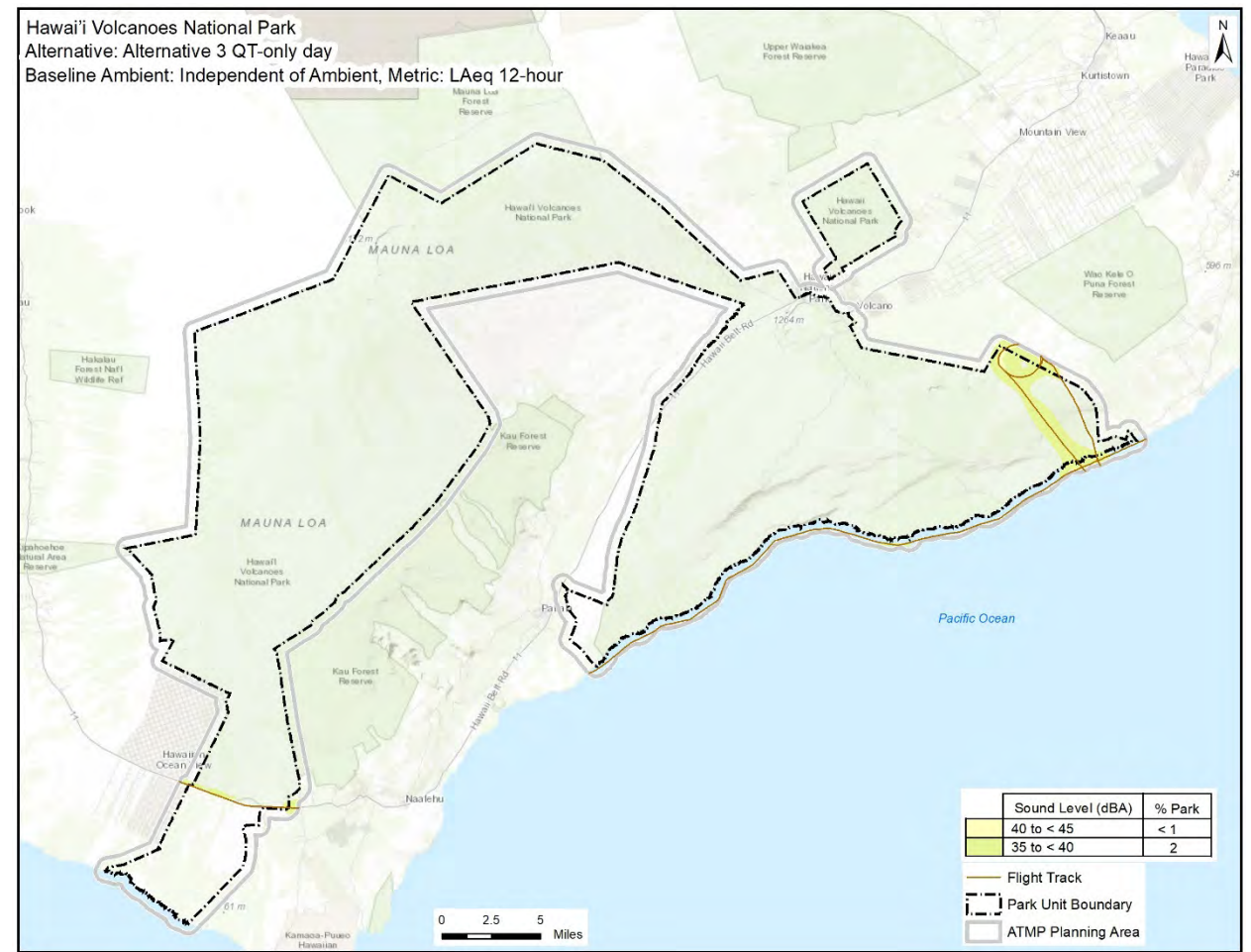


Figure 11. 12-hour Equivalent Sound Level ($L_{Aeq,12h}$) for Alternative 3 (Quiet Technology-Only Day)

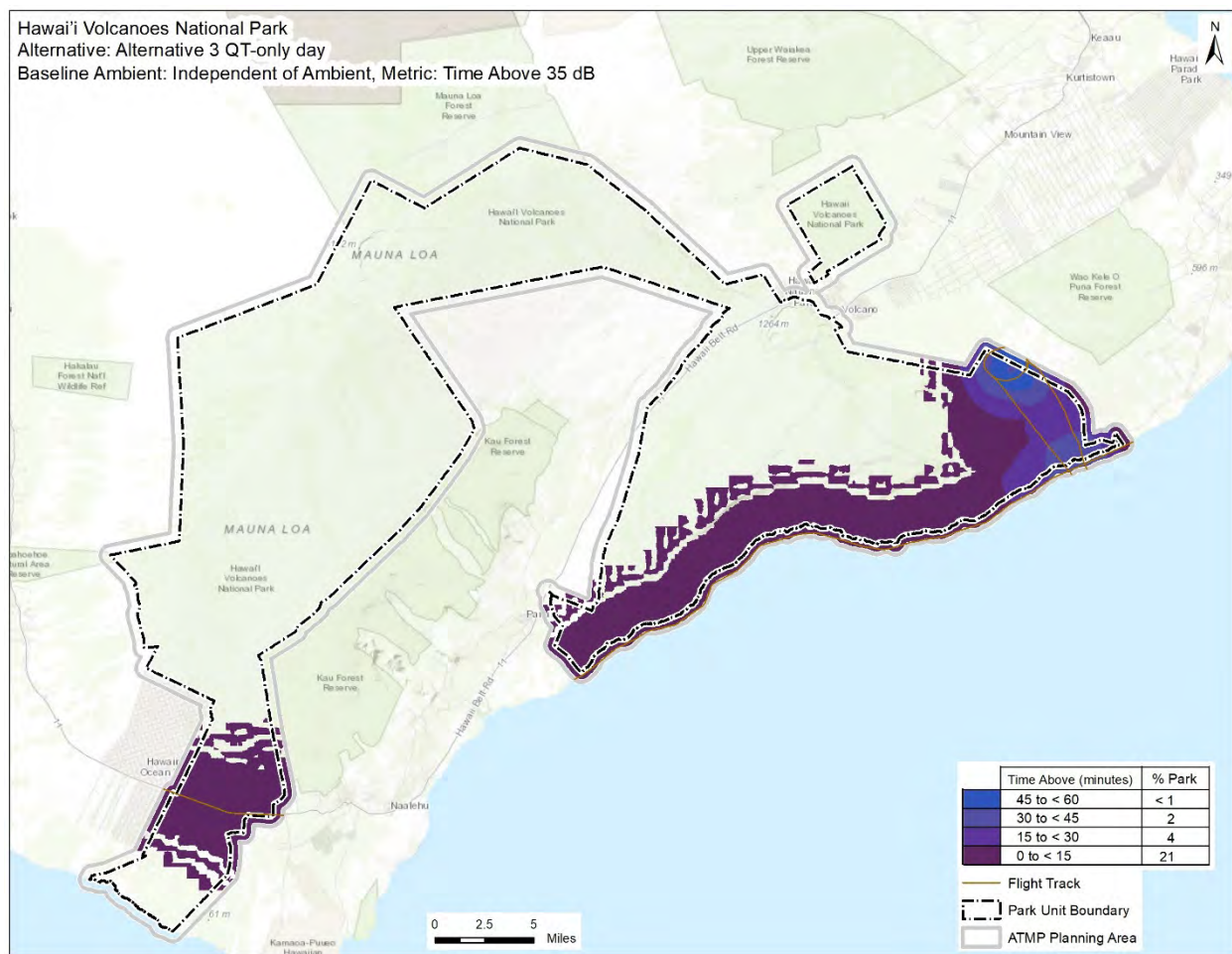


Figure 12. Time Above 35 dBA for Alternative 3 (Quiet Technology-Only Day)

The resultant DNL for Alternative 3 is expected to be below 45 dB. Refer to the *Noise Technical Analysis* in Appendix F for more information.

A comparison of impacts to noise and noise-compatible land use between Alternative 3 (on days when air tours operate) and the No Action Alternative is provided below. Because the noise impacts of Alternative 2 cannot be modeled, Alternative 2 was not included in this analysis:

- **12-hour Equivalent Sound Level:** Compared to the No Action Alternative, the average sound levels under Alternative 3 would be lower for the regions of the Park near Halema'uma'u Crater and the Kīlauea Visitor Center but would be higher in coastal regions. The noise footprint for Alternative 3 potentially affects 10% less of the ATMP planning area on standard days, and 11% less on quiet technology-only days.
- **Time Audible Natural Ambient:** Compared to the No Action Alternative, the overall time audible noise footprint for Alternative 3 standard day potentially is 2% larger than the No

Action Alternative due to higher aircraft altitudes under Alternative 3. For the quiet technology-only day, the overall time audible noise footprint potentially is 32% smaller than the No Action Alternative. The approximately 25% of the Park where time audible exceeds 150 minutes under the No Action Alternative would no longer exceed this threshold on both standard and quiet technology-only days under Alternative 3. The largest reductions would be at Pu'u'ō'ō (301-321 minutes) and Top of Mauna Loa Road (247 minutes). However, increases in time audible would occur at 14 locations.

- *Time Above 35 dBA:* Compared to the No Action Alternative, the time above 35 dBA under Alternative 3 would be up to 70 minutes less (see Pu'u'ō'ō). However, time above 35 dBA would be greater under Alternative 3 at ten locations (up to 11 minutes). The noise footprint for Alternative 3 (standard day) potentially affects 31% less of the ATMP planning area and 39% less for Alternative 3 quiet technology-only day.
- *Time Above 52 dBA:* Compared to the No Action Alternative, the time above 52 dBA under Alternative 3 would be up to 19 minutes less (see Cone Peak, Nēnē Area). Time above 52 dBA would be only slightly greater (up to 2.2 minutes) under Alternative 3 at seven locations. Sound levels above 52 dBA would occur in fewer locations under Alternative 3 (six locations) compared to the No Action Alternative (24 locations).
- *Maximum Sound Level:* Compared to the No Action Alternative, the maximum sound levels under Alternative 3 would be notably lower (more than 20 dBA) in 27 locations in areas surrounding Halema'uma'u Crater and the Kīlauea Visitor Center. However, maximum sound levels under Alternative 3 on a standard day may be greater at points such as Frontcountry Kahuku (5 dBA greater), Halapē Wilderness Camp (8 dBA greater), and 'Āpua Point Camp (5 dBA greater), as well as two other locations. These increases are mitigated under quiet technology-only days as the maximum sound levels are 5-10 dBA lower than on standard days.

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

For any alternative (Alternatives 2 and 3) that would limit the number of flights per year to a level below existing conditions (11,376 flights per year), it is reasonably foreseeable that current air tour operators could seek to make up lost revenue in other ways. One of the ways that operators could potentially generate revenue is by offering air tours outside of the ATMP planning area, as these would not be regulated by the ATMP. This type of shift in air tour activity is referred to as "air tour displacement," and could consist of air tour operators shifting routes or altitudes to just outside the ATMP planning area. This could result in impacts to resources to the extent that they are present near the locations where the displaced air tours would occur.

It is difficult to predict with specificity if, where, and to what extent any air tours would be displaced to areas outside of the ATMP planning area, including at altitudes at or above 5,000 ft. AGL. The preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Visual Flight Rules which are based on the principle of “see and avoid” and may vary greatly. It is reasonably foreseeable that operators would continue to fly to points of interest on the island outside of the ATMP planning area where they already fly, or fly routes over or around the Park similar to existing flight paths but outside of the ATMP planning area. Air tour operators are likely to continue to fly some air tours along the perimeter of the ATMP planning area where Kīlauea Crater or any active lava may be visible. While operators currently fly along most of the eastern boundary of the ATMP planning area and along the flight paths proposed under Alternative 3, ADS-B systems data of flight paths shows an absence of existing flights in a small area to the southwest of the ‘Ōla’a Forest tract. It is reasonably foreseeable that if operators are unable to fly within the ATMP planning area, the implementation of Alternatives 2 or 3 may result in more flights in this area as they may be able to hover and view the crater. If operators choose to fly above the vertical limit of the ATMP planning area, they would likely keep to an altitude close to, but just above 5,000 ft. AGL, as higher flights would provide limited value to a sightseeing operation. Operators may choose to fly just above 5,000 ft. AGL over some parts of the ATMP planning area. See Figure 1 for an example profile of ground level elevation changes relative to feet above ground level.

The exactness of routes and altitudes for tours flown at altitudes below 5,000 ft. AGL flying Visual Flight Rules could vary depending on client demand, weather, fuel load, and other costs. Specific routes, altitudes and numbers would be relevant in assessing noise and other potential indirect and cumulative impacts associated with eliminating air tours within the ATMP planning area. Consistent with the CEQ regulations, the agencies are disclosing that specific air tour routes, altitudes, and numbers of tours are not available to assess noise and other potential indirect and cumulative impacts associated with reducing or eliminating air tours within the ATMP planning area. In addition, because specific air tour routes are not available, it is not possible to identify all the other potential noise sources that might contribute to the acoustic conditions outside the ATMP planning area where operators may fly. Agencies are not required to conduct new scientific or technical research to analyze impacts and may rely on existing information to assess impacts. See 40 CFR 1502.21(c). For the purposes of disclosing the potential indirect effects of these alternatives, the agencies have considered the potential noise effects of operations above or along the perimeter of the ATMP planning area.

Indirect effects to ATMP planning area: Displaced air tours above the ATMP planning area (at or above 5,000 ft. AGL) would result in noise within the ATMP planning area. Compared to current conditions, the noise would be spread over a larger geospatial area and would be audible for a longer period, but at lower intensity. Thus, under Alternatives 2 and 3, some locations within the ATMP planning area may experience less intense noise but for a longer

period when compared to current conditions. Additionally, other locations within the ATMP planning area not currently experiencing air tour noise may experience some noise under these alternatives when compared to current conditions. However, in both cases, the intensity of noise would likely be low given the aircraft altitude; any noise that might result could also be more easily masked by opportunistic sounds such as wind and various anthropogenic noise sources. In summary, while the area of noise could be greater under these alternatives, the intensity of noise, especially when compared to current conditions at locations near or directly below existing air tour routes, would be less.

Indirect effects outside the ATMP planning area: Displaced air tours have the potential to affect noise-sensitive locations outside the ATMP planning area. However, it is unlikely that displaced air tours would generate noise at or above DNL 65 dB. To illustrate this, a conservative, screening-level noise analysis was conducted, refer to Appendix F, *Noise Technical Analysis*, Section 8 for a full description of this analysis. The analysis indicates that it would be highly unlikely that air tours that are displaced to outside the ATMP planning area under these alternatives would generate noise at or above DNL 65 dB.

Cumulative Effects: The cumulative impact of an alternative is the overall acoustic condition of the environment including existing and future noise from sources other than air tours plus anticipated noise from air tours under the alternative. The existing ambient condition of the acoustic environment is disclosed in Affected Environment Section 3.1, Noise and Noise-Compatible Land Use. Impacts from non-commercial air tour aircraft operations that currently occur outside the ATMP planning area are not regulated by the ATMP and will continue to occur.

As part of the cumulative effects assessment, the FAA and NPS considered other ongoing and planned actions. The NPS performs routine maintenance of Park buildings, utilities, roads, and trails that may include short-term noise associated with these actions. The frequency and duration of these activities vary depending on the project scope and Park mitigations. Noise-generating work is only permitted between one hour after sunrise and one hour before sunset, and in some areas of the Park, the timing of these activities is further restricted such as near lodging and housing areas. The Park's Superintendent's Compendium restricts the maximum noise levels generated to not more than 60 dBA.

The NPS and Park partners also use helicopters to transport supplies, equipment, or personnel to various locations for resource management actions, volcanic monitoring, search and rescue, and maintenance activities. These flights contribute noise to the Park's acoustic environment. These actions are performed in accordance with the best management practices for helicopter use as outlined in the Park's 2014 Mission Critical Aviation Plan and EA to minimize the impacts to natural and cultural resources, visitors, and Wilderness character. Helicopter use for these activities within the Park boundary averaged approximately 250 hours per year in 2014,

although this has continued to decrease in recent years. With the exception of regular flights (every 1-2 weeks) by the United States Geological Survey (USGS) to monitor the active volcanic areas, flights are typically dispersed across the Park landscape and the frequency determined by the type of activity. The NPS has an established program for ungulate animal control involving an extensive fence system designed to prevent entry of non-native ungulates into the Park through implementation of the Protecting and Restoring Native Ecosystems by Managing Non-Native Ungulates Plan/EIS (NPS, 2013). Temporary localized noise-producing activities associated with this work includes the use of jackhammers when fence post installation or replacement is necessary and the use of vehicles to drive to locations of fence installation or replacement (when accessible by roads). Most fence work includes the replacement of the mesh fence material and does not require mechanized equipment. The NPS also has an established program to conduct native plant restoration and invasive plant control within the Park, primarily focused on Special Ecological Areas. This work consists of manual techniques of cutting, digging, and pulling invasive plants, as well as the use of chainsaws for removal of invasive trees, which generates temporary noise in these areas. Planned future projects at the Park include a disaster recovery project, consisting of entrance road realignment, demolition of damaged structures at Uēkahuna bluff, replacement of waterline and fiber optic lines in the developed area, and construction of a replacement USGS field station. This project will last one to two years, during which there will be some construction noise generated most days, but mitigation measures will be used to ensure that noise is minimized as much as possible. The Park is also undertaking the development of a 0.3 mile trail segment to connect the access road in the Kahuku-Pōhue parcel to an existing historic trail, as well as a project to rehabilitate water systems in the Kīlauea unit of the Park. Both of these may result in some localized, temporary construction noise throughout the duration of the project.

Alternatives 2 and 3 would likely result in a noticeable beneficial effect on the overall acoustic environment of the Park from reducing or eliminating air tours within the ATMP planning area since the intensity of noise directly around and below existing air tour routes would decrease as described above. Alternative 3 would result in less cumulative noise in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other conditions. However, it would allow for more cumulative noise in the ATMP planning area than Alternative 2, where flights would not be authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS within the ATMP planning area would continue to occur under any of the alternatives.

3.2 Air Quality and Climate Change

3.2.1 Affected Environment

Air Quality

The Park is a designated Class I Airshed, which means that it is afforded the highest degree of protection (NPS, 2015). Air quality within the Park is affected by several emission sources, primarily from Kīlauea volcano. Emissions of sulfur dioxide (SO₂) and other gases from Kīlauea chemically interact with sunlight, oxygen, water, and dust to form acidic volcanic smog or “vog.” Vog creates a haze that obscures visibility and can contribute to acid rain that can degrade human health, natural resources, and cultural resources.

In addition to vog, another source of volcanic activity that affects air quality is known as laze, which is created when hot lava reaches sea water and forms large clouds of mist. Laze often contains hydrochloric acid other airborne contaminants that impact human health.

Other sources of emissions that impact air quality within the Park include marine aerosols, motor vehicles, non-road combustion engines, helicopters, and wildfires. These activities can release nitrogen oxides, particulate matter (PM), and other pollutants that affect air quality and visibility.

The National Ambient Air Quality Standards (NAAQS) determine whether a region is in an air quality attainment or nonattainment area. An area is considered to be in attainment if it meets the federal standard for all criteria pollutants. Subsequently, an area is in nonattainment if it does not meet (or contributes to ambient air quality in a nearby area that does not meet) the standard. When this occurs, states must submit implementation plans to the Environmental Protection Agency (EPA) discussing programs to improve air quality within that region. The Park is currently in an area of attainment for all NAAQS.

A monitoring program was implemented in 1986 to assess volcanic emissions within the Park, in addition to monitoring atmospheric deposition, ultraviolet radiation, ozone, visibility, and haze to obtain information on air quality (NPS, 2015). Air quality is regularly monitored at two primary monitoring stations near the Kīlauea Visitor Center and Jaggar Museum/Ūekahuna bluff in addition to a network of low resolution SO₂ sensors that serve the visitor SO₂ alert system. The NPS and the USGS operate an advisory program that is updated every 15 minutes and informs the public of current SO₂ levels within the Park (NPS, 2015). The Park has an air quality protocol to guide the response during periods of poor air quality. The air quality advisory level for the Park and each of its monitoring sites for SO₂ and PM sized 2.5 micrometers in aerodynamic diameter and smaller (PM_{2.5}) is considered Good, which is the best classification for air quality advisories (NPS, 2022a).

The NPS' Air Resources Division identifies ozone (O₃), visibility, and atmospheric wet deposition of nitrogen and sulfur as key indicators of air quality in national parks. Sulfur dioxide (SO₂) concentrations are also used as an additional measure for the Park. Monitoring for volcanic SO₂ emissions is vital to the safety of Park visitors and staff. This indicator is important in the Park given its potential to adversely impact natural resources and human health in the Park (Fung Associates and SWCA Environmental Consultants, 2019). Air quality status information including air quality alerts are posted daily to the NPS website for the Park.¹⁶

Greenhouse Gases

Of growing concern is the impact of proposed projects on climate change. The Intergovernmental Panel on Climate Change (IPCC) estimates that aviation accounted for 4.1% of global transportation greenhouse gas (GHG) emissions (FAA, 2020). GHGs are those that trap heat in the earth's atmosphere. Naturally occurring and anthropogenic (human-made) greenhouse gases include carbon dioxide (CO₂), water vapor (H₂O), methane (CH₄), nitrous oxide (N₂O), and O₃. The EPA data indicates that commercial aviation contributed to 6.6% of CO₂ emissions in 2013 in the United States (EPA, 2015).

In response to the increasing need for understanding and action related to climate change impacts in the parks, the NPS launched the Climate Friendly Parks program in 2002, creating opportunities to educate staff about climate change issues, assess each park's contribution to GHG emissions, create short and long-term strategies for reducing emissions, determine potential effects of climate change on park resources, and develop skills and strategies for communicating these effects to the public (NPS, 2015). As a part of the Park's participation in this program, the NPS developed a long-term Climate Action Plan (2007) that involved analyzing the anthropogenic carbon footprint of the Park using the Climate Leadership in Parks tool, a greenhouse gas emissions inventory model jointly developed by the EPA and the NPS. Data used to perform the calculations included the amount of electricity purchased, waste sent to the landfill, and fuels consumed.

An initial inventory completed in 2007 discloses Park emissions and includes contributions from administrative activities as well as Park visitors. Initial findings by the NPS show that transportation was the largest contributor to total GHG emissions for the Park (73% of emissions); energy was the next highest contributor, with 15% of emissions; solid waste and other emission sources (such as stationary combustion and refrigeration) also contributed to overall Park emissions (NPS, 2007). These findings provide an initial overview of the carbon footprint of the Park. Further monitoring and analysis using the Climate Leadership in Parks tool will track progress in reducing the Park's carbon footprint into the future.

¹⁶ <https://www.nps.gov/havo/air-quality-alert.htm>

3.2.2 Environmental Consequences

Alternative 1: No Action

The No Action Alternative represents existing air tour conditions. Modeling results for the No Action Alternative are presented in Table 8 for the criteria pollutants. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Pollutant emissions are based on annual flight miles and routes for each aircraft type operating within the ATMP planning area. The emission rates (pounds of emissions per mile flown) used in modeling are aircraft engine- and fuel-specific. The results in Table 8 describe baseline emissions under existing conditions; emissions under alternatives can be compared to baseline emissions to indicate potential impacts on air quality within the ATMP planning area.

Table 8. Summary of Criteria Pollutant Annual Emissions in Tons per Year (TPY) Under the No Action Alternative

Criteria Pollutant	Total Annual Emissions (TPY)
Carbon monoxide (CO)	0.845
Lead (Pb)	0.000
Nitrogen dioxide (NO ₂)	6.830
Particulate matter: aerodynamic diameter ≤ 2.5 μm (PM _{2.5})	0.062
Particulate matter: aerodynamic diameter ≤ 10 μm (PM ₁₀)	0.062
Sulfur dioxide (SO ₂)	0.757

Total annual GHG emissions for the No Action Alternative are modeled to be 1,851 metric tons (MT) of CO₂. The No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed.

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area which would eliminate direct emissions within the planning area and would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Therefore, Alternative 2 would result in direct beneficial effects on air quality compared to the No Action Alternative, due to lower commercial air tour emissions within the ATMP planning area. Direct emissions in the ATMP planning area would be expected to decrease by the amount reported in the No Action Alternative (Table 8) and would result in zero emissions from the elimination of commercial air tours within the ATMP planning area. The direct effects of this alternative would be the reduction of the emissions within the ATMP planning area reflected in Table 8; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below).

Alternative 3

Under Alternative 3, commercial air tour aircraft would still fly within the ATMP planning area; however, the total number of flights per year would be reduced and the routes flown would be modified as compared to existing conditions. Direct emissions in the ATMP planning area would be expected to decrease by the amount reported in Table 9 as compared to the No Action Alternative and would result in reduced emissions from the reduction of commercial air tours within the ATMP planning area. The direct effects of this alternative would be the reduction of the emissions within the ATMP planning area reflected in Table 9; however, emissions could still be generated from displaced air tours (refer to indirect effects analysis below). Modeling results for Alternative 3 are presented in Table 9 for the criteria pollutants in terms of change in emissions as compared to the No Action Alternative. Note that ozone is not reported as it is not directly emitted in aircraft exhaust. Similar to the No Action Alternative, these results are based on annual flight miles and routes for each aircraft type and the emission rates used in modeling are aircraft engine- and fuel-specific. Alternative 3 contains provisions for both a standard day and a quiet technology-only day. The results in Table 9 show that emissions from air tours for all criteria pollutants would decrease or remain unchanged under Alternative 3.

Table 9. Summary of Change in Criterial Pollutant Annual Emissions in TPY Under Alternative 3 as Compared to No Action Alternative

Criteria Pollutant	Change in TPY as Compared to No Action Alternative*
Carbon monoxide (CO)	-0.676
Lead (Pb)	0.000
Nitrogen dioxide (NO ₂)	-5.192
Particulate matter: aerodynamic diameter ≤ 2.5 µm (PM _{2.5})	-0.047
Particulate matter: aerodynamic diameter ≤ 10 µm (PM ₁₀)	-0.047
Sulfur dioxide (SO ₂)	-0.567

*Negative values represent a reduction in total emissions.

The total change in annual GHG emissions for Alternative 3 as compared to the No Action Alternative is modeled to be a reduction of 1,388 MT CO₂ within the ATMP planning area. Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. Compared to the No Action Alternative, Alternative 3 would result in beneficial impacts to air quality due to lower commercial air tour emissions within the ATMP planning area. Alternative 3 could result in an approximately 75 percent

reduction in both criteria pollutant and GHG emissions as compared to the No Action Alternative.

Indirect and Cumulative Effects

Indirect Effects: For any alternative that limits the number of flights per year to a level below existing conditions (11,376 flights per year), as described above, it is reasonably foreseeable that operators could potentially generate revenue by offering air tours outside of the ATMP planning area, as the areas outside this area would not be regulated by the ATMP. Some of this displaced activity could result in impacts to air quality, although, it is difficult to predict with specificity if, where, and to what extent any displaced air tours would result in impacts in different and/or new areas. The preciseness of routes and altitudes for tours flown on displaced routes are generally subject to Visual Flight Rules and may vary greatly.

Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Alternatives 2 and 3 limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, if any, would not result in direct effects from emissions within the ATMP planning area. However, prevailing winds may transport some of the emissions outside the ATMP planning area to within the ATMP planning area (i.e., indirect effects). Additionally, some areas that are not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions in these scenarios thus affecting the air quality in these areas.

For purposes of assessing indirect air quality and GHG impacts that would occur as a result of Alternatives 2 or 3, this analysis considers whether aircraft currently operating over the Park would generate significant emissions to affect the attainment status of the Park. Based on the analysis, the emissions of all criteria pollutants (excluding ozone) and GHGs from the current number of air tours flown over the Park are minimal. Operations that may occur outside the ATMP planning area as a result of Alternative 2 or Alternative 3, may shift where emissions occur but the total annual emissions are not likely to change substantially.

Because of both the number of air tours and the likely dispersal of air tours outside the ATMP planning area, it is unlikely that air tours that are displaced to outside the ATMP planning area under these alternatives would result in air quality impacts under NEPA or change the current attainment status of the Park. Changes in air tour operations under these alternatives would also likely have minimal impact, if any, to regional air quality.

Cumulative Effects: The cumulative impact of an alternative is the overall air quality of the environment including existing and future emissions from sources other than air tours plus anticipated emissions from air tours under the alternative. The existing air quality in the Park is disclosed in Section 3.2.1, Affected Environment. Other ongoing actions related to air quality and GHGs include: the monitoring program to assess air quality and to monitor visibility; an air quality protocol to guide the response during periods of poor air quality; and continued work related to the Climate Action Plan (2007). Alternatives 2 and 3 would likely result in no noticeable change to a slight improvement in overall air quality in the Park, with no change in the current NAAQS attainment status. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.3 Biological Resources

The area of analysis for biological resources, including but not limited to species listed as threatened or endangered, in this draft EA includes the Park and areas outside the Park but within ½ mile of its boundary, also known as the ATMP planning area. This area encompasses all effects of the proposed action for biological resources. To the extent that habitat and species occurrences correlate, impacts to biological resources are expected to be similar within the ATMP planning area. Therefore, if habitat exists for a species but occurrence is unknown, the assumption is that the species could be present and therefore will be analyzed accordingly.

The environmental effects of commercial air tour operations are evaluated for biological resources and their habitats. The analysis discloses the context of natural variability and ecosystem integrity, as well as effects on individuals and populations. Some impacts are species specific and are identified accordingly.

The ESA is the primary federal statute regulating federally listed threatened and endangered species and critical habitat. The United States Fish and Wildlife Service (USFWS) is the federal agency responsible for administration of the ESA, the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act (MBTA). The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) is the regulatory agency with oversight of the ESA for marine mammals and fishes. Jurisdiction over the Marine Mammal Protection Act (MMPA) is shared between USFWS and NMFS. Under the Hawai'i State Endangered Species Statute, Hawai'i Revised Statute 195D, any federally listed endangered or threatened species are also listed under Hawai'i Revised Statute 195D. The NPS 2006 Management Policies direct the NPS to meet its obligations under the NPS Organic Act and the ESA to both proactively conserve listed species and prevent detrimental effects on these species (NPS Management Policies § 4.4.2.3, 2006).

A threatened species is defined under the ESA as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its

range.” An endangered species is defined under the ESA as “any species which is in danger of extinction throughout all or a significant portion of its range.” Species designated as threatened or endangered are collectively referred to as listed species in this draft EA. Critical habitat has been designated by USFWS or NMFS as the habitat needed to support recovery of listed species.

3.3.1 Affected Environment

The Park protects a wide diversity of wildlife and habitat. Approximately 90% of all native wildlife on the Island of Hawai'i is endemic (National Parks Conservation Association, 2008). There are hundreds of native species within the Park, many of which are recognized as threatened or endangered (NPS, 2019). All native mammals and several bird species in the Park are listed as federally and state listed threatened or endangered species. The biological resources analyzed in this section include both listed and non-listed wildlife most likely to be affected by the alternatives. As discussed in Section 1.5, Environmental Impact Categories Not Analyzed in Detail, it is unlikely that plants, invertebrates and fish species would be affected by air tours, therefore they are not considered for further analysis in this draft EA.

Many of the Park's native wildlife species face pressure from nonnative species, including invasive ungulates. Other ongoing stressors to specific species are discussed below.

Federally Listed Species

Mammals

Hawaiian Hoary Bat

The Hawaiian hoary bat (*Lasiurus semotus*), or 'ōpe'ape'a, is the only fully terrestrial native mammal in the Hawaiian Islands and is federally listed as endangered. 'Ōpe'ape'a are found from sea level to 11,800 ft., with most observations occurring in native rain forests up to at least 6,000 ft. (Bonaccorso et al., 2015). Data indicates that 'ōpe'ape'a commonly traverse and forage throughout the ATMP planning area and are likely to be roosting within this area. Detections were reported from within the Park or the vicinity of the ATMP planning area, and activity peaked 40-60 minutes after sunset (Fraser et al., 2007). Females typically give birth to twin pups from June to August, and juveniles are typically volant by mid-September.

'Ōpe'ape'a are known to roost solitarily in tree foliage in a variety of tree species and in an assortment of habitats and elevations (native and non-native habitats). Roost trees are usually larger than surrounding trees (Montoya-Aiona, 2020). 'Ōpe'ape'a is vulnerable to roost disturbance during pupping and pup care (June-September). Noise exposure to bat species during daytime roosting and while rearing young can lead to abandonment of their roosts and young (California Department of Transportation, 2016). Noise from a variety of sources, including commercial air tours, occur over 'ōpe'ape'a habitat during these sensitive months.

‘Ōpe‘ape‘a is an insectivore, and prey include a variety of night-flying insects, primarily moths and beetles (Whitaker and Tomich, 1983; Pinzari et al., 2019). Acoustic detection studies show seasonal patterns of habitat occupancy with increased activity in the higher elevations (higher than 3,300 ft.) during the non-breeding season (November to April), and increased activity in the low elevations during the breeding season (Bonaccorso et al., 2015).

Due to its solitary and cryptic roosting behavior (Bonaccorso et al., 2015), robust estimates of the population size and trend of the ‘ōpe‘ape‘a are currently unavailable. ‘Ōpe‘ape‘a can be injured and killed from collisions with man-made structures including barbed wire fences, wind turbines, and communication towers; however, limiting factors are poorly understood. There is one documented rotor strike of ‘ōpe‘ape‘a on the Island of Hawai'i (Yuen, 2012). Other threats to this species include the elimination of roosting sites, habitat destruction, pesticides, and introduced species such as non-native insects or disease.

Hawaiian Monk Seal

The ‘īlio holo i ka uaua or Hawaiian monk seal (*Neomonachus schauinslandi*) is the only native marine mammal within the Park and is listed as endangered. This species is gray to brown in color, with a yellow-brown ventral pelage and an average length of 7 ft. for adult individuals (NMFS and NOAA, 2007). Monk seal births are most common between February and August, peaking in March and April (NMFS and NOAA, 2007). Monk seals inhabit the remote beaches of the Park where they rest and bask along the shore for several days throughout the year. They also use these beaches for hauling out, pupping, and nursing, and utilize the vegetation further inland on the beaches for protection from weather elements. The critical habitat of this species is designated in ten areas of the Northwestern Hawaiian Islands and six areas in the main Hawaiian Islands, including the Island of Hawai'i. Critical habitat is located along the southeastern coast of the Park (see Figure 13). See Appendix H, *Section 7 Consultation*, for additional information about critical habitat.

The Hawaiian monk seal was first listed as endangered on the Endangered Species List in 1976, where it currently remains, in addition to being protected under the MMPA. Population sizes across the Park and the greater Hawaiian Islands have declined over the past 20 years (NMFS and NOAA, 2007). The NMFS recovery plan for this species was implemented in 2007, and today their total global population is estimated to be 1,200 individuals. Although this species has a high recovery potential, the magnitude of threats has caused the current total population to be relatively small and in decline, so much so that there is concern about long-term maintenance of genetic diversity (NOAA, 2020).

A study of ringed seal responses to fixed-wing airplanes and helicopters in Greenland (Born et al., 1999) found that 6% of the seals showed escape behavior in response to low altitude fixed-wing aircraft overflights at 500 ft. and responded at an average distance of 1,214 ft. in front of

the aircraft. Escape response occurred at a maximum distance of 1,970 ft. In contrast, 50% of seals showed escape behavior in response to helicopters flying at this same altitude at 1,640 ft. in front of the helicopter and showed a maximum escape distance of 4,760 ft. (Born et al., 1999). Although the aircraft and helicopter surveys were conducted at different locations, the magnitude of these differences indicates that seals show a heightened response to helicopters versus fixed-wing aircraft (NMFS, 2015). Threats to this species include food limitation, entanglement, predation, infectious disease, habitat loss, and human disturbance (NMFS and NOAA, 2007).

Other Marine Mammals

Other marine mammals that are protected under the ESA may be present within the ATMP planning area. This includes several species of whale: blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), Main Hawaiian Islands Insular false killer whale (*Pseudorca crassidens*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). Whales within the Pacific Ocean have experienced population declines due to commercial whaling throughout the 1900s. Although commercial whaling has largely been banned, populations are still recovering. Today, threats to whales include vessel strikes, interactions with fisheries, pollution, and climate change.

Blue whales are the largest mammal on Earth. The Central North Pacific stock of blue whales feed in the summer throughout the Gulf of Alaska and migrate to the Hawaiian Islands in the winter. Blue whales are listed as endangered under the ESA. From 1910 to 1965, approximately 9,500 blue whales were killed from commercial whaling; their population today ranges from 38 to 81 individuals and is increasing as a result of the prohibition of commercial whaling across much of their range (NMFS, 2017).

The fin whale inhabits deep, offshore waters of all major oceans. Tens of thousands of fin whales have been killed in the Pacific Ocean since the early 1900s due to commercial whaling. The estimated population size for fin whales across the State of Hawai'i ranges from 27 to 58 individuals (NMFS, 2017). While population trends for the State of Hawai'i stock are undetermined, other populations of fin whales have had stable abundance, with some stocks in the Pacific Ocean increasing at a rate of 4.8% per year (NMFS, 2017). Fin whales are listed as endangered under the ESA.

The Main Hawaiian Islands Insular false killer whale is one of three stocks of false killer whales in the State of Hawai'i. Critical habitat for this species occurs throughout the Hawaiian Islands and extends approximately 50 kilometers off of the coast of each island, portions of which overlap with the ATMP planning area (see Figure 13). The population of the Main Hawaiian Islands Insular false killer has declined from 162 to 92 individuals from 2000 to 2009 and is expected to continue to decline due to threats such as inbreeding, pollution, and commercial

fishery activity that increases competition for food, entanglement, and intentional harm by fishermen (NMFS, 2017). This population of false killer whale is considered to be genetically distinct to other populations of false killer whale. This species was listed as endangered under the ESA in 2012.

The North Pacific right whale is one of the most endangered whale species in the world. Critical habitat for this species is located in the Gulf of Alaska and the Southeast Bering Sea, both of which lay outside of the ATMP planning area. North Pacific right whales migrate to temperate waters, such as those surrounding the State of Hawai'i, in the winter months to reproduce. The Eastern North Pacific stock of right whales has a population that is smaller than the western stock; population size is believed to be less than 100 individuals, with several sampling studies estimating that the population size ranges from 23 to 31 whales (NMFS, 2017).

Sei whales are distributed worldwide. They winter at low latitudes for reproduction and travel to high latitudes in summer where they feed on zooplankton and schools of fish. Two subspecies of sei whale are recognized, *B. b. schlegellii* in the Southern Hemisphere and *B. b. borealis* in the Northern Hemisphere, the latter of which could be present in the waters around the State of Hawai'i. Population estimates of the North Pacific population have declined from 42,000 individuals to 8,600 from 1963 to 1974 and were estimated to be 29,632 between 2010 and 2012 (NMFS, 2017). Of the three small stocks that are present in U.S. waters, the State of Hawai'i population is estimated to be 93 to 178 individuals (NMFS, 2017). Sei whales are listed as endangered under the ESA.

Sperm whales are the most abundant large whale species and found in all major oceans. They forage at higher latitudes in the summer and breed at lower latitudes during the winter. Of the three U.S. stocks of sperm whales that occur in the Pacific Ocean, the State of Hawai'i stock is estimated to be 2,539 to 3,354 individuals (NMFS, 2017). Globally, higher estimates of sperm whale abundance are approaching pre-whaling levels.

Reptiles

There are five species of sea turtle that are protected under the ESA and could occur in the ATMP planning area: the green sea turtle (*Chelonia mydas*), or honu, hawksbill sea turtle (*Eretmochelys imbricata*), or honu'ea, leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*). Threats to sea turtles include interactions with fisheries, poaching, and nesting habitat degradation due to coastal development.

Honu are listed as threatened under the ESA. The Central North Pacific population, which includes the State of Hawai'i, has approximately 3,710 breeding females (Seminhoff et al., 2015). More than 96% of nesting occurs at one site in the northwest Hawaiian Islands; the highly concentrated nesting population makes honu vulnerable to stochastic events (events

that can alter population dynamics, such as floods or droughts) and threats from climate change that impact their low-level nesting habitat (Seminhoff et al., 2015). However, monitoring over the past 40 years has indicated that overall nesting is increasing in the State of Hawai'i. In 2011, a honu was documented nesting on a beach that is now part of the Park (Sietz, 2012). Critical habitat for this species is designated around Culebra Island, Puerto Rico, which is located outside of the ATMP planning area.

Honu'ea are found in all major oceans and are the only sea turtle that can survive on a diet that consists mostly of sponges. Critical habitat for this species is located outside of the ATMP planning area in the waters surrounding Mona and Monito Islands, Puerto Rico, but there are several beaches along the south coast of the Park that are protected for nesting females. Less than 20 females per year nest in the Park, which makes it one of the smallest nesting populations in the world but the largest in the Central North Pacific Ocean (NOAA, 2022). Honu'ea exhibit high site fidelity, and regularly return to Āpua Point, Halapē, and Pōhue to lay eggs from late July to mid-September (Seitz, 2012; Fung Associates and SWCA Environmental Consultants, 2019). A prominent threat to honu'ea is hunting, where they are targeted for their shells whose "tortoise shell" pattern is used to create jewelry and crafts. Honu'ea are listed as threatened under the ESA, and their populations are declining.

Leatherback sea turtles are the largest turtle in the world and highly migratory. In the Pacific Ocean, nesting is common in Mexico, Nicaragua, and Indonesia, but rare across the State of Hawai'i. Abundance estimates for leatherback sea turtles are less than 1,000 nesting females for the East Pacific population, and have been declining (NMFS and USFWS, 2020a). This species is currently listed as endangered. Critical habitat for leatherback sea turtles is designated outside of the ATMP planning area.

The loggerhead sea turtle is the most abundant sea turtle that nests in the United States and has nine distinct populations. The ATMP planning area is included under the North Pacific population; turtles mate on the coasts of Japan and forage in the western Pacific. The number of nesting females was estimated to be 8,733 individuals and are overall increasing, but population trends are an estimate and can vary by location (NMFS and USFWS, 2020b). Loggerhead sea turtles are listed as endangered and have designated critical habitat that is located outside of the ATMP planning area.

Olive ridley sea turtles are one of the world's smallest sea turtles and are found worldwide, notably in Pacific subtropical waters from California to Peru. An olive ridley nest was documented in 2020 at a beach neighboring Park lands outside of the ATMP planning area. Population estimates of this species vary by nesting location, but are believed to be declining overall (NMFS and USFWS, 2014). In the Pacific, large nesting populations are present in Mexico and Costa Rica. Olive ridley are listed as threatened under the ESA.

Birds

Forest Birds

‘Akiapōlā‘au (*Hemignathus wilsoni*), an endangered honeycreeper species, is extremely rare in the Park and only found along the northeast boundary of Kahuku, close to Ka‘ū Forest Reserve, in mixed ‘ōhi‘a-koa mesic to wet forest above 4,300 ft. elevation. This species has previously been observed in the Mauna Loa Strip area, but there is currently no resident population in this region of the Park. These endemic honeycreepers are insectivores that forage on koa, ‘ōhi‘a, kōlea, and ‘ie‘ie vegetation. ‘Akiapōlā‘au nest almost exclusively in the tops of ‘ōhi‘a trees. ‘Akiapōlā‘au breeds and fledges young throughout the year, although more predictably from March to July. This species had an estimated population size of 1,500 individuals in the late 1970s, and surveys conducted between 1990 and 1995 estimated that the population size decreased to around 1,110 individuals (State of Hawai‘i, 2015), and then conservation actions resulted in increasing trends to the most recent estimate of 1,900 birds (Kendall et al., 2022).

Populations of the Hawai‘i creeper (*Loxops mana*), also known as ‘alawī, are concentrated in a small area in mesic to wet forest in the Kahuku Unit above 4,300 ft. elevation. Also insectivores, Hawai‘i creeper primarily forage along the trunks and branches of ‘ōhi‘a and koa. Hawai‘i creepers tend to build their nests at mid-canopy. This species was first listed as endangered in 1970, and its first recovery plan was created in 1983. Population estimates for the Hawai‘i creeper remained stable at around 12,500 individuals until 2010, when a five-year status review was conducted indicating that their populations across the Island of Hawai‘i increased to approximately 14,000 birds (USFWS, 2020). There are four distinct populations on the Island of Hawai‘i. Within the Park’s Kahuku unit, the densities of this species are increasing (Judge et al., 2017).

The Hawai‘i ‘ākepa (*Loxops coccineus*), which are more abundant and widely distributed throughout Kahuku than ‘akiapōlā‘au and Hawai‘i creepers, forage almost exclusively on buds and new flush of ‘ōhi‘a foliage in single trees or small stands within subalpine shrublands and adjacent old growth ‘ōhi‘a forest of Kahuku. Their breeding season is from March to late May, and they have been observed nesting in cavities of large ‘ōhi‘a trees. The Hawai‘i ‘ākepa was first listed as endangered in 1970 and had recovery plans created and revised in 1983 and 2006, respectively. The total population estimate of the Hawai‘i ‘ākepa is greater than 16,000 birds, with the population in the Park and the Ka‘ū Forest Reserve being the second largest on the Island of Hawai‘i. Their population at Kahuku was estimated to be 3,663 individuals (Judge et al., 2018).

The ‘i‘iwi (*Drepanis coccinea*), federally listed as threatened, is a honeycreeper historically widespread and occurring at all elevations, but now persists only in the high-elevation forests primarily on the Islands of Hawai‘i, Maui, and Kaua‘i (Scott et al., 1986; USFWS, 2016; Fancy and

Ralph, 2020). The population on the Island of Hawai'i was estimated to be greater than 543,000 birds (Kendall et al., 2022). At the Park, 'i'iwi is generally restricted to elevations above 4,900 ft. where the disease vector mosquito for avian malaria is absent. 'i'iwi population trends are variable within the Park. Populations in Kahuku and on the eastern side of the Park within the Mauna Loa Unit are both declining; populations within Northwest Kahuku and 'Ōla'a are considered to be stable; populations in Pāpā are increasing (Judge et al., 2017). Breeding may occur all year, but peak breeding occurs from February through June (Fancy and Ralph, 2020). The 'i'iwi is a strong flier capable of high, long flights to locate nectar sources (Guillaumet et al., 2017; Fancy and Ralph, 2020). 'i'iwi are primarily nectivorous, but also eat small arthropods. USFWS has proposed critical habitat for the species (USFWS, 2022a), which includes portions of the ATMP planning area.

Another endangered forest bird species, 'ālalā or Hawaiian crow (*Corvus hawaiiensis*), was once common throughout their range on the Island of Hawai'i. The last 'ālalā in its native habitat was thought to have been confined to higher elevations in South Kona. 'Ālalā became extinct in their native habitat. The last observation of 'ālalā in the wild was in 2002 (USFWS, 2009). It remains a captive breeding population at Keauhou Bird Conservation Center where propagation efforts have been successful. Release of 'ālalā is being considered for several areas across the State of Hawai'i and may include areas within the ATMP planning area.

Today, most Hawaiian forest birds persist only in high-elevation forests where the risk of malaria transmission is lower due in part to cooler temperatures (van Riper et al., 1986; Scott et al., 1986; Atkinson and LaPointe, 2009; Atkinson et al., 2014). Even though much of the high elevation threatened and endangered bird habitat in the ATMP planning area is largely protected from feral ungulates and direct human-caused habitat loss, there is evidence of continuing range contraction and population declines, especially from lower-elevation portions of their ranges since 1980 (Baker and Baker, 2000; Camp et al., 2009; Vetter et al., 2012). Other surveys have shown that the overall condition of landbird populations within the Park are considered to be stable; while no species of landbirds have been found to experience an overall decline in the Park, several species are decreasing in specific areas (Fung Associates and SWCA Environmental Consultants, 2019). Under existing conditions, noise from ongoing air tours is present within the ATMP planning area. This noise affects biological resources in various ways, including bird species that occur throughout the ATMP planning area. Specifically, noise from aircraft has been demonstrated to influence bird vocalizations to overcome the masking effects from aircraft noise in areas where loud and frequent helicopter traffic occurs (Gallardo Cruz et al., 2021). While altering vocalizations may not result in death of impacted birds, this change in behavior is likely to be indicative of other effects (e.g., stress response) seen in numerous bird species in response to noise disturbance (Francis et al., 2009; Barber et al., 2010; Shannon et al., 2016; Buxton et al., 2017). Stress is well known to reduce survival and reproductive success in birds (Delaney et al., 1999; Kleist et al., 2018). As air tours are currently occurring within the

ATMP planning area, these effects are ongoing and part of the affected environment for bird species that occur within the ATMP planning area.

Seabirds

There are three listed seabirds confirmed or potentially occurring within the ATMP planning area during nesting season, traveling outside of the ATMP planning area during the day to feed and return to the nest at night. 'Akē'akē, or band-rumped storm-petrel (*Oceanodroma castro*), is a small black pelagic seabird that breeds on steep, remote cliffs and high-elevation volcanic terrain above 6,900 ft. (Slotter-back, 2002; Antaky et al., 2019). The species was listed as endangered in 2016 after the first active nests were discovered in the Hawaiian Islands (USFWS, 2016).

Once widespread in the main Hawaiian Islands, the 'a'o, or Newell's shearwater (*Puffinus newelli*), is federally listed as threatened. 'A'o breed on the ground in excavated burrows often surrounded with dense vegetation, including native 'ōhi'a (*Metrosideros polymorpha*) and uluhe ferns (*Dicranopteris linearis*), at elevations ranging from 500 to 4,000 ft. on steep slopes and near-vertical volcanic crater walls (Ainley et al., 2019). Populations are historically known to breed in rainforest dominated by an uluhe fern understory in areas of the lower East Rift Zone outside the boundary of the Park; however, much of the area was covered in lava in 2018 during the lower Puna eruption, including Pu'ulena Crater where surveyors in 1993 confirmed a breeding colony (Reynolds and Ritchotte, 1997). Before the 2018 eruption, potential colonies were suspected to be under the threat of predation by barn owls (*Tyto alba*), which have devastated seabird colonies in areas of Hawai'i (Byrd and Telfer, 1980); the owls were recorded frequently in known breeding locations (Reynolds et al., 1994). In the early 1970's there was a carcass and bird calls recorded at Makaopuhi Crater within the Park (Banko, 1980) and there were incidental reports of calls near the Kalapana Trailhead (Banko, 1980; Swift and Burt-Toland, 2009), but there were no detections of Newell's shearwater during radar and auditory/visual surveys conducted between 2001 and 2005 (Swift and Burt-Toland, 2009). Using population estimates of 2,000 birds for both 'ua'u or 'ao, Day et al. (2004) estimated that 0.00016% of the population would be killed/year from collisions with an 85 ft. radio tower located near Park headquarters. It is assumed that some birds may still be nesting in areas of the East Rift Zone. No focused monitoring has occurred since the early 2000s (Swift and Burt-Toland, 2009).

The Hawaiian Petrel (*Pterodroma sandwichensis*), known as 'ua'u, is an endangered seabird that forages widely across the Pacific and nests only in the Hawaiian Islands, which is the only time they utilize land. Their nesting habitat is variable, ranging from heavily vegetated, forested slopes on the Islands of Lāna'i and Kaua'i to subalpine and alpine environments on the Islands of Maui and Hawai'i. They have been observed nesting in shallow pits, cracks and lava tubes within sparsely vegetated, weathered pāhoehoe lava flows on Mauna Loa, in addition to

underground burrows at high elevations (above 5,500 ft.) in sparsely vegetated terrain on the western slope of Kahuku and in upper subalpine and alpine habitat on the eastern side of Mauna Loa above 8,000 ft. elevation. Adult petrels and fledglings are believed to enter and exit their underground nests at dusk and dawn. This species was first listed as endangered in 1978, and a recovery plan was created in 1983 by the USFWS. A 5-year status review was conducted in 2011, where 'ua'u populations statewide had increased from the low thousands to around 19,000 individuals, allowing some of their delisting criteria to be partially fulfilled due to conservation efforts such as predator management (USFWS, 2022b). Another 5-year status review began in 2022. 'Ua'u populations on the Island of Hawai'i number in the low hundreds and within the Park there are approximately 55 to 75 known active nests. Data from this review and fulfillment of delisting criteria is still being analyzed, but populations of 'ua'u on the Island of Hawai'i are expected to increase due to predator management actions such as installing predator-proof fencing, however, nests outside of protective fences remain extremely vulnerable to predation.

Climate change affects seabirds' breeding success with increasing variability in the distribution and availability of at-sea prey, which is being affected by rising ocean temperatures; however, little is known about the potential effects of climate-driven changes in the prey available for 'akē'akē, 'a'o, and 'ua'u. Expanding invasive species are also associated with climate change scenarios, which could potentially degrade the breeding habitat of the 'akē'akē, 'a'o, and 'ua'u. (Ainley et al., 2019). Current threats to seabirds include habitat loss, trampling of nests by feral ungulates, predation, light pollution, and collision with vehicles and man-made objects/structures.

Hawaiian Goose

The Hawaiian goose (*Branta sandvicensis*), known as nēnē, occur in the Park and the greater Hawaiian Islands, often flying between roosting and foraging sites multiple times throughout the day. Nēnē use diverse habitats including sub-alpine grasslands, open native shrubland and grasslands as well as mid- and low-elevation pasture and managed grasslands, to forage on leaves of grass, berries, seeds, and flowers; some make elevational movements for breeding, foraging, and molting (Leopold and Hess, 2014; Banko et al., 2020).

Nēnē were extirpated from all islands except the Island of Hawai'i by the early 1900s. In 1967, this species was listed as federally endangered under the ESA. In 2019, the nēnē were down listed from endangered to threatened. Currently, the population size of nēnē within the Park is estimated to be fewer than 200 individuals; nēnē have multiple breeding areas in the Park, which is nearly 20% of the population of nēnē on the Island of Hawai'i. Their population continues to decline despite conservation efforts such as habitat management, predator control, and restrictions on areas where nēnē are present. Threats to nēnē include vehicle collisions, wind farm turbine collisions, human or vehicle-related injuries and trauma, predation

by small mammals, toxoplasmosis (a pathogen carried by feral cats), and mosquito-borne avian pox virus (Work et al., 2015; Banko et al., 2020).

Based on the biology of this species, there may be the potential for aircraft noise to affect communication and flock and family interactions of this social species. For example, aircraft may disturb nesting birds, with the female tending the nest, the male standing guard, and the need for communication about predators. The Park's nēnē population is most vulnerable to aircraft impacts in areas when nesting and brood rearing is occurring. Several studies have documented that noise from helicopters and fixed-wing aircraft can elicit behavioral responses, including flushing and reduced foraging, to various waterbird species at close elevations (Ward et al., 1999; Komenda-Zehnder et al., 2003; Williams, 2007). Results of an experimental procedure for one species, the crested tern (*Sterna bergii*), indicate that the maximum responses observed, preparing to fly or flying off, were restricted to exposures at sound levels greater than 85 dBA (Brown, 1990). This study also showed scanning behavior involving head-turning was the minimum response at lower noise levels, and this, or a more intense response, was observed in nearly all birds at all levels of exposure (Brown, 1990). In addition to these studies, NPS staff have observed nēnē react to air tours at existing altitudes over the Park by exhibiting alert behavior.

Other Native Birds

Within the ATMP planning area, there are other native bird species including those protected under the MBTA but are not classified as endangered or threatened under the ESA.

Hawai'i 'amakihi (*Chlorodrepanis virens*) is a common, widely distributed omnivorous forest bird most abundant in upland mesic forest and subalpine woodland. The breeding season for Hawai'i 'amakihi occurs from November to May. The Island of Hawai'i hosts a population of over 800,000 birds (Gorresen et al., 2009; Kendall et al., 2022). Based on population trend studies, this species appears to have mixed trends across the Park (Judge et al., 2017).

'Apapane (*Himatione sanguinea*), a species in the Hawaiian honeycreeper family, is the most abundant native forest bird in the Park, occurring in relatively high numbers in Kahuku, Kīlauea, and Mauna Loa Road portions of the Park. 'Apapane occupy habitats predominated by 'ōhi'a and koa and often travel in flocks to different flowering vegetation. Breeding occurs from January to July with nests throughout 'ōhi'a canopy or in other vegetation. The response of 'apapane vocalizations has been specifically studied in relation to helicopter noise on the Island of Hawai'i, which actively changed the amount of time they vocalized in relation to loud and frequent helicopter noise, suggesting the presence of vocal plasticity in this species (Gallardo Cruz et al., 2021). Based on population studies, the trends of 'apapane are mixed within the Park (Judge et al., 2017; NPS unpublished report).

Hawai'i 'elepaio (*Chasiempis sandwichensis*) a non-migratory native Hawaiian insectivorous flycatcher with declining populations in the leeward, lower mid-elevations and Kīlauea caldera rainforest where it is rarely observed. However, this species occurs in mixed mesic forest and native koa forest along Mauna Loa Road, and have been occasionally observed in wet forest at 'Ōla'a. 'Elepaio catch insects aerially and forage for a variety of arthropods along branches, foliage, and on the ground. Breeding occurs from March through May, and they create their nests using a wide range of vegetative species including 'a'ali'i, koa, 'ōhi'a, māmane, and naio (VanderWerf, 2020). Surveys indicate an Island of Hawai'i population of approximately 200,000 birds (Gorresen et al., 2009; Kendall et al., 2022), with an approximate estimate of less than 10,000 birds within the Park (Judge et al., 2017). Recent population trends in the Park are mixed based on location (NPS unpublished data). It is one of three island specific 'elepaio species (Kauai, Oahu, and Hawai'i) of which the Oahu 'elepaio is listed as endangered under the ESA.

The Hawaiian hawk (*Buteo solitarius*), known as 'io, is a small broad-winged hawk with light and dark plumage. Its habitat includes most native and non-native forests (including papaya, guava, and macadamia orchards), grasslands, and cane fields (Clarkson and Laniawe, 2020). This species prefers open savanna or denser rainforests and will avoid dry scrub areas. Nesting occurs March through September where this species constructs their nests in the branches of high trees. Found only on the Island of Hawai'i, 'io can be found at elevations from sea level to 8,500 ft. 'Io was formerly listed as endangered, then listed as threatened under the ESA, and was recently removed in 2020, as range-wide population estimates have been stable for over 30 years and are not expected to decline. This species is state listed as endangered. Threats to this species include destruction or disturbance of nesting habitat, predation, avian diseases, and extensive modification and reduction of native forest habitat. Although no incidences of 'io and helicopter collisions have been documented in the State of Hawai'i, in the continental U.S. over a 10 year period there were 446 collisions documented between a closely related species (red tailed hawks - also genus *Buteo*) and civilian aircraft resulting in eight fatalities and nearly \$43 million in damages (Dolbeer et al., 2021).

'Ōma'o (*Myadestes obscurus*) is a predominantly fruit-eating Hawaiian thrush with variable populations in wet and mesic environments of the Park. Populations of 'ōma'o increased in Kahuku and along the 'Ōla'a tract, and experienced a sharp decline in the East Rift Zone (Judge et al., 2017). Declining population trends of 'ōma'o occurred in the northwest Kahuku and Pāpā tracts, and densities were stable in the Mauna Loa south flank and Mauna Loa Strip tracts (Judge et al., 2017). This species is most abundant along the Kīlauea caldera and flanks, wet-mesic forests of Kahuku that extend broadly into the Ka'ū Forest Reserve, and along Mauna Loa Road in mesic forest through subalpine shrublands. 'Ōma'o forage primarily for fleshy fruits in both canopy and understory but also feed on seeds and arthropods, even on the forest floor. Nests have been found in a variety of habitats including tree cavities, tree ferns, rock cracks,

and lava tube openings. Their breeding season is not well defined but believed to occur in the spring and summer. 'Ōma'o is only found on the Island of Hawai'i, and consists of three populations (Hawai'i Department of Land and Natural Resources, 2023).

The pueo (*Asio flammeus sandwichensis*), or Hawaiian short-eared owl, are found on all the main Hawaiian Islands at elevations ranging from sea level to 8,000 ft. Pueo occupy a variety of habitats, including agricultural lands, grasslands, wetlands, shrublands, and native forests. Ground nests are well concealed and lined with grasses and feather down (Price and Cotín, 2018). Threats to this species include loss and degradation of habitat, predation by invasive mammals, vehicle and wind turbine collisions, and other human interaction (Pueo Project, 2019).

Other birds that are year-round residents in the Park include the noio or Hawaiian black noddie (*Anous minutus melanogenys*) which nests on the coasts; and koa'e kea or white-tailed tropicbird (*Phaethon lepturus*), which are known to nest on the walls of craters such as Kīlauea caldera and other nearby craters.

Migrant or transiting birds that occur in the ATMP planning area include the kōlea or Pacific golden plover (*Pluvialis fulva*), an overwintering migrant shorebird that have been observed in disturbed grasslands in the Park during the winter months.

Special Ecological Areas

Special Ecological Areas (SEAs) provide focal sites for the active recovery of threatened and endangered species, as well as opportunities for researchers and the public to study and learn about native species. The first six SEAs were designated in 1985 (Loh and Tunison, 2009). There are currently 38 SEAs in the Park today that span approximately 112,100 acres of the Park. Refer to Figure 13 for a depiction of SEAs across the Park. Occurring throughout the various ecological zones of the Park, SEAs are selected based on criteria such as ecological zone or vegetation type, potential for native species recovery, species diversity, and value for research and interpretation (Tunison and Stone, 1992; Loh and Tunison, 2009). In SEAs, non-native plant populations occur in low densities, allowing the control of invasive species to be more feasible in SEAs than in other regions of the Park. The NPS's program to conduct native plant restoration and invasive plant control within Park boundaries consists of chemical treatment and manual techniques of cutting, digging, and pulling invasive plants.

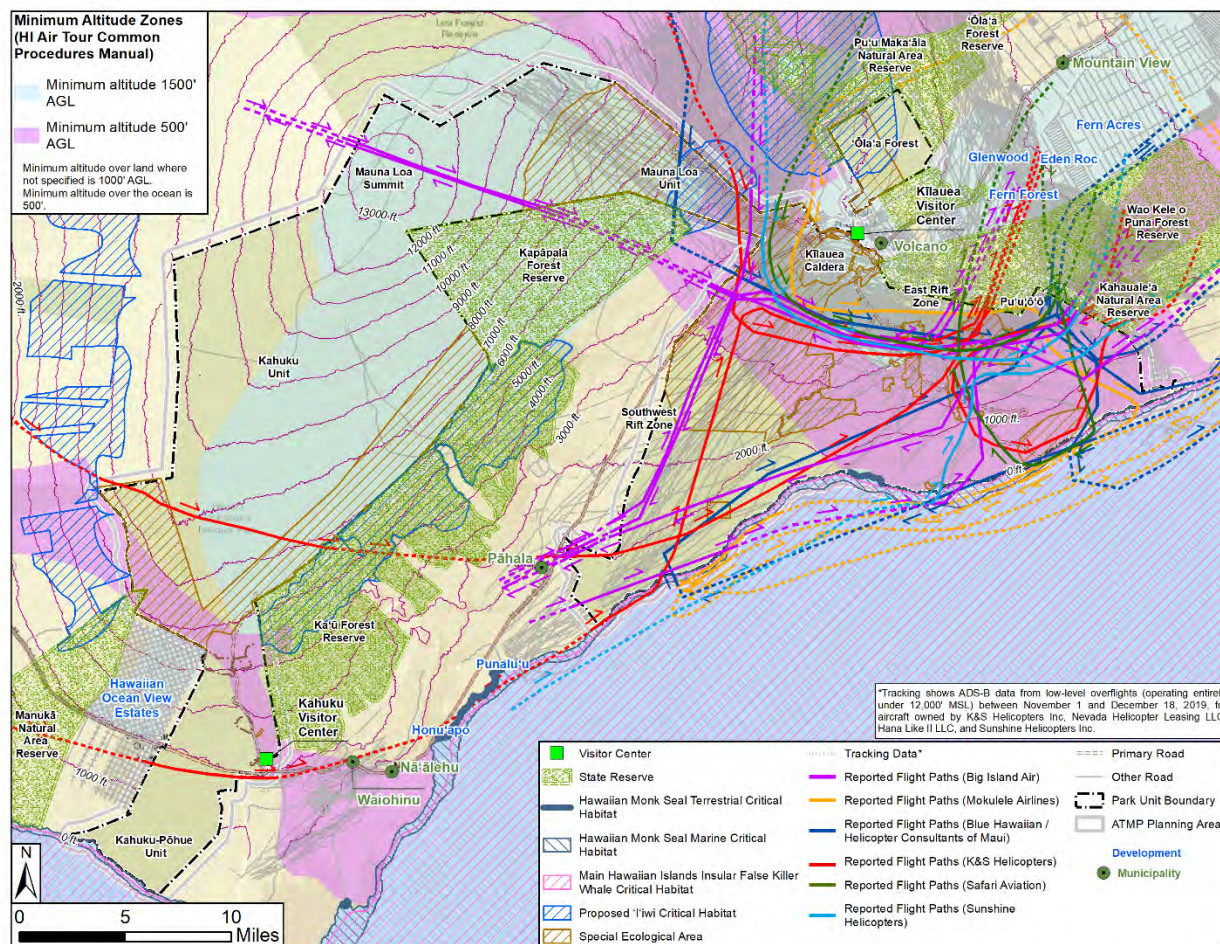


Figure 13. Affected Environment for Biological Resources.

3.3.2 Environmental Consequences

Noise from commercial air tours may impact wildlife in a number of ways, including altered vocal behavior, breeding relocation, changes in vigilance and foraging behavior, direct collisions, and impacts on individual fitness and the structure of ecological communities to name a few (Shannon et al., 2016; Kunc et al., 2016; Kunc and Schmidt, 2019; Dolbeer et al., 2021). Understanding the relationships between noise attributes (e.g., timing, intensity, duration, and location) and ecosystem responses is essential for understanding impacts to these species and developing management actions to address them (Gutzwiller et al., 2017). To capture how noise may affect quieter natural sounds or conversations, the resource impacts analysis below primarily examines the time above 35 dBA (for quieter natural sounds and impacts to natural resources). Refer to the *Noise Technical Analysis* in Appendix F for more information.

The FAA and the NPS initiated technical assistance with the USFWS and NMFS in December 2022 during which all three alternatives were reviewed. Based on these discussions, the agencies initiated informal consultation with the USFWS and NMFS for those federally listed species and/or designated critical habitat described in Section 3.3.1, Affected Environment, in accordance with 50 CFR 402.02. Through this process, the agencies have determined that the preferred alternative (Alternative 3) **may affect**, but is **not likely to adversely affect** federally listed threatened or endangered species, nor would it result in the destruction or adverse modification of federally designated critical habitat. See Appendix H, *Section 7 Consultation* for the correspondence submitted to the USFWS and NMFS which includes the agencies' analysis.

Alternative 1: No Action

Under the No Action Alternative, noise from commercial air tours would continue to affect wildlife throughout the ATMP planning area. Ongoing noise from commercial air tours currently disturbs the Park's wildlife and could result in changes in wildlife behavior, such as bird vocalizations, or other effects that cause wildlife to change their behavior or avoid an area, such as nest abandonment or flushing, and when flown at low altitudes, commercial air tours may result in direct strikes to airborne species. These effects would be expected to continue to occur under the No Action Alternative.

SEAs throughout the Park are valued for their contribution to research, education, and species conservation for many different types of biological resources, and they would continue to be affected by noise from commercial air tours under the No Action Alternative. Under existing conditions, the SEAs which experience the heaviest concentrations of commercial air tour overflights are those in the area near Kilauea caldera, Mauna Loa, and the East Rift Zone. This noise may interfere with species behavior for any noise sensitive species that occur in these areas or could interfere with research and education activities if it resulted in augmented wildlife behavior or impeded wildlife observations, such as listening to or recording bird vocalizations. This interference could impede the NPS's ability to fully meet the Park's purpose of preserving endemic Hawaiian ecosystems and would not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the Park since the NPS cannot successfully monitor these species without the ability to listen and record bird vocalizations. Effects for specific categories of biological resources are described below.

Mammals

Mammals within the ATMP planning area have a variety of sensitivities to noise from commercial air tours. For nocturnal species, such as the 'ōpe'ape'a (Hawaiian hoary bat), impacts associated with air tours would be less likely to occur, as commercial air tours do not fly at night. However, this species could be susceptible to disturbance from air tour noise if

tours were conducted near sunrise and sunset. Based on reporting data from 2017-2019, air tours typically departed between 6:00 AM and 4:00 PM, which may coincide with sunrise and sunset during certain times of the year. This could expose the 'ōpe'ape'a to noise that could lead to abandonment of their roosts and young, and these effects would continue to occur under the No Action Alternative. There is one documented rotor strike of 'ōpe'ape'a on the Island of Hawai'i (Yuen, 2012), and since under the No Action Alternative there would be no change to the altitudes reported by commercial air tour operators over the Park, the risk of a rotor strike to 'ōpe'ape'a would remain the same as current conditions.

Marine mammals could also be disturbed by noise, including the Hawaiian monk seal and whale species, including critical habitat for the Main Hawaiian Islands Insular false killer whale. Current flight tracking data of commercial air tours shows lower concentrations of aircraft flying over beaches that are considered Hawaiian monk seal habitat, including those where known sightings have occurred. Under the No Action Alternative, flights could continue to be flown as low as 500 ft. AGL in accordance with the Hawai'i Common Procedures Manual, which could cause Hawaiian monk seals to exhibit escape behavior impacting pupping and nursing (Richardson et al., 1995). Whale species have also been found to exhibit behavior responses that might constitute a disruption of their normal behavior patterns (Patenaude et al., 2002) for altitudes under the No Action Alternative. Physical and biological features essential to conservation for the Main Hawaiian Islands Insular false killer whale could also be impacted, specifically where sound from air tours could impair whale's use or occupancy of critical habitat.

Reptiles

Sea turtles, hauled out in coastal areas, could be adversely impacted by aircraft noise and alter their behavior (interrupt their rest periods on shore). Honu'ea, or hawksbill turtles, range from inshore reefs to the open ocean; they bask and nest on sandy beaches with strand vegetation. Low numbers of this endangered turtle are found in waters off the Islands of O'ahu, Moloka'i, Maui, and Hawai'i, with 90% of documented nests occurring on the south coast of Hawai'i (Pratt et al., 2011). However, no impacts to nesting are anticipated because this typically occurs at night for these species. Due to the poor sound transference from air to water, noise would be unlikely to illicit a response for individual turtles underwater. While sea turtles could be disturbed by noise, it would result in short-term behavioral reactions, such as swimming away from the aircraft, which is not expected to have fitness consequences (NMFS, 2022).

Forest Birds

Endangered forest birds are vulnerable to the effects of low-level overflights including commercial air tours because many forest birds forage and nest in the upper parts of the forest canopy that are most exposed to noise and physical effects from aircraft.

The No Action Alternative would be expected to have limited to no impacts on 'akiapōlā'au and Hawai'i creeper, which are primarily found in the northeast boundary of Kahuku close to Ka'ū Forest Reserve above 4,300 ft. elevation, because there are very few air tours that occur in proximity to this area under existing conditions. Under the No Action Alternative, flight patterns would be expected to be similar to those flown under existing conditions. The *Noise Technical Analysis* (Appendix F) shows that noise above 35 dBA would occur for less than 15 minutes a day in areas that provide habitat for these species, and in many places would not occur under the No Action Alternative, so there would be limited to no impacts that would be expected. The effects on the Hawai'i 'ākepa would be expected to be similar, though they may be exposed to slightly more noise since their habitat is present in a larger extent of the Kahuku Unit.

The No Action Alternative could affect 'i'iwi and proposed critical habitat that occur at elevations above 4,900 ft. in forested areas that are near Kīlauea and Mauna Loa where heavy concentrations of commercial air tours have been reported under existing conditions. In those areas, the *Noise Technical Analysis* (Appendix F) shows that noise above 35 dBA could occur for up to 75 minutes a day under the No Action Alternative. While the specific effects of noise on this species have not been studied, noise from aircraft has been demonstrated to influence forest bird vocalizations to overcome the masking effects from aircraft noise in areas where loud and frequent helicopter traffic occurs (Gallardo Cruz et al., 2021). This species would continue to be subjected to noise from commercial air tours under the No Action Alternative if operators continued to fly on routes similar to those reported during the period from 2017-2019.

Seabirds

Within the ATMP planning area, the 'akē'akē breeds within high-elevation volcanic terrain above 6,900 ft. found on Mauna Loa. Flight tracking data from 2017-2019 shows a moderate concentration of air tours flying over or near this area which could subject this species to noise. The *Noise Technical Analysis* (Appendix F) shows that noise above 35 dBA would occur up to 30 minutes a day under the No Action Alternative.

Habitat for Newell's shearwater and Hawaiian petrel is generally more widespread throughout the ATMP planning area which could subject these species to more noise. The Newell's shearwater generally occupies steep slopes and near-vertical volcanic crater walls at elevations ranging from 500 to 4,000 ft. (Reynolds and Ritchotte, 1997; Ainley et al., 2019) which are present on Kīlauea along the East Rift Zone. These areas also experience the heaviest concentrations of commercial air tours under existing conditions based on flight tracking data from 2017-2019. The *Noise Technical Analysis* (Appendix F) shows that noise above 35 dBA would occur in excess of 120 minutes a day in these areas under the No Action Alternative which would subject the Newell's shearwater to this aircraft noise. The Hawaiian petrel

occupies high elevation environments from 5,500 ft. to above 8,000 ft. on Mauna Loa. These upper elevation areas are generally subjected to less noise from commercial air tours under existing conditions than those near Kīlauea and the East Rift Zone, so noise effects on the Hawaiian Petrel would be similar to those experienced by the 'ake'ake. These species would continue to be subjected to noise from commercial air tours under the No Action Alternative.

These seabirds only inhabit areas of the Park during the nesting season, returning and exiting the nest at dusk and dawn to forage and feed chicks. Under the No Action Alternative, there would be no limits on the time of day the tours could be conducted, which may result in some tours being flown near dusk and dawn which increases the likelihood of a direct strike with species active during this time.

Hawaiian Goose

Habitat for the nēnē occurs throughout the ATMP planning area, and observational evidence by the NPS indicates temporary response to low-level helicopter flights by nēnē (NPS, 2014). There is no published, direct evidence that aircraft disturb nēnē (Hu, 2012), though based on the biology of this species, there may be the potential for aircraft noise to affect communication and flock and family interactions of this social species. For example, aircraft may disturb nesting birds, with the female tending the nest, the male standing guard, and the need for communication about predators. The Park's nēnē population is most vulnerable to aircraft impacts in areas when nesting and brood rearing is occurring (NPS, 2014). This would continue to occur under the No Action Alternative, particularly in the Kīlauea summit and East Rift Zone areas of the ATMP planning area which generally experience the highest density of commercial air tour aircraft based on flight tracking data. Administrative flights conducted by the NPS utilize a minimum altitude of 2,000 ft. AGL to protect this species (NPS, 2014) which would not be met by commercial air tours under the No Action Alternative, as flights could fly as low as 500 ft. AGL according to the Hawai'i Common Procedures Manual.

Other Native Birds

Other native birds that occur throughout the majority of the ATMP planning area, including Hawai'i 'amakihi, 'apapane, 'io, 'ōma'ō, pueo, and other migratory or transiting birds would be exposed to noise at a similar frequency and duration as other species described above. The 'apapane has specifically been studied to understand its response to helicopter noise, which shows that the species responds by changing the amount of time they vocalized in relation to loud and frequent helicopter noise. These effects would continue to occur under the No Action Alternative as helicopter noise is present within 'apapane habitat under existing conditions.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area which would eliminate this source of noise from the planning area. Therefore, there would be a direct beneficial effect on biological resources since the intensity and likely presence of noise from commercial air tours would be less than under the No Action Alternative. The impacts described above under the No Action Alternative would be less likely to occur as a result of air tours since they would no longer be flying within the ATMP planning area.

Alternative 3

The routes, altitudes, and time-of-day restrictions included in Alternative 3 would provide protection to biological resources as compared to the No Action Alternative. Refer to Figure 14 for a depiction of this alternative in the context of biological resources and their habitats. This both reduces the frequency and duration of noise and the sound levels experienced by wildlife within the ATMP planning area, as well as reduces the likelihood of collisions with aircraft. Under current conditions, 60% of the Park would experience noise above 35 dBA on days when air tours occurred, with some portions of the ATMP planning area experiencing noise above 35 dBA exceeding 120 minutes a day. In contrast, under Alternative 3, 1% of the Park would experience noise above 35 dBA between 30 and 45 minutes a day on a standard day. When compared to existing conditions, in which air tours are flying at 500 ft. AGL minimum, Alternative 3 would increase the minimum altitudes for air tours within the ATMP planning area anywhere from 1,500 to 2,000 ft. AGL. Higher altitudes both reduce the likelihood of bird strikes and reduce maximum sound levels at sites directly below the flight path. It should be noted that when the altitude of an aircraft is increased, the total area exposed to the noise from that aircraft may also increase depending on the surrounding terrain. Although the area exposed to noise might increase, this would not meaningfully affect wildlife because of the attenuation of the noise from higher altitude and reduced number of flights.

As it relates to the Park's SEAs, Alternative 3 would result in less noise than the No Action Alternative which would enhance research conditions in the SEAs and allow the Park to meet its fundamental resources and values to a greater extent. Effects for specific categories of species are described below.

Mammals

Alternative 3 would provide protection to the 'ōpe'ape'a (Hawaiian hoary bat) primarily by limiting the hours of operation for commercial air tours within the ATMP planning area to 10:00 AM to 2:00 PM for non-quiet technology flights and 9:00 AM to 5:00 PM for quiet technology flights. Since the 'ōpe'ape'a is a nocturnal species that may be active near dawn and dusk hours, these restrictions would provide protection to those that may be active during this time.

Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 *may affect, not likely to adversely affect* 'ōpe'ape'a.

Alternative 3 would also provide protection to the Hawaiian monk seal by increasing the minimum altitude at which commercial air tours may fly over monk seal habitat as compared to existing conditions. The Coastal Route included in Alternative 3 is located near beaches that are used by Hawaiian monk seals, and the alternative sets the minimum altitude for air tours using this route to 2,000 ft. AGL and would be located 2,000 ft. laterally from the land. Compared to related species, Hawaiian monk seals have reduced sensitivity to airborne sounds and a reduction in terrestrial hearing ability (Ruscher et al., 2021). Although this species has a broad range of hearing while in water, they are not sensitive to noise that is less than 73 dB while in water (Sills et al., 2021). Under Alternative 3, noise over critical habitat and beach areas used by Hawaiian monk seals for hauling out or pupping is not expected to exceed 75 dBA. The value for L_{max} generated by commercial air tours in the Park on a standard day would be 63.7 dBA and would occur at 'Āpua Point Camp, which is located near marine critical habitat for the Hawaiian monk seal; however, the L_{max} noise metric is event based and does not provide any context of frequency, duration, or timing of exposure. At this location, time above 52 dBA would occur for 2.1 minutes on a standard day and 2.5 minutes on a quiet technology-only day. Coastal beaches along the Coastal Route would experience noise above 52 dBA between 0.8 and 1.2 minutes on a standard day, and 0.4 to 2.5 minutes on a quiet technology-only day (refer to Tables 8 and 9 in Appendix F, *Noise Technical Analysis*). A specific regulation, issued pursuant to the ESA and published at 50 CFR 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. In addition, when aircraft fly below certain altitudes (about 500 meters [1,640.4 ft.]), they have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Paternaude et al., 2002). Although effects vary between cetaceans and pinnipeds and no such standoff zone has been established for Hawaiian monk seals, the 2,000 ft. AGL altitude requirement under Alternative 3 for routes over coastal areas would exceed altitudes that have been shown to cause effects.

Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 *may affect, not likely to adversely affect* Hawaiian monk seal.

Whale species have been known to occur near a portion of the flight path for Alternative 3. Richter et al. (2006) evaluated aircraft effects on blow duration, vocalization patterns, and surface time for sperm whales and found that there was little change in blow duration when exposed to aircraft used for aerial whale watching. When aircraft were flown at 150 meters (492 ft.), surface time differed between resident and transient whale populations, where resident whales had a slightly longer surface duration when exposed to aircraft, while transient

whales had a shorter surface duration when exposed to aircraft (Richter et al., 2006). Sperm whales did not alter the frequency of their vocalization patterns, but did take longer to make their first click sound after a tail fluke-up dive when aircraft were present.

Noise from air tours may impact marine species in a number of ways: altered vocal behavior, changes in behavior such as retreating underwater and surface times, and pod formation, among others (Kunc et al., 2016; Kunc and Schmidt, 2019; Gomez et al., 2016; Richardson et al., 1995). Visually, aircraft can be difficult for cetaceans to locate since they are not in the water and move rapidly (Richter et al., 2006). As noted above, aircraft that fly below 500 meters (about 1,640 ft.) have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Patenaude et al., 2002). Commercial air tours have the potential to generate noise that could be audible to whales. However, these noise events are not expected to be stressors on these species as they are infrequent and of short duration (likely limited to no more than a few minutes of exposure). Noise underwater is the loudest when aircraft are directly overhead, and generally decreases as altitude increases. As noted above, a specific regulation, issued pursuant to the ESA and published at 50 CFR 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. No such standoff zone has been established for other whale species within the action area. However, the agencies believe the 2,000 ft. AGL minimum flight altitude for routes over the ocean would be protective of whale species. In addition, due to the poor sound transference from air to water, noise would be unlikely to illicit a response for whale species at these altitudes. Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 would have *no effect* on the listed whale species described in Section 3.3.1, Affected Environment, Mammals.

Critical habitat for the Main Hawaiian Islands Insular false killer whale would not be impacted because noise levels under Alternative 3 would not impair the species use or occupancy of the area.¹⁷ Therefore the agencies have determined Alternative 3 would have *no effect* on critical habitat for the Main Hawaiian Islands Insular false killer whale.

Reptiles

Due to the poor sound transference from air to water, noise would be unlikely to illicit a response for individual turtles underwater. Underwater noise thresholds in the loggerhead sea turtle were measured by Martin et al. (2012) that indicated potential behavioral thresholds observed at about 100 dB at 100 hertz, much higher than the maximum sound levels of 63.7 dBA at 'Āpua Point Camp associated with Alternative 3. Other beaches had lower values for

¹⁷ https://media.fisheries.noaa.gov/dam-migration/1514-13_ifkw_ch_final_bio_rpt_041017_clean.pdf

maximum sound level (see Tables 8 and 9 in Appendix F, *Noise Technical Analysis*). Sea turtle ears are adapted to hearing underwater, and they are more sensitive to underwater sounds than sounds above water. Therefore, while sea turtles hauled out on shore could be exposed to noise, it is unlikely this would elicit a response for individual turtles. Because there is not existing research directly examining this impact, the agencies have determined that this alternative *may affect, is not likely to adversely affect* sea turtles.

Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 *may affect, not likely to adversely affect* the listed reptile species when under USFWS jurisdiction and have *no effect* to listed species when under NMFS jurisdiction described in Section 3.3.1, Affected Environment, Reptiles.

Forest Birds

The routes included in Alternative 3 would avoid most forest bird habitat that is present within the ATMP planning area. Specifically, the Kahuku Route and Coastal Route would not fly over forested areas that could provide habitats for these species which would limit the maximum sound levels that would occur from commercial air tours in forested areas near these routes. While the Pu'u'ō'ō Route overlaps with some forested areas in the East Rift Zone, the route avoids the most forested areas in this region to provide the best habitat protection to support forest bird populations. Other parameters included in this alternative including the annual limit on the number of flights and limits on hovering, loitering and/or circling will reduce the frequency and duration of noise exposure to forest birds. Across the entire ATMP planning area, the *Noise Technical Analysis* (Appendix F) shows that on a standard day, noise above 35 dBA would occur for less than 45 minutes a day, and on a quiet technology-only day would occur for less than 60 minutes a day. Under both types of operational days, most areas of the ATMP planning area that provide forest bird habitat (particularly in the Kahuku Unit) would not experience noise above 35 dBA from commercial air tours. Collectively, these operational parameters represent an improvement to the protection of forest bird habitat as compared to existing conditions because forest birds will be exposed to less noise throughout the ATMP planning area.

Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 *may affect, not likely to adversely affect* the listed forest bird species and proposed critical habitat for 'i'iwi described in Section 3.3.1, Affected Environment, Forest Birds.

Seabirds

High and mid-elevation seabirds would experience greater protection from noise associated with commercial air tours as compared to the No Action Alternative because of the placement of the routes included in Alternative 3. Specifically, routes would avoid high and mid-elevation

seabird habitat in all areas of the ATMP planning area, except for those near Pu'u'ō'ō, and limits the number of commercial air tours to no more than 1,565 tours per year. This represents an improvement compared to current conditions for these species. The *Noise Technical Analysis* (Appendix F) shows that for portions of the ATMP planning area that are at or above 500 ft. elevation (which corresponds with areas utilized by mid-elevation seabirds), noise above 35 dBA could occur for up to 45 minutes a day on a standard day and up to 60 minutes on a quiet technology-only day, depending on the location being utilized. Most areas within the Newell's shearwater habitat would have less than 15 minutes a day with noise above 35 dBA. This would result in beneficial improvements for the habitat conditions for this species compared to current conditions.

The *Noise Technical Analysis* (Appendix F) shows that commercial air tour noise above 35 dBA would not occur within the high-elevation seabird habitat under Alternative 3.

Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 *may affect, not likely to adversely affect* the listed seabird species described in Section 3.3.1, Affected Environment, Seabirds.

Hawaiian Goose

The nēnē would also experience improved habitat conditions under Alternative 3 as compared to current conditions due to the placement of the authorized routes, altitude restrictions, and limited number of flights on an annual basis. As nēnē habitat occurs throughout most of the ATMP planning area, restricting the authorized routes to limited areas limits the spatial spread of noise that would occur under Alternative 3. Across the entire ATMP planning area, the *Noise Technical Analysis* (Appendix F) shows that on a standard day, noise above 35 dBA would occur for less than 45 minutes a day, and on a quiet technology-only day would occur for less than 60 minutes a day. The altitude restrictions that raise the minimum altitude as compared to existing conditions would reduce the likelihood of a bird strike with aircraft. Collectively, these operating parameters represent an improvement for nēnē within the ATMP planning area compared to current conditions.

Based on the analysis described in this draft EA and Appendix H, *Section 7 Analysis*, Alternative 3 *may affect, not likely to adversely affect* nēnē.

Other Native Birds

Other protected native birds that occur throughout the majority of the ATMP planning area, including Hawai'i 'amakihi, 'apapane, 'io, 'ōma'o, pueo, and other migratory or transiting birds would be exposed to noise at a similar frequency and duration as seabirds and nēnē described above for Alternative 3, which represents a reduction in noise compared to current conditions.

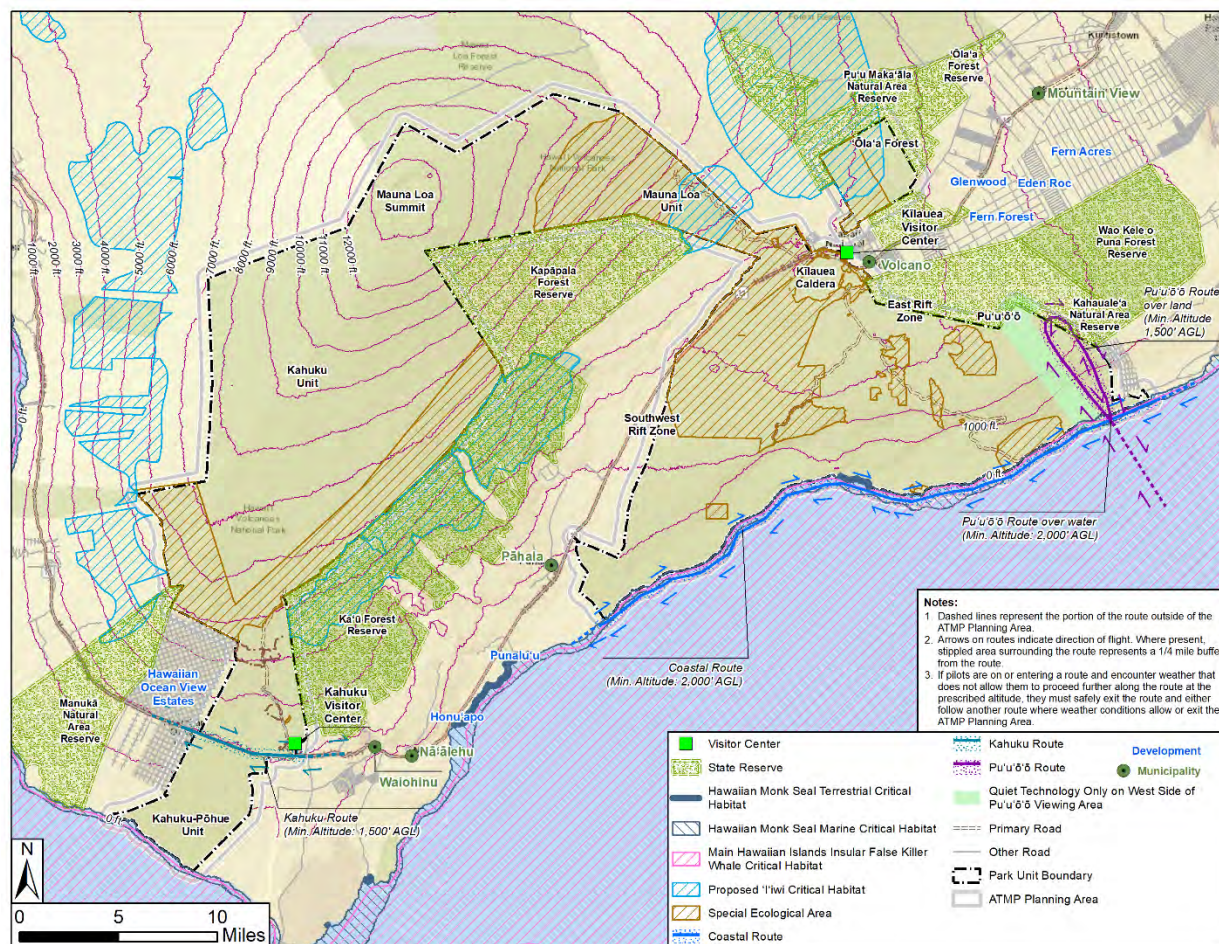


Figure 14. Biological Resources Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: Indirect effects to biological resources could occur as a result of noise caused by air tours flying outside of the ATMP planning area. As noted in Section 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, indirect noise impacts would have the potential to occur under Alternatives 2 and 3 as these alternatives could result in the displacement of air tours outside the ATMP planning area. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Operators may also choose to fly just outside of the perimeter of the ATMP planning area surrounding the volcanoes in order to view Kīlauea crater or any active lava. Air tours outside the ATMP planning area may occur in the area southwest of the 'Ōla'a Forest tract to view lava in Kīlauea caldera. Therefore, under Alternatives 2 or 3, some indirect impacts to biological resources could occur if flights were displaced to outside the ATMP planning area. This would likely affect

forest birds that are found at higher elevations on Mauna Loa and near the Kīlauea caldera and surrounding areas, or species that have more widespread habitat, such as nēnē for air tours conducted just outside the ATMP planning area. Since Alternative 2 would displace more flights outside the ATMP planning area than Alternative 3, Alternative 2 could result in more indirect effects to biological resources than Alternative 3.

Indirect impacts could also occur to 'ālalā or other bird species if they are released within the ATMP planning area at some time in the future. Impacts to 'ālalā or other bird species are expected to be similar to other forest bird species. Under existing conditions, air tours over suitable 'ālalā habitat within the ATMP planning area include Kahuku and the adjacent Ka'ū Forest Reserve, and the 'Ōla'a and Mauna Loa Units of the Park, resulting in noise impacts to the species under the No Action Alternative. Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area which would eliminate potential impacts to 'ālalā. While it is not known where this species would be introduced, the higher altitudes prescribed in Alternative 3 would limit the potential for noise impacts if 'ālalā were to be reintroduced or recolonize after reintroduction elsewhere. Based on the analysis described in this draft EA and Appendix H, *Section 7 Consultation*, Alternative 3 *may affect, not likely to adversely affect* 'ālalā.

Cumulative Effects: The NPS would continue current management actions and respond to future needs and conditions for biological resources without major changes in the present course. The administrative flights and associated noise levels (see Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use for more information) and wildlife disturbance risks within the ATMP planning area would likely continue at current levels. Non-native ungulates have extensively modified biological resources at the Park and throughout the Hawaiian Islands, and the presence of non-native ungulates remains a major management concern. The Park has an established program for ungulate animal control involving an extensive fence system designed to prevent entry of non-native ungulates into the Park, which has allowed many natural ecosystems to recover from this stressor. These trends, and the management response by the NPS to control ungulate populations and restore ecosystems would continue at current levels, therefore noise generated by mechanized equipment during fencing and restoration activities may have infrequent, short term and transient effects on species in the localized area of the work. There are no anticipated changes to public access within the ATMP planning area, so ongoing impacts to wildlife from visitors would remain unchanged in the foreseeable future.

Changes in environmental conditions in the ATMP planning area that may ensue from global climate change include increasing temperatures, decreasing precipitation, increasing storm intensities, and increasing variability in weather patterns (Thomas et al., 2004; Frazier and Giambelluca, 2017). Changes in microclimatic conditions in the habitats of endemic invertebrates and their host plants may lead to the loss of native species due to direct

physiological stress, the loss or alteration of habitat, increasing distribution and abundance of invasive species, and changes in disturbance regimes (e.g., droughts, fire, storms, and hurricanes). Alternative 3 would result in less cumulative noise and wildlife disturbance in the ATMP planning area than the No Action Alternative, given the reduced number of flights, higher altitudes, designated routes, and other conditions that would be required under Alternative 3. However, it could allow for more cumulative noise and associated wildlife disturbance than Alternative 2, where flights would not be authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.4 Cultural Resources

The NHPA (54 U.S.C. §§ 300101 et seq.) is comprehensive federal preservation legislation intended to protect cultural resources. Section 106 of the NHPA (54 U.S.C. § 306108), as implemented in 36 CFR Part 800, requires federal agencies to consider the effects of undertakings on historic properties, should any such properties exist. Historic property is defined in 54 U.S.C. § 300308 and 36 CFR 800.16(l)(1) as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (National Register). This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or NHO and that meet the National Register criteria. The FAA's environmental impact category discussing cultural resources is titled as Historical, Architectural, Archeological and Cultural Resources in FAA Order 1050.1F. These categories include historic properties as well as any cultural resources identified that may not be eligible for listing in the National Register including those otherwise protected as tribal resources or by local and state laws. Sacred sites, for example, are considered significant cultural resources and are also protected under the American Indian Religious Freedom Act. The methodology in Appendix E as well as the Section 106 documentation in Appendix G further describe the identification and treatment of cultural resources for the project.

In addition to Section 106 of the NHPA, the NPS's Organic Act and Section 110 of the NHPA apply to and provide for the preservation of historic, ethnographic and cultural resources on Park land. NPS policies and directives also apply to Park cultural and ethnographic resources, and provide direction for their management including the 2006 NPS Management Policies, Chapter 5 and Director's Order 28: Cultural Resource Management. Executive Order (EO) 13007 provides direction regarding Indian Sacred Sites. NPS Management Policies (2006) Section 5.3.1.7, Cultural Soundscape Management, also acknowledges that culturally appropriate sounds are important elements of the national park experience in many parks, and that the NPS will preserve soundscape resources and values of the parks to the greatest extent possible to protect opportunities for appropriate transmission of cultural and historic sounds

that are fundamental components of the purposes and values for which the parks were established. NPS Management Policies identify and define five types of cultural resources for consideration in NEPA evaluation: Archeological Resources, Cultural Landscapes, Ethnographic Resources, Historic and Prehistoric Structures, and Museum Collections. These resource types correlate generally with the FAA categories as described further below. Museum Collections is dismissed from consideration due to the nature of the project.

Section 106 consultation with the Hawai'i State Historic Preservation Division (SHPD) was initiated via formal letter dated March 29, 2021. On April 28, May 4, and May 6, 2021, the agencies held initial Section 106 consultation webinars to provide background information on ATMPs and the ATMP development process. The agencies identified consulting parties that may have an interest in the undertaking and its effects on historic properties. They initiated consultation with consulting parties in three phases in order to include additional parties that were identified as the process moved forward (see Appendix G, *Cultural Resources Consultation and Summary*, for correspondence and list of consulting parties). These letters were dated April 16, August 6, and October 1, 2021. The last letter included an invitation to the October 28, 2021, informational webinar held to provide background on the ATMP development process. A listening session was held December 10, 2021, with the Park's Kūpuna consultation group and other consulting parties and individuals. A second listening session with the Park's Kūpuna consultation group and other consulting parties and individuals was held on March 11, 2022.

The NEPA study area for cultural resources corresponds with the Area of Potential Effects (APE) identified as part of the Section 106 process and encompasses the potential effects of all alternatives under consideration. As defined at 36 CFR 800.16(d), the APE is the geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of any historic properties, if any such properties exist. The proposed undertaking does not require land acquisition, construction, or ground disturbance, and the FAA anticipates no physical effects to historic properties. The APE therefore includes areas where any historic property present could be affected by the potential introduction of visual or audible elements that could diminish the integrity of any identified significant historic properties. The APE has been defined to include the ATMP planning area as well as a small area to the southwest of the 'Ōla'a Forest tract outside of the ATMP planning area. The APE extends upwards vertically from ground level with no upper ceiling to encompass areas where historic properties may be affected by operators flying above the ATMP planning area. Refer to Figure 15 for a depiction of the APE identified for the undertaking.

The agencies consulted with the Hawai'i SHPD, NHOs, the Park's Kūpuna consultation group, operators, and other consulting parties prior to finalizing the APE. The agencies initiated consultation with six newly identified consulting parties via formal letter dated November 8,

2022 and held a Section 106 consultation meeting with all consulting parties on November 21, 2022 to inform them of the proposed APE and to seek comment on identification of historic properties within the APE. The agencies subsequently expanded the boundaries of the APE to incorporate additional areas potentially affected by the undertaking. The FAA sent a letter dated December 23, 2022, to the SHPD requesting their input on the APE. SHPD responded with no objection in a letter dated January 24, 2023. The agencies shared the revised APE and updated list of historic properties with the consulting parties in a letter dated February 21, 2023. See Appendix G, *Cultural Resources Consultation and Summary*, for Section 106 correspondence.

3.4.1 Affected Environment

The affected environment includes prehistoric or historic districts, sites, buildings, structures, and/or objects, as well as TCPs (inclusive of ethnographic resources and sacred sites) and cultural landscapes that have been previously documented in the APE or identified through consultation. Under existing conditions, based on flight tracking data and reported routes, the heaviest concentrations of commercial air tours occur around Kīlauea caldera then along the East Rift Zone. Throughout the Section 106 process, the agencies requested consulting party input to help identify historic properties within the APE. The agencies provided an initial historic property identification list to consulting parties in a March 8, 2022, letter accompanying the public scoping newsletter and at the November 21, 2022, Section 106 Consulting Party meeting and requested further input on the identification of historic properties within the proposed APE. Consulting parties provided comments during the meeting as well as in emails, written letters, and phone calls following the meeting regarding the identification of historic properties, and the agencies took into consideration the input from the consulting parties in identifying additional historic properties. The agencies again requested input on historic property identification in the revised APE in the letter dated February 21, 2023. A final historic properties list was provided in the March 27, 2023 finding of effects letter.

Cultural Resources (including Ethnographic Resources, Sacred Sites and Traditional Cultural Properties)

Ethnographic resources are resources that are associated with the customs, habits, or behaviors of a cultural group, including those that possess religious and cultural significance. A sacred site, as defined in EO 13007, is any specific location that is identified to be an appropriately authoritative representative of an indigenous religion as sacred by virtue of its established religious significance to, or ceremonial use by, an indigenous religion. A TCP is a property significant due to its association with past and continuous cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. TCPs possess traditional cultural significance derived from the role the property plays in a community's historically rooted

beliefs, customs, and practices (NPS, 1992). TCPs are treated as historic properties for the purpose of evaluating effects under Section 106 and NEPA (FAA, 2020).

The volcanic landscape found throughout the Park and beyond is considered an ethnographic landscape that is very important to Native Hawaiians. Sacred or religious sites occur within the Park and include natural features such as active lava flows, the Kīlauea and Mauna Loa summit areas, native forests, sulphur deposits, volcanic steam cracks, volcanic craters and gases, the air space above the land, petroglyph fields, and additional constructed features such as shrines, heiau, or burial sites. The Kīlauea Crater is listed on the National Register for its ethnographic and scientific significance with the boundary encompassing the crater's edge. Based on an ethnographic study (Langlas, 2003), Native Hawaiians view the entire Kīlauea Crater as sacred and as the "origin of new land." Many Native Hawaiian cultural practitioners come to Kīlauea for ceremonies, ho'okupu, and paying tribute to the deity Pelehonuamea, also referred to as Pele, who resides at Halema'uma'u. Chants and recorded oral accounts say that Pele and her family traveled to the Island of Hawai'i from Kahiki, searched the island chain, and settled at Kīlauea. Pele is an 'aumakua (ancestral god) for some Hawaiians and an akua (unrelated god) for others. Those that are descended from Pele have a special relationship with her; they may pray for help and have the right to be united with her after death. For some, Pele is important as the goddess who controls and is embodied in volcanic phenomena. She must be respected and given offerings by those seeking protection from her forces. Pele is manifested in molten lava, steam, earthquakes, and thunder and lightning connected with volcanism. She is present at Halema'uma'u crater, within Kīlauea caldera, but also at other pit craters around Kīlauea, and in east and southwest rift zone eruptions and the other volcanoes on the Island of Hawai'i. Traditionally, Hawaiians leave offerings to her, especially when there is an eruption, and the whole area around Kīlauea caldera is sacred (Langlas, 2003). Langlas (2003) also found that religious rituals and collection of plants for religious or medicinal purposes, in particular 'a'ali'i (*Dodonaea viscosa*) and liko lehua (the leaf buds of the 'ōhi'a tree), occur throughout the Park. Plants are collected to wear as lei in performing hula, for medicines, and other purposes.

Vegetation and forested areas within the Park are an important source of spirituality and self-identification for many residents of the Island of Hawai'i. One study examining resident connection with nature found that cultural heritage is strongly linked to forest for many residents of the Island of Hawai'i, particularly for Native Hawaiians (Gould et al., 2014). Similarly, a study prepared for the Park (Keali'ikanakolehailani, 2009) found that ceremony and ritual take place most commonly in the kīpuka, the forested areas at Kīlauea, at other craters, at the coast where new land is being formed, and at places where private family ceremonies are conducted, including the visiting of grave sites. The unevaluated Kīpukakī, for example, is considered an 'Ōiwi holy place of worship. Medicine collection requires lightly and densely forested regions. Many chants that are found in written and published stories of Pele reiterate the importance of silence. Silence, in most traditions of Hawaiian practice, is essential

for learning, understanding, observing, and respecting another's space, thoughts and kapu. Silence, in the presence of Pelehonuamea, reflects one form of ultimate respect (Keali'ikanakoleohailani, 2009).

A study completed by Kumu Pono Associates (2004) states the following:

"We find in native traditions and beliefs, that Hawaiians shared spiritual and familial relationships with the natural resources around them. Each aspect of nature from the stars in the heavens, to the winds, clouds, rains, growth of the forests and life therein, and everything on the land and in the ocean, was believed to be alive. Indeed, every form of nature was a body-form of some god or lesser deity. In the Hawaiian mind, care for each aspect of nature, the kino lau (myriad body-forms) of the elder life forms, was a way of life. This concept is still expressed by Hawaiian Kūpuna (elders) through the present day, and passed on in many native families. Also, in this cultural context, anything which damages the native nature of the land, forests, ocean, and kino lau therein, damages the integrity of the whole. Thus caring for, and protecting the land and ocean resources, is important. In the traditional context above referenced, we find that the land, the native plants and life-forms, and the intangible components therein, are a part of a sacred Hawaiian landscape. Thus, the landscape itself is a highly valued cultural property."

Natural resources such as rock outcrops, pools of water, forests, ocean, mountains, land, and air are all valuable natural resources that define the significant body of TCPs and cultural practices of the Hawaiian people (Kumu Pono Associates, 2001).

Other traditional practices that occur within the Park include the collection of marine resources such as fish, crab, and shellfish. The Puna coastline located in the Park is another important resource for Native Hawaiians who live in the Kalapana extension area and continue to practice their fishing rights along the coastal areas of the Park. The extension area extends from Kupapa'u Point on the east to Keauhou on the west.

The NPS has a strong commitment to include native voices in Park planning and interpretive materials. The NPS acknowledges the Park's living culture and embraces the sacredness of the volcanic landscapes and the summit areas of Kīlauea and Mauna Loa volcanoes. Additionally, the NPS maintains relationships with several elders, or Kūpuna, from the adjacent communities of Puna and Ka'ū, NHOs such as the Office of Hawaiian Affairs, and non-profits such as the Edith Kanaka'ole Foundation.

Archeological Resources

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. Archeological resources located within the Park

are diverse and include a wide temporal range spanning multiple centuries, consisting of the material remains of various groups and activities that left their mark on the landscape. This includes the physical evidence of pre- and post-contact Native Hawaiian life ways to historic, Euro-American, and African American sites.

Pre- and proto-historic archeological features and sites within the APE include ancient village sites, petroglyphs, trails, fossil footprints, burials, heiau, shrines, caves with cultural deposits, resource procurement areas, agricultural mounds, animal corrals, canoe shelters, lithic and volcanic glass quarries, rock shelters, and house platforms. Archeological resources in the Park document the Native Hawaiian way of life (ka noho 'ana) in traditional land divisions, or ahupua'a, extending from the uplands to the sea and wao or vertical land divisions. Historic features include rock walls, roads, trails, structures, buildings, water collection features, ranching features, landing fields, and trash disposal sites amongst dozens of other feature types.

There are two historic districts related to archeological resources in the Park. This includes the Puna-Ka'u Historic District that spans over 129,000 acres and contains a density of prehistoric and protohistoric archeological features. Within the district there are vestiges of ancient Hawaiian villages, ancient agricultural areas, large petroglyph fields, and where the Waha'ula Heiau once stood. The heiau was the first luakini or human sacrificial temple to be established by Pā'ao, a priest that arrived at the Island of Hawai'i from Kahiki in the 1200s, marking a new era of religion and cultural change on the Island of Hawai'i.

The second archeologically significant historic district is the 1790 Footprints. The district contains ancient fossilized footprints that were impressed in the hardened ash layers from the explosive Kīlauea eruptions that occurred in the 1700s. In addition to the footprints, the district contains an ancient trail system that connected villages of Ka'u with Kīlauea Crater, upper Puna, and Hilo. Hundreds of temporary camp sites and volcanic glass quarries are found along the route. The outdated 1974 nomination forms include 4,000 acres in the boundary; however, subsequent studies have shown that the boundary actually extends over 12,000 acres.

A new recent addition to the Park boundary is significant in part for its archeological and ethnographic resources. Located on the southern flank of Mauna Loa, the Kahuku-Pōhue parcel is home to numerous well-preserved Hawaiian cultural sites, including the largest recorded abrader quarry in the State of Hawai'i, lava tubes, burial site, mauka-makai (mountain to sea) trails, fishing shrines, remains of once-thriving coastal villages, and petroglyphs. A well-preserved portion of the Ala Kahakai National Historic Trail or Ala Loa, an ancient coastal trail system, hugs the coastline.

While the Park contains a vast number of archeological sites, only four sites are actively interpreted for the public. One of the highest-profile and most heavily visited archeological

sites in the Park is the Pu'uloa Petroglyph Field, a contributing cultural landscape to the Puna-Ka'ū Historic District. This site contains more than 23,000 petroglyphs that depict people, canoes, geometric shapes, and cupules, where babies' umbilical cords were placed in hopes of long life. While petroglyphs are found throughout the Hawaiian Islands, the Pu'uloa Petroglyph Field is the largest concentration of petroglyphs in the State of Hawai'i.

Additional interpreted archeological sites include the 1790 Footprints, the Pulu Station, and the Ka'ū Agricultural Field Systems. The Pulu Station is located in the East Rift Wilderness unit and is made up of three structures that are the only currently identified and recorded tangible remnants of a once thriving industry that occurred for several decades in the mid-1800s. People collected the soft downy fur (pulu) from the hāpu'u ferns to use for stuffing mattresses, pillows, and upholstery. The pulu was shipped globally from the Puna coastal area that now falls within the Park, but was a short-lived venture as it was eventually discovered that pulu would break down and cause lung irritations.

A vestige of the Ka'ū Agricultural Field system is actively interpreted in the Kahuku unit. The 1400-era site contains a portion of a larger earthwork made of rock walls, mounds, and structures. The site is an example of the ingenious engineering that was developed for ancient agricultural pursuits that took advantage of wind and rain patterns and volcanic soils in order to maximize food production.

Across the entire Park, more than 700 archeological sites made up of tens of thousands of features have been identified, evaluated, and recorded in the Cultural Resource Inventory System, the NPS database of cultural resource information. There are still many areas of the Park that have yet to be surveyed; therefore, this number is anticipated to grow as projects are implemented in the future.

Historical and Architectural Resources (including Cultural Landscapes and Prehistoric/Historic Structures)

A cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided. Cultural landscapes are geographic areas associated with specific cultures or historical events, and they help illustrate how humans have adapted to and altered their surroundings. The NPS recognizes four cultural landscape categories: historic designed landscapes, historic vernacular landscapes, historic sites, and ethnographic landscapes.

The Park contains cultural landscapes that are architecturally and historically significant. The seven designated cultural landscapes of the Park are: 'Āinahou Ranch House and Gardens, Crater Rim Historic District, Kahuku Ranch Cultural Landscape, Kīlauea Administration and Employee Housing Historic District, Kīlauea Military Camp Historic District, Pu'uloa Petroglyph

Field Cultural Landscape, and Nāhuku Cultural Landscape (Thurston Lava Tube Cultural Landscape).

The Park retains several architectural and engineering resources that are listed in, or eligible for listing in, the National Register, including historic trails, roads, shelters, campsites, and historic districts. Historic districts located within the Park that emphasize architecture and the built environment include the Kīlauea Administration and Employee Housing Historic District, the Nāmakanipaio Cabin Camp District, the Kahuku Ranch Base Camp, the Crater Rim Historic District, and the Kilauea Military Camp.

The Kīlauea Administration and Employee Housing Historic District covers 43 acres along Crater Rim Drive. The housing and administrative district was determined eligible for listing in the National Register for its association with early Park planning and with the Civilian Conservation Corp (CCC) program. It is also significant at the state level for distinctive architectural design, because its contributing features exemplify the “Park Service Rustic” style. The period of significance spans 1927 to 1942, covering the years of initial master planning efforts, development, and CCC involvement.

The Nāmakanipaio Cabin Camp was built in the 1960s and encompasses rustic cabins, camp sites, comfort stations, and picnic areas. It is eligible for listing in the National Register for its association with early Park planning and development and in the areas of entertainment and recreation. It is also eligible as a rare example of Mission 66-era design and development at the Park. Mission 66 was an NPS program that was intended to expand NPS visitor services by 1966. The Nāmakanipaio Cabin Camp’s period of significance spans 1960 to 1965, which reflects its planning, development, and construction.

The Crater Rim Historic District is an approximately 5,000-acre historic district that extends in and around Kīlauea Crater. The boundary of the Crater Rim Historic District encompasses Crater Rim Drive, an approximately 10-mile scenic road that takes visitors around the crater rim and onto the crater floor, which is listed on the Hawai'i State Register of Historic Places. The district also includes the road’s associated features, parking lots, trails, overlooks, and the buildings and developed areas on the crater rim. The historic district is eligible for listing in the National Register for its association with early Park planning, its association with the CCC program, and for its distinctive design, which exemplifies the “Park Service Rustic” style and naturalistic landscape architecture perpetuated by the NPS in the period between the World Wars I and II. The period of significance for the historic district spans the years 1916 to 1942, covering the period of primary Park development and CCC involvement.

The Kilauea Military Camp Historic District encompasses 52.7 acres at the northern edge of Kīlauea caldera and has been evaluated and determined to be significant for its association with historic events involving the early establishment and development of the U.S. Army on the

Island of Hawai'i, and its role during World War II as the U.S. Army Hawai'i District headquarters, as a detention center for Japanese-American civilians rounded up in the aftermath of the December 7, 1941, attack on Pearl Harbor, and as a prisoner-of-war camp in the late years of the war. It has also been determined to be eligible as an intact example of a lengthy period of military construction in the State of Hawai'i beginning in 1916 and extending to just after World War II. It represents some of the earliest military construction in the Hawaiian Islands, and its initial development was the earliest important event in U.S. military history on the Island of Hawai'i. The camp is also architecturally significant for its Hawai'i-focused architectural styles (Plantation and Vernacular), use of local materials, particularly lava rock, and the adaptation of the camp buildings to the mountain environment. The period of significance is 1916, when the first three buildings (Buildings 34, 35, and 40) were constructed, to 1947 following the last period of major development in the camp.

Other resources are significant for their association with the history of visitation to the Park. The 1877 Volcano House was once attached to a larger Victorian style hotel addition that was constructed in 1891. The 1877 structure was detached from the 1891 addition and moved to its current location in 1921 sparing it from the fire that burnt and demolished the 1891 structure in 1940. The unique historic building now houses a non-profit partner, the Volcano Art Center Gallery. Significant infrastructure that was key in the development of the Park includes the large rain shed first constructed in the 1920s that provides water for the Park. The Park also retains resources associated with strategic operations of World War II in the Kahuku Ranch Base Camp, which was used by the U.S. military as a radar station for detection of planes and ships between 1939 and 1947. Other resources that relate to World War II history in the Park include landing fields around the Kīlauea caldera, buildings at Kilauea Military Camp used for the temporary detainment of Japanese Issei and Nissei and prisoners of war, and natural areas that were used for military training and bombing ranges.

The Park also has a history of scientific research that is represented in some of its architectural features. The Jaggar Museum, which is a part of the Crater Rim Historic District, and the Whitney Seismograph Vault reflect the beginnings of volcanology studies in the Park. The Wilkes Campsite served as the location of a scientific expedition in the early 1840s led by Lieutenant Charles Wilkes and the U.S. Exploring Expedition on Mauna Loa, which was meant to expand the geographic knowledge of the area and its coasts.

Historic roads within the Park, including Crater Rim Drive, Hilina Pali Road and Mauna Loa Road, convey NPS road design and construction principles dating to the 1930s. Contributing features to the historic roads include stone lined culverts, retaining walls, shelters, lookouts, and nodes of development that are a part of the unique historic character. Historic and ancient trails are found throughout the Park that weave through the landscape of the Crater Rim, descend into

the caldera, as well as reach far into the summits, backcountry, and Wilderness areas of the Park.

Cultural Resources List

There are 43 identified cultural resources within the APE, listed in Table 10 below and depicted in Figure 15. The locations of some archeological sites are considered sensitive information and are therefore not included in Figure 15. Descriptions of each can be found in Appendix G, *Cultural Resources Consultation and Summary*.

Table 10. National Register Eligible, Listed, or Unevaluated Eligible Properties within the APE and Section 4(f) Resources

Property Name	Eligibility Status	Property Type
1790 Footprints	Listed	District, Site
‘Āinahou Ranch House and Gardens	Listed	Cultural Landscape
‘Āinapō Trail	Listed	Structure
Ala Wai‘i Parcel	Unevaluated	TBD
Boles Field (Kīlauea Airfield Study Areas)	Eligible	Site
Chain of Craters Road	Unevaluated	Structure
Crater Rim Drive	Listed	District, Structure
Crater Rim Drive Historic District	Listed	Cultural Landscape, District
Great Crack Parcel	Unevaluated	TBD
Hale ‘Ōhi‘a Tract Historic District	Listed	District
Hawai‘i Volcanoes National Park	Eligible	TCP
Hilina Pali Road	Listed	District
Historical Corral and Chute	Eligible	Structure
Historic Trails	Eligible	Structure
Johnston Summer Residence (Hale Ohia Cottages, Uluwena)	Listed	Building
Kahuku Ranch Base Camp	Eligible	Cultural Landscape, Site
Kahuku Shrines	Eligible	Site
Kahuku Ranch Cultural Landscape	Eligible	Cultural Landscape, District
Kahuku-‘Āinapō Trail	Eligible	Structure
Kahuku-Pōhue Parcel Archaeological Sites	Eligible	Site
Kalapana Fishing and Homesteading Rights	Eligible	TCP
Kīlauea Administration and Employee Housing Historic District	Eligible	Cultural Landscape, District

Property Name	Eligibility Status	Property Type
Kīlauea Crater	Listed	Site
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	Eligible	Site
Kīlauea Military Camp Historic District	Eligible	Cultural Landscape, District
Kīpuka Ka'ōpapa	Eligible	Site
Kīpukakī	Unevaluated	Site
Lithic Block Quarry	Eligible	Site
Mauna Loa Road	Listed	District
Moku'āweoweo Caldera	Eligible	Site
Nāhuku (Thurston Lava Tube) Cultural Landscape	Eligible	Cultural Landscape, District
Nāmakaniāpaio Cabin Camp District	Eligible	District
1877 Volcano House (Old Volcano House No. 42)	Listed	Building
Pi'i Mauna Dump Site	Unevaluated	Site
Puna-Ka'ū Historic District	Listed	District
Punalu'u Heiau	Unevaluated	Site
Punalu'u Springs	Unevaluated	Site
Pu'uloa Petroglyphs	Eligible	Cultural Landscape
Rain Shed, Building 43	Eligible	Building
Volcano Residential District	Eligible	District
Whitney Seismograph Vault No. 29	Listed	Building
Wilkes Campsite	Listed	Site
World War II Scrape Mounds (Kīlauea Airfield Study Areas)	Eligible	Site

Sources: NPS Cultural Resource Managers and Hawai'i State Historic Preservation Division staff.

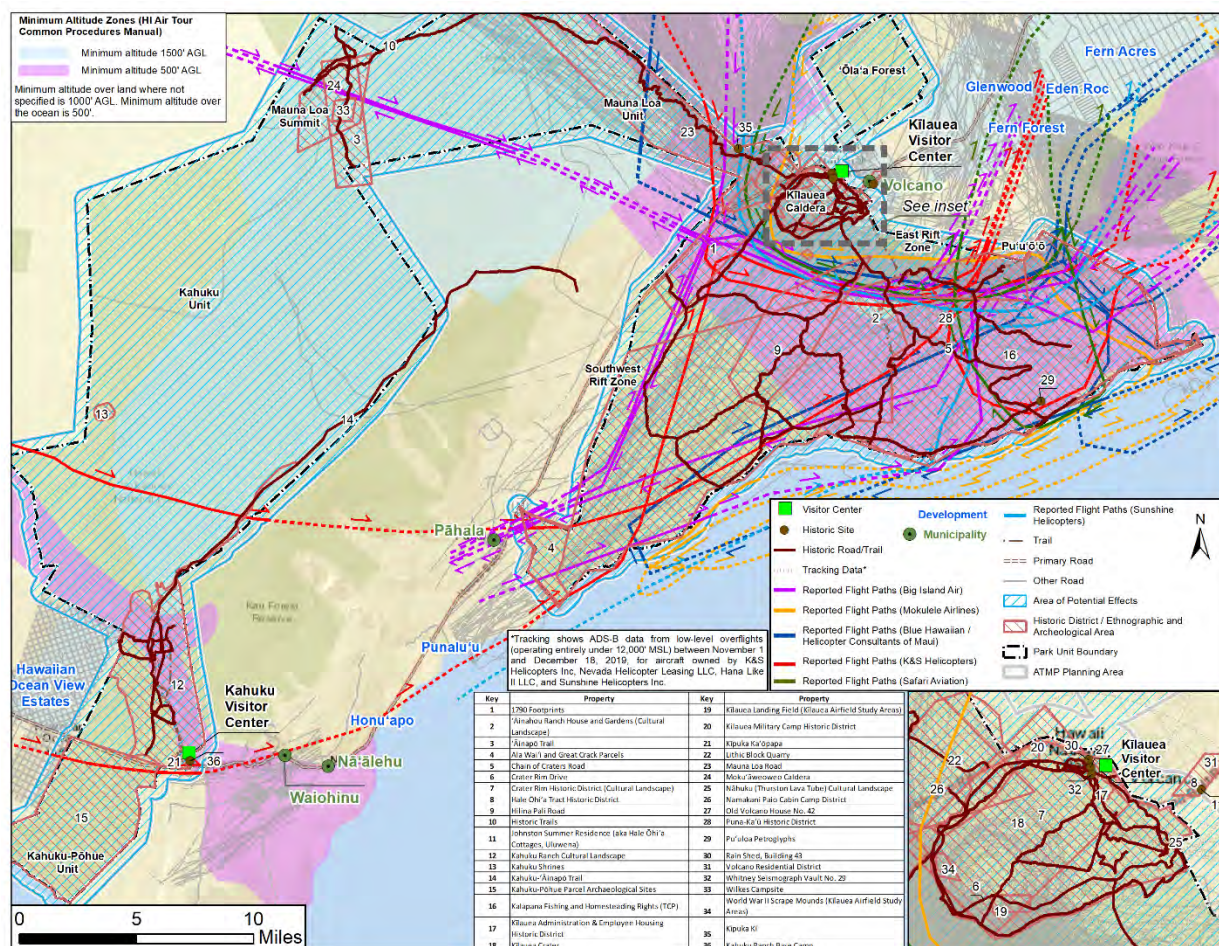


Figure 15. Affected Environment for Cultural Resources.

3.4.2 Environmental Consequences

Cultural resources within the APE include historic, architectural, archeological, and cultural resources, inclusive of ethnographic resources, TCPs, sacred sites, cultural landscapes, historic districts, and prehistoric and historic buildings and structures. Adverse impacts to these resources would occur if the alternative would alter the characteristics of a cultural resource that contribute to its significance in a manner that diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Commercial air tours, by their nature, have the potential to impact resources for which feeling and setting are contributing elements.

For all alternatives, the proposed action would not limit access to or change ceremonial use of Native Hawaiian sacred sites on federal lands. Sacred ceremonies or other Native Hawaiian activities occur in the Park routinely without notice to the NPS and may be interrupted by noise. Under Alternative 3, larger events, such as Merrie Monarch Festival-related Native Hawaiian

practices, or the Park Cultural Festival, would have a mandatory standoff to limit interruptions by noise from commercial air tours. Commercial air tours have no impact on Native Hawaiian access. Additionally, the proposed action would not involve any ground disturbing or other activities that would adversely affect the physical integrity of sacred sites.

The agencies requested and received consulting party input on the potential impacts of the alternatives on cultural resources throughout the Section 106 process, including at the October 28, 2021, informational webinar, December 10, 2021, listening session, March 11, 2022, listening session, and the November 21, 2022, Section 106 Consulting Party meeting. Consulting parties provided comments during the meetings as well as in emails, written letters, and phone calls following the meetings, and the agencies took into consideration the input from the consulting parties in evaluating the impacts of the preferred alternative on cultural resources.

Alternative 1: No Action

Under the No Action Alternative, cultural resources within the APE would continue to be impacted by air tours, as noise and visual impacts would alter the feeling and setting of those resources. As described in Section 2.2.1, Air Tours at or above Existing Levels, noise and visual impacts from existing air tours impact existing Native Hawaiian ethnographic resources, sacred sites, and TCPs. Native Hawaiians have consistently noted that the persistent air tours over the Park unreasonably interfere with the silence needed to perform ceremonies conducted by Native Hawaiian practitioners at these sacred sites, some of which rely on hearing natural sounds. Under the No Action Alternative, these impacts to ethnographic resources would continue to occur. Reporting data from 2017-2019 indicates that on average, air tour aircraft fly over the APE approximately 31 times per day, and the maximum number of tours reported over the Park during that period was 90 tours in a day, creating the potential for multiple audible intrusions of Native Hawaiian ceremonial practices when the noise from those tours is audible. Based on the *Noise Technical Analysis* (see Appendix F, Section 6, Figure 10), air tour noise above 35 dBA would occur in excess of 120 minutes a day. Noise above 35 dBA would occur across 60% of the Park. The 12-hour equivalent sound level would be up to 46.8 dBA (location point #5), just southeast of the Kīlauea caldera. Under the No Action Alternative, flights over significant features would continue to occur, resulting in visual and audible intrusions that detract from the sanctity of the entire Park as a TCP.

Air tours within the APE may also impact the Park's historical, architectural, and archeological resources, including cultural landscapes and prehistoric and historic structures when air tour noise and visual impacts detract from the feeling and setting of those resources. As noted in Appendix G, *Cultural Resources Consultation and Summary*, the Hawai'i Volcanoes National Park TCP, Footprints National Register District, Puna Ka'ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), Kīlauea Crater, Kīpukakī, and Lithic Block Quarry, as well as several

other historic roads and trails are the cultural resources that experience the most air tours flying directly over or near them under existing conditions. Based on the significant characteristics that make them eligible for listing in the National Register, all of these resources currently have their feeling or setting impacted by the noise and visual impacts of air tours. These impacts would continue to occur under the No Action Alternative.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area. The elimination of commercial air tours from the ATMP planning area would reduce the noise and visual intrusions from directly impacting the feeling and setting of cultural resources within the APE and result in beneficial impacts to ethnographic resources and sacred sites, TCPs, archeological resources, cultural landscapes, historic districts, and prehistoric and historic buildings and structures compared to current conditions.

Alternative 3

Alternative 3 would reduce the overall number of air tours in the ATMP planning area and establish flight paths that do not cross directly over most cultural resources in the APE except for the Hawai'i Volcanoes National Park TCP, over part of the Puna-Ka'ū Historic District, over the edge of the Kahuku-Pōhue Parcel Archaeological Sites, and over the Kahuku Ranch Cultural Landscape. The authorized flights paths under Alternative 3 would not fly directly over many sacred sites and ethnographic resources within the APE, including the Moku'āweoweo Caldera, Kīlauea Crater, and many contributing resources to the Hawai'i Volcanoes National Park TCP. Overall, Alternative 3 would eliminate or reduce noise and visual impacts that could detract from the feeling and setting of these resources. Some points in or near the following cultural resources may experience a slight increase in noise intensity and/or duration as compared to current conditions as more flights may fly near these resources than currently pass those areas: the Hawai'i Volcanoes National Park TCP, Kahuku-Pōhue Parcel Archaeological Sites, Kīpuka Ka'ōpapa, Kahuku Ranch Base Camp, Kahuku Ranch Cultural Landscape, Kahuku-Āinapō Trail, Ala Wai'i/Great Crack Parcels, Pu'uloa Petroglyphs, Puna-Ka'ū Historic District, Kalapana Fishing and Homesteading Rights (TCP), coastal Historic Trails, and Chain of Craters Road.

Overview of Noise Effects Throughout the APE

Under Alternative 3, the *Noise Technical Analysis* (Appendix F, Section 6, Figures 13 and 16) indicates that compared to the No Action Alternative, the time above 35 dBA across the Park would be reduced by up to 70 minutes on days when air tours would occur (see Point 9, Pu'u'ō'ō), and the noise footprint for Alternative 3 as measured by time above 35 dBA potentially affects 31% less of the ATMP planning area on a standard day and 39% less on a quiet technology-only day. Compared to the No Action Alternative, the time above 52 dBA would be up to 19 minutes less on days when air tours would occur (see Point 5, Cone Peak,

Nēnē Area). At some points, time above 35 dBA or 52 dBA may be higher for quiet technology-only days compared to standard days because some quiet technology aircraft, while quieter, are modeled to be audible for a slightly longer period of time than standard aircraft based on the location, route, and type of aircraft modeled for those points.

Compared to current conditions, the $L_{Aeq,12h}$ sound levels would be lower for the interior regions of the Park but may be higher in coastal regions and along the proposed Kahuku Route. As a whole, the noise footprint for Alternative 3, as measured by areas where the $L_{Aeq,12h}$ sound levels would exceed 35 dBA, would be reduced from 13% of the Park to 3% of the Park on standard days and 2% of the Park on quiet technology-only days (see Appendix F, Section 7, Table 10). Alternative 3 would also reduce $L_{Aeq,12h}$ sound levels to zero or near zero for locations near the heart of the Park (e.g., Halema'uma'u Crater and the Kīlauea Visitor Center). Portions of the APE along the proposed flight paths would experience $L_{Aeq,12h}$ sound levels between 35 dBA and 40 dBA, with small areas rising above 40 dBA but below 45 dBA.

Points with Increased Noise

Nine noise points in the ATMP planning area (14, 17, 18, 19, 20, 24, 39, 40, 41) are modeled to experience increases in noise under the FAA and NPS metrics. The agencies identified whether these points were near any cultural resources that have a quiet setting or natural sounds and setting as a significant characteristic. The agencies then analyzed additional noise metrics to determine changes in noise duration and intensity that would be experienced at those properties under Alternative 3 compared to current conditions. Table 13 in Appendix F, *Noise Technical Analysis*, compares the $L_{Aeq, 12 \text{ hr}}$ under the No Action Alternative to the modeled $L_{Aeq, 12 \text{ hr}}$ under Alternative 3, Table 14 compares time audible for natural ambient, Table 15 compares time above 35 dBA, Table 16 compares time above 52 dBA, and Table 17 compares the maximum sound levels. The analysis in the Section 106 finding of effects letter interprets the modeled noise metrics in these tables and if any changes in noise have the potential to cause adverse effects to historic properties in the APE. See Appendix G, *Cultural Resources Consultation and Summary* for more information.

The following noise points may experience an increase in duration of noise, but not intensity: 14, 18, 19, 20 (see Appendix F, Section 5, Figure 7 for modeled point locations and Tables 13-17 for comparison of point data). Each of these points represents a coastal area of a cultural resource, many of which include contributing features or as a whole have a quiet or natural setting as a significant characteristic. At most of these points, time above 35 dBA would increase when compared to the No Action Alternative. These points would also see an increase in time audible. However, $L_{Aeq, 12 \text{ hr}}$ would remain similar to or less than current conditions and the maximum sound levels would substantially decrease at all these points under Alternative 3. This indicates that due to the increased altitudes of the flights under Alternative 3, the air tours

may be audible for a longer amount of time, but they would not be as loud as current conditions.

Points 17, 24, 40, and 41 would have increases in noise duration and intensity on standard days on which air tours would be permitted. Maximum sound levels would decrease on quiet technology-only days when compared to current conditions. There would be increases in the $L_{Aeq,12hr}$ but sound levels would remain under 35 dBA. The increases in time above metrics would be minimal on both standard and quiet technology-only days: time above 35 dBA would increase by up to 11.2 minutes, and time above 52 dBA would increase by up to 2.2 minutes total each operating day. The time audible would increase at all points but less on quiet technology-only days. Each of these points represents coastal or slightly inland locations of multiple cultural resources, many of which include or have contributing features that include a quiet or natural setting as a significant feature. Resources in the vicinity of these points include fishing shrines, trails, traditional fishing areas, culturally sensitive sites, culturally used lava tubes, and other features that require a quiet and/or natural setting.

Only Point 39 increases in all modeled noise metrics although noise levels generally remain low. Point 39 represents a coastal point within the Hawai'i Volcanoes National Park TCP, the Puna-Ka'u Historic District and is also near the Kalapana Fishing and Homesteading Rights (TCP) and coastal Historic Trails. Contributing features to the TCPs and Historic District in the vicinity of Point 39 include traditional fishing areas, trails, and other features that require a quiet and/or natural setting. $L_{Aeq,12h}$ would increase almost 10 dBA at Point 39, which means sound exposure would almost double on standard days and quiet technology-only days; however, overall, the sound levels would remain low (20-30 dBA). The maximum sound level would increase by 2 dBA on quiet technology-only days and almost 8 dBA on standard days. Increases below ± 3 dBA are generally not perceptible, and the maximum sound level of 60.7 dBA is similar to a commercial area or dishwasher in the next room. Time above 35 dBA and 52 dBA are modeled to slightly increase under Alternative 3, with time above 35 dBA experienced for a total of 7 minutes on a standard day and 10 minutes on a quiet technology-only day, and time above 52 dBA experienced for 1 minute on both a standard day and on a quiet technology-only day. Therefore, while increasing, noise levels generally remain low. At Point 39, air tours would be audible for 36 minutes on quiet technology-only days and about an hour on standard days, which is an increase from current conditions where air tours are not audible and could disrupt experiences that require a quiet setting if they take place during hours that air tours are in operation. However, as further discussed below and in the Section 106 consultation, the measures included in Alternative 3 would reduce the likelihood that traditional uses of cultural resources will be impacted as they would reduce the number of air tours overall and restrict the days of the week and times of day air tours can take place. Any impacts would be temporary and infrequent, and therefore would not result in adverse effects to these cultural resources.

Summary of Effects

Because noise is modeled using conservative assumptions and implementing the ATMP under Alternative 3 would result in limiting the number of flights to 14% of the three-year average of flights flown from 2017-2019 using three consolidated routes and the same aircraft to fly at higher altitudes than existing conditions, noise and visual impacts to cultural resources are expected to overall be reduced under Alternative 3. Alternative 3 would not introduce new audible or visual elements into the APE because air tours are currently occurring in this area. Alternative 3 would substantially reduce the number of air tours within the ATMP planning area, move the air tours away from most sensitive cultural resources and avoid direct overflights of cultural resources, and increase the altitude at which air tours must fly, which would result in beneficial impacts to many cultural resources in the APE. Although Alternative 3 would shift authorized air tour operations to the three proposed flight paths and may expose some cultural resources to increased noise and visual impacts, any increases in noise and visual impacts would not overall substantially diminish the integrity of these resources. The inclusion of no-fly days, time-of-day restrictions to avoid sunrise and sunset, quiet technology incentives, and limiting flights to certain days of the week minimizes impacts to the cultural resources and reduces the likelihood that an air tour would interrupt Native Hawaiian traditional practices. Furthermore, air tours are transitory in nature, and any noise and visual impacts to cultural resources would be temporary, infrequent, and in many cases less intrusive than existing conditions in the Park. Therefore, Alternative 3 would not result in any adverse effects to cultural resources in the APE.

The agencies continued consultation under Section 106 with an evaluation of the effects of Alternative 3, as the preferred alternative, on historic properties. A letter was sent on March 27, 2023, to the Hawai'i SHPD and all consulting parties outlining the Section 106 process, including a description of the undertaking, delineation and justification of the APE, identification of historic properties and an evaluation and proposed finding of effects. Based on this consultation, the FAA proposes a finding that the ATMP will not adversely affect historic properties. See Appendix G, *Cultural Resources Consultation and Summary*, for more information.

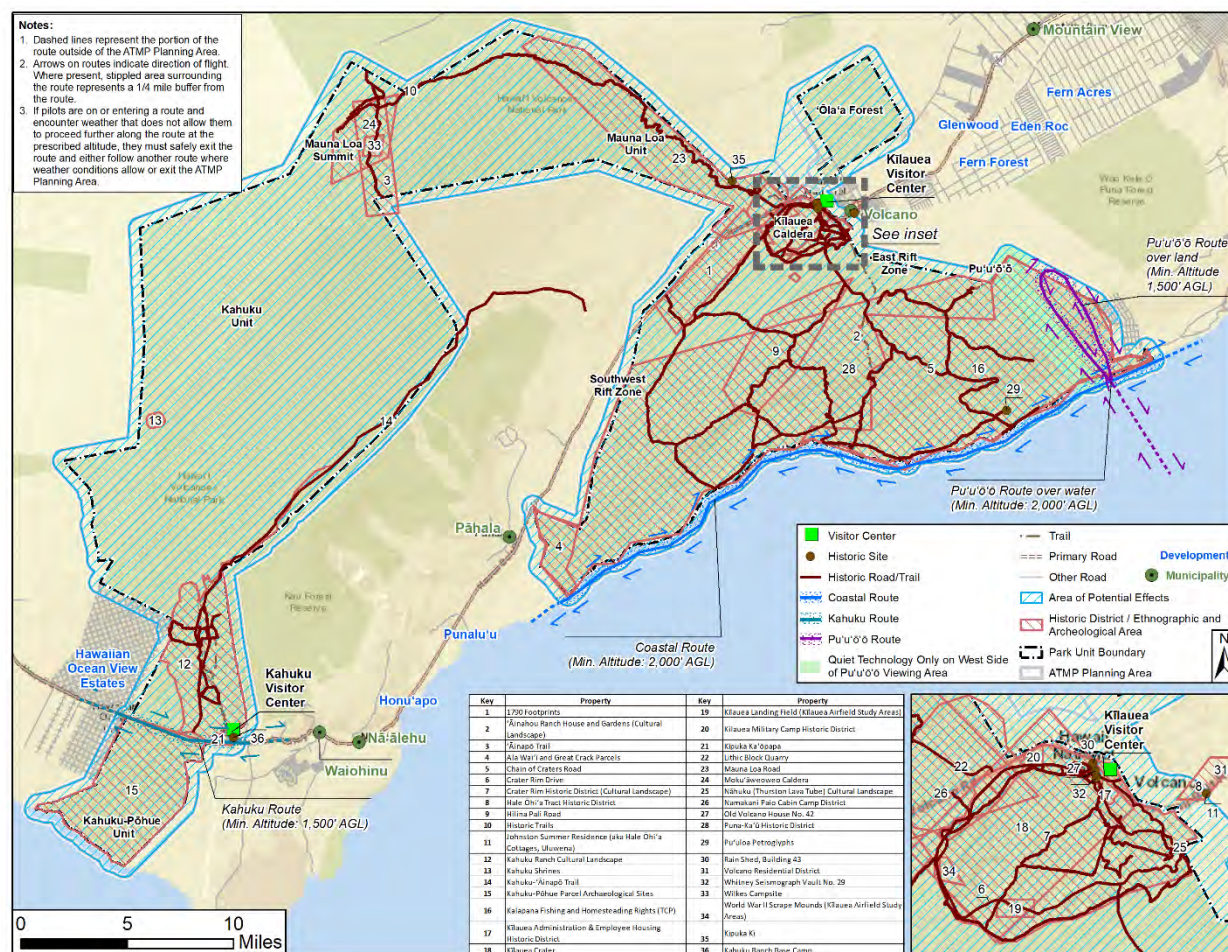


Figure 16. Cultural Resources Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: Indirect effects to cultural resources could occur as a result of noise and visual effects caused by air tours flying outside of the ATMP planning area, including those above 5,000 ft. AGL. As noted in 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, indirect noise impacts would have the potential to occur under Alternatives 2 and 3 as these alternatives could result in the displacement of air tours outside the ATMP planning area. The No Action Alternative is not expected to result in indirect effects to cultural resources within the APE. Since Alternative 2 would prohibit flights within the ATMP planning area (whereas Alternative 3 would limit them to no more than 1,565 flights per year in addition to other operating parameters as specified in Section 2.6), Alternative 2 would likely result in more indirect impacts to cultural resources within the APE than Alternative 3.

It is difficult to predict with specificity if, where, and to what extent any displaced air tours under Alternatives 2 and 3 would result in impacts in different and/or new areas. The

preciseness of routes and altitudes for air tours flown on displaced routes are generally subject to Hawai'i Common Procedures Manual and may vary greatly. Under Alternatives 2 and 3, it is reasonably foreseeable that operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Helicopter flights above 5,000 ft. AGL in the higher elevations of Mauna Loa are unlikely due to the ground elevation in that area and safety requirements for unpressurized aircraft; however, fixed-wing flights with a pressurized cabin may still fly above 5,000 ft. AGL in these areas. Air tour operators may also choose to fly to points of interest on the island outside of the ATMP planning area, or along the perimeter of the ATMP planning area surrounding the volcanoes in order to view Kīlauea Crater or any active lava. Under Alternatives 2 and 3, some noise and visual impacts to cultural resources could occur at higher elevation areas of the Park to the north with views towards the ocean or near a small area to the southwest of the 'Ōla'a Forest tract in the APE where flights may be more likely to hover to view the Kīlauea Crater compared to existing operations. Any flights above or along the perimeter of the ATMP planning area would likely be reduced from the existing number of flights due to the ATMP restrictions and therefore result in a reduction of noise and visual impacts to cultural resources in the northern portion of the Park, including the Moku'āweoweo Caldera and several contributing resources to the Park TCP.

Cumulative Effects: Other ongoing sources of noise within the APE include Park maintenance and management actions such as administrative flights or the use of mechanized equipment for maintenance. Planned future projects at the Park include a disaster recovery project consisting of entrance road realignment that will adversely affect the Crater Rim Drive, demolition of damaged structures at Uēkahuna bluff including the historic Jaggar Museum (an adverse effect; a Programmatic Agreement is being implemented to mitigate the adverse effects from the disaster recovery project), replacement of waterline and fiber optic lines in the developed area, and construction of a replacement USGS field station on the western edge of the Kīlauea Military Camp Historic District. This project will last one to two years, during which there will be some construction noise generated most days, but mitigation measures will be used to ensure that noise is minimized as much as possible. The NPS is also undertaking the development of a trail segment to connect the access road in the Kahuku-Pōhue parcel to an existing historic trail, as well as a project to rehabilitate water systems in the Kīlauea summit area. Ongoing visual impacts within the APE include general aviation flights, overflights by commercial airlines, military flights, and administrative flights such as those used for maintenance or search and rescue efforts, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours. These actions have the potential to introduce noise and visual impacts that may impact the feeling and setting of cultural resources. In some cases, these activities detract from the opportunity for traditional cultural practices because mechanized equipment is necessary for the activity.

However, these activities enhance the cultural and natural resources of the Park by protecting and potentially restoring habitat for Native Hawaiian plants and animals, which are significant to the Native Hawaiian people and traditional cultural practices.

The potential for cumulative noise and visual effects of these actions along with those from commercial air tours would be the greatest under the No Action Alternative. The cumulative effects would be fewer for Alternative 3, which limits the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. As mentioned, changes in environmental conditions in the APE that may ensue from global climate change include increasing temperatures, decreasing precipitation, increasing storm intensities, and increasing variability in weather patterns (Thomas et al., 2004; Frazier and Giambelluca, 2017). These changes have the potential to affect cultural resources such as the availability of fresh water, which is crucial for traditional Native Hawaiian farming practices. Changes from climate change also threaten to impact archeological site integrity through erosion and increased risk of catastrophic flooding. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.5 Wilderness

While Wilderness is not an impact category the FAA traditionally examines, the NPS has agency wide (see NPS Management Policies (2006), Chapter 6, and Director's Order 41, 2013) and park-specific guidelines (NPS, 2015) for managing designated Wilderness areas within the National Park System. The Wilderness Act of 1964 is the primary federal legislation regulating the management of Wilderness areas. As a managing agency, the NPS is required to preserve Wilderness character. Pursuant to NPS Management Policies (2006), the NPS manages eligible, study, proposed, recommended, and potential Wilderness as designated Wilderness. NPS Management Policies (2006) Section 6.1. states:

The purpose of Wilderness in the national parks includes the preservation of Wilderness character and Wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, Wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.

The NPS manages the Wilderness for the following qualities of Wilderness character¹⁸:

- **Untrammeled:** Unhindered and free from the actions of modern human control or manipulation.
- **Natural:** Ecological systems are substantially free from the effects of modern

¹⁸ <https://www.nps.gov/subjects/wilderness/wilderness-character.htm>

civilization.

- **Undeveloped:** Retaining primeval character and influence without permanent improvements or modern human occupation.
- **Solitude or Primitive and Unconfined Recreation:** Ability to provide outstanding opportunities for solitude or primitive and unconfined type of recreation.
- **Other features of value:** Wilderness preserves other features of value that are of scientific, educational, scenic, or historical value.

Since commercial air tours do not land within the Park, the undeveloped quality of Wilderness is not discussed. Additionally, the authorization of commercial air tours is not an intentional manipulation of the environment and therefore the untrammelled quality of Wilderness is also not discussed. Other features of value within the Park's Wilderness including historical, scientific, educational, and scenic resources are discussed in other sections of this draft EA (cultural and ethnographic resources are discussed in Section 3.4, Cultural Resources; scientific and educational activities are discussed in Section 3.3, Biological Resources; and scenic resources are discussed in Section 3.8, Visual Effects) therefore, the other features of value have not been discussed in this section.

The study area for Wilderness includes the designated, eligible, and potential Wilderness areas within the ATMP planning area (collectively referred to as Wilderness) (refer to Figure 17).

3.5.1 Affected Environment

The Park's Wilderness is located on the most isolated land mass in the world and consists of some of the newest land in the world with lava flowing daily as a result of active volcanism (Burroughs, 2017). The Park has four distinct sections of the designated Wilderness that are informally considered units because they vary in characteristics such as vegetation, elevation, location, and climate. These four units, the Mauna Loa, Ka'ū Desert, East Rift, and 'Ōla'a, collectively span approximately 123,100 acres across the Park's 354,461 acres. Refer to Figure 17 for a depiction of the affected environment for Wilderness.

The NPS determined that approximately 121,015 acres of the Kahuku unit are eligible for inclusion under the National Wilderness Preservation System (NPS, 2014). Areas eligible for Wilderness designation include the upland portions of the Kahuku unit, the upslope of pastures, and 100 meters above and along the uppermost four-wheel drive roads (NPS, 2015).

The study area for Wilderness includes 7,500 acres of potential Wilderness per 1978 legislation.¹⁹ Approximately 1,951 acres of the potential Wilderness exist within the Park in an

¹⁹ An Act to authorize additional appropriations for the acquisition of lands and interests in lands within the Sawtooth National Recreation Area in Idaho. (92 Stat. 3467) (P.L. 95-625, Nov. 10, 1978).

area of outstanding geological resources called the Great Crack. The other area of potential Wilderness is located near Nāhuku in the East Rift forest and is owned by the State of Hawai'i. There are 19,201 acres of the Park that have not yet been evaluated for Wilderness eligibility.

Because natural sound is such an integral part of Wilderness character, the NPS considers noise above 35 dBA to negatively impact Wilderness character. As shown in Figure 2 of Appendix F, *Noise Technical Analysis*, the natural ambient conditions in the majority of Wilderness areas range from 25-35 dBA. As described in Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use, human-generated noise sources within the study area for Wilderness include wheeled vehicles on roads, such as passenger vehicles and tour buses, and cyclists, and aircraft overflights consisting of high-altitude commercial jet aircraft, occasional NPS flights for management activities or other Park purposes, commercial air tour operations, and private general aviation aircraft.

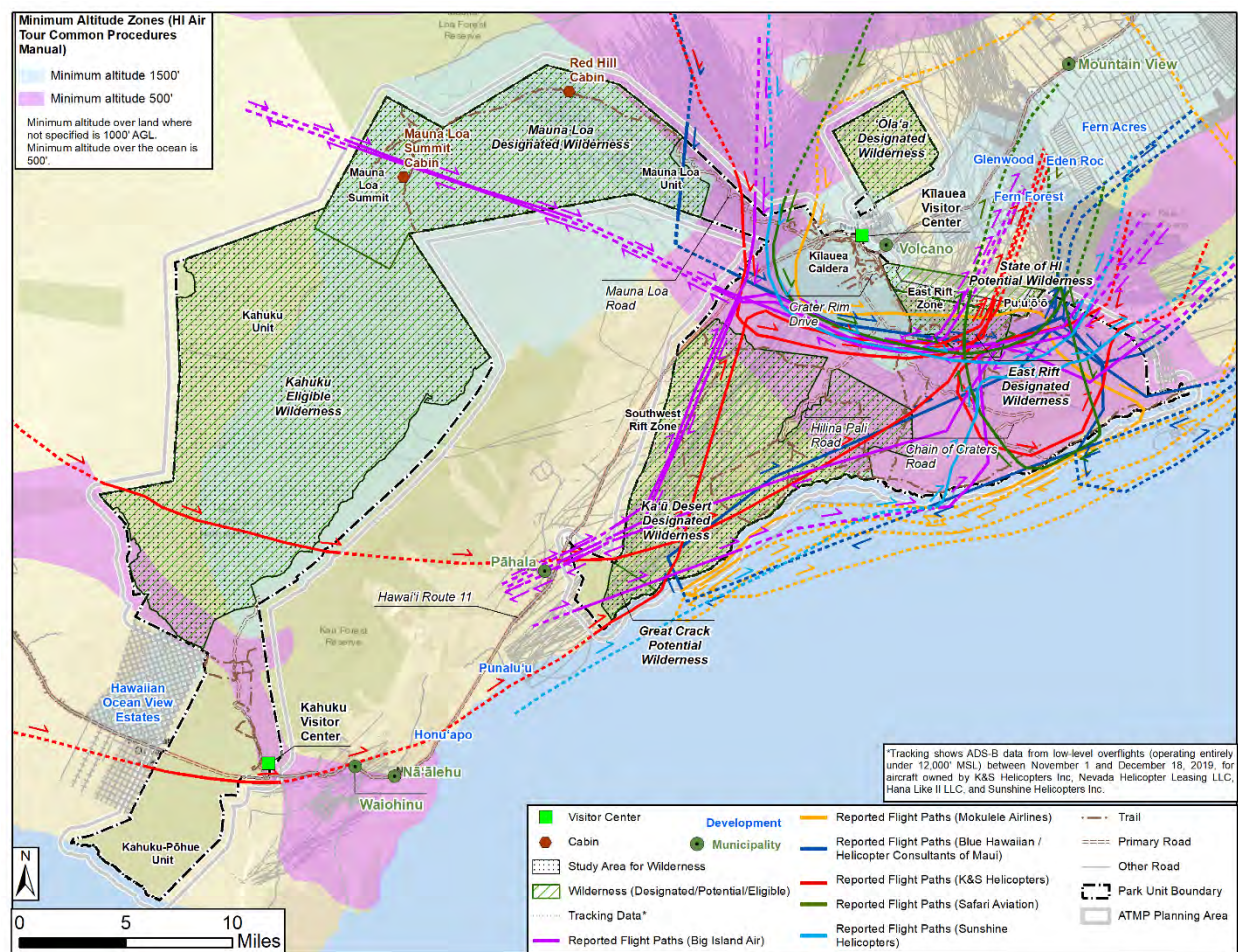


Figure 17. Affected Environment for Wilderness.

Natural

The Wilderness areas within the Park support a diverse community of plant species that allow the natural quality of Wilderness to be preserved. The Mauna Loa unit encompasses the summit of Mauna Loa and extends down the southeast face to just above the Mauna Loa Road. This unit of Wilderness is characterized by koa forest, isolated kīpuka (islands of plant and animal life surrounded by lava), subalpine and alpine shrublands, and extensive barren lava flows at higher elevations. The Ka'ū Desert unit spans the Ka'ū Desert and the coastal areas along the Southwest Rift of Kīlauea, and is characterized by 'ōhi'a woodlands, native shrublands, grasslands, and extensive lava flows. The 'Ōla'a unit is characterized by dense rainforest dominated by ferns. The East Rift unit is characterized by highly dynamic and relatively recent lava flows, pit craters, rainforest, as well as pioneer vegetation that is re-establishing on recent lava flows of the active upper east rift zone of Kīlauea. The Great Crack unit is characterized by its namesake crack that stretches up to 15 meters wide and 20 meters deep in places. It is a superb example of the geologic dynamism of Kīlauea and is just one of a series of cracks, fissures, and cones in the area. The Kahuku Wilderness unit stretches from 12,600 feet in elevation down to roughly 4,600 feet in elevation. The area is characterized by dramatic lava flows and volcanic features along the Mauna Loa Southwest Rift Zone and native montane 'ōhi'a and koa forests.

A natural Wilderness is one where ecological systems are substantially free from the effects of modern civilization. The natural quality is preserved when indigenous species and ecological processes are intact. When the effects of modern civilization impact Wilderness, the natural quality is degraded. The natural quality of Wilderness has been impacted by non-native ungulates that put endemic species at risk. Ungulates can alter vegetative communities through grazing or trampling, as well as disturbing nesting birds and their habitat. The Park has taken measures to prevent and mitigate damage to native species, such as installing fencing around sensitive areas to keep out ungulates.

Further, avian diseases such as avian malaria affect bird populations within the study area for Wilderness, negatively impacting the natural quality of Wilderness character in the Park.

Solitude

The ability to experience solitude is an integral component of Wilderness character. In preserving this Wilderness quality, the NPS places importance on considering the value of maintaining these places where present and future generations have the opportunity to feel free, at peace, and self-reliant, and observe landscapes without modern human effects. There are several opportunities for solitude and unconfined recreation within the Park's Wilderness. Wilderness use typically occurs on marked trails which provide the primary opportunities for visitors to experience solitude.

Within the Mauna Loa unit, trails lead to the summit caldera, the weather observatory off of Saddle Road, and the Kapāpala Forest Reserve. Visitors have access to two developed historic camps and water located at the Red Hill Cabin along the Mauna Loa Trail and the Mauna Loa Summit Cabin at the summit. Trails in the Ka'ū Desert unit provide paths to Kīlauea caldera, Highway 11, the end of Hilina Pali Road, and Chain of Craters Road, and several trails provide access to backcountry campgrounds with water and beaches within the Park. The East Rift unit, known for its scenic volcanic landscapes, receives higher amounts of visitation when there are active lava flows. As such, trails in this unit lead from the various craters and a campground in the East Rift Zone to Chain of Craters Road. There are no formal trails within the 'Ōla'a unit. Wilderness use beyond marked trails is inhibited by dense rainforests and geologic features but does occur in some areas. The Great Crack and Kahuku Wilderness units do not currently have formal trails or visitor facilities. Future planning efforts will consider if trails are needed and would utilize existing historic trail segments where feasible.

Solitude in all of the Wilderness units is disrupted by commercial air tours, and when permitted under a minimum requirement analysis, administrative flights and administrative use of motorized equipment, which audibly and visibly affect the primitive Wilderness experience.

3.5.2 Environmental Consequences

Section 2(a) of the Wilderness Act states that Wilderness areas “shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as Wilderness, and so as to provide for the protection of these areas, the preservation of their Wilderness character.” The NPS manages all categories of Wilderness to enhance Wilderness character consistent with the Wilderness Act and NPS Management Policies and generally manages for the natural, untrammeled, undeveloped, solitude and unconfined recreation, and other features of value qualities of Wilderness character. Commercial air tours over the Park may impact the opportunity for solitude or the natural qualities of Wilderness character. Aircraft that land in Wilderness detract from the undeveloped quality of Wilderness. Because commercial air tours do not land in Wilderness or the Park, the undeveloped quality of Wilderness is not considered here.

Keeping it Wild 2, An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System, 2015 (Landres et al., 2015) notes that Wilderness has traditionally been associated with protecting ecological systems from human impacts (Sutter, 2004) (p.39). Therefore, “the natural quality is preserved when there are only indigenous species and natural ecological conditions and processes” taking place or by the restoration of those ecological conditions (p.11). “Natural quality is preserved when wilderness ecological systems are substantially free from the effects of modern civilization” (p.34). The natural quality of Wilderness may be impacted by actions both outside and inside Wilderness

(p.34). Effects on the natural quality are determined by determining the effects from human actions on ecological systems (p.34).

Solitude includes attributes such as “separation from people and civilization, inspiration (an awakening of the senses, connection with the beauty of nature and the larger community of life), and a sense of timelessness (allowing one to let go of day-to-day obligations, go at one’s own pace, and spend time reflecting). A review of research suggests that solitude encapsulates a range of experiences, including privacy, being away from civilization, inspiration, self-paced activities, and a sense of connection with times past (Borrie and Roggenbuck, 2001)” (p. 51).

Generally, solitude improves when sights and sounds of human activity are remote. Commercial air tours can represent both a sight and sound of human activity and therefore detract from this quality of Wilderness character. Visitors in backcountry and Wilderness areas often find commercial air tours more intrusive than visitors in developed and front-country areas where noise from commercial air tours may not be as audible (Rapoza et al., 2015; Anderson et al., 2011).

Alternative 1: No Action

Based on flight tracking data, the heaviest concentrations of air tours currently fly over the Mauna Loa, East Rift, Great Crack, and Ka’ū Desert Wilderness units. Operators have also reported flying tours over the Kahuku Wilderness unit, though flight tracking data shows very few tours being flown over this area. There is little to no air tour activity reported over the ‘Ōla’a Wilderness Unit, though flight tracking data shows heavy concentrations of air tours being flown near this area near the Kīlauea caldera. Under the No Action Alternative, the existing flight patterns, altitudes, number of tours per year, and other parameters described in Section 2.4, Alternative 1 (No Action Alternative), would continue to occur. The NPS has determined that persistent noise within the Park’s Wilderness areas under the No Action Alternative would continue to unreasonably interfere with the opportunity for solitude and would continue to detract from the natural qualities of Wilderness. The No Action Alternative would continue to adversely impact Wilderness character, as air tour noise within and near Wilderness detracts from the opportunity for solitude and natural quality of the Park’s Wilderness character as described below.

Natural Quality

Air tours at existing levels detract from the natural quality of Wilderness character, which would continue under the No Action Alternative. Specifically, air tour noise currently affects natural resources that are present within the Park’s Wilderness areas, including native forest birds, many of which are threatened and endangered. Noise may affect these species by making it more difficult to forage, mate, or avoid predation, (refer to Section 3.3.2, Environmental Consequences for Biological Resources for more information on noise impacts).

Ongoing air tour noise may result in temporal shifts in songbird vocalization (Gallardo Cruz et al., 2021). The *Noise Technical Analysis* (Appendix F, Section 6, Figure 10) shows that on days when air tours occur, noise above 35 dBA would occur for less than 90 minutes a day in the East Rift and Ka'ū Desert Wilderness units, and for less time in other Wilderness units. All Wilderness units would experience at least some noise above 35 dBA on days when air tours occurred. The potential for impacts to the Park's wildlife that would occur under the No Action Alternative would continue to greatly detract from the natural quality of the Park's Wilderness.

Opportunity for Solitude

The presence of noise and visual intrusion of commercial air tours is a human activity that detracts from the opportunity to experience solitude in Wilderness. Noise from commercial air tours disrupts Wilderness visitors seeking an opportunity for solitude within the Park's Wilderness areas and would continue to occur under the No Action Alternative. The *Noise Technical Analysis* (Appendix F, Section 6, Figure 9) provides context for the noise effects that would occur under the No Action Alternative and that would detract from the opportunity for solitude within the Park's Wilderness areas. This analysis shows that on days when air tours occur (an average of 345 days per year based on 2017-2019 reporting data), the maximum time that air tours could be audible within the Wilderness is less than 360 minutes a day (non-contiguous), which would occur in the East Rift Wilderness Unit. All Wilderness units would experience audible air tour noise in at least some areas, and only the Kahuku and Mauna Loa Wilderness units would have areas that would not experience audible air tour noise on days that air tours occurred. This noise would continue to detract from the opportunity for solitude in the Park's Wilderness areas as it introduces sounds of human activity and therefore detracts from this quality of Wilderness character. The NPS has received complaints from Wilderness users about commercial air tour noise within the East Rift, Mauna Loa, and Ka'ū Desert units, which would continue to occur under the No Action Alternative.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area, which would offer the greatest protection to Wilderness. Compared to current conditions, this would enhance Wilderness character by reducing the intensity of noise and number of noise events over Wilderness areas. There would be direct beneficial impacts to the natural quality of Wilderness and the opportunities for solitude under Alternative 2.

Alternative 3

Alternative 3 would not allow air tours to be conducted over any of the designated, eligible, or potential Wilderness within the ATMP planning area (see Figure 18). Compared to current conditions, this would enhance qualities of Wilderness character by reducing the intensity of

noise, the footprint of noise, and the number of noise events over Wilderness areas, although some noise would still be present as described below.

Natural Quality

Impacts to the natural quality of Wilderness character would be fewer than the No Action Alternative because the intensity and duration of air tour noise would be less, which would result in fewer disturbances to forest birds. There would be direct beneficial impacts to the natural quality of Wilderness and opportunities for solitude under Alternative 3. The *Noise Technical Analysis* (Appendix F, Section 6, Figure 13) shows that on days when air tours occur, noise above 35 dBA would occur for less than 15 minutes a day in the Great Crack, East Rift, and Ka'ū Desert Wilderness units. This would occur during both a standard day and quiet technology-only day, though the spatial footprint of noise above 35 dBA in Wilderness would be smaller during a quiet technology-only day. These impacts would detract from the natural quality of Wilderness, although it would represent an overall reduction in impacts compared to current conditions, and the majority of the Wilderness areas within the study area for Wilderness would not experience impacts to the natural quality of Wilderness, as noise above 35 dBA would not occur.

Opportunity for Solitude

Impacts to opportunities for solitude would be less than the No Action Alternative because the intensity and duration of air tour noise would be less, which would result in less of a detraction from this quality of Wilderness character. The *Noise Technical Analysis* (Appendix F, Section 6, Figure 12) shows that on standard days when air tours occur, the maximum time that air tours could be audible within Wilderness is less than 135 minutes a day (non-contiguous) in the East Rift Wilderness unit. Other Wilderness units would experience audible air tour noise for less time. The 'Ōla'a Wilderness unit would experience approximately 200 fewer minutes of audible air tour noise per day on a standard day under Alternative 3. Only portions of the Kahuku and Mauna Loa Wilderness units have portions of the Wilderness that would not experience audible air tour noise during a standard day. On quiet technology-only days, the maximum time that air tours could be audible within Wilderness is less than 120 minutes a day (non-contiguous). All Wilderness units except the Mauna Loa unit would experience at least some audible air tour noise, and the spatial footprint of audible air tour noise is smaller in the Kahuku, Ka'ū Desert, and 'Ōla'a units as compared to standard days, and approximately the same spatial footprint of audible air tour noise for the Great Crack unit. This noise detracts from the opportunity for solitude as it introduces sounds of human activity and therefore detracts from this quality of Wilderness character, although it would be substantially less than current conditions.

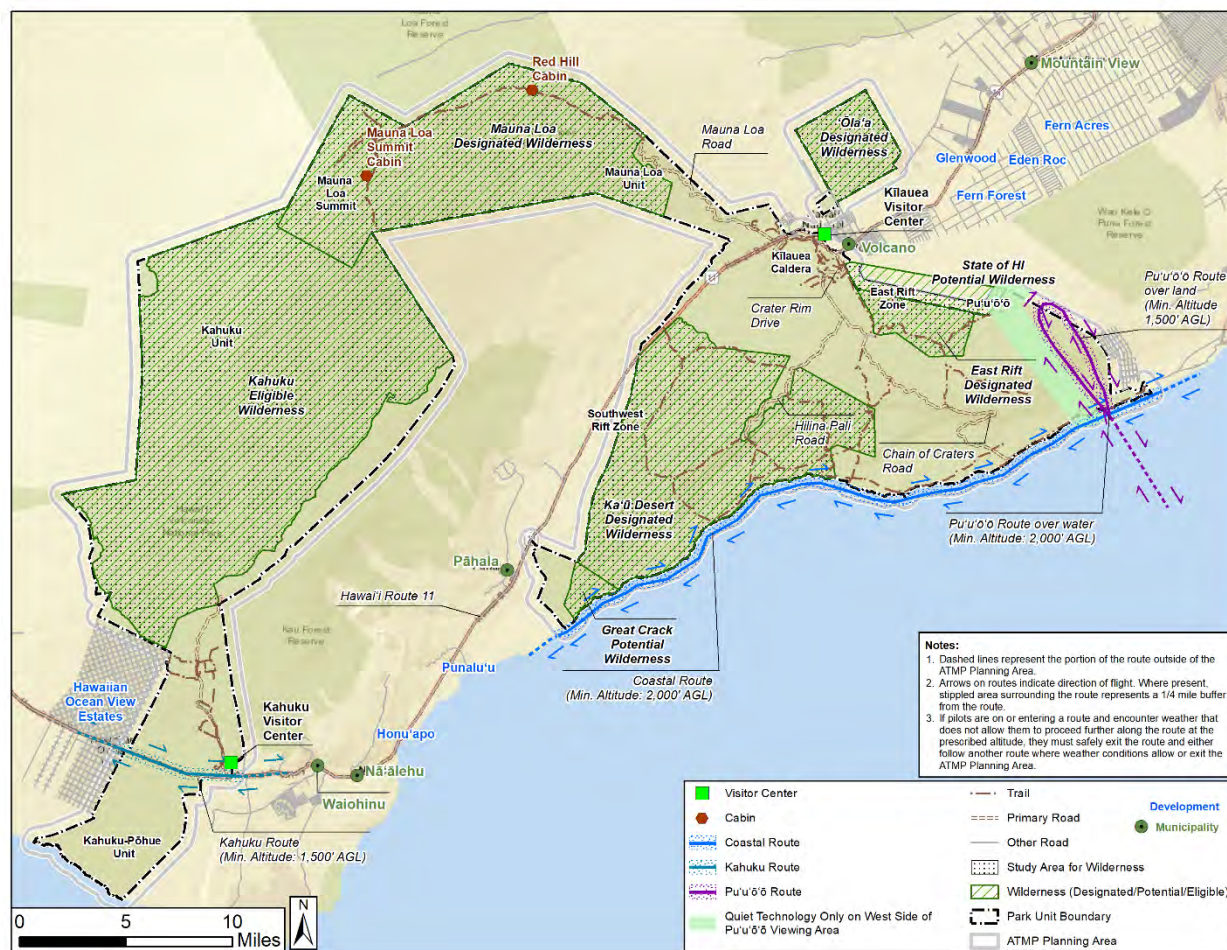


Figure 18. Wilderness Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would generally remain consistent with existing conditions, thus there are no indirect impacts to Wilderness that would be expected to occur under this alternative.

Alternatives 2 and 3 would limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, if any, may result in noise that could affect qualities of Wilderness character to the extent that Wilderness is present in areas near where those air tours would be occurring. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Operators may also choose to fly just outside of the perimeter of the ATMP planning area surrounding the volcanoes in order to view Kilauea Crater or any active lava. Air

tours outside the ATMP planning area may occur in the area southwest of the 'Ōla'a Forest tract due to the proximity to Kīlauea caldera and the potential to view any lava that may be present. Therefore, under Alternative 2, some indirect impacts to both the natural quality and opportunities for solitude could occur in the Wilderness as a result of noise from air tours flying just outside the ATMP planning area. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits them to no more than 1,565 flights per year in addition to other operating parameters as specified in Section 2.7, Summary Comparison of the ATMP Alternatives, Alternative 2 would likely result in more indirect impacts to Wilderness character than Alternative 3 as some tours would still be permitted within the ATMP planning area.

Cumulative Effects: Solitude in the study area for Wilderness is impacted by administrative flights and administrative use of motorized equipment for Park management actions, such as invasive plant removal and trail maintenance, and noise from commercial air tours which audibly and visually detract from the primitive Wilderness experience. Under the No Action Alternative these conditions would continue, resulting in limited opportunities to experience solitude in the Wilderness. Under Alternatives 2 and 3 administrative flights would continue, but noise would likely be less frequent since commercial air tours would be prohibited from flying directly over Wilderness areas below 5,000 ft. AGL. Therefore, the No Action Alternative would result in no cumulative change in the opportunity to experience solitude, while Alternatives 2 and 3 would likely result in a net beneficial effect to the opportunity for solitude. In some cases, management activities detract from the natural quality of Wilderness character because mechanized equipment is determined to be the minimum tool necessary under a minimum requirement analysis. However, these activities enhance the natural quality of Wilderness by protecting native species. The cumulative effects would be fewer for Alternative 3, which would limit the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. Under all alternatives, the NPS would continue current management actions and respond to future needs and conditions to improve the natural quality of the Wilderness, while minimizing adverse impacts on the opportunity for solitude and the natural qualities of Wilderness character.

3.6 Visitor Use and Experience and Other Recreational Opportunities

While visitor experience is not an impact category the FAA traditionally examines, the NPS has agency wide (see 2006 NPS Management Policies, Section 8.2) and park-specific guidelines (NPS, 2015) for managing visitors within the National Park System. This section also examines impacts to air tour customers.

3.6.1 Affected Environment

Trends in Visitation and Visitor Demographics

From 2017-2019, the Park welcomed an average of 1.5 million visitors per year (NPS, 2022b). Due to the equable climate year-round, Park visitation is fairly evenly distributed throughout the year, with slightly higher visitation in July, August, and particularly December. However, visitation increases greatly at the time of volcanic activity. For example, a May 2002 eruption caused an increase in the number of visitors that hiked out to the lava-covered section of Chain of Craters Road to view the eruption site; the average of 650 visitors per day in that area increased to between 2,000 and 6,000 visitors per day during the eruption (USGS, 2002). Most Park visitation is for day-use, with visitors typically entering the Park between 10:00 AM and 2:00 PM and visiting just the Kīlauea caldera area. In 2007, most visitors to the Park (68.9-75.0%, depending on the location where visitors were surveyed) were first time visitors to the Park. Most Park visitors were residents of the United States (90.5-91.2%) and were typically between 25 and 54 years of age (Lawson et al., 2007).

Visitor Experience

The character and quality of the visitor experience influences perception of natural areas, providing a unique encounter with a place that differentiates it from other areas. Public enjoyment of resources is a fundamental purpose of all national parks (NPS, 2006). Park visitors have the opportunity to view some of the world's most active volcanoes, view dramatic landscapes, as well as learn about the geologic history of the Hawaiian Islands and learn about the Native Hawaiian culture. Viewing lava is a once in a lifetime opportunity for many of the Park's visitors. In addition to viewing volcanic eruptions and landscapes on scenic drives, visitors can also experience 63 miles of front-country hiking, over 92 miles of backcountry hiking, and utilize front-country campgrounds such as Nāmakanipaio and Kulanaokuaiki, or utilize backcountry campgrounds. The most popular trail in the Park is Kīlauea Iki Trail, located immediately to the east of the Kīlauea caldera. Visitors also have the opportunity to enjoy additional recreational activities such as biking on shared Park roadways, fishing in the Park's coastal Wilderness, bird watching, and viewing wildlife in the seven ecological zones of the Park. Figure 19 depicts various visitor facilities within the Park, including trails, campgrounds, visitor centers, points of interest, and other visitor destinations. Figure 19 also depicts the Park's four management zones (Park support zone, visitor services zone, transitional zone, wild/primitive zone). Of these four zones, the visitor services zone indicates the areas where the greatest concentrations of Park visitors would be expected, as this zone is managed primarily for a high level of visitor use and access.

The Park is open to visitors year-round, with the exception of the Kahuku unit, which is open Thursday through Sunday (except for federal holidays) from 8:00 AM to 4:00 PM. Kīlauea

Visitor Center is open from 9:00 AM to 8:00 PM. Most of the Park's interpretive programs are hosted at the Kīlauea Visitor Center.

A visitor use study conducted at the Park (Lawson et al., 2007) found that the most important reasons for visiting the Park included appreciating the natural scenery, seeing the active lava flows, seeing the summit caldera of Kīlauea volcano, and seeing the Nāhuku (Thurston Lava Tube). About half of all visitors at Steam Vents (43.2%) and Nāhuku (Thurston Lava Tube) (53.9%) reported that hearing the sounds of nature was a very important reason for visiting the Park, and about one-quarter of Steam Vents visitors (29.2%) and one-third of Thurston Lava Tube visitors (32.6%) reported that enjoying peace and quiet was a very important reason for visiting the Park. The same study examined the effects of natural and human caused sounds, including air tour sounds, on the visitor experience at the Park. Most visitors that reported hearing aircraft considered it either unacceptable or annoying and reported negative emotions or feelings associated with hearing aircraft sounds at the Park.

Other Recreational Opportunities

This category applies to persons recreating within the ATMP planning area through the experience of air tours. Air tour customers are able to experience the Park from another viewpoint. The air tour experience often varies depending on weather conditions and other factors such as length of flight and the Park features that are viewed. Commercial air tour companies offer various tours over the Park on helicopters and fixed-wing aircraft. In 2017, an estimated 82,600 people took commercial air tours of the Park, which equates to approximately 4% of the over two million visitors that same year.²⁰

Volcanic activity that results in surface lava flows and other geological features (lava trees, craters, earth cracks) are an attraction for air tours. Pu'u'ō'ō is a point of interest within the East Rift Zone. Lava flows that were visible near Pu'u'ō'ō and along the East Rift experienced 60-80 air tours daily (NPS, 2008). Another volcanic point of interest for commercial air tours includes Mauna Loa rift zones and Kīlauea caldera. Air tours transiting from the west side of the Island of Hawai'i routinely cross the Mauna Loa Road area and during periods of poor weather can dissect the lower part of Kīlauea at lower altitudes. The Park airspace is temporarily restricted by the FAA during hazardous volcanic events which may generate ash, volcanic tephra and hazardous gases. Other sites of interest for commercial air tours over the Park include craters along the East Rift Zone and the expansive views along the coastal areas.

²⁰ The estimated 82,600 people who took commercial air tours of the Park in 2017 is based on reported air tours in 2017 (16,520), multiplied by an estimated 5 passenger seats per aircraft. The number of air tours customers likely overestimates the actual number since it assumes every passenger seat is occupied.

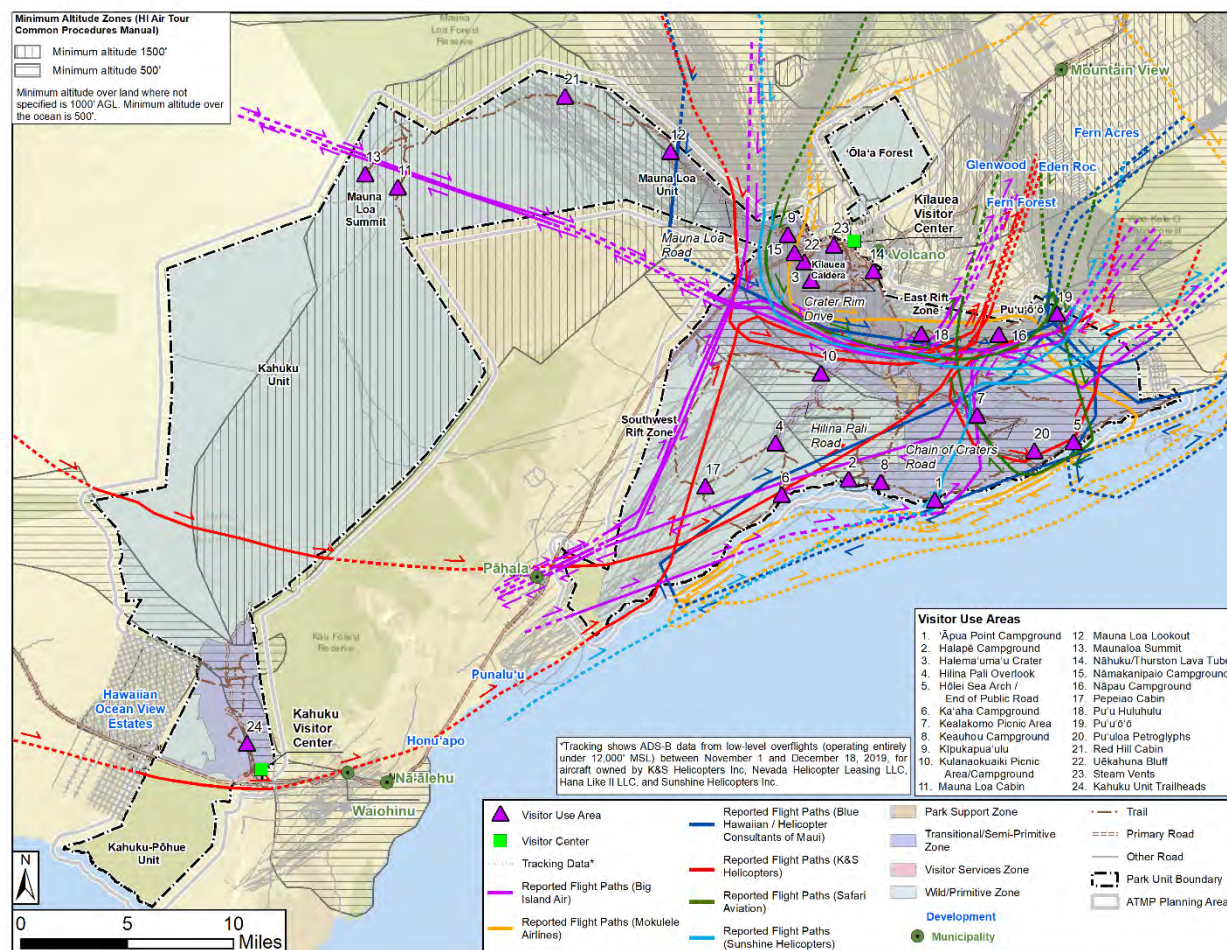


Figure 19. Affected Environment for Visitor Use and Experience.

3.6.2 Environmental Consequences

The NPS allows visitor uses that are appropriate to the purpose for which the park was established and can be sustained without causing unacceptable impacts to park resources or values. Unacceptable impacts are impacts that, individually or cumulatively, would unreasonably interfere with park programs or activities including interpretive programs, or the atmosphere of peace and tranquility, or the natural soundscape maintained in Wilderness and natural, historic, or commemorative locations within the park (NPS, 2006).

Effects of commercial air tours on Park visitor experience have been well documented over many years, one example is the *Report on the Effects of Aircraft Overflights on the National Park System* (NPS, 1995). The primary effect of commercial air tours is the introduction of noise into the acoustic environment of the Park. Numerous studies have identified the value and importance of soundscapes as one of the motivations for visiting parks (Haas and Wakefield, 1998; McDonald et al., 1995; Merchan et al., 2014; Miller et al., 2018), including in a cross-

cultural context (Miller et al., 2018). Other studies have focused specifically on the effects of aircraft on the visitor experience both in parks and protected areas, and a laboratory setting, indicating that aircraft noise negatively impacts the visitor experience (Anderson et al., 2011; Ferguson, 2018; Mace et al., 2013; Rapoza et al., 2015).

Some Park visitors may hear noise from commercial air tours, which may disrupt visitors or degrade the visitor experience at the Park by disturbing verbal communications and masking the sounds of nature. For example, noise from commercial air tours may disrupt visitors during interpretive and educational programs at the Park or while hiking, camping or participating in other activities. Visitors respond differently to noise from commercial air tour overflights – noise may be more acceptable to some visitors than others. Visitors in backcountry and Wilderness areas often find commercial air tours more intrusive than visitors in developed and frontcountry areas where noise from commercial air tours may not be as audible (Rapoza et al., 2015; Anderson et al., 2011). The NPS has established acoustic-based management standards for each of the Park's visitor use zones (Park support zone, visitor services zone, transitional zone, wild/primitive zone), which are summarized in Table 11 (NPS, 2015):

Table 11. Management Standards for Visitor Use Zones at the Park

Zone	Standard
Park support zone	Permanent noise sources should not exceed sleep dBA thresholds (35 dBA) at the receptor site at nighttime.
Visitor services zone	If dBA levels which cause speech interference occur, management strategies will be triggered. L_{10} does not exceed 45 dBA. ²¹
Transitional zone	Mean difference between natural and ambient dBA (L_{50}) is not more than 1.5 dBA.
Wild/primitive zone	Mean difference between natural and ambient dBA (L_{50}) is not more than 1.0 dBA.

Source: NPS, 2015.

Alternative 1: No Action

Under existing conditions, air tours are concentrated near the Kīlauea caldera and the East Rift zone (see Figure 19), including visitor facilities and points of interest such as Halema'uma'u crater, Kīpukapua'ulu, Nāmakekapaio and Nāpau Campgrounds, Pu'uhuluhulu, Uēkahuna Bluff, Nāhuku (Thurston Lava Tube), and Pu'u'ō'ō, which would continue under the No Action Alternative.

As noted in Section 3.6.1, Affected Environment for Visitor Use and Experience, many ranger-led interpretive programs are offered near the Park's Kīlauea Visitor Center. The visitor center

²¹ The L_{10} sound level (in decibels) is the sound level exceeded 10 percent of the day.

was one of the modeled location points selected by NPS for analysis in the *Noise Technical Analysis* (point #4, see Appendix F), which indicates that on days that air tours occur, noise above 52 dBA, which is the threshold for speech interference, is expected to occur for less than 0.1 minutes. Ranger-led interpretive programs also occur in the vicinity of Jaggar/HVO (point #37), and this location point was also modeled. The *Noise Technical Analysis* indicates that on days that air tours occur, noise above 52 dBA occurs for 0.2 minutes a day. Therefore, in these locations, the No Action Alternative could result in some impacts to visitor use and experience associated with speech interference during interpretive programs.

Natural quiet is a foundational resource for the Park and a primary reason for visitation, and air tours disrupt natural quiet throughout the Park which affects the visitor experience for activities such as hiking, camping, bird watching, nature viewing, and hearing the sounds of lava flows, all activities which value natural quiet. Air tours would continue to disrupt the natural quiet under the No Action Alternative. The time audible natural ambient metric provides context for the total time that aircraft noise levels would be audible to an attentive listener with normal hearing under natural ambient conditions. Based on the *Noise Technical Analysis* approximately half (48%) of the ATMP planning area would experience audible air tour noise for less than 30 minutes a day (non-contiguous) under this alternative, and 82% of the Park would experience audible air tour noise at some point during a day that commercial air tours occurred. Across the entire ATMP planning area, audible air tour noise would occur for up to 480 minutes a day in areas near Pu'u'ō'ō and the East Rift Zone. As noted in Section 3.6.1, Affected Environment for Visitor Use and Experience, a visitor use study (Lawson, 2007) indicated that peace and quiet is a very important reason for visitors to come to the Park and that the majority of visitors find air tour sounds unacceptable or annoying and reported negative emotions or feelings associated with that sound at the Park. Therefore, noise from commercial air tours under this alternative would negatively impact visitor experience at the Park. Table 12 presents a summary of the No Action Alternative's compliance with NPS acoustic-based visitor use and experience management standards for each of the Park's visitor use zones:

Table 12. Evaluation of Compliance with NPS Management Standards for Visitor Use Zones at the Park for the No Action Alternative.

Zone	Standard	Summary of Compliance
Park support zone	Permanent noise sources should not exceed sleep dBA thresholds (35 dBA) at the receptor site at nighttime.	Not applicable. Commercial air tours are transient, and the resultant noise is temporary. Commercial air tours also do not fly at night. The ATMP would not introduce permanent noise sources that would exceed nighttime management thresholds.

Zone	Standard	Summary of Compliance
Visitor services zone	If dBA levels which cause speech interference occur, management strategies will be triggered. L_{10} does not exceed 45 dBA.	The <i>Noise Technical Analysis</i> shows that noise above 52 dBA, which generally corresponds with speech interference, would occur at two modeled location points in the visitor services zone under the No Action Alternative. This includes points #6 (Halema'uma'u Crater, 0.2 minutes) and #37 (Jaggar/HVO, 0.2 minutes). Time above 35 dBA would not exceed 10% of the day (72 minutes) at any of the modeled location points in the visitor services zone (points #4, 6, 24, 37, 38), therefore, neither would time above 45 dBA.
Transitional zone	Mean difference between natural and ambient dBA (L_{50}) is not more than 1.5 dBA. ²²	Under the No Action Alternative, the noise due to air tours at modeled location points #3, 5, 8, 11, 12, 15, 17, 18, and 20 within the transitional zone would increase the natural ambient by more than 1.5 dBA. The No Action Alternative would not be in compliance with the Park's soundscape management standards for visitor use and experience in these locations within the transitional zone.
Wild/primitive zone	Mean difference between natural and ambient dBA (L_{50}) is not more than 1.0 dBA. ²²	Using the process described for the transitional zone, under the No Action Alternative, the noise due to air tours at modeled location points #9, 10, 16, 19, 27, and 41 within the wild/primitive zone would increase the natural ambient by more than 1.0 dBA. The No Action Alternative would not be in compliance with the Park's soundscape management standards for visitor use and experience in these locations within the wild/primitive zone.

²² The difference between the L_{50} natural ambient and L_{50} ambient sound level including air tours can be reasonably and conservatively assessed by evaluating the difference between the natural ambient L_{50} (see *Noise Technical Analysis* Table 6) and the cumulative ambient including air tours. The cumulative ambient is the result of an energy summation of the measured natural ambient L_{50} and modeled L_{eq12h} due to air tours.

In summary, noise from air tours under the No Action Alternative would not meet the NPS's acoustic-based visitor use standards for the visitor services, transitional, and wild/primitive zones in several of the modeled location points. The current level of air tours diminishes visitor opportunities to learn about and be inspired by Park resources and values and the NPS has determined that it unreasonably interferes with Park programs, activities, the atmosphere of peace and tranquility, and the natural soundscapes in Wilderness (NPS Management Policies, Section 1.4.7.1, 2006). Audibility of natural sounds or natural quiet is important to visitor experience at the Park since natural quiet is a fundamental resource of the Park (NPS, 2017). Because the natural ambient sound level of the Park is so low, the persistence of noise across the Park under current conditions interferes with visitor's ability to enjoy natural quiet almost daily (Rapoza et al., 2015). Most impacts to visitor experience under this alternative, which would continue to occur Park-wide with the exception of the Park's developed areas, are related to the intrusion of audible air tour noise where visitors would expect natural sounds to prevail during their visit to the Park.

In addition to interfering with natural soundscapes that allow visitors to hear the sounds of nature, including lava when present, the NPS has documented visitor complaints from ongoing low-level commercial air tours over backcountry areas, lava flow fields, and at various viewing locations around the Kīlauea summit. These effects would continue to occur under the No Action Alternative, as commercial air tours would be able to fly as low as 500 ft. AGL to 1,500 ft. AGL (depending on location) according to the Hawai'i Common Procedures Manual.

Commercial air tours offer a recreational experience for those who wish to view the Park from a different vantage point. Commercial air tour pilots may provide education to commercial air tour customers about the region, its history, and geology. Because the number of commercial air tours under the No Action Alternative would be consistent with the average number of flights from 2017-2019, there would be no or minimal changes anticipated to the availability of this recreational experience under this alternative.

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area which would eliminate this source of noise from the ATMP planning area. Therefore, there would be a direct beneficial impact to Park visitor use and experience since the intensity and presence of noise from commercial air tours would be less than under the No Action Alternative. Alternative 2 offers the greatest protection of visitor use and experience.

However, Alternative 2 would not allow commercial air tours within the ATMP planning area, so air tour customers who wished to would not be able to view the Park from an aerial vantage point within the ATMP planning area. This would be an adverse effect on those seeking that experience within the ATMP planning area.

Alternative 3

Alternative 3 would permit air tours to be conducted along designated routes and altitudes (see Figure 20). The authorized routes avoid flying directly over or close to areas of the Park that have the highest amount of visitor use, including those near the Kīlauea caldera, which would promote hearing the natural sounds, including of lava, by Park visitors. The designated routes avoid flying over the majority of the Park which would limit the noise effects of commercial air tours to Park visitors. Air tour routes would be limited to areas in the East Rift Zone near Pu'u'ō'ō, over Highway 11 near the Kahuku Visitor Contact Station, and along the coast. The designated Coastal Route would be flown offshore and would not occur directly over coastal visitor use areas such as campgrounds which would reduce potential impacts to visitor experience in these locations. In the area near the Kahuku Visitor Contact Station, the authorized Kahuku Route would be flown over Highway 11 where other anthropogenic noises such as roadway traffic noise is already present and may be more acceptable when audible to Park visitors. Alternative 3 would not be expected to result in impacts to visitor use and experience associated with speech interference during interpretive programs. The *Noise Technical Analysis* (Appendix F, Tables 8-9) shows that noise above 52 dBA would not occur during a standard day or quiet technology-only day at the Kīlauea Visitor Center (point #4) or Jaggar/HVO (point #37) where interpretive programs are typically held within the Park.

The time audible metric in the *Noise Technical Analysis* provides context for the effects of air tour noise on visitor experience where visitors would expect natural sounds and quiet soundscapes to prevail. The *Noise Technical Analysis* indicates that on a standard day under Alternative 3, air tour noise would be audible for up to 150 minutes a day (representing 2% of the Park). Approximately half the ATMP planning area (49%) would experience at least 15 minutes of audible air tour noise a day, and 84% of Park would experience some amount of audible air tour noise on days when air tours occurred. On a quiet technology-only day under Alternative 3, air tour noise would be audible for 135 minutes or more (representing 1% of the Park), and 50% of the Park would experience some amount of audible air tour noise, leaving 50% of the Park free from sounds caused by commercial air tours. Audible air tour noise would be concentrated in the lower elevations of the ATMP planning area and in the East Rift Zone. While this noise may detract from the visitor experience, particularly in areas where visitors would expect to hear natural sounds, the majority of time during the day would be free of air tour noise so visitors would not hear them. This would correspond to improved visitor experience conditions for activities such as camping and hiking, bird watching and wildlife viewing, and lava viewing since visitors would be able to hear natural sounds for the majority of their visit. The time-of-day restrictions included in Alternative 3 would provide further protection to visitor use and experience at the Park by creating times during the day when commercial air tours would not fly within the ATMP planning area so visitors would not experience noise from air tours in this area. In addition, Alternative 3 includes one day

(Sunday) when air tours would not be permitted within the ATMP planning area, so this would provide an entire day where Park visitors would not experience noise from air tours in this area.

When compared to current conditions, Alternative 3 would result in fewer negative impacts to visitor experience in most areas of the Park. Specifically, Alternative 3 would eliminate the 25% of the Park where time audible exceeds 150 minutes under the No Action Alternative, as it would no longer exceed this value. The largest reductions in the time audible metric between Alternative 3 and the No Action Alternative are at Pu'u'ō'ō (301 minutes) and the Mauna Loa Lookout (247 minutes). However, increases in time audible occur at 19 locations. Refer to Table 14 in the *Noise Technical Analysis* in Appendix F. Table 13 presents a summary of Alternative 3's compliance with NPS acoustic-based visitor use and experience management standards for each of the Park's visitor use zones:

Table 13. Evaluation of Compliance with NPS Management Standards for Visitor Use Zones at the Park for Alternative 3.

Zone	Standard	Summary of Compliance
Park support zone	Permanent noise sources should not exceed sleep dBA thresholds (35 dBA) at the receptor site at nighttime.	Not applicable. Commercial air tours are transient, and the resultant noise is temporary. Commercial air tours also do not fly at night. The ATMP would not introduce permanent noise sources that would exceed nighttime management thresholds.
Visitor services zone	If dBA levels which cause speech interference occur, management strategies will be triggered. L_{10} does not exceed 45 dBA.	The <i>Noise Technical Analysis</i> shows that noise above 52 dBA, which generally corresponds with speech interference, would not occur at any of the modeled location points that are in the visitor services zone under Alternative 3. Time above 35 dBA would not exceed 10% of the day (72 minutes) at any of the modeled location points in the visitor services zone (points #4, 6, 24, 37, 38), therefore, neither would time above 45 dBA.
Transitional zone	Mean difference between natural and ambient dBA (L_{50}) is	During both a standard day and quiet technology-only day under Alternative 3, noise due to air tours at modeled location points #17 and 18 within the transitional

Zone	Standard	Summary of Compliance
	not more than 1.5 dBA. ²²	zone would increase the natural ambient by more than 1.5 dBA. Alternative 3 would not be in compliance with the Park's soundscape management standards for visitor use and experience in these locations within the transitional zone, but it would be in compliance in all other modeled location points.
Wild/primitive zone	Mean difference between natural and ambient dBA (L ₅₀) is not more than 1.0 dBA. ²²	During both a standard day and quiet technology-only day under Alternative 3, noise due to air tours at modeled location points #9, 10, and 41 within the wild/primitive zone would increase the natural ambient by more than 1.0 dBA. Alternative 3 would not be in compliance with the Park's soundscape management standards for visitor use and experience in these locations within the wild/primitive zone, but it would be in compliance in all other modeled location points.

In summary, noise from air tours under Alternative 3 would meet the Park's acoustic-based visitor use standards for the visitor services zone across all modeled location points. Alternative 3 would not meet the Park's visitor use standards for two modeled location points in the transitional zone and three points in the wild/primitive zone, but across all other modeled location points it would be in compliance, which represents an improvement compared to the No Action Alternative.

Alternative 3 would limit the availability of air tours for those who wish to view the Park from an aerial vantage point to no more than 1,565 tours per year.

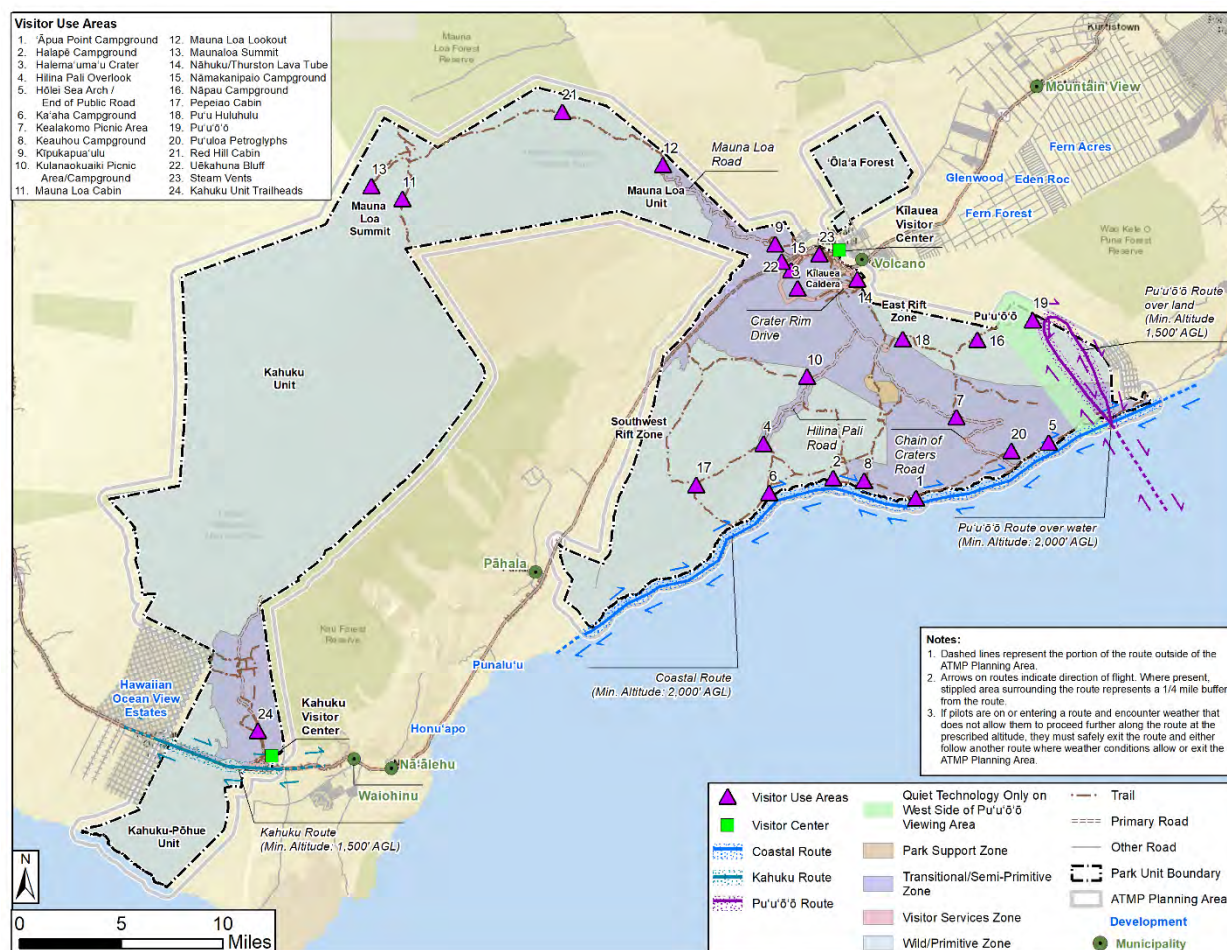


Figure 20. Visitor Use and Experience Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would generally remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Alternatives 2 and 3 would limit the number of flights per year as compared to existing conditions and would therefore have the potential to result in some displacement of air tours outside the ATMP planning area. As described in 3.1.2, Indirect and Cumulative Effects for Noise and Noise-Compatible Land Use, air tours occurring outside the ATMP planning area, may result in noise that could affect visitor use and experience to the extent that those facilities and uses were present near where displaced air tours would be occurring. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Operators may also choose to fly just outside of the perimeter of the ATMP planning area

surrounding the volcanoes in order to view Kīlauea crater or any active lava. Air tours outside the ATMP planning area may occur in the area southwest of the 'Ōla'a Forest tract due to the proximity to Kīlauea caldera and the potential to view any lava that may be present. Therefore, under Alternatives 2 and 3, some indirect impacts to visitor experience and points of interest, likely in the Kīlauea caldera area, could occur if flights were displaced to outside the ATMP planning area. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits them to no more than 1,565 flights per year in addition to other operating parameters as specified in Section 2.6, Alternative 2 would likely result in more indirect impacts to visitor experience than Alternative 3.

Cumulative Effects: Under existing conditions, periodic helicopter flights are necessary to carry out Park management actions including maintenance, resource management, search and rescue and other operations. The noise from these administrative flights occasionally disrupts visitors. Because these flights generally occur throughout the Park and are not concentrated in any one area, they are not a source of consistent disruption on the visitor experience. These flights are anticipated to continue to facilitate resource stewardship projects and scientific research under any of the selected alternatives. Other noise from building and trail maintenance and construction activities occasionally disrupts visitors, but these activities are temporary and short-term in nature. Alternative 3 would result in less cumulative noise that could affect the visitor experience in the ATMP planning area than the No Action Alternative, given the reduced number of flights, designated routes, and other conditions that would be required by Alternative 3. However, it could allow for more cumulative noise impacting the visitor use and experience than Alternative 2, where flights would not be authorized in the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.7 Environmental Justice and Socioeconomics

As mandated by EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, dated February 11, 1994), “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” In addition to EO 12898, DOT Order 5610.2c, Final Order to Address Environmental Justice in Low-Income and Minority Populations requires the FAA to incorporate environmental justice principles in project development and provide meaningful public involvement opportunities to minority and low-income populations, known as “EJ populations.” For the purposes of this EJ analysis, the FAA uses the minority and low-income definitions provided in DOT Order 5610.2c.

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature, or a combination of the two. A socioeconomic analysis evaluates how

elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s) (FAA, 2020). The CEQ regulations for implementing NEPA, 40 CFR 1500, direct economic analyses of federal actions that will affect local or regional economies. The policies and rationale associated with including an evaluation of socioeconomic impacts in the NEPA process are found in Section 1.4.7.1 of NPS Management Policies (2006). The factors of socioeconomics discussed in this draft EA include the tourism industry. U.S. Census Bureau data was used to evaluate social and economic factors of the study area.

The combination of all the other relevant impact categories represents the potential environmental justice impact, because environmental justice impacts may be realized in conjunction with impacts to any other impact category. Section 3.7.2 discusses the relevant resources that may have impacts considered in conjunction with EJ for this draft EA. Refer to each environmental impact category's respective section in this draft EA for a description of the study area limits and Figure 21 for a depiction of the study area used for the EJ and socioeconomic analyses. The analysis incorporates data presented at the county level and from census block groups that are within and adjacent to the study area. Data from the block group level is compared to county level data to determine populations of EJ concern.

3.7.1 Affected Environment

Environmental Justice

The most recent minority and low-income information was analyzed through 2020 U.S. Census Bureau data sets. U.S. Census Bureau data is collected in five descending groupings corresponding to geographic area. The groupings are as follows: state, county, tract, block group, and block. Block group is the smallest unit for which income and poverty level information is available. Block level data is the smallest unit for which race and minority information are available. The agencies used data from the American Community Survey (ACS) to determine socioeconomic and racial characteristics of the population. AEDT version 3e was used to screen for Potential Environmental Justice Populations. The analysis includes selecting a unit of analysis and comparing it to an appropriate reference community. If the percentage of minority or low-income populations in the unit of analysis exceed the reference community threshold, then those geographic units are populations of EJ concern. In this case, the agencies identified block level data within the study area (unit of analysis) and compared that data to the county (appropriate reference community). Data from the block group level was then compared to county level data to determine populations of EJ concern.

For this analysis, a minority census block group of EJ concern is a census block group (unit of analysis) with a minority population percentage greater than the average minority population percentage in the county (reference community). The average percentage of minority populations at the block group level residing within the study area is 68% (ACS 2016-2020).

Therefore, every census block group with a percentage of minority population greater than the average minority population of approximately 68% is designated a census block group of EJ concern. For this analysis, a low-income population census block group of EJ concern is a census block group with a greater percentage of low-income population than the average percentage of low-income population in the study area. The average percentage of low-income populations at the block group level residing in the study area was 14% (ACS 2016-2020). Therefore, every census block group with a low-income population greater than 14% is designated a census block group of EJ concern.

Figure 21 (ACS, 2016-2020) depicts locations of EJ concern by block group within the study area. Table 14 (ACS, 2016-2020) shows the minority and low-income data for Hawai'i County and block groups within the study area.

Table 14. Minority and Low-income Population Data within Hawai'i County and the Study Area

Area	Population	Minority	Low-Income
Hawai'i County	201,350	141,256	64,201
Block Groups within Study Area	22,510	15,086	3,826

Source: ACS, 2016-2020

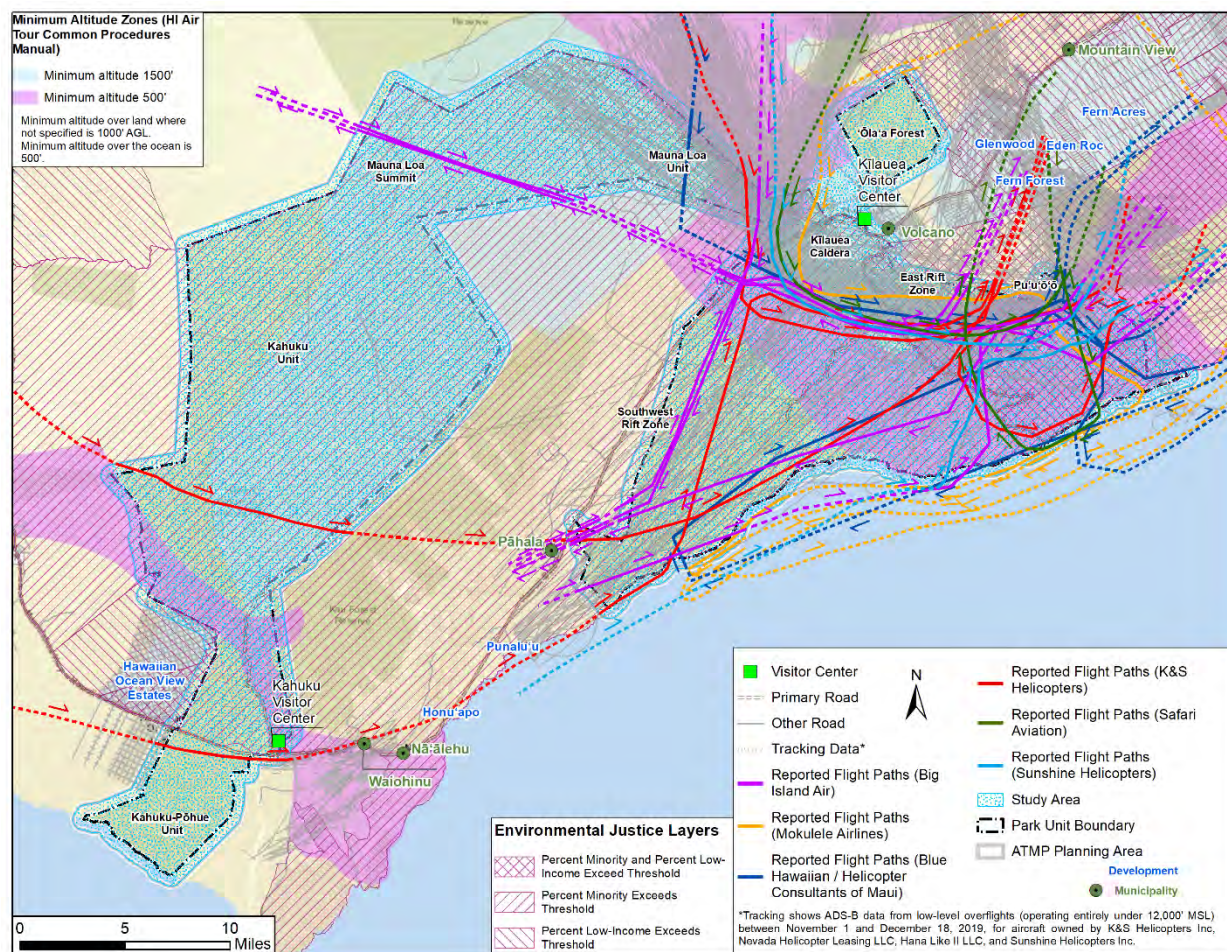


Figure 21. Affected Environment for Environmental Justice.

Socioeconomics

This section describes the socioeconomic conditions that may be affected by the alternatives. Socioeconomic impacts of the alternatives include the potential impacts commercial air tour operations have on two interest groups: 1) local residents living in close proximity to the Park, who may be affected by both the number of air tours and the manner in which they are conducted and 2) air tour operators in Hawai'i, specifically the ten air tour operators with IOA for the Park and their employees, and the associated tourism industry. The factors of socioeconomic discussed in this draft EA include population demographics, industry, employment and income.

Industry

Hawai'i County is the most rural county in Hawai'i and accounts for a majority of the farm employment in the state. The principle agricultural products on the Island of Hawai'i are fruits,

tree nuts, and berries (U.S. Department of Agriculture, 2017). The Kona district in the western part of Hawai'i County is the coffee belt of the United States and is also known for its beachfront resorts and offshore deep-sea fishing. Despite the importance of agriculture in the county and its national prominence, this industry accounts for only a small percentage of the total jobs in Hawai'i County, with the largest sources of employment being service-based jobs such as retail, health care, social assistance, and federal employment. In 2021, the air transportation industry represented 400 jobs in Hawai'i County,²³ or less than 1% of the county's overall employment (Hawai'i Department of Business, Economic Development and Tourism, 2021). Across the state, employment in manufacturing decreased by approximately 50% between 1990 and 2022, while employment in education and health services grew by approximately 80% during the same time period (Hawai'i Department of Business, Economic Development and Tourism, 2022).

The Park also plays an important role in the industry and employment of the area and is often the top visited site in the State of Hawai'i. The Park provides seasonal, term, permanent full-time, as well as part-time positions. In 2021, the Park employed 79 full-time employees and 1,262,747 visitors spent \$117 million in communities near the Park, and that spending supported 1,220 jobs in the local area (Hawai'i Volcanoes National Park Fact Sheet, 2022). In addition to these expenditures and benefits, the Park also supports the local economy when utilizing local vendors or awarding contracts to local businesses, for example, through wastewater management services or purchases of office supplies. From 2017-2019, the Park welcomed an average of 1.5 million visitors per year which does not include people who take air tours over the Park, who contribute to the local economy through tourism.

Commercial Air Tours

Commercial air tour operators currently fly an average of 11,376 flights per year (based on the average of reporting data from 2017-2019) over the Park. There is a \$25 fee for commercial air tours entering Park airspace. As per the Federal Lands Recreation Enhancement Act,²⁴ a majority of the revenues are used for facility improvement projects within the Park.

The price per person for each air tour varies by company and can range from \$350-\$650 per person (Blue Hawaiian Helicopters 2022; Safari Helicopters Hawai'i 2022). The air tour industry employs pilots, mechanics, office administrators, and other types of jobs to conduct business. In 2022, 400 individuals worked in the air transportation industry in Hawai'i County (which includes both the air tour industry plus commercial airlines and airport employees),

²³ The air transportation industry includes all forms of air transportation related employment, including but not limited to commercial air tourism.

²⁴ The Omnibus Budget Reconciliation Act of 1993.

representing approximately less than 1% of the county's total employment (Hawai'i Department of Business, Economic Development and Tourism, 2022). In addition to people directly employed by air tour operators, others are indirectly involved with the industry including hotels, tour booking agents, and advertising and marketing professionals. Employment supported by the air tour industry provides income to workers and indirectly provides revenue to local businesses as a result of employee and operator spending.

3.7.2 Environmental Consequences

In accordance with FAA Order 1050.1F the following factors were considered to determine if the action would have a disproportionately high and adverse impact to an EJ population, i.e., a low-income or minority population:

- significant impacts in other environmental impact categories; or
- impacts on the physical or natural environment that affect an EJ population in a way that the FAA determines are unique to the EJ population and significant to that population.

This assessment is provided for each alternative below. As shown in Figure 21, minority and low-income populations of EJ concern are present throughout nearly the entire study area. Specific impacts associated with each alternative are discussed in more detail below.

For socioeconomic impacts, FAA considers the following factors when evaluating the severity of impacts which include the potential to:

- induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);
- disrupt or divide the physical arrangement of an established community;
- cause extensive relocation when sufficient replacement housing is unavailable;
- cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;
- disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities; or
- produce a substantial change in the community tax base.

The analysis below reflects the results of the impact analysis for noise, visual, and air quality effects as they are the impact categories that would be reasonably expected to affect EJ

populations, though impact conclusions for other environmental impact categories are reflected in other sections of this draft EA.

Alternative 1: No Action

Under existing conditions, based on flight tracking data, the heaviest concentrations of commercial air tours within the study area fly over census block groups that contain populations of EJ concern or “EJ populations.” Reporting data from 2017-2019 indicates that residents in these areas have the potential, on average, for exposure to commercial air tour aircraft approximately 31 times per day, and the maximum number of air tours reported within the ATMP planning area during this time period was 90 tours in a single day. Based on reported data, the existing air tours occur between 6:00 AM and 4:00 PM. The altitudes vary between 500 – 1,500 ft. AGL.

Air tours are concentrated over the heart of the Park near Kīlauea and the East Rift zone. Block groups within these areas are comprised of low-income and minority EJ populations.²⁵ Therefore, EJ populations currently experience the noise, air quality, and visual effects associated with air tours under current conditions as described in more detail below.

The noise impacts analysis for the No Action Alternative (see Section 3.1, Noise and Noise-Compatible Land Use) indicates that the No Action Alternative would not result in noise impacts that would exceed 65 dB DNL. The DNL is expected to be below 50 dB under the No Action Alternative.

For air quality impacts (see Section 3.2, Air Quality and Climate Change), the No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or increase the frequency or severity of any such existing violations. The total amount of annual GHG emissions resulting from commercial air tours over the Park is 1,851 MT CO₂.

Under the No Action Alternative, impacts to viewsheds would continue to primarily occur near Kīlauea summit, along the East Rift Zone, and over parts of Chain of Craters Road, and Crater Rim Drive. Impacts would continue to occur to visual resources under the No Action Alternative as air tours would affect the nature of the visual character of the area and would continue to contrast the scenic vistas and natural areas in the Park. The visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the

²⁵ Note that while residential use of the Park is limited to that provided by NPS temporary housing, the block groups encompassing the Park also encompass areas outside of the Park. Because block groups are the smallest unit of analysis for which data is available to identify EJ populations, these geographic areas inside and outside the Park have been lumped together as containing EJ populations, but the Park does not contain residential settlements other than temporary NPS housing.

study area (on average, air tours were conducted within the study area 31 times per day) (see Section 3.8, Visual Effects).

In summary, the No Action Alternative would not result in disproportionately high and adverse noise, air quality, or visual effects to EJ populations. Under the No Action Alternative, the number of commercial air tours conducted by operators would vary from year to year, but would likely be consistent with the number of tours reported in the timeframe from 2017-2019 (an average of 11,376 tours per year). Therefore, the amount of income generated for air tour operators and other ancillary businesses as well as employment would likely be consistent with income generated during that timeframe. The No Action Alternative would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, disrupt traffic patterns, or produce a substantial change in the community tax base.

Alternative 2

Under Alternative 2, commercial air tours would not fly within the ATMP planning area. Therefore, there would be direct beneficial impacts on noise, air quality, and viewsheds within the study area as a result of the elimination of commercial air tours in the ATMP planning area (see Section 3.1, Noise and Noise-Compatible Land Use; 3.2, Air Quality and Climate Change; and 3.8, Visual Effects). Alternative 2 would result in a reduction in noise, air quality, and visual impacts compared to those currently occurring under existing conditions, therefore, this alternative may result in a benefit to EJ populations within the study area, and Alternative 2 would not result in disproportionately high and adverse noise, air quality, or visual impacts to EJ populations.

Because Alternative 2 would prohibit air tours from flying within the ATMP planning area, air tour operators and other ancillary businesses would not be able to generate income from conducting tours in this area. Additionally, the NPS would not collect a fee as no air tours would enter the Park's airspace. There could be some economic benefit under this alternative to businesses within the study area that benefit from quieter noise levels and/or the absence of human-caused sounds. This may include Park visitation, or it could include agricultural operations that occur in the study area that would experience less disturbance from human-caused sounds.

Alternative 2 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns. Alternative 2 could result in some impacts to employment or the amount of income that air tour operators and other ancillary businesses could generate from conducting air tours within the ATMP planning area as would occur under the other alternatives. However, the air transportation industry represents less than 1% of the total employment in Hawai'i County, and the prohibition on air tours within the ATMP planning area would not preclude operators from making up this revenue generation

in other ways such as using their aircraft for other business ventures or conducting air tours elsewhere within the region (see below for a discussion of indirect socioeconomic effects). Therefore, it is unlikely that Alternative 2 would result in large socioeconomic impacts to the surrounding community, including those associated with changes to the community's tax base associated with loss of industry.

Alternative 3

Alternative 3 would permit air tours to be conducted along designated routes and altitudes (refer to Figure 22) within the ATMP planning area. The authorized routes for this alternative are located over Highway 11 in the Kahuku Unit, part of the East Rift zone, and offshore from the coastal boundary of the Park but within the ½ mile buffer. Compared to the No Action Alternative, Alternative 3 would result in fewer direct noise, air quality, and visual impacts as described for each impact category below.

In consideration of the noise impacts of Alternative 3, (Section 3.1, Noise and Noise-Compatible Land Use), the DNL analysis indicates that Alternative 3 would not result in noise in excess of 65 dB DNL. The resultant DNL for Alternative 3 is expected to be below 45 dB.

For air quality impacts (see Section 3.2, Air Quality and Climate Change), Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or increase the frequency or severity of any such existing violations. The total change in annual GHG emissions for Alternative 3 as compared to the No Action Alternative is modeled to be a reduction of 1,388 MT CO₂ within the ATMP planning area.

For visual impacts, Alternative 3 would provide protection to Park viewsheds, including those overlooking Kīlauea, part of the East Rift Zone, and along Crater Rim Drive and the upper parts of Chain of Craters Road. Commercial air tours along the authorized route under Alternative 3 may be visible from the Park's coastal areas and lower Chain of Crater Road, parts of the East Rift zone, and over Highway 11 near Kahuku, but they would avoid most other scenic points of interest or overlooks within the ATMP planning area (see Section 3.8, Visual Effects). The limited duration and reduced number of air tours that would occur under Alternative 3 as compared to the No Action Alternative would result in fewer impacts to viewsheds than those under existing conditions, including those viewsheds that may be used by EJ populations within the study area. Alternative 3 would protect the visual character of the Park and its viewsheds, including the importance, uniqueness, and aesthetic value of the affected visual resources. Other than times of day when commercial air tours were present within the ATMP planning area, this alternative would not contrast with the visual resources and/or visual character in the study area or obstruct views of the visual resources.

In summary, Alternative 3 would not result in disproportionately high and adverse noise, air quality, or visual impacts to EJ populations. The same socioeconomic effects stated under

Alternative 2 would occur under Alternative 3, but those effects would be fewer (including the potential for impacts associated with changes to the community's tax base), as some air tours would still occur within the ATMP planning area. Alternative 3 would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns.

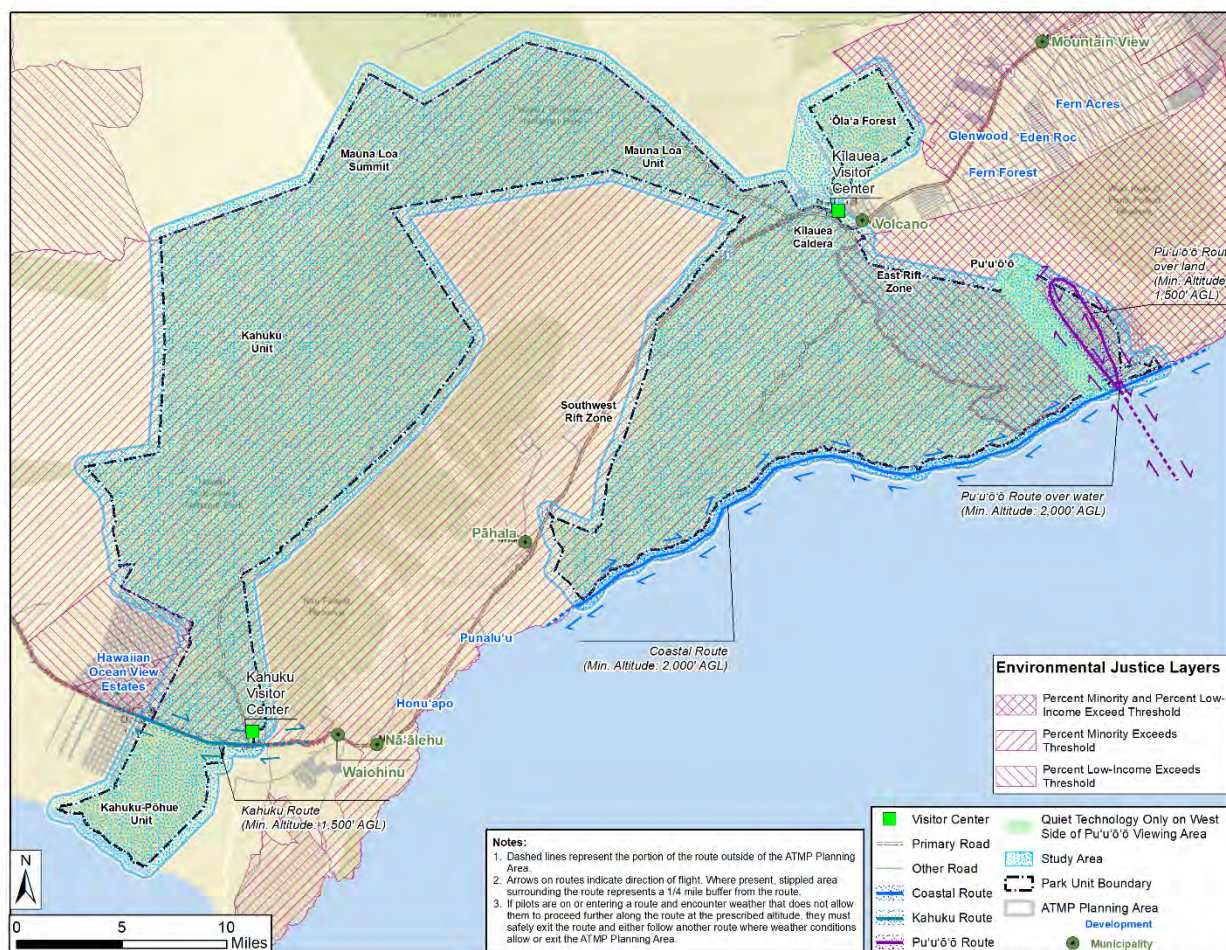


Figure 22. Environmental Justice Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative. There are no indirect impacts to EJ populations that would be expected to occur under the No Action Alternative, nor would this alternative be expected to result in indirect socioeconomic impacts as there would be no change to existing conditions.

The prohibition of flights under Alternative 2 and the limited number of flights permitted by Alternative 3 could limit the potential future economic growth for commercial air tour operators and other ancillary businesses. Because of the capital investment air tour operators have in aircraft, facilities, and equipment, operators could seek to make up lost revenue from air tours within the ATMP planning area by conducting air tour operations outside of the ATMP planning area to the extent possible. Operators may also choose to retire, surrender their operating certificates, or use their aircraft for other businesses or operations such as search and rescue, fire protection, resource mapping and assessment, and flight for life operations. Therefore, although Alternatives 2 and 3 would limit the opportunities for air tour operators and ancillary businesses to generate revenue from tours conducted within the ATMP planning area, these alternatives would not preclude operators from making up this revenue generation in other ways such as using their aircraft for other business ventures or conducting air tours elsewhere within the region.

Under Alternatives 2 and 3, it is challenging to predict with specificity if, where, and to what extent any air tours that were displaced to outside the ATMP planning area would result in indirect noise, air quality, or visual impacts to EJ populations within the study area. Operations that may occur outside the ATMP planning area as a result of Alternative 2 and/or reduction in annual operations under Alternative 3, may shift where noise, air quality emissions, and visual effects occur, but the effects are not likely to change substantially as compared to current conditions. Therefore, adverse indirect impacts to EJ populations are not expected to occur. Therefore, disproportionately high or adverse indirect noise, air quality, or visual impacts to EJ populations are not expected to occur.

Cumulative Effects: The cumulative effects to EJ populations reflect those analyzed in other sections of this draft EA for noise, air quality, and visual effects. In summary, ongoing present and future Park management actions by the NPS within the ATMP planning area including administrative helicopter flights may contribute noise and air quality emissions that would continue to negatively affect the acoustic environment and air quality within the ATMP planning area. Those effects would be greatest under the No Action Alternative and fewest under Alternative 2 based on the number of flights authorized per year. Other sources of ongoing visual impacts that may affect EJ populations within the ATMP planning area include general aviation flights, overflights by commercial airlines, military flights, and administrative flights such as those used for management actions or search and rescue efforts. These flights would continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours. The cumulative effects to viewsheds, including those experienced by EJ populations, would be greatest under the No Action Alternative and fewest under Alternative 2 based on the number of flights authorized per year. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.8 Visual Effects

Visual resources include buildings, sites, TCPs, and other natural or manmade landscape features that are visually important or have unique characteristics. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the alternatives. Visual character refers to the overall visual makeup of the existing environment where the alternatives would be located. For example, areas in close proximity to densely populated areas generally have a visual character that could be defined as urban, whereas less developed areas could have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, or deserts, etc. Visual effects generally describe the extent to which the proposed action or alternatives would either produce light emissions that create annoyance or interfere with activities; or contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Although there are no federal special purpose laws or requirements specific to light emissions and visual effects, there are special purpose laws and requirements that may be relevant, such as those relating to cultural resources or Section 4(f) resources. Additionally, NPS Management Policies (2006) Section 1.4.6 provides that scenic views and vistas are park resources that are subject to protection under the NPS Organic Act.

The study area for visual effects includes the ATMP planning area as well as areas within the cultural resources APE that are outside of the ATMP planning area. Refer to Figure 23 for a depiction of the visual effects study area.

3.8.1 Affected Environment

Within the Park, visual resources can be related to the Park's geologic features, including lava flows, craters, coastal areas, mountains, and other natural scenic areas, such as forests, coastal plains, and grasslands, and are often tied to visitor use and ethnographic resources. One such viewshed is the historic Crater Rim Drive, the most visited corridor in the Park that provides access to a number of unique volcanic, scenic, and cultural features such as Nāhuku lava tube, Uēkahuna, Kīlauea Visitor Center, and Steam Vents. Other notable viewpoints along Crater Rim Drive include Kīlauea Overlook, which provides views of Kīlauea caldera and Halema'uma'u crater; Kīlauea Iki Overlook and Pu'upua'i Overlook, which provide views into Kīlauea Iki crater and also into Kīlauea crater. Chain of Craters Road provides spectacular views along the drive and open vistas, and it also allows visitors to stop at several notable overlooks within the Park including Kealakomo Overlook, a scenic overlook above a vast lava plain with views toward the Pacific Ocean. As discussed in Section 3.6, Visitor Use and Experience, a major attraction for visiting the Park is to experience the natural scenery and landscape of the Park.

Other structures and sites that are tied to cultural resources are often present within these viewsheds and are discussed in greater detail in Section 3.4, Cultural Resources. Visual

character can also be defined by natural landscape features, particularly within the Park's Wilderness areas (refer to Section 3.5.1, Affected Environment for Wilderness). As approximately 123,100 acres of the Park are federally designated Wilderness, the natural areas and features provide an aesthetic and visual character unique to the Park that is free from visual evidence of human civilization. Figure 23 depicts scenic points of interest including overlooks throughout the ATMP planning area, viewpoints into the Kīlauea caldera, and visitor overlooks along Chain of Craters Road. Trails are also depicted to provide a sense of where visitors within backcountry of the Park would experience the Park's visual resources and aesthetics.

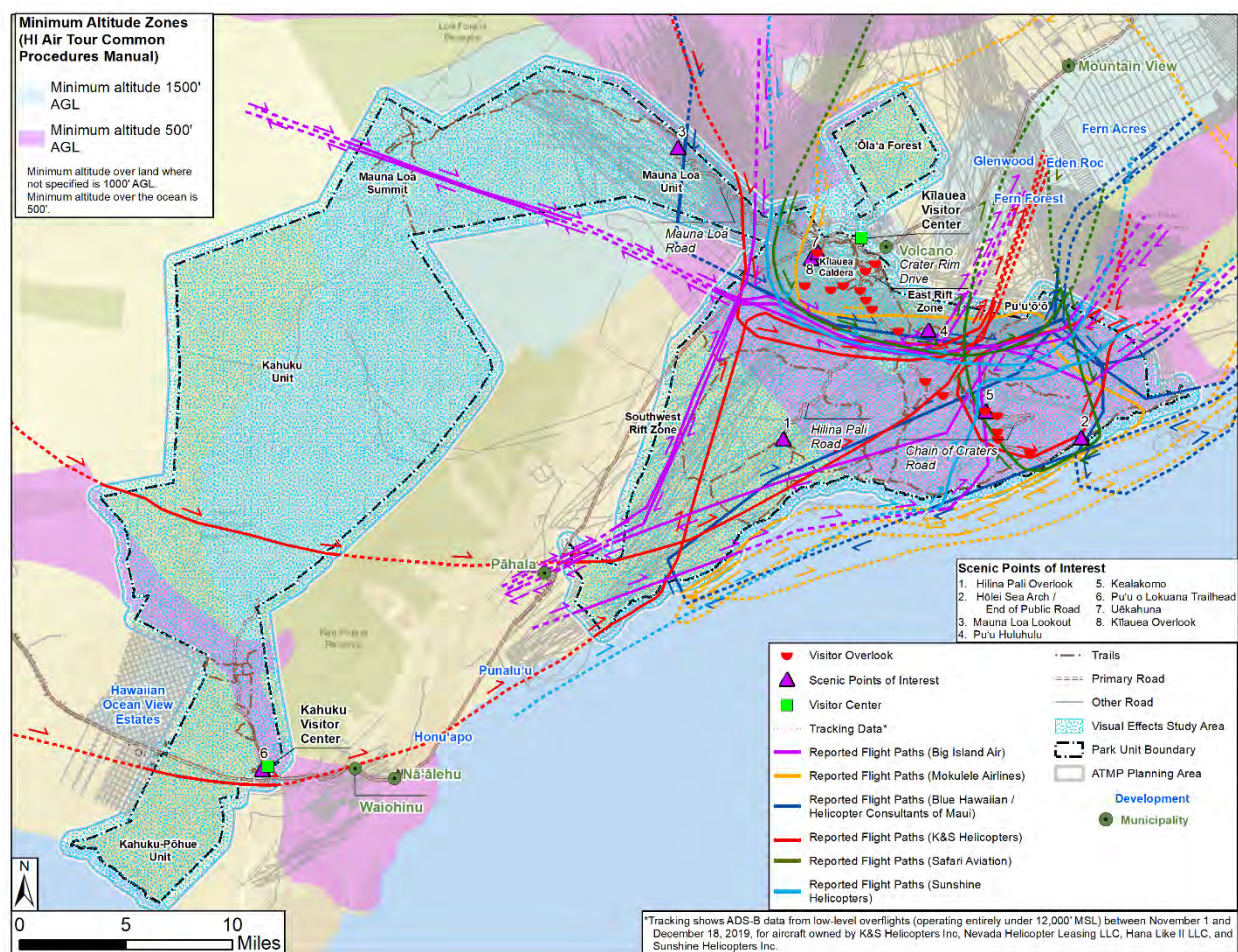


Figure 23. Affected Environment for Visual Effects.

3.8.2 Environmental Consequences

Studies indicate that aircraft noise in national parks can impact human perceptions of aesthetic quality of viewsheds (Weinzimmer et al., 2014; Benfield et al., 2018). Visitors may notice aircraft overflights because of the accompanying noise.

Impacts to visual resources and visual character relate to a decrease in the aesthetic quality of the Park resulting from air tours. FAA Order 1050.1F provides factors to consider in evaluating the severity of impacts, including the extent that the action would have the potential to:

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and/or visual character in the study area; and
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

Alternative 1: No Action

Reporting data from 2017-2019 indicates that visitors have the potential, on average, to see commercial air tour aircraft approximately 31 times per day, and the maximum number of tours reported over the Park during this time period was 90 tours a day. Based on reported data, the existing air tours occur between 6:00 AM and 4:00 PM. The altitudes reported near Park viewsheds are 500-1,500 ft. AGL. Refer to Figure 23 for a depiction of existing air tour conditions in the context of visual points of interest and viewsheds within the visual effects study area.

Based on current reported flight routes and flight tracking data, under existing conditions, overlooks and vistas across most of the visual effects study area have commercial air tour aircraft flying over or near them. Visitor overlook areas along Chain of Craters Road and Crater Rim Drive generally experience the heaviest concentrations of commercial air tours flying directly over these overlooks, which are also among the most heavily visited areas of the Park. Under this alternative, visitors in these areas would continue to experience visual impacts associated with commercial air tours. Commercial air tours may block visitors from seeing a viewshed or detract from natural or cultural scenery. Commercial air tours may be especially distracting when the visitor is at an overlook or other area where a specific visual experience is expected. Under the No Action Alternative, any of the viewsheds within the visual effects study area could be impacted by commercial air tours for up to 90 times a day. Since the Park consists primarily of a natural landscape, the encroachment of commercial air tour aircraft on these viewsheds would continue to detract from the visitor's opportunity to observe these scenic natural resources and would block the view of unique visual resources within the Park of scenic vistas and natural areas which contrast with commercial air tours when commercial air tours are present (on average approximately 31 times per day). However, the visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the ATMP planning area.

Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area so commercial air tours in this area would not detract from visual resources in the visual effects study area. Visual resources would experience direct beneficial impacts under Alternative 2 and visual character would improve compared to current conditions. Alternative 2 would provide the greatest protection to Park viewsheds across the three alternatives.

Alternative 3

Under Alternative 3, some Park viewsheds could experience temporary impacts when commercial air tours are flying within the visual effects study area, and those instances would be generally limited to viewsheds where aircraft could be seen along the designated routes and altitudes (refer to Figure 24) and would be limited to no more than 1,565 instances per year (an 86% reduction compared to the No Action Alternative). Commercial air tours along the authorized routes could be visible from the Park's coastal areas, the East Rift zone, and over Highway 11 near Kahuku, but they would avoid most other scenic points of interest or overlooks within the visual effects study area. The time-of-day restrictions included in Alternative 3 would provide further protection to the Park's viewsheds by creating times of day when commercial air tours would not fly within the ATMP planning area and viewsheds would not be impacted.

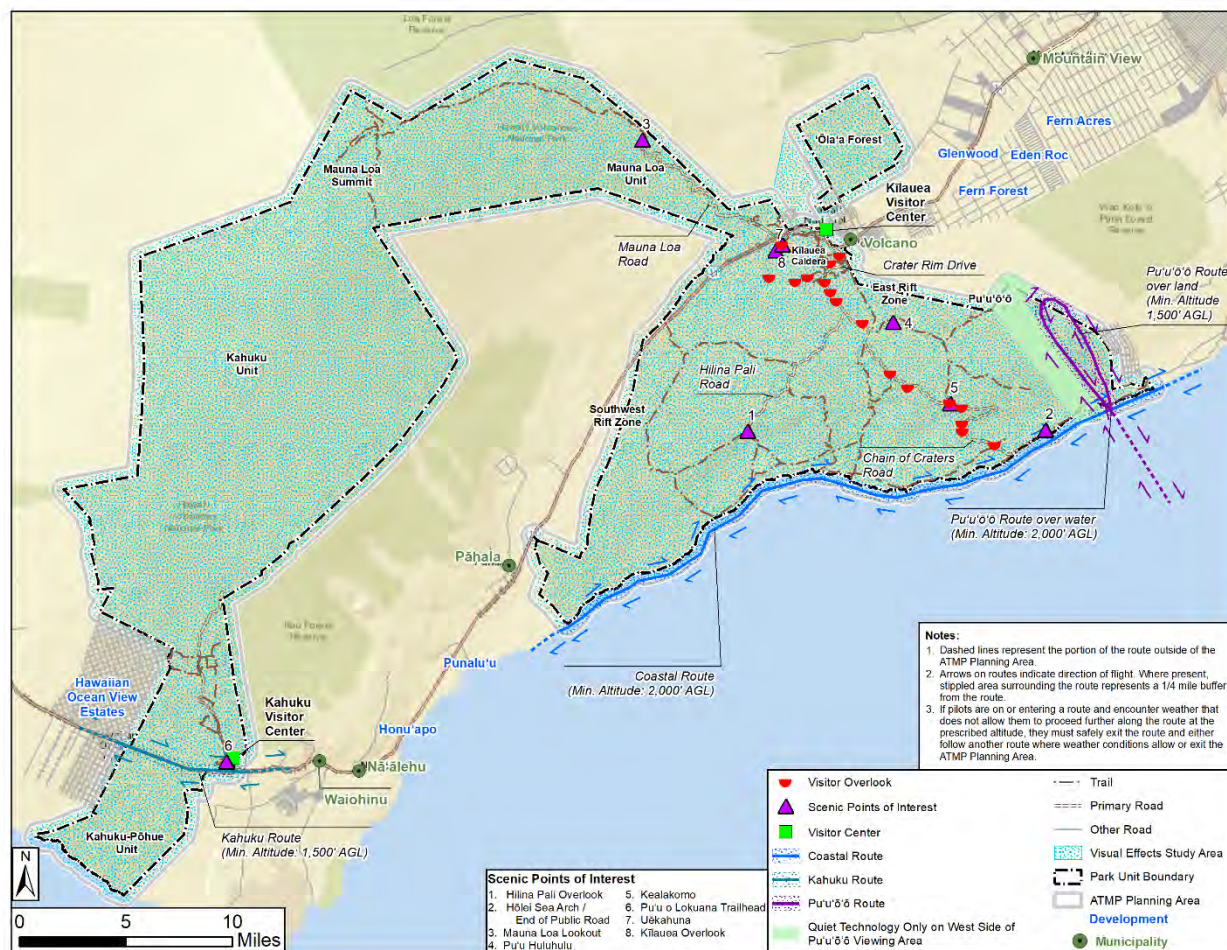


Figure 24. Visual Effects Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: Under the No Action Alternative, commercial air tour operations within the ATMP planning area would likely remain consistent with existing conditions, thus there are no indirect impacts that would be expected to occur under this alternative.

Under Alternatives 2 and 3, since commercial air tour operations would be limited or prohibited within the ATMP planning area, it could result in the displacement of tours outside of this area. Operators may choose to fly along existing flight paths but at or above 5,000 ft. AGL; however, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions. Operators may also choose to fly just outside of the perimeter of the ATMP planning area surrounding the volcanoes in order to view Kilauea Crater or any active lava. Air tours outside the ATMP planning area may occur in the area southwest of the 'Ōla'a Forest tract due to the proximity to Kilauea caldera and the potential for viewing any lava that may be present. Therefore, under Alternative 2, some indirect impacts to viewsheds near the 'Ōla'a

Forest tract and the areas near Kilauea could occur to the extent that they are present if flights were displaced to outside the visual effects study area. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits them to no more than 1,565 flights per year in addition to other operating parameters as specified in Section 2.6, Alternative 2 would likely result in more indirect impacts to viewsheds than Alternative 3.

Cumulative Effects: Other sources of ongoing visual impacts within the visual effects study area include general aviation flights, overflights by commercial airlines, military flights, and administrative flights such as those used for maintenance or search and rescue efforts, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours.

The cumulative visual effects of these ongoing flights along with those from commercial air tours under the No Action Alternative would have the greatest potential for impacts within the visual effects study area. The cumulative effects would be fewer for Alternative 3 which limits the number of air tours that would occur as compared to the No Action Alternative, and the fewest under Alternative 2 as there would be no tours permitted within the ATMP planning area. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives.

3.9 Coastal Resources

The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1466) provides for management of U.S. coastal resources to help coastal states balance conservation and restoration of natural resources with community development to develop their economies and support ecosystems. The CZMA provides a framework and technical assistance to address coastal issues including wetland management, public access, coastal hazards, and water quality. The CZMA includes requirements for ensuring that activities conducted or authorized by federal agencies are consistent with approved state coastal zone management programs. These consistency requirements, as interpreted in NOAA's implementing regulations (15 CFR part 930), apply to activities that would have reasonably foreseeable effects on land or water uses or natural resources in a coastal zone.

The State of Hawai'i administers a CZM program and has established objectives and their supporting policies (Hawai'i Revised Statutes § 205A-2) to help the Hawai'i CZM Program evaluate the consistency of proposed federal actions. As part of this compliance with CZMA, the agencies have prepared documentation describing the preferred alternative's consistency with each objective and policy of the Hawai'i CZM program (see Appendix K, *CZMA Compliance*). The agencies have requested a federal consistency review by the Hawai'i CZM Program Office simultaneous with the release of this draft EA for public review and comment.

The entire State of Hawai'i is considered a coastal zone under the Hawai'i CZM program. Therefore, the study area for coastal resources is the ATMP planning area.

3.9.1 Affected Environment

Because the entire State of Hawai'i is considered a coastal zone, the affected environment includes the entire ATMP planning area as discussed above.

3.9.2 Environmental Consequences

Impacts to coastal resources may occur in the form of physical effects associated with land use (such as construction), changes in water quality from pollutants or runoff, or effects to biological resources that utilize coastal resources. FAA Order 1050.1F provides factors to consider in evaluating the severity of impacts, including the extent that the action would have the potential to:

- Be inconsistent with the relevant state coastal zone management plan(s);
- Impact a coastal barrier resources system unit (and the degree to which the resource would be impacted);
- Pose an impact to coral reef ecosystems (and the degree to which the ecosystem would be affected);
- Cause an unacceptable risk to human safety or property; or
- Cause adverse impacts to the coastal environment that cannot be satisfactorily mitigated.

The agencies analyzed the potential for direct, indirect, and cumulative impacts on coastal resources in the relevant environmental impact categories for all three alternatives in this draft EA. This analysis can be found in Noise and Noise Compatible Land Use (Section 3.1), Biological Resources (Section 3.3), Cultural Resources (Section 3.4), Visitor Use and Experience and Other Recreational Opportunities (Section 3.6), Environmental Justice and Socioeconomics (Section 3.7), Visual Effects (Section 3.8), and DOT Act Section 4(f) Resources (Section 3.10).

The agencies only prepared a consistency determination for the preferred alternative (Alternative 3) and have evaluated Alternative 3's consistency with the enforceable policies of the Hawai'i CZM Program, including their objectives and supporting policies (Hawai'i Revised Statutes § 205A-2). The agencies' analysis is in Appendix K, *CZMA Compliance*, and the conclusions from that analysis are summarized below.

The agencies have evaluated Alternative 3 and have found that its implementation would not interfere with the Hawai'i CZM objective for:

- recreational resources, which is to provide coastal recreational opportunities accessible to the public;
- historic resources, which is to protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture;
- scenic and open space resources, which is to protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources;
- coastal ecosystems, which is to protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems;
- economic uses, which is to provide public or private facilities and improvements important to the state's economy in suitable locations;
- coastal hazards, which is to reduce hazard to life and property from coastal hazards;
- managing development, which is to improve the development review process, communication, and public participation in the management of coastal resources and hazards;
- public participation, which is to stimulate public awareness, education, and participation in coastal management.

Alternative 3 would be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program with respect to recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, and public participation. The policies for beach and coastal dune protection and marine and coastal resources are not applicable to the proposed action and have therefore not been evaluated as part of this assessment. Refer to Appendix K, *CZMA Compliance* for the agencies' analysis.

The agencies have provided the consistency determination in Appendix K, *CZMA Compliance* as well as a copy of this draft EA to the Hawai'i CZM Program Office concurrent with the release of this draft EA for public review and have requested their concurrence with this determination.

3.10 Department of Transportation (DOT) Act Section 4(f) Resources

Section 4(f) of the Department of Transportation Act of 1966, which was recodified and renumbered as Section 303(c) of 49 U.S.C., provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a

public park, recreational area, or wildlife and waterfowl refuge of national, state or local significance; or land from an historic site of national, state or local significance, as determined by the officials having jurisdiction over the land, unless i) there is no feasible and prudent alternative to the use of such land, and ii) such program or project includes all possible planning to minimize harm resulting from such use. Where federal lands are administered for multiple uses, the federal official having jurisdiction over the lands shall determine whether the subject lands are in fact being used for park, recreational, wildlife, waterfowl, or historical purposes. National Wilderness areas may serve similar purposes and shall be considered subject to Section 4(f) unless the controlling agency specifically determines that, for Section 4(f) purposes, the lands are not being used.

Appendix B of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* describes the FAA's procedures for complying with Section 4(f). Federal Highway Administration/Federal Railroad Administration/Federal Transit Administration regulations and policy are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to aviation projects.²⁶ According to FAA Order 1050.1F, significance of impacts is determined based on if the action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.

The study area for considering Section 4(f) resources in this draft EA corresponds with the APE used for compliance with Section 106 of the NHPA. Refer to Figure 25 for a depiction of the Section 4(f) study area.

3.10.1 Affected Environment

Section 4(f) resources including parks, recreational areas, and wildlife and waterfowl refuges were identified using public datasets from federal, state, and local sources. Historic properties were identified as part of the Section 106 consultation process (refer to Section 3.4, Cultural Resources). Each resource that intersected the Section 4(f) study area (i.e., some portion of the property fell within the Section 4(f) study area) was included in the Section 4(f) analysis (see Appendix I).

Table 15 shows Section 4(f) parks and recreational areas identified in the study area, and Section 3.4.1, Affected Environment for Cultural Resources and Appendix G list historic resources that qualify under Section 4(f). Except in unusual circumstances, Section 4(f) protects

²⁶ See 1050.1F Desk Reference, Section 5-3.

only those historic sites that are listed in or eligible for listing in the National Register.²⁷ Figure 25 shows a map of the Section 4(f) resources analyzed in this chapter, within the Section 4(f) study area.

Table 15. Section 4(f) Resources

Property Name	Property Type
Hawai'i Volcanoes National Park	NPS Park Unit
Hakalau Forest National Wildlife Refuge	USFWS Wildlife Refuge
Keauhou Cooperative Nēnē Sanctuary	State Reserve
ʻŌlaʻa Forest Reserve	State Forest Reserve
Kaʻū Forest Reserve	State Forest Reserve
Kapāpala Forest Reserve	State Forest Reserve
Mauna Loa Forest Reserve	State Forest Reserve
Kapāpala Cooperative Game Management Area	State Reserve
Kahaualeʻa Natural Area Reserve	State Reserve
Kipāhoehoe Natural Area Reserve	State Reserve
Manukā Natural Area Reserve	State Reserve
Puʻu Makaʻala Natural Area Reserve	State Reserve
Kīpuka ʻAinahou Nēnē Sanctuary	State Reserve
Kīlauea State Recreation Area	State Park
Pāpā/Honomalino Conservation Easements (Nature Conservancy of Hawai'i - Kona Hema Preserve)	Nature Preserve
Keaoi Islet Seabird Sanctuary	State Reserve
State Resource Management Area (SRMA)	SRMA

Sources: USGS Protected Areas Database of the United States, Hawai'i Division of State Parks, Hawai'i Department of Land and Natural Resources Office of Conservation and Coastal Lands, Hawai'i Division of Forestry and Wildlife.

²⁷ If a historic site is not National Register listed or eligible, a state or local official may formally provide information to FAA to indicate that a historic site is locally significant. The responsible FAA official may then determine it is appropriate to apply Section 4(f). See FAA Order 1050.1F for further detail.

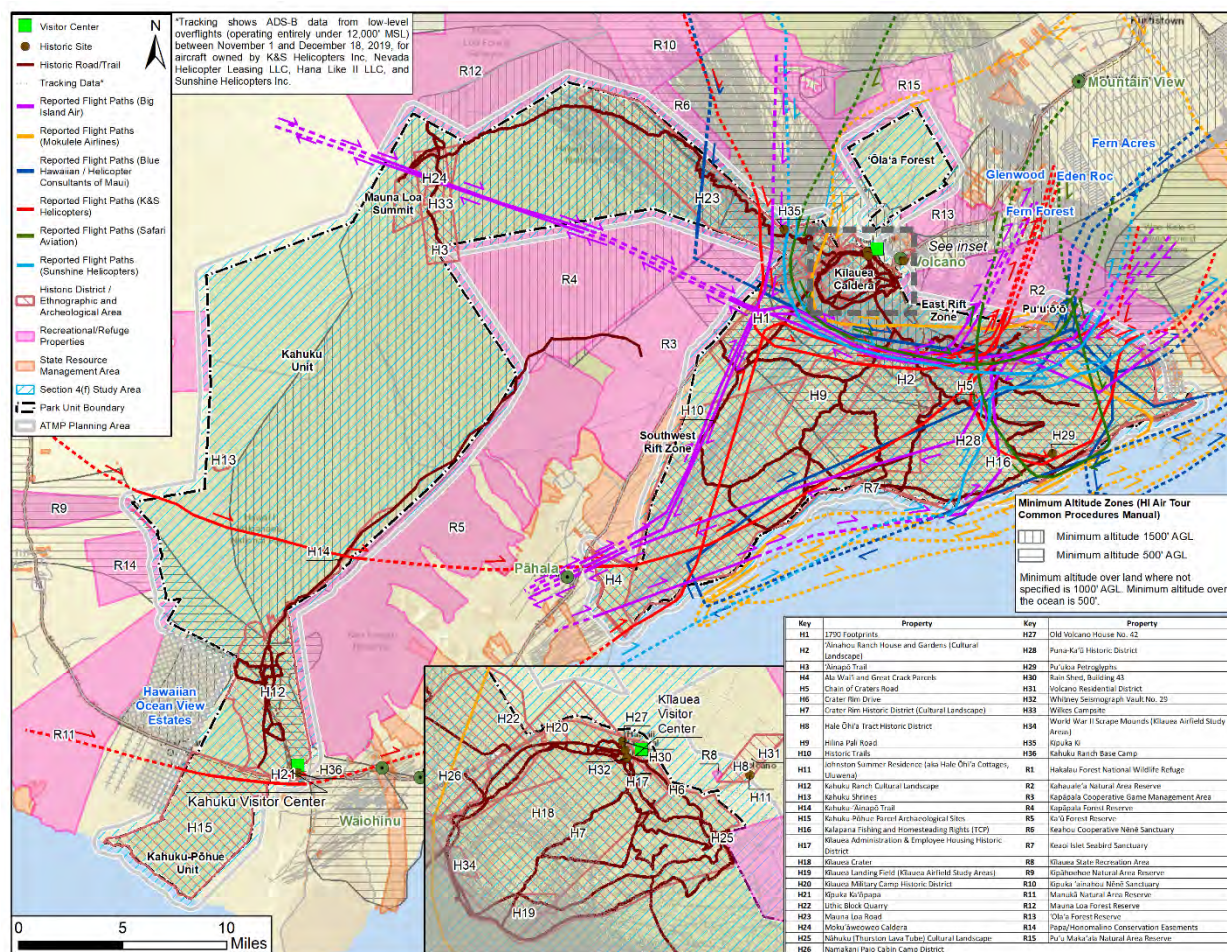


Figure 25. Affected Environment for Section 4(f) Properties.

3.10.2 Environmental Consequences

In the context of Section 4(f) resources, the term “use” refers to both physical constructive impacts to Section 4(f) resources. A physical use involves the physical occupation or alteration of a Section 4(f) resource, while constructive use occurs when a proposed action results in substantial impairment of a resource to the degree that the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. In consideration of potential impacts that could result in substantial impairment to Section 4(f) resources in the Section 4(f) study area, the analysis is limited to identifying impacts that could result in a constructive use, as the alternatives would not have the potential to cause direct impacts to a Section 4(f) resource. Potential impacts to Section 4(f) resources from commercial air traffic may include noise from aircraft within the acoustic environment, as well as visual impacts.

The FAA considered the potential for constructive use of Section 4(f) resources under all alternatives but focused the Section 4(f) analysis on the preferred alternative (Alternative 3). In accordance with FAA Order 1050.1F, the FAA determined through an initial assessment if the alternatives would result in use of any of the properties to which Section 4(f) applies. As noted in Section 2.4, Alternative 1 (No Action Alternative), the No Action Alternative provides a basis for comparison within this draft EA but is not a selectable alternative because it does not meet the purpose and need for the ATMP (refer to Section 1.4, Purpose and Need). Furthermore, the FAA consulted with the NPS on the potential for substantial impairment to Section 4(f) resources that would occur under the No Action Alternative, and the NPS determined that the No Action Alternative cannot be mitigated to avoid or prevent unacceptable impacts to Park resources including those that unreasonably interfere with ceremonies conducted by Native Hawaiian practitioners at cultural sites, Park programs, activities, the atmosphere of peace and tranquility, and the natural soundscapes in Park's Wilderness areas. The FAA did not advance the No Action Alternative for detailed Section 4(f) analysis as the NPS does not consider it a selectable alternative. Effects to Section 4(f) resources under Alternative 2 would be expected to be similar or less than those under Alternative 3 as there would be no air tours authorized in the ATMP planning area under this alternative. Therefore, the Section 4(f) analysis does not analyze the potential for constructive use of Section 4(f) resources in detail under Alternative 2. Detailed analysis of Section 4(f) resources is provided for Alternative 3 (preferred alternative).

In order to assess noise impacts to Section 4(f) resources, the land use compatibility guidelines in 14 CFR Part 150 assist with determining whether a proposed action would constructively use a Section 4(f) resource. These guidelines rely on the DNL, which is considered the best measure of impacts to the quality of the human environment from exposure to noise. The FAA acknowledges that the land use categories in 14 CFR Part 150 may not be sufficient to determine the noise compatibility of Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks and wildlife refuges), where a quiet setting is a generally recognized purpose and attribute. The FAA has consulted with the NPS and included supplemental noise metrics in the Section 4(f) analysis for the alternatives (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use). Visual impacts are assessed in accordance with the framework identified in Section 3.8, Visual Effects.

The FAA evaluated Alternative 3 for potential impacts to Section 4(f) resources. The noise analysis in Section 3.1.2, Environmental Consequences, indicates that the resultant DNL due to Alternative 3 is expected to be below DNL 45 dB and would eliminate or reduce noise in many noise sensitive regions of the Park compared to current conditions.

As indicated by the supplemental noise metrics, some points overlapping with or near Section 4(f) resources may experience an increase in noise intensity or duration as compared to existing conditions as routes include flights near these resources under Alternative 3. Refer to Section

3.4.2, Environmental Consequences of Alternative 3 for Cultural Resources for a discussion of these noise metrics in the context of historic resources that are Section 4(f) properties.

For parks and recreational sites that are Section 4(f) properties, at some points that are closest to the authorized routes under Alternative 3 (Points 9, 10, 14, 17, 18, 20, 24, 31, 39, 40, 41) time above 35 dBA or 52 dBA may be higher for quiet technology-only days compared to standard days because some quiet technology aircraft, while quieter overall, may be audible for a slightly longer period of time than standard aircraft based on the specific route location and type of aircraft modeled. Of the Section 4(f) parks and recreational sites that are within the Section 4(f) study area, this would be most likely to affect Kahauale'a Natural Area Reserve, Keaoi Islet Seabird Sanctuary, and State Resource Management Area which are located closest to these modeled location points and the routes for Alternative 3. See Figure 26.

Nine location points (14, 17, 18, 19, 20, 24, 39, 40, 41) are modeled to experience increases in noise under both standard and quiet technology-only days as indicated by the supplemental metrics (time audible natural ambient, time above 35 dBA, time above 52 dBA, and maximum sound level) as compared to current conditions. The FAA identified whether these points were near any parks and recreational Section 4(f) properties (refer to Appendix I, *Section 4(f) Analysis* for the location point analysis):

- Point 24 is within 1.10 miles of the Ka'ū Forest Reserve and within 0.77 miles of the State Resource Management Area;
- Point 39 is within 0.27 miles of the Keaoi Islet Seabird Sanctuary;
- Point 40 is within 1.47 miles of the Keaoi Islet Seabird Sanctuary.

The FAA then evaluated the supplemental noise metrics to determine changes in noise duration and intensity that would be experienced at those 4(f) properties under Alternative 3 compared to current conditions. Points 24 and 40 would experience increases in noise duration under all conditions but increases in noise intensity (as indicated by maximum sound level) would only occur on standard days on which air tours would be permitted. Increases in noise intensity either do not occur or are minimal (< 3 dBA) on quiet technology-only days. The increases in time above metrics are minimal (at point 24, time above 35 dBA would increase from 1.8 to 10.9 minutes; time above 52 dBA would increase from less than 0.1 minutes to 0.7 minutes; at point 40, time above 35 dBA would increase from 2.2 to 7.7 minutes; time above 52 dBA would increase from 0.2 to 0.8 minutes). The time audible for natural ambient would increase at these points but less on quiet technology-only days (at point 24, increase from 10.2 minutes to 46.6 minutes on a standard day and 37.7 minutes on a quiet technology-only day; at point 40, increase from 0 minutes to 88.6 minutes on a standard day and 51.5 minutes on a quiet

technology-only day). Note that in all cases, these durations are the summation of several non-contiguous events that would span across the operating day.

Point 39 represents a coastal point near the Keaoi Islet Seabird Sanctuary, and noise at Point 39 would increase for all modeled noise metrics. Specifically, the maximum sound level would increase by 2 dBA on quiet technology days and almost 8 dBA on standard days, with the highest level at 60.7 dBA. Time above 35 dBA and 52 dBA would slightly increase under Alternative 3 based on the modeling results, with time above 35 dBA experienced for a total of 7 minutes on a standard day and 10 minutes on a quiet technology-only day, and time above 52 dBA experienced for 1 minute on both a standard day and on a quiet technology-only day. At Point 39, air tours would be audible for 36 minutes on quiet technology-only days and about an hour (61 minutes) on standard days.

Because noise is modeled using conservative assumptions and implementing the ATMP under Alternative 3 would result in limiting the number of flights to 14% of the three-year average of flights flown from 2017-2019 using three consolidated routes and the same aircraft to fly at higher altitudes than existing conditions, noise impacts to Section 4(f) parks and recreational resources are expected to experience an overall reduction under Alternative 3. Air tours are currently occurring in these areas, and Alternative 3 would substantially reduce the number of air tours within the ATMP planning area, move the air tours away from most Section 4(f) resources in the Section 4(f) study area, and increase the altitude at which air tours must fly. Although Alternative 3 would shift authorized air tour operations to the three proposed flight paths and may expose some Section 4(f) resources to increased noise impacts, any increases in noise impacts would not result in substantial impairment of these Section 4(f) resources. The inclusion of no-fly days, time-of-day restrictions to avoid sunrise and sunset, quiet technology incentives, and limiting flights to certain days of the week minimizes impacts to Section 4(f) resources. Furthermore, air tours are transitory in nature, and any noise impacts would be temporary, infrequent, and in many cases less intrusive than current conditions in the Section 4(f) study area.

As a result, FAA concludes there would be no substantial impairment²⁸ on Section 4(f) resources in the Section 4(f) study area from noise-related effects under Alternative 3. This conclusion supports the FAA's determination that Alternative 3 would not constitute constructive use of Section 4(f) resources in the Section 4(f) study area. This Section 4(f) determination for historic properties is based on 14 CFR Part 150 Appendix A and is also consistent with the Section 106 no adverse effect determination at the Park (see Section 3.4, Cultural Resources).

²⁸ Substantial impairment would occur when impacts to section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

The FAA also considered the potential for vibrational impacts on Section 4(f) resources under Alternative 3. A review of the potential for vibrational impacts on sensitive structures such as historic buildings suggests that the potential for damage resulting from helicopter overflights is minimal, as the fundamental blade passage frequency is well above the natural frequency of these structures. Additionally, the vibration amplitude of these overflights at the altitudes prescribed in Alternative 3 would be well below recommended limits.^{29, 30} Vibrational impacts are not anticipated to affect surrounding parkland and State Forest areas given that aircraft overflights do not contain vibrational energy at levels which would affect outdoor areas or natural features and there is no substantial change from current conditions.

Recognizing that some types of Section 4(f) resources may be affected by visual effects of commercial air tours, the FAA and the NPS considered the potential for the introduction of visual elements that could substantially diminish the significance or enjoyment of Section 4(f) resources in the Section 4(f) study area. Alternative 3 would limit the number of commercial air tours per year to 1,565 flights and would limit those routes to three designated flight paths over the ATMP planning area, which would result in fewer areas of the Section 4(f) study area, and therefore, fewer Section 4(f) properties, from which a commercial air tour could be visible. Alternative 3 would not introduce visual elements or result in visual impacts that would substantially diminish the activities, features or attributes of a Section 4(f) resource. Therefore, there would be no constructive use from visual impacts of Section 4(f) resources.

²⁹ Hanson, C.E., King, K.W., et al., "Aircraft Noise Effects on Cultural Resources: Review of Technical Literature," NPOA Report No. 91-3 (HMMH Report No.290940.04-1), September 1991.

³⁰ Volpe National Transportation Systems Center, Department of Transportation, 2014. Literature Review: Vibration of Natural Structures and Ancient/Historical Dwellings, Internal Report for National Park Service, Natural Sounds and Night Skies Division, August 21, 2014.

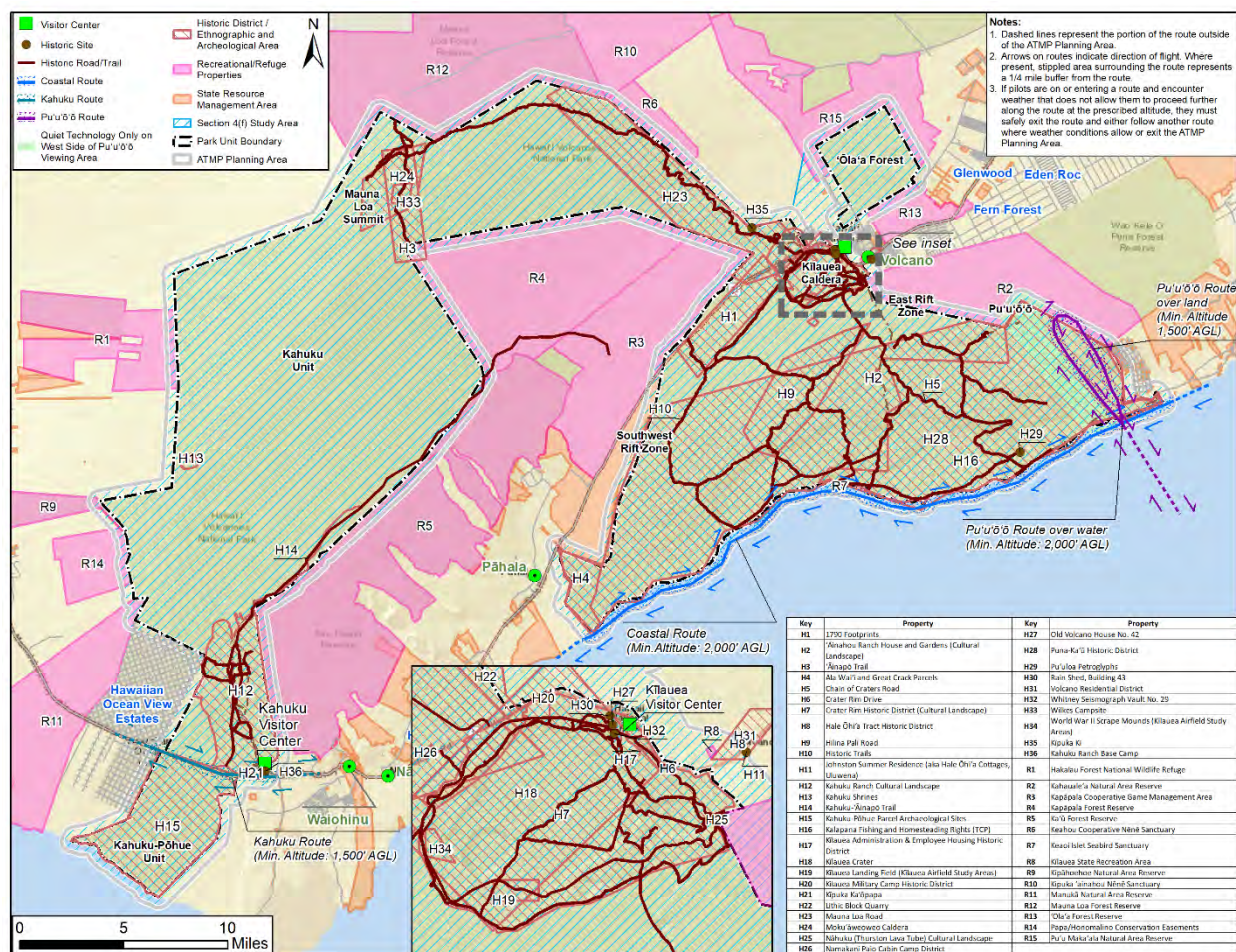


Figure 26. Section 4(f) Environmental Consequences for Alternative 3.

Indirect and Cumulative Effects

Indirect Effects: The indirect effects of Alternative 3 on Section 4(f) properties reflect those analyzed in the sections for noise and visual effects. Alternative 3 would limit the number of flights per year as compared to existing conditions and would have the potential to result in some displacement of air tours outside the ATMP planning area. Air tours occurring outside the ATMP planning area, if any, may result in noise or visual effects to Section 4(f) resources to the extent that they are present near the areas that those flights would occur.

The indirect effects analysis conducted for Noise and Noise-Compatible Land Use indicates that it is highly unlikely that the air tours that are displaced to outside the ATMP planning area under Alternative 3 would generate a noise exposure level at or above DNL 65 dB in a single location in accordance with FAA Order 1050.1F, including those that overlap with Section 4(f) properties. The indirect effects analysis for Visual Effects identifies that some indirect visual impacts could occur if flights were displaced to outside the ATMP planning area and would

likely be experienced in the areas within or surrounding the 'Ōla'a Forest and the Kīlauea caldera since lava and other volcanic features would still be visible from air tours conducted just outside the ATMP planning area in this location. Section 4(f) resources are present in these areas and could experience indirect visual effects if air tours were visible from those resources. However, the FAA and the NPS are unable to predict with specificity if, where, and to what extent any displaced air tours would result in visual impacts in different and/or new areas, including Section 4(f) resources.

Cumulative Effects: The cumulative effects to Section 4(f) properties reflect those analyzed in the sections for noise and visual effects. Ongoing present and future Park management actions by the NPS including administrative helicopter flights may contribute noise that would continue to negatively affect the acoustic environment of Section 4(f) properties within the Section 4(f) study area. Other sources of ongoing visual impacts that may affect Section 4(f) properties within the Section 4(f) study area include general aviation flights, overflights by commercial airlines, military flights, and administrative flights such as those used for management actions or search and rescue efforts, which would likely continue under Alternative 3, as they occur independently of air tours.

Section 4(f) Recommended Finding

In summary, the FAA has preliminarily determined that there would be no constructive use to Section 4(f) properties under Alternative 3 because noise, vibrational, and visual impacts from commercial air tours under this alternative would not constitute a substantial impairment of Section 4(f) resources in the Section 4(f) study area. As part of the draft ATMP and draft EA development, the FAA consulted with the NPS and through the release of the draft ATMP and draft EA, consulted with the NPS and other officials with jurisdiction over Section 4(f) resources in the Section 4(f) study area regarding FAA's preliminary finding of no substantial impairment, and hence, the FAA's proposed no constructive use determination. The FAA has sent letters to each Section 4(f) property's official with jurisdiction with this preliminary finding concurrent with the release of this draft EA for public review. Refer to Appendix I, *Section 4(f) Analysis*, for additional details on this coordination.

3.11 Summary of Environmental Consequences

Table 16 summarizes the environmental consequences described above for each of the alternatives considered across each environmental impact category.

Table 16. Summary of Environmental Consequences of the ATMP Alternatives

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
Noise and Noise-Compatible Land Use	• Air tours can occur any day of the year • 12-hr equivalent sound level: maximum <55 dBA; 35 to <50 dBA in 13% of the Park. • DNL: <50 dB • Time audible natural ambient: maximum 360-480 minutes a day in <1% of the Park; >120 minutes a day in 27% of the Park; audible air tour noise in 82% of the Park. • Time above 35 dBA: maximum >120 minutes a day in <1% of the Park; >30 minutes a day in 15% of the Park. • Maximum time above 52 dBA: 18.9 minutes; <1 minute in 85% of the Park. • Maximum sound level in ATMP planning area: 72.0 dBA at location #5. • Average of 345 days with air tours per year within the ATMP planning area. • No indirect effects expected.	• 365 days per year without air tours within the ATMP planning area and would reduce noise in the most noise sensitive regions of the Park. • Indirect noise impacts may occur due to air tours displaced to outside the ATMP planning area.	• 52 days per year without air tours within the ATMP planning area • 12-hr equivalent sound level: maximum <45 dBA; 35 to <40 dBA in 3% of the Park. • DNL: <45 dB • Time audible natural ambient: maximum <150 minutes a day in 2% of the Park; ≥60 minutes a day in 18% of the Park. • Time above 35 dBA: maximum 30-45 minutes a day in 1% of the Park; ≥0.1 minutes a day in 29% of the Park. • 83% of points modeled would not experience sound levels above 52 dBA on a standard day (i.e., time above 52 dBA is 0 minutes). • Maximum sound level in ATMP planning area: 63.7 dBA at location #17. • Indirect noise impacts may occur due to air tours being displaced to outside the ATMP planning area.
Air Quality and Climate Change	• Criteria pollutants: 0.845 TPY • GHG emissions: 1,851 MT of CO₂ per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • No indirect effects expected.	• Reduction in criteria pollutants (from air tours in ATMP planning area): 0.845 TPY • Reduction of GHG emissions (from air tours in ATMP planning area): 1,851 MT of CO₂ per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within	• Reduction in criteria pollutants (from air tours in ATMP planning area): 0.676 TPY • Reduction in GHG emissions (from air tours in ATMP planning area): 1,388 MT CO₂ per year • Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations. • Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
		the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions. Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts under NEPA or change the current attainment status of the Park.	the ATMP planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions. Highly unlikely that air tours displaced to outside the ATMP planning area would result in air quality impacts or change the current attainment status of the Park.
Biological Resources	- Commercial air tour noise would continue to affect wildlife within the ATMP planning area and interfere with wildlife research activities in SEAs. - Altitudes do not meet guidelines for protection of marine mammals. - Time above 35 dBA: >120 minutes a day in portions of ATMP planning area. - Not expected to result in indirect effects to wildlife.	- Direct beneficial effects to biological resources are expected. - No direct impacts to biological resources within the ATMP planning area but could result in some indirect impacts due to air tour displacement outside the ATMP planning area.	- Annual (1,565) limit of air tour operations; time-of-day restrictions: 10:00 AM to 2:00 PM for non-quiet technology, 9:00 AM to 5:00 PM for quiet technology aircraft; and increased altitudes (1,500-2,000 ft. AGL.) to protect biological resources within the ATMP planning area. - Time above 35 dBA: ≥45 minutes a day in portions of the ATMP planning area. - Altitudes meet guidelines for protection of marine mammals. - Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area.
Cultural Resources	- Cultural resources would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of cultural resources. 12-hr equivalent sound level: 46.8 dBA at location #5. - Time above 35 dBA: >120 minutes a day in 60% of the Park. - Not expected to result in indirect effects to cultural resources within the APE.	- Would reduce the noise and remove visual intrusions from the setting of cultural resources within the APE. - Could result in some indirect impacts to cultural resources within the APE, primarily in areas within and near the 'Ōla'a Forest tract and the Kīlauea caldera if flights were displaced to outside the ATMP planning area.	- Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources in most locations within the APE as compared to current conditions. - Annual (1,565) limit of air tour operations; and time-of-day restrictions: 10:00 AM to 2:00 PM for non-quiet technology, 9:00 AM to 5:00 PM for quiet technology aircraft would reduce the likelihood that air

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
			tours interrupt Native Hawaiian traditional practices such as ceremonies and the sanctity of the Kīlauea caldera. • 12-hr equivalent sound level: 29.9 dBA on a quiet technology-only day, ≥30.1 dBA on a standard day at locations #12-#15; 32.3 dBA on a quiet technology-only day, 32.7 dBA on a standard day at location #4; 9.5 dBA on a quiet technology-only day, 9.6 dBA on a standard day at locations #16 and #28. • Time above 35 dBA: ≥45 minutes a day; ≥60 minutes a day on quiet technology-only day. • Could result in air tour displacement outside the ATMP planning area.
Wilderness	• Air tour noise within and near the Wilderness detracts from the natural quality and opportunity for solitude. • Time above 35 dBA: <90 minutes a day in the East Rift and Ka'ū Desert Wilderness units. • Time audible within Wilderness: <360 minutes a day in the East Rift Wilderness Unit. • No indirect effects expected.	• Offers the greatest protection of Wilderness, since commercial air tours would not be able to fly over Wilderness. • Could result in indirect impacts to Wilderness areas associated with the sights and sounds of air tours if tours were displaced to outside the ATMP planning area.	• Would diminish the natural quality of Wilderness in some discrete locations where air tour noise would reach native forest bird habitat, and also would detract from opportunities for solitude where air tour noise would be audible to Wilderness visitors. • Time above 35 dBA: <15 minutes a day in the Great Crack, East Rift, and Ka'ū Desert Wilderness units. • Time audible within Wilderness: <135 minutes a day in the East Rift Wilderness unit, <120 minutes a day on quiet technology-only days. • Could result in some indirect impacts to Wilderness areas if tours were displaced to outside the ATMP planning area and the sights and sounds of those tours

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
			affected Wilderness areas within the ATMP planning area.
Visitor Use and Experience and Other Recreational Opportunities	• Would not meet the Park's acoustic-based visitor use standards for the visitor services, transitional, and wild/primitive zones. Most impacts to visitor experience, which would occur Park-wide with the exception of the Park's developed areas, are related to the intrusion of audible air tour noise where visitors would expect natural sounds to prevail during their visit to the Park. • Maintains the current availability of air tours for those that wanted to view the Park from an aerial vantage point within the ATMP planning area. • 82% of the Park would experience audible air tour noise at some point of the day. • Audible air tour noise <30 minutes a day in 48% the Park. • Time above 52 dBA: <0.1 minutes a day at Kīlauea Visitor Center (location #4) and 0.2 minutes a day at Jaggar/HVO (location #37). • No indirect effects expected.	• Offers the greatest protection of visitor use and experience but eliminates air tours within the ATMP planning area. • Air tours occurring outside the ATMP planning area may result in noise in other areas near those flights which could affect the visitor experience. • Indirect impacts to visitor experience and points of interest within or near the 'Ōla'a Forest tract and the Kīlauea caldera could occur if flights were displaced to outside the ATMP planning area.	• Annual (1,565) limit of air tour operations; day-of-week restrictions: no air tours on Sundays; time-of-day restrictions: 10:00 AM to 2:00 PM for non-quiet technology, 9:00 AM to 5:00 PM for quiet technology aircraft; and increased altitudes (1,500-2,000 ft. AGL.) would reduce impacts to visitor experience. • 49% of the Park ≥15 minutes of audible air tour noise a day, 84% of the Park would experience audible air tour noise at some point in the day. • Audible air tour noise ≥150 minutes a day in 2% of the Park. • Time above 52 dBA: would not occur at Kīlauea Visitor Center (location #4) or Jaggar/HVO (location #37). • Indirect impacts to visitor experience and points of interest within or near the 'Ōla'a Forest tract and the Kīlauea caldera could occur if flights were displaced to outside the ATMP planning area.
Environmental Justice and Socioeconomics	• Would not result in disproportionately high or adverse noise, air quality, or visual effects to EJ populations. • Would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, disrupt traffic patterns, or produce a	• Would be direct beneficial impacts to EJ populations within the ATMP planning area for noise, air quality, and visual resources. • Would not induce substantial economic growth, disrupt or divide physicality of community, cause extensive relocation, or disrupt traffic patterns.	• Annual (1,565) limit of air tour operations; time-of-day restrictions: 10:00 AM to 2:00 PM for non-quiet technology, 9:00 AM to 5:00 PM for quiet technology aircraft; and increased altitudes (1,500-2,000 ft. AGL.) would result in fewer impacts to EJ populations.

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
	substantial change in the community tax base. • DNL: <50 dB • 1,851 MT CO₂ • PMAD = 31 air tours	• Unlikely would result in large socioeconomic impacts to the surrounding community, including those associated with changes to the community's tax base associated with loss of industry.	• Would result in fewer direct noise, air quality, and visual effects to EJ populations. • Provides protection to Park viewsheds, including those overlooking Kilauea, part of the East Rift Zone, and along Crater Rim Drive and the upper parts of Chain of Craters Road. • DNL: <45 dB • 1,388 MT CO₂ • Could impact employment or the amount of income that air tour operators and other ancillary businesses generate from conducting air tours within the ATMP planning area.
Visual Effects	• Air tours would continue to impact visitor overlook areas primarily along Chain of Craters Road and Crater Rim Drive. • No indirect effects expected. • PMAD = 31 air tours	• Would provide the greatest protection to Park viewsheds and would benefit visual resources and visual character within the Park. • Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area.	• Annual (1,565) limit of air tour operations; and time-of-day restrictions: 10:00 AM to 2:00 PM for non-quiet technology, 9:00 AM to 5:00 PM for quiet technology aircraft to protect the Park's viewsheds. • Commercial air tours along the authorized routes may be visible from the Park's coastal areas, parts of the East Rift zone, and over Highway 11 near Kahuku but air tours would be limited in the number of instances that would occur on an annual basis as compared to the No Action Alternative. • Indirect impacts to viewsheds could occur if flights were displaced to outside the ATMP planning area.
Coastal Resources	• N/A – the agencies have only prepared a consistency determination for the preferred alternative (Alternative 3).	• N/A – the agencies have only prepared a consistency determination for the preferred alternative (Alternative 3).	• Would not result in impacts to coastal resources. • Would be undertaken in a manner consistent to the maximum extent practicable

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred)
			with the enforceable policies of the Hawai'i CZM Program.
DOT Act Section 4(f) Resources	• FAA consulted with NPS, who determined that the No Action Alternative would result in substantial impairment to Section 4(f) resources.	• No substantial impairment of Section 4(f) resources in the Section 4(f) study area. • No "constructive use" to any Section 4(f) properties.	• Annual (1,565) limit of air tour operations; time-of-day restrictions: 10:00 AM to 2:00 PM for non-quiet technology, 9:00 AM to 5:00 PM for quiet technology aircraft; and increased altitudes (1,500-2,000 ft. AGL.) result in beneficial impacts to the Section 4(f) resources. • No substantial impairment of Section 4(f) resources in the Section 4(f) study area. • No "constructive use" to any Section 4(f) properties. • DNL: <45 dB

**Appendices for the Draft Environmental
Assessment for an Air Tour Management
Plan for
Hawai'i Volcanoes National Park**

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APPENDIX A

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APPENDIX B

List of Acronyms, Abbreviations, and Glossary

Acronyms and Abbreviations

The Act	National Parks Air Tour Management Act of 2000
ACS	American Community Survey
ADS-B	Automatic Dependent Surveillance-Broadcast
AEDT	Aviation Environmental Design Tool
AGL	Above Ground Level
ANSI	American National Standards Institute
APE	Area of Potential Effects
ATMP	Air Tour Management Plan
ATMP planning area	The area within which an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL.
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CMZA	Coastal Zone Management Act
CO ₂	Carbon Dioxide
dB	Decibels
dBA	Decibels (A-weighted scale)
DNL	Day-night Average Sound Level (denoted by the symbol L _{dn})
DOT	United States Department of Transportation
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
FSDO	Flight Standards District Office
GHG	Greenhouse Gas
H ₂ O	Water Vapor
Hawai'i Common Procedures Manual	2008 FAA Hawai'i Air Tour Common Procedures Manual
IOA	Interim Operating Authority
IPCC	Intergovernmental Panel on Climate Change
L ₁₀	The L ₁₀ sound level (in decibels) is the sound level exceeded 10 percent of the day
L ₅₀	The median or L ₅₀ sound level (in decibels) is the sound level exceeded 50 percent of the day
L _{Aeq}	Equivalent Continuous Sound Level
L _{dn}	Day-night Average Sound Level
L _{max}	The loudest sound level, in dBA, generated by the loudest event

L _{nat}	Natural ambient L ₅₀ as described in Lynch (2012) and Job (2018)
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MT	Metric Tons
N ₂ O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHO	Native Hawaiian Organizations
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
O ₃	Ozone
The Park	Hawai'i Volcanoes National Park
PM	Particulate Matter
PM _{2.5}	Particulate matter with aerodynamic diameter of 2.5 micrometers and smaller
PM ₁₀	Particulate matter with aerodynamic diameter of 10 micrometers and smaller
PMAD	Peak Month Average Day
SEA	Special Ecological Area
SHPD	State Historic Preservation Division
SO ₂	Sulfur Dioxide
TCP	Traditional Cultural Properties
TPY	Tons per Year
U.S.C.	United States Code
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

APPENDIX C

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Appendix C lists the names of the principal persons contributing information to this draft EA.

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APPENDIX D

Distribution List

The agencies have sent the following agencies and parties copies of this draft EA and draft ATMP documents for participation in the NEPA process.

Federal Agencies

- National Park Service
- U.S. Fish and Wildlife Service Hakalau Forest National Wildlife Refuge
- USDA Forest Service Institute of Pacific Islands Forestry
- U.S. Department of the Interior, Office of Native Hawaiian Relations
- USGS Pacific Island Ecosystems Research Center

Hawai'i State Agencies

- Department of Hawaiian Homelands
- Office of Hawaiian Affairs
- Department of Land and Natural Resources

Hawai'i County and Local Agencies

- County of Hawaii

Community Organizations, Associations, Businesses, and Interest Groups

- Three Mountain Alliance
- The Nature Conservancy
- Historic Hawai'i Foundation
- Na Kupuna Moku O Keawe
- Kalapana Fishing Council
- Kalauonaone O Puna Association
- Edith Kanaka'ole Foundation
- Kamehameha Schools
- Kalapana 'Ohana Association
- Maku'u Farmers Association
- Naki'i Ke Aho
- Royal Hawaiian Academy of Traditional Arts
- The Mary Kawena Pūku'i Na Ohana O Kalapana
- Cultural Preservation Society
- Keauhou Bird Conservation Center

Public Review

Copies of this draft EA are available for public review and comment. The full document is available via the following:

- NPS Planning, Environmental and Public Comment website:
<https://parkplanning.nps.gov/HawaiiVolcanoesATMP>

APPENDIX E

Environmental Impact Analysis Methods

Draft Environmental Assessment for an Air Tour Management Plan for

Hawai'i Volcanoes National Park

Environmental Impact Analysis Methodologies

1.0 Introduction and Overview

The Federal Aviation Administration (FAA), in cooperation with the National Park Service (NPS) (the agencies), are working together to develop an Air Tour Management Plan (ATMP) for Hawai'i Volcanoes National Park (Park). In compliance with the National Environmental Policy Act (NEPA), the agencies prepared a draft Environmental Assessment (EA) for the Park's ATMP. The proposed action is to implement an ATMP for the Park and is described in Section 1.3 of the draft EA. This technical appendix describes the methodologies used for evaluating the potential for environmental impacts to occur from the alternatives considered in the draft EA.

The agencies have identified environmental impact categories that require detailed analysis in the draft EA due to the potential environmental impacts resulting from implementing the alternatives (refer to Section 1.5 of the draft EA for a discussion of the environmental impact categories not analyzed in detail). The methodologies in this document reflect the analysis that has been performed by environmental impact category for each of the alternatives. The results of these analyses are described in the Environmental Consequences sections of the draft EA. This methodology is based on the 2015 FAA 1050.1F Order and Desk Reference - *Environmental Impacts: Policies and Procedures*, and NPS NEPA policies and procedures (2015 NPS NEPA Handbook, 2015 NPS NEPA Handbook Supplemental Guidance - *Writing Impact Analysis Sections for EAs and EISs*).

Under the National Parks Air Tour Management Act of 2000 (the Act) and its implementing regulations an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 feet (ft.) above ground level (ATMP planning area). Air tours outside of the ATMP planning area are not regulated under the ATMP. Unless otherwise noted, the study area for each environmental impact category is the ATMP planning area.

2.0 Environmental Baseline and Impact Analysis for the No Action Alternative

For all environmental impact categories described herein, impact analysis for each alternative discloses how environmental conditions would change relative to current conditions, which serves as the environmental baseline for this analysis. Impacts are analyzed relative to current conditions, so that they can be described and measured relative to a level for which data exists. Each analysis provides a comparative analysis between alternatives for each environmental impact category.

Existing conditions for air tour activity is defined as the three-year average of commercial air tours conducted over the Park from 2017-2019, along with operator-provided route and altitude information. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not reflect actual flights. The agencies consider the 2017-2019, three-year average, existing conditions for the purposes of understanding both the existing number of commercial air tour flights over the Park and impacts from that activity. Flight numbers from a single year were not chosen as the existing condition because the three-year average accounts for both variation across years and takes into account the most recent years prior to the COVID-19 pandemic.

The 2020 COVID-19 pandemic resulted in atypical commercial air tour operations, which does not represent the conditions in a typical year. The agencies also decided against using 2021 or 2022 data due to continued abnormalities associated with the COVID-19 pandemic and the unavailability of reporting data for 2021 or 2022 during most of the planning effort.

The No Action Alternative represents a continuation of existing air tour conditions over the Park. The Act provided for existing commercial air tour operations occurring at the time the law was enacted to continue until an ATMP for the Park was implemented by expressly requiring the FAA to grant interim operating authority (IOA) to existing operators.^{1,2} Flights up to IOA are not considered part of the No Action Alternative, as flights at these levels are not reasonably foreseeable based on reporting data. The affected environment for each environmental impact category discloses existing conditions of commercial air tours over the Park as it relates to resources within the study area for each category. Impact analysis for the No Action Alternative discloses the effects on the environment that would occur with existing conditions carried into the future. There are no designated routes under the No Action Alternative, but for the purpose of defining the No Action Alternative for analysis, route information provided by operators and flight tracking data is used to define the routes for this alternative. There are no altitude restrictions under the No Action Alternative beyond the FAA general restrictions/allowances and the guidelines in the 2008 FAA Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual).³

3.0 Impacts Considered

The analysis considers direct, indirect, and cumulative effects of each alternative described in Chapter 2 of the draft EA. The methodologies used in considering these effects to environmental impact categories are described by category in Section 4.0 of this document.

3.1. Direct Effects

Direct effects are those caused by the alternative and occur at the same time and place as implementation of the alternative. Direct effects consider the change from current resource condition, which is described in the affected environment, on environmental resources within the study area resulting from implementation of that alternative.

3.2. Indirect Effects

Indirect effects are those which are caused by the alternative and occur later in time or are farther removed in distance but are still reasonably foreseeable.

It is reasonably foreseeable that because of the capital investment air tour operators have in aircraft, facilities, and equipment, operators could seek to make up lost revenue from air tours over the Park resulting from a reduction in air tours by conducting air tour operations outside of the ATMP planning area to the extent possible. In accordance with Section 1508.1(g)(2) of Council on Environmental Quality (CEQ) NEPA regulations, the agencies considered reasonably foreseeable actions that could occur as a result of the alternative in the indirect effects analysis for each environmental impact

¹ 49 U.S.C. § 40128(c)(2)(A)(i-ii)

² Federal Register, Vol. 70, No. 194, October 7, 2005, page 58778

³ FAA DOCUMENT NUMBER: AWP13-136A

category. The indirect effects analyses consider potential shifts in air tour operations resulting from implementation of each alternative and the potential for displacement of air tours outside of the ATMP planning area due to a reduction in the number of authorized flights per year compared to existing conditions.

Consistent with the Section 1502.21 of CEQ NEPA regulations, the agencies have disclosed that specific air tour routes, altitudes, and numbers of tours are not available to assess impacts that would occur from air tours that are displaced outside the ATMP planning area, and the resultant environmental effects that would occur. In addition, because specific air tour routes are not available, it is not possible to identify all the other potential noise sources or sources of visual effects that might contribute to the acoustic or visual conditions if operators were to fly just outside the ATMP planning area. It is difficult to predict whether any displaced air tours would result in operations on alternative routes that could have effects within or outside the ATMP planning area. This is because the airspace outside of the ATMP planning area is uncontrolled airspace, and operators fly under Visual Flight Rules (VFR). VFR is based on the principle of “see and avoid,” and does not require specific routes or altitudes, excepting weather minimums (*see* 14 Code of Federal Regulations (CFR) § 91.155).⁴ Therefore, the exactness of routes and altitudes for air tours outside of the ATMP planning area flying VFR could vary depending on client demand, weather, fuel load, and other costs. *See* 40 CFR § 1502.21 (c)(1). Agencies are not required to conduct new scientific or technical research to analyze impacts and may rely on existing information to assess impacts. *See* 43 CFR § 1502.21(c).

For the purposes of disclosing the potential indirect effects of each alternative, the agencies have considered operator websites, the current availability of air tours over other lands outside the ATMP planning area, and the proximity of the operator’s facilities to other airports or heliports. The analysis considers current and historical flight patterns, the prevalence of features outside the ATMP planning area that may attract air tours (such as known points of interest), and the potential for operators to fly along the perimeter of the ATMP planning area and/or above 5,000 ft. AGL to continue to observe features within the ATMP planning area. Indirect effects analyses consider the number of air tours proposed in each alternative and the likely displacement of air tours outside the ATMP planning area. The draft EA qualitatively discusses what potential shifts in air tour operations would mean for resources within or outside of the ATMP planning area to the extent that they are present.

3.3. Cumulative Effects

Cumulative effects are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Based on local knowledge from NPS staff, the agencies have identified other ongoing and reasonably foreseeable actions to consider within each environmental impact category.

The cumulative effects analysis qualitatively considers the effects of each alternative along with any known past, present, or future actions that would contribute to environmental effects to resources in the ATMP planning area. The draft EA presents this analysis in a comparative manner across all

⁴ <https://www.faa.gov/files/gslac/courses/content/25/185/vfr%20weather%20minimums.pdf>

alternatives and describes the context of the effect in terms of other environmental effects that are present or likely to occur within the ATMP planning area.

4.0 Analysis Methodology by Environmental Impact Category

The section presents the impact analysis methodologies used in development of the draft EA for each environmental impact category considered.

4.1. Noise and Noise-Compatible Land Use

The impact analysis for noise and noise-compatible land use discloses the noise generated from air tours under each alternative as modeled. The analysis also includes a comparison of the effects across alternatives. The methods used for the noise modeling are presented below and also described in the *Noise Technical Analysis*, Appendix F of the draft EA.

4.1.1. Noise Modeling

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment of a park, including intensity, duration, and spatial footprint of the noise. The ambient sound level data and air tour operational data are used as inputs into the FAA's Aviation Environmental Design Tool (AEDT) to compute the following metrics to be used for the noise technical analysis (Table 1).

Table 1. Primary metrics used for the noise technical analysis

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA ⁵ , over a 12-hour day. The selected 12-hour period is 7:00 AM to 7:00 PM to represent typical daytime commercial air tour operating hours.
Day-night average sound level, L_{dn} (or DNL)	The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty on noise events occurring between 10:00 PM and 7:00 AM local time. Note: Both $L_{Aeq, 12\text{ hr}}$ and DNL characterize: - Increases in both the loudness and duration of noise events - The number of noise events during specific time period (12 hours for $L_{Aeq, 12\text{ hr}}$ and 24-hours for DNL)

⁵ dBA (A-weighted decibels): Sound is measured on a logarithmic scale relative to the reference sound pressure for atmospheric sources, 20 μPa . The logarithmic scale is a useful way to express the wide range of sound pressures perceived by the human ear. Sound levels are reported in units of decibels (dB) (ANSI S1.1-1994, American National Standard Acoustical Terminology). A-weighting is applied to sound levels in order to account for the sensitivity of the human ear (ANSI S1.42-2001, Design Response of Weighting Networks for Acoustical Measurements). To approximate human hearing sensitivity, A-weighting discounts sounds below 1 kHz and above 6 kHz.

	If there are no nighttime events, then $L_{Aeq, 12hr}$ is arithmetically three dBA higher than DNL as the events are averaged over 24 hours instead of 12 hours. The FAA's (2015 Exhibit 4-1) indicators of significant impacts are for an action that would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.
Time Audible Natural Ambient	The total time (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. The natural ambient is the sound level exceeded 50 percent of the time L_{50}, determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Time audible does not indicate how loud the event is, only if it might be heard.
Time Above 35 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA). In quiet settings, outdoor sound levels exceeding this level degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).
Time Above 52 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA). At this background sound level, normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters would result in 95% sentence intelligibility (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974). This metric represents the level at which one may reasonably expect interference with park interpretive programs, activities that require communication from a distance and other general visitor communication.
Maximum sound level, L_{max}	The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations. L_{max} does not provide any context of frequency, duration, or timing of exposure.

4.1.2. Indirect Effects

The indirect effects analysis for noise and noise-compatible land use considers potential shifts in air tour operations resulting from implementation of an alternative within the ATMP planning area and the potential for displacement of air tours outside of the ATMP planning area due to a reduction in the number of authorized flights per year compared to existing conditions. FAA considers that noise levels are generally significant if aircraft activity under the alternative would increase noise by annual DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that would be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the existing conditions for the same timeframe. (FAA Order 1050.1F, Exhibit 4-1).

The analysis consists of two separate components:

- A noise analysis that, for the aircraft currently operating at the Park, assesses the activity threshold that would generate a noise exposure level at or above DNL 65 dB in a single location. Use of the DNL 65 dB threshold speaks to whether or not noise from air tours operating outside the ATMP planning area under the alternative would result in levels incompatible with noise-sensitive land use (i.e., DNL 65 dB), but the threshold of significance is a 1.5 dB or more increase at or above the resulting DNL 65 dB level as defined in FAA Order 1050.1F and 14 CFR Part 150.1.
 - The noise analysis considers the activity threshold two ways:
 - For the aircraft type with the loudest noise level, what is the activity level that would generate a noise level at or above DNL 65 dB?
 - For the aircraft types and fleet mix distribution within the 2017-2019 peak month average day (PMAD), what is the activity level that would generate a noise level at or above DNL 65 dB?
- An activity assessment that describes the potential number of aircraft operations that may occur at a given point outside the ATMP planning area over a 24-hour period due to a no air tour alternative or additional flights outside the ATMP planning area resulting from a decrease in annual operations.
 - The analysis assumed air tour operations would comply with applicable aviation safety regulations including minimum altitudes proscribed in the HI Common Procedures Manual.

The results of this analysis are described in the indirect effects analysis in the environmental consequences discussion of the draft EA for Noise and Noise-Compatible Land Use.

4.1.3. Cumulative Effects

The impacts analysis for cumulative effects to noise and noise-compatible land use discloses the likely changes to the ambient condition (not natural ambient, which is disclosed in the Affected Environment section of the draft EA) as modeled for each alternative. The qualitative discussion includes mention of whether the overall soundscape would become louder, quieter, or stay the same. The cumulative impact analysis includes the noise from air tours plus other noise sources. The section also provides discussion of differences between alternatives.

4.2. Air Quality and Climate Change

4.2.1. Air Quality Analysis

The EPA has established the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for six criteria air pollutants which can be harmful to human health and the environment.⁶ Primary standards protect public health, including sensitive populations such as children and the elderly, while secondary standards protect public welfare, including visibility impairment and damage to animals, vegetation, and buildings. The six criteria pollutants are:

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen dioxide (NO₂)
- Ozone (O₃)⁷
- Particulate matter: aerodynamic diameter $\leq 2.5 \mu\text{m}$ (PM_{2.5})⁸ and aerodynamic diameter $\leq 10 \mu\text{m}$ (PM₁₀)
- Sulfur dioxide (SO₂)

The EPA designates geographic areas⁹ based on their relation to the NAAQS by pollutant:

- Nonattainment Area: Areas of the country where air pollution levels persistently exceed one or more of the national ambient air quality standards.
- Attainment Area: any area that meets the standard for all criteria pollutants
- Maintenance Area: any area that was formerly in nonattainment status for one or more criteria pollutants, but currently meets the standard for all criteria pollutants

The General Conformity Rule (40 CFR Part 93) ensures that Federal actions do not cause or contribute to new violations of the NAAQS, worsen existing NAAQS violations, or delay attainment of the NAAQS. Federal agencies are required to work with state, tribal, and local governments in nonattainment or maintenance areas to ensure their actions conform to relevant air quality plans.¹⁰

4.2.2. Study Area and Data Sources

The study area for the air quality analysis corresponds with the ATMP planning area. The study area is compared with geographic information systems (GIS) data in EPA's Green Book¹¹ to confirm attainment status (attainment, nonattainment, or maintenance by pollutant). The FAA's AEDT is used to derive emission rates for aircraft used in air tours over the Park. The route lengths by aircraft type and number of annual operations by aircraft type are derived from operator reporting data.

⁶ NAAQS Table: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

⁷ Nitrogen oxides (NOX) and volatile organic compounds (VOC) are considered precursors to ground-level ozone and may be closely monitored in areas with ozone concerns.

⁸ Sulfur dioxide (SO₂), NOX, VOC, and ammonia are considered precursors to PM_{2.5}.

⁹ Current Nonattainment Counties for All Criteria Pollutants:

<https://www3.epa.gov/airquality/greenbook/ancl.html>

¹⁰ General Conformity: <https://www.epa.gov/general-conformity>

¹¹ Nonattainment Areas for Criteria Pollutants (Green Book): <https://www.epa.gov/green-book>

4.2.3. Methodology for Analyzing Air Quality Impacts

The impact analysis for air quality consists of five steps:

1. Calculate annual flight miles for each aircraft type operating over the ATMP planning area.

Annual flight miles over the ATMP planning area are calculated for each aircraft type by multiplying the total number of air tour operations by each route flown over the ATMP planning area.

2. Calculate emission rates for each aircraft used in air tours over the ATMP planning area.

The latest version of FAA's AEDT is used to develop emission rates (pounds of emissions per mile flown) for each aircraft. Emission rates for non-jet engines (i.e., those most likely conducting air tours) are based on emission factors in AEDT, which are primarily derived from the EPA's AP-42: Compilation of Emission Factors. Although the AP-42 emission factors represent the best available data, they have not been updated since the 1990s and most aircraft engines in use today are likely to be cleaner due to less-polluting fuels and improvements in engine emissions controls. Therefore, the calculated emission rates should be considered a conservative estimate of emission rates for aircraft used in air tours.

3. Calculate emissions from air tours over the ATMP planning area.

For each aircraft type operating over the ATMP planning area, emissions (tons per year) are calculated by multiplying the annual flight miles (step 1) by the aircraft-specific emission factor (step 2). The sum of emissions across all aircraft types represents the total emissions (by alternative) for the ATMP planning area.

4. If the ATMP planning area is located in EPA's nonattainment and/or maintenance areas, compare emissions with *de minimis* thresholds.

To highlight the potential impacts to ambient air quality for all criteria pollutants, the emissions results are compared with the EPA's General Conformity *de minimis* thresholds for the most stringent¹² nonattainment areas. EPA's General Conformity *de minimis* thresholds represent a surrogate for impacts to ambient air quality. If emissions estimates for all pollutants in the ATMP planning area are below *de minimis* thresholds, the proposed air tours are expected to result in negligible impacts to air quality.

5. If the ATMP planning area is located in EPA's attainment areas, disclose ATMP emissions to fulfill NEPA requirements.

Per the requirements of NEPA, disclosure of both baseline emissions and any change in emissions (comparison between the No Action Alternative and the action alternatives) shall be provided in the draft EA to understand the potential consequences to air quality. Since the ATMP planning area is located in an area of the United States that is in attainment for all regulated pollutants, there are no regulatory thresholds to compare that indicate the potential air quality impacts of said emissions. Rather, the reported emissions provide a basis of acknowledgement as to what the proposed project

¹² The most stringent non-attainment areas (i.e., lowest *de minimis* thresholds) are categorized as "extreme" for ozone (VOCs or NOX) and "serious" for particulate matter (PM₁₀, PM_{2.5}, NOX, VOC, and SO₂; ammonia is not considered for aircraft emissions as they relate to ATMPs).

may contribute to the attainment air shed. For the purposes of ATMPs, only emissions changes from aircraft operations for each alternative are considered.

If adverse effects on air quality are predicted, the final step of the analysis is to determine whether:

- there are any practicable mitigation measures or alternatives that would avoid or reduce impacts to air quality; and
- a substantial need for action exists, and if other alternatives with less adverse impacts on air quality will still satisfy the purpose and need without resulting in exorbitant costs.

4.2.4. Climate Change Analysis

In February 2021, the CEQ rescinded the 2019 Draft NEPA Guidance on Consideration of Greenhouse Gas Emissions and is reviewing, for revision and update, the 2016 Final Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change. CEQ directs agencies to consider: (1) the potential effects of a proposed action on climate change as indicated by assessing greenhouse gas (GHG) emissions (e.g., to include, where applicable, carbon sequestration); and (2) the effects of climate change on a proposed action and its environmental impacts. Federal agencies are advised to use projected GHG emissions as a proxy for assessing an action's impact on climate change. The difference in GHG emissions between alternatives, as well as the total GHG emissions of the No Action Alternative, should be provided as part of the NEPA analysis. The 2016 CEQ guidance does not establish any particular quantity of GHG emissions as significant.

4.2.5. Study Area and Data Sources

The study area for GHG emissions reflects the ATMP planning area. FAA's AEDT is used to derive emission rates for aircraft used in air tours over the ATMP planning area. The route lengths by aircraft type and number of annual operations by aircraft type are derived from operator reporting data.

4.2.6. Methodology for Analyzing Greenhouse Gas Impacts

The GHG analysis includes the following four steps:

1. Calculate annual fuel burn for each aircraft type operating over the ATMP planning area.

Annual fuel burn (for use with fuel burn-based emission factors in step 2) are calculated from the annual flight miles using conversion factors given in FAA's AEDT. Annual flight miles over the ATMP planning area are calculated for each aircraft type by multiplying the total number of air tour operations by each route flown within the ATMP planning area.

2. Calculate GHG emission factors for each aircraft used in air tours in the ATMP planning area.

The latest version of AEDT is used to develop a CO₂ equivalents (CO₂e) emission factor in metric tons of emissions per gallon of fuel (MT CO₂/gal) for each aircraft. CO₂e emission factors in AEDT are calculated based on the quantity of aircraft fuel burned. Since the proposed action involves only aircraft operations, MT CO₂e will be assumed to be the same as the aircraft MT CO₂.¹³

3. Calculate GHG emissions from air tours over the ATMP planning area.

¹³ FAA 1050.1F Desk Reference. February 2020. Section 3.3 Environmental Consequences – Climate.

For each aircraft type operating over the ATMP planning area, the CO₂e emissions (MT per year) are calculated by multiplying the annual fuel burn (step 1) by the aircraft-specific emission factor (step 2). The sum of emissions across all aircraft types represents the total emissions (by alternative) for the ATMP planning area.

GHG emission inventory results are not compared to the NAAQS nor any other significant criteria. The results are provided for informational purposes as a means of disclosing the project's potential effects on GHGs and climate change.

If an increase in GHG emissions is predicted, the final step of the analysis involves considering whether there are areas within the scope of the project where such emissions could be reduced through mitigation measures such as changes to more fuel-efficient aircraft, use of renewable fuels, and operational changes.

4.3. Biological Resources

The study area for biological resources includes the ATMP planning area. To the extent that habitat and species occurrences correlate, impacts to biological resources are expected to be similar within the ATMP planning area. Therefore, if habitat exists for a species but occurrence is unknown, the assumption is that the species could be present and has been analyzed accordingly.

The agencies have identified federally listed species, special status species, and any critical habitats within the Affected Environment discussion of the draft EA. For any species for which habitat does not encompass the entire ATMP planning area, habitat areas for these species are identified in order to connect data on effects of air tours, such as noise contours, to potential effects on species that utilize those areas. Based on the results of this review, the Park's natural resource managers and biologists have confirmed species within the ATMP planning area that have the potential to be affected by commercial air tours based on their knowledge of wildlife responses to commercial air tours.

For special status species and/or critical habitats which have the potential to be affected by commercial air tours, the agencies have performed a literature review for species-specific management guidelines such as recommended noise limits, time of year restrictions, aircraft standoff distances, or other mitigation measures that could be feasibly addressed by the ATMP parameters. The agencies have also sought technical assistance from the U.S. Fish and Wildlife Service for species-specific management guidelines and recommendations, the results of which have been integrated into the draft EA.

The draft EA includes a qualitative analysis of the effects to biological resources that could result from each alternative. The analysis discloses how ATMP operating parameters and the resultant resource conditions would change by comparing existing conditions to the parameters proposed for each alternative. For example, the draft EA identifies areas where noise levels would change, if routes had been shifted closer or further from sensitive habitat attributes, or if altitudes would increase or decrease as compared to existing conditions, and qualitatively discloses how that could affect biological resources. The analysis also discloses the effects of the use itself by analyzing the impacts of each alternative in the context of any documented management guidelines (as available). Based on this analysis, the agencies have also proposed an effect determination and will consult with the U.S. Fish and Wildlife Service and National Marine Fisheries Service in accordance with Section 7 of the Endangered Species Act.

4.4. Cultural Resources

The analysis methodology for cultural resources (inclusive of Historical, Architectural, Archeological and Cultural Resources) consists of evaluating the potential impacts of each alternative under consideration on cultural resources identified within the NEPA study area. Section 106 of the National Historic Preservation Act (NHPA Section 106) as set forth in 36 CFR Part 800 provides the framework for gathering the information needed to assess impacts on cultural resources under NEPA, per FAA's 1050.1F Desk Reference. The NEPA study area for cultural resources corresponds with the Area of Potential Effects (APE) identified as part of the Section 106 process and encompasses the potential effects of all alternatives under consideration. The APE may be revised and refined based on the preferred alternative or the consultation process. Cultural Resources within the APE are identified in the Affected Environment of the draft EA.

Section 106 considers effects to properties (districts, sites, buildings, structures, or objects) that are listed in or eligible for listing in the National Register of Historic Places (National Register). The Section 106 process for the Park includes prehistoric or historic districts, sites, buildings, structures, and/or objects, as well as traditional cultural properties (TCPs) (inclusive of ethnographic resources and sacred sites) and cultural landscapes that have been previously documented in the APE or identified through consultation. NPS Management policies define five types of cultural resources for consideration – archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections. Because of the nature of the alternatives (i.e., no ground disturbance or physical incursion), the cultural resource identification focuses on resources that could be affected visually or by noise from aircraft. The focus of cultural resources identification is on those resources for which feeling and setting contribute to the properties' significance, including TCPs and other properties of cultural and religious significance to Native Hawaiians, as identified by Kūpuna groups and other consulting parties with relevant expertise. This analysis in the draft EA considers potential beneficial and adverse impacts to all cultural resources within the APE, including resources identified by the Park that may not fall under the Section 106 process, if present.

Park staff have provided information about cultural resources located within the Park boundaries and the consulting parties have identified TCPs and sacred sites within the APE. Additional records have been gathered from the Hawai'i Cultural Resource Information System (HICRIS) and through a records request of the Hawai'i State Historic Preservation Division (SHPD) to identify any additional cultural resources within the APE. Historic property identification includes previously documented properties with no formal National Register evaluation as well as those previously listed or determined eligible for listing in the National Register. No additional survey will be conducted; unevaluated or undetermined properties will be treated as eligible for the purposes of Section 106 consultation and NEPA evaluation. Using this information, a list of cultural resources located within the APE is generated and those with unrestricted location data are mapped (any individual TCPs, sites of cultural or religious significance or boundaries of archeological districts included in the study area maps depict only general buffered areas to protect the location of sensitive sites).

The agencies have reviewed the alternatives and determined if any of the cultural resources within the APE may be affected by each alternative and evaluated the magnitude of those impacts. The analysis includes a qualitative assessment of how the ATMP operating parameters for each alternative may affect resource conditions compared to current conditions. The agencies use the time above 35 dBA

metric and 12-hour equivalent sound level metric from the *Noise Technical Analysis* to quantitatively assess potential noise impacts to cultural resources from Alternative 3 as compared to the No Action Alternative. Noise data is used to identify where audible impacts may increase, decrease, or be introduced. Time above 52 was used where noise increases are identified and modeled noise points can be associated with cultural resources. Point data does not include areas outside of the ATMP planning area that may be within the APE. As appropriate, maximum sound level and time audible metrics are also utilized for additional context on increases in noise intensity and/or duration and evaluation of whether impacts are adverse or beneficial to cultural resources where a quiet or natural setting contributes to the significance. Alternative 2 was not modeled, so the same data is not available for Alternative 2.

The impacts analysis considers the context and significant features of the resources as well as the nature of the impacts that may result from the action, including the intensity and severity of the impact. Effects to cultural resources would occur if implementation of the alternative would alter the characteristics of the resource that make it eligible for listing in the National Register or otherwise culturally significant. Examples of effects that adversely impact cultural resources are noted in 36 CFR 800.5(a). An adverse effect finding under Section 106 does not automatically trigger a significant impact under NEPA. The analysis of impacts will incorporate any measures developed through the Section 106 process to avoid, minimize or mitigate adverse effects. The relative effects to cultural resources are also qualitatively compared across all alternatives. The NEPA documentation will report consultation conducted as relevant to the delineation of the APE and affected environment. The results of Section 106 consultation and the FAA's proposed finding of effect will also be included for the preferred alternative when available. Relevant documentation of the Section 106 process will be included in the appendix for reference.

4.5. Wilderness

An evaluation of impacts to Wilderness character includes a qualitative analysis of how each alternative would affect the Natural and Solitude or Primitive and Unconfined Recreation qualities of Wilderness character.

The results of the biological resources analysis are utilized to identify Wilderness areas that may experience potential impacts to the natural quality of Wilderness character.

To identify potential impacts to solitude within Wilderness areas, the time audible natural ambient metric from the noise technical analysis is utilized.

The analysis also considers the change in Wilderness character between current conditions and each alternative, as well as provides qualitative comparison across all alternatives.

4.6. Visitor Use and Experience and Other Recreational Opportunities

The impact analysis for visitor use and experience and other recreational opportunities is analyzed for Park visitors and air tour clients. The visitor analysis focuses effects on visitor points of interest and how visitors use those areas, interpretive programs, and Park management objectives related to visitor use and experience, as identified in the Affected Environment of the draft EA. The Affected Environment also identifies Park management zones and objectives that would apply to the management of

commercial air tours. The environmental impact analysis quantitatively analyzes how the ATMP operating parameters and the resultant resource conditions for visitor use and experience would change by comparing existing conditions to the parameters proposed in the alternative. The analysis also utilizes the results of the noise technical analysis to identify potential impacts to visitor use and experience from the alternatives, including interpretive programs. As described in the *Noise Technical Analysis*, the time above 52 dBA metric represents the level at which one may reasonably expect interference with Park interpretive programs. The locations of Park interpretive programs and the corresponding time above 52 dBA are noted in order to identify impacts to interpretive programs that could occur. The analysis also considers the different noise sensitivities of the different types of Park visitor and visitor experiences (e.g., backcountry vs. front country), and how each of the alternatives could affect visitor use at those sites. For areas of the Park where visitors would have an expectation to hear natural sounds, the analysis includes a reference to the results of the time audible, natural ambient metric. In addition to considering noise effects on the Park visitor experience, the analysis considers how visual effects could influence visitor use and experience (see method description for visual effects below). The relative effects to Park visitors are also qualitatively compared across all alternatives.

The impact analysis for other recreational opportunities applies to persons recreating outside the Park but within the ATMP planning area through the experience of air tours. Although they are not considered Park visitors, commercial air tours offer a recreational experience for those who wish to view the Park from a different vantage point. Impacts to the availability of this experience within the ATMP planning area are considered by qualitatively analyzing how the opportunity to see the Park from an air tour within the ATMP planning area would change as a result of each alternative by comparing existing conditions to the parameters proposed under each alternative. This analysis primarily considers how routes and the number of tours authorized by each alternative could affect the availability of this experience within the ATMP planning area for air tour clients.

4.7. Environmental Justice and Socioeconomics

The study area for the environmental justice (EJ) analysis includes the county or counties that are within or partially within the Park and ½-mile of its boundary. As stated in the 1050.1F Desk Reference, the combination of all study areas for the other relevant impact categories represents the potential impact area for EJ, because EJ impacts may be realized in conjunction with impacts to any other impact category. Refer to each environmental impact category's respective section in the draft EA for a description of the study area limits. The analysis incorporates data presented at the county level and from U.S. Census block groups that are within and adjacent to the ATMP planning area.

U.S. Census data is used to identify the percentage of the populations within the counties that are low-income (as identified by poverty status) and minority pursuant to U.S. Department of Transportation (DOT) Order 5610.2(a), otherwise known as "EJ populations." For the purposes of this EJ analysis, FAA uses the minority and low-income definitions provided in DOT Order 5610.2a. The average of the county income and minority population percentages is compared to block group level data on income and race and ethnicity within the study area to determine if the population is an EJ community of concern. A minority census block group considered as an EJ community is a census block group with a minority population percentage greater than the average minority population percentage of the study area. Any census block group with a minority population greater than the average of the study area is designated as a census block group of EJ concern. A low-income population census block group

considered as an EJ community is a census block group with a greater percentage of low-income population than the average percentage of low-income population in the study area. Each census block group with a low-income population greater than the study area average is designated a census block group of EJ concern. State and local data has also been evaluated to confirm accuracy of findings.

The EJ analysis considers the ATMP operating parameters (i.e., locations of the commercial air tour routes, altitudes, and frequencies) under each alternative as well as the results of the analyses for Noise and Noise-Compatible Land Use, Air Quality, and Visual Effects, as well as the corresponding environmental effects of each alternative. The analysis identifies if each alternative would cause disproportionately high and adverse effects on low-income or minority populations within the study area. The definitions for disproportionately high and adverse effects provided in DOT Order 5610.2(a) is used to conduct the analysis. The significance of the impacts to EJ populations is determined by identifying the context, intensity, and relation the impact has to other environmental impact categories. Specifically, for each environmental impact category, the analysis identifies if an EJ population would sustain more of an impact than any other population segment. In doing so, the impacts to environmental impact categories are considered, as well as if the impacts would affect the EJ population in a way that the agencies determine is unique or significant to that population.

The socioeconomic analysis considers the effects the alternatives may have on local business activity. This could include businesses within the ATMP planning area that could be affected by noise or other effects of the ATMP, such as ranching operations, and will also evaluate effects of the alternatives on the commercial air tour industry and related businesses. Specifically, the draft EA analyzes how commercial air tour operators may support economic development by generating income for other ancillary tourism industry businesses. The draft EA describes how the number of flights authorized by each alternative compares to the existing level of air tours reported by each operator. The analysis notes that the competitive bidding process may redistribute the number of flights and income between individual operators in the future.

Given the nature of the alternatives, the agencies do not anticipate impacts to the housing, race, age, or population conditions of the ATMP planning area; therefore, effects to these socioeconomic characteristics within the ATMP planning area have not been analyzed.

As they occur, the draft EA will document efforts that the agencies performed to incorporate EJ principles throughout the ATMP development process, including opportunities for engagement with EJ populations throughout the ATMP planning area.

4.8. Visual Effects

In accordance with FAA's 1050.1F Desk Reference, visual effects deal broadly with the text to which the alternatives would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or visual character of the existing environment. As air tours occur during daylight, the draft EA focuses on visual effects on visual resources and character and not light emissions. Visual effects on resources discussed in other sections of the draft EA are discussed in those sections and a cross-reference to the Visual Effects section is provided.

Visual resources may include structures or objects that identify landscape features that are visually important or have unique characteristics. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the alternatives. Visual character refers to the overall visual makeup of the existing environment where the alternatives are located.

The study area for visual effects includes the Park and ½ mile buffer up to 5,000 ft. above ground level (AGL), which corresponds with the ATMP planning area. The study area for visual effects also includes areas within the cultural resources APE that are outside the ATMP planning area. The impact analysis focuses on analyzing effects to Park viewsheds and notable visual resources, as identified in the Affected Environment, which notes any aesthetic value and unique aspects within the Park. The analysis analyzes how the ATMP operating parameters (e.g., number of tours, location of the routes, altitudes, hovering, loitering, and/or circling, and other ATMP elements that could affect Park viewsheds) for each alternative and the resultant Park viewshed resource conditions would change by comparing existing conditions to the parameters proposed in the alternative. The relative effects to Park viewsheds are also compared across all alternatives. Impacts to visual resources and visual character relate to a decrease in the aesthetic quality of the Park resulting from air tours. According to FAA's 1050.1F Desk Reference, significance of impacts is determined based on the degree the action would have to affect the visual character of the area, taking into consideration the importance, uniqueness, and aesthetic value; the degree to which the action contrasts with the visual resources or character; and the degree to which views are obstructed.

4.9. Coastal Resources

The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1466) provides for management of US coastal resources, including the Great Lakes, to help coastal states balance conservation and restoration of natural resources with community development to develop their economies and support ecosystems. The state of HI administers a CZM program and has established objectives and their supporting policies (HI Revised Statutes § 205A-2) to help the HI CZM Program evaluate the consistency of proposed federal actions. The entire state of HI is considered a coastal zone under the HI CZM program. Therefore, the study area for coastal resources reflects the ATMP planning area.

The affected environment for this environmental impact category identifies resources within the study area that are relevant to the evaluation of the proposed action's consistency with the enforceable policies of the HI CZM program.

According to FAA's 1050.1F Desk Reference, the significance of impacts considers the degree to which the action would be inconsistent with the relevant state coastal zone management plan(s); impact a coastal barrier resources system unit (and the degree to which the resource would be impacted); pose an impact to coral reef ecosystems (and the degree to which the ecosystem would be affected); cause an unacceptable risk to human safety or property; or cause adverse impacts to the coastal environment that cannot be satisfactorily mitigated. As land acquisition, construction, or other ground disturbing activities would not occur because of the proposed action, the effects analysis for coastal resources focuses on an evaluation of the preferred alternative's consistency with the enforceable policies of the HI CZM Program, including their objectives and supporting policies (Hawai'i Revised Statutes § 205A-2). This analysis is provided in Appendix K, *CZMA Compliance*, and the conclusions summarized in the

Environmental Consequences section of the draft EA. The agencies will provide the consistency determination as well as a copy of the draft EA to the HI CZM Program Office concurrent with the release of the draft EA for public review and request their concurrence with the agencies' determination.

4.10. Department of Transportation Act Section 4(f) Resources

Section 4(f) is applicable to historic sites and publicly owned parks, recreation areas, and wildlife and waterfowl refuges of national, state, or local significance that may be impacted by transportation programs or projects carried out by the U.S. DOT and its operating administrations, including the FAA. The study area for considering Section 4(f) resources in the draft EA corresponds with the APE used for compliance with Section 106 of the NHPA.

Historic properties are identified as part of the Section 106 consultation process (see section above: Cultural Resources). Parks, recreational areas, and wildlife and waterfowl refuges are identified using public datasets from federal, state, and local sources. The study area for Section 4(f) analysis is the same as the APE identified as part of Section 106. Each resource that intersects the study area is included in the Section 4(f) analysis. A list of these properties as well as a short description, the approximate size, and Official(s) with Jurisdiction has been compiled, and the properties was mapped.

As land acquisition, construction, or other ground disturbance activities would not occur under the ATMP, the alternatives would not have the potential to cause a permanent use of a Section 4(f) resource. Therefore, analysis of potential impacts to Section 4(f) resources is limited to identifying impacts that could result in a constructive use. Evaluating potential impacts to Section 4(f) resources focuses on changes in aircraft noise exposure and visual effects resulting from implementing the alternative. A constructive use of a Section 4(f) resource would occur if there was a substantial impairment of the resource to the degree that the activities, features, or attributes of the site that contribute to its significance or enjoyment are substantially diminished. This could occur as a result of both visual and noise impacts. The FAA has evaluated the Section 4(f) resources for potential noise (including vibration) and visual impacts for the preferred alternative to determine if there will be substantial impairment to Section 4(f) resources due to the preferred alternative that would result in a constructive use.

The methodology for the noise impacts analysis will reflect that described for the Noise and Noise-Compatible Land Use resource category (see above). The methodology for the visual impacts analysis reflects that described under the Visual Effects resource category (see above). As noted, both resource analyses describe the effects of the alternative itself as well as the relative change from the environmental baseline.

Noise impacts on Section 4(f) resources are analyzed using location point data provided in the *Noise Technical Analysis*. Location points are used to model noise across multiple metrics (e.g., 12-hour Equivalent Sound Level, Time Above 52 dBA) at specific points of interest in the study area, including forests, geological features, and historic sites, and often correspond to Section 4(f) resources. For Section 4(f) resources without corresponding location point data, noise impacts are assessed using the closest location point(s). The range of time (in minutes) above 52 dB is reported for each Section 4(f) resource.

APPENDIX F

Noise Technical Analysis

Noise Technical Analysis: Hawai'i Volcanoes National Park

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1. Introduction

The purpose of this report is to document the noise results used in the alternatives impact analysis discussed in the Air Tour Management Plan (ATMP) Draft Environmental Assessment (EA) for Hawai'i Volcanoes National Park (Park) and to document the inputs and assumptions used in the computer modeling of air tour aircraft activity. This information will provide the reader with the technical basis used to assess potential impacts to the following resource categories – Noise and Noise-Compatible Land Use; Biological Resources; Department of Transportation Act Section 4(f) Resources; Cultural Resources; Environmental Justice and Socioeconomics; Visitor Use and Experience; and Wilderness.

Humans perceive sound as an auditory sensation created by pressure variations that move through a medium such as water or air. Sound is measured in terms of amplitude and frequency. Amplitude, which refers to the sound pressure level or intensity, is the relative strength of sound waves which humans perceive as loudness or volume and is measured in decibels (dB). Decibels work on a logarithmic scale, such that an increase of 10 dB causes a doubling of perceived loudness and represents a ten-fold increase in sound level. The A-weighted decibel scale (dBA) is commonly used to describe sound levels because it reflects the frequency range to which the human ear is most sensitive.¹ Thus 20 dBA would be perceived as twice as loud as 10 dBA, 30 dBA would be perceived as 4 times louder than 10 dBA, 40 dBA would be perceived as 8 times louder than 10 dBA, etc. The dBA scale from zero to 110 covers most of the range of everyday sounds, as shown in Figure 1. Note that sound levels in protected natural areas, such as the Park, are often lower than those of the 'common' outdoor areas shown, in the range of 20-30 dBA.

¹ dBA (A-weighted decibels): Sound is measured on a logarithmic scale relative to the reference sound pressure for atmospheric sources, 20 μ Pa. Sound levels are reported in units of decibels (dB) (ANSI S1.1-1994, American National Standard Acoustical Terminology). A-weighting is applied to sound levels to account for the sensitivity of the human ear (ANSI S1.42-2001, Design Response of Weighting Networks for Acoustical Measurements). To approximate human hearing sensitivity, A-weighting discounts sounds below 1 kHz and above 6 kHz.

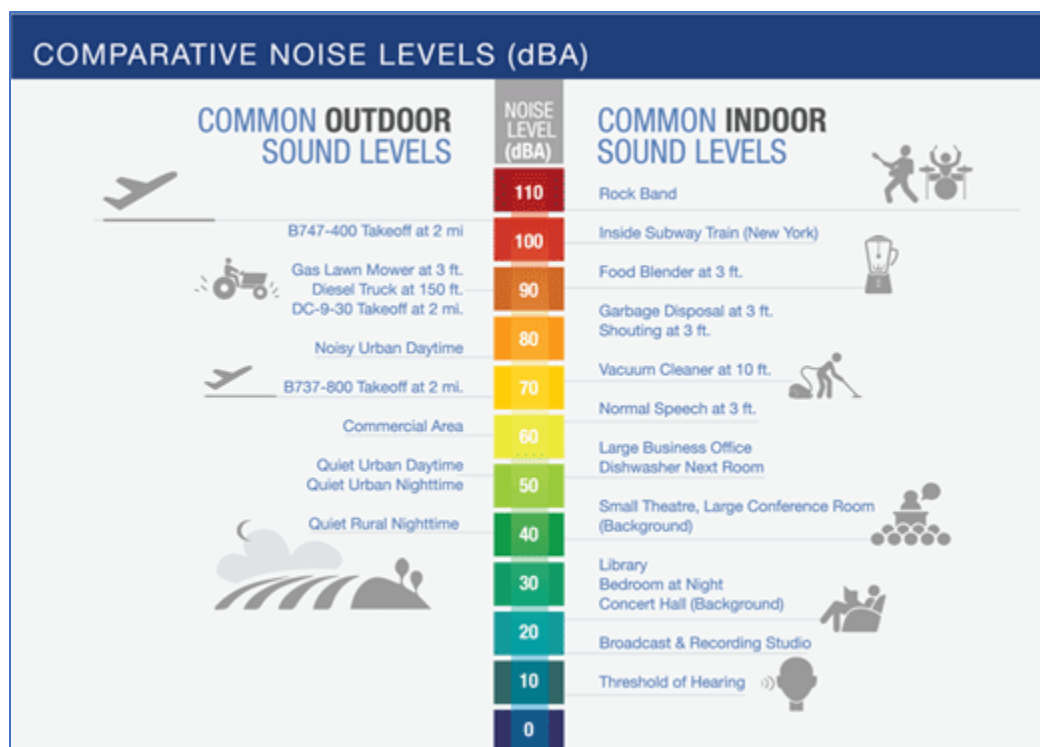


Figure 1. Comparative Sound Levels²

Section 2 discusses the noise metrics. Section 3 discusses the affected environment and ambient soundscape. Section 4 discusses the noise model method and inputs while Section 5 discusses outputs. Sections 6 and 7 provide detailed noise results for each alternative. Section 8 discusses indirect effects.

2. Modeled Noise Metrics

There are numerous ways to measure the potential impacts of noise from commercial air tours on the acoustic environment of a park, including intensity, duration, and spatial footprint of the noise. The affected environment and impact analysis disclose noise metrics consistent with both Federal Aviation Administration (FAA) and National Park Service (NPS) noise guidance. The FAA noise evaluation is based on guidance under FAA Order 1050.1F and uses the yearly Day Night Average Sound Level (DNL) metric; the cumulative noise energy exposure from aircraft over 24 hours. The NPS considers various different metrics to analyze impacts to park resources and values from noise, including equivalent sound level, time audible (the amount of time you can hear air tour aircraft noise), the amount of time that the noise from a commercial air tour operation would be above specific sound levels that relate to functional effects of noise and park management objectives (e.g., 35 and 52 dBA), and maximum sound level. These metrics are discussed further in Table 1.

² Source https://www.faa.gov/regulations_policies/policy_guidance/noise/basics/

Table 1. Primary metrics used for the noise analysis

Metric	Relevance and citation
Equivalent sound level, $L_{Aeq, 12\text{ hr}}$	The logarithmic average of commercial air tour sound levels, in dBA, over a 12-hour day. The selected 12-hour period is 7:00 AM to 7:00 PM to represent typical daytime commercial air tour operating hours.
Day-night average sound level, L_{dn} (or DNL)	The logarithmic average of sound levels, in dBA, over a 24-hour day, DNL takes into account the increased sensitivity to noise at night by including a 10 dB penalty between 10:00 PM and 7:00 AM local time. Note: Both $L_{Aeq, 12\text{ hr}}$ and DNL characterize: - Increases in both the loudness and duration of noise events - The number of noise events during specific time period (12 hours for $L_{Aeq, 12\text{ hr}}$ and 24-hours for DNL) If there are no nighttime events, then $L_{Aeq, 12\text{ hr}}$ is arithmetically three dBA higher than DNL.
Time Audible Natural Ambient L_{50}	The total time (minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions. The median natural ambient is the sound level exceeded 50 percent of the time (L_{50}), determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds. Time audible does not indicate how loud the event is, only if it might be heard.
Time Above 35 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 35 dBA) In quiet settings, outdoor sound levels exceeding 35 dBA degrade experience in outdoor performance venues (American National Standards Institute (ANSI), 2007). This level is also shown to cause blood pressure increases in sleeping humans (Haralabidis et al., 2008); as well as exceeding recommended maximum background noise level inside classrooms (ANSI S12.60/Part 1-2010).
Time Above 52 dBA	The amount of time (in minutes) that aircraft sound levels are above a given threshold (i.e., 52 dBA) This metric represents the level at which one may reasonably expect interference with Park interpretive programs. At this background sound level, normal voice communication at five meters (two people five meters apart), or a raised voice to an audience at ten meters would result in 95% sentence intelligibility (United States Environmental Protection Agency, Office of Noise Abatement and Control, 1974).

Metric	Relevance and citation
Maximum sound level, L_{max}	The loudest sound level, in dBA, generated by the loudest event; it is event-based and is independent of the number of operations and ambient conditions. L_{max} does not provide any context of frequency, duration, or timing of exposure.

3. Affected Environment

NPS defines acoustic resources as physical sound sources, including both natural sounds (wind, water, wildlife, vegetation) and cultural and historic sounds (battle reenactments, tribal ceremonies, quiet reverence). The acoustic environment is the combination of all the acoustic resources within a given area. This includes natural sounds and cultural sounds, as well as non-natural human-caused sounds. Soundscape can be defined as the human perception of those physical sound resources.

Natural sounds are also part of the biological or other physical resource components of the Park. Some common naturally occurring sounds in the Park are surf action at the shoreline, winds spilling across volcanic flows or rustling leaves, native Hawaiian birds calling and singing, rain falling on tree canopies, and crickets vocalizing in the rain forest. Some of the Park's most notable sounds include those related to volcanic activity such as the hissing and crackling of new lava flows, clinking of glass-like surfaces of active lava flows, booming methane explosions or, more rarely, the roar of fountaining events.

One of the natural resources of the Park is the natural soundscape, also referred to as the natural ambient or "natural quiet." The natural ambient includes all of the naturally occurring sounds of the Park, as well as the quiet associated with still nights and certain seasons. An important part of the mission of the NPS is to preserve or restore the natural soundscapes associated with units of the national park system (NPS Management Policies, 4.9 Soundscape Management).

The term existing ambient refers to the sound level of all sounds in a given area, and includes all natural sounds as well as all mechanical, electrical, and other human-caused sounds. Human-generated noise sources may include wheeled vehicles on roads, such as passenger vehicles, tour buses, and cyclists, and aircraft overflights consisting of high-altitude commercial jet aircraft, occasional NPS flights for research or other Park purposes, commercial air tour operations, and private general aviation aircraft. Human-generated noise within the Park is typically concentrated in areas of high visitor use.

To characterize the natural and existing ambient, detailed sound level measurements were conducted at 22 locations across the Park from 2002-2003, resulting in the identification of ten acoustic zones representing regions with similar acoustic conditions (Table 2) (Lee et al., 2016). These acoustic sampling zones were chosen to be representative of the natural ecological zones or broad ecosystems of the Park and ATMP planning area.³ Median daytime natural ambient sound levels (L_{50}) ranged from 20

³ An ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL. This is referred to as the ATMP planning area.

dBA in backcountry areas to 54 dBA along the shoreline (Lee et al., 2016); median daytime existing ambient sound levels for these areas exhibit similar variability, ranging from 20 dBA to 54 dBA. The median or L_{50} sound level (in decibels) is the sound level exceeded 50 percent of the day.

Additional sound level data were collected at four locations in the Kahuku Unit in 2013 to assist with air tour management planning and to determine ambient sound levels (Beeco and Pipkin, 2018). The locations were chosen to best assess noise impacts to sites at varying elevations and habitats within the Kahuku Unit. It was found that the Kahuku Unit is dominated by natural sounds impacted very little by anthropogenic noise. All four sites had nearly untouched natural soundscapes with no more than 0.3 dBA added to the ambient sound level from anthropogenic sound sources. Locations at higher elevations were found to be particularly quiet. Results indicated that the natural ambient sound levels (L_{nat})⁴ during the monitoring period ranged from 16.8 to 27.7 dBA during the daytime. These results were used to assign ambient data for computer modeling to this area.

Table 2. Ambient sound levels measured in Hawai'i Volcanoes National Park in 2002-2003

Acoustic Sampling Area	Daytime Natural Ambient, L_{50} (dBA)	Daytime Existing Ambient, L_{50} (dBA)	Description
Zone 1 (Shoreline)	47-54	47-54	Highest natural ambient sound levels in the Park, similar to light traffic noise. Natural sounds in this zone are surf, strong winds, and birds. Human sounds include noise from vehicles and, when applicable, visitors at the lava viewing area at the end of the road and commercial air tour aircraft on the coastline.
Zone 2 (Coastal Lowlands)	28-33	28-33	Gently sloped lands immediately above the shoreline zone, this zone has low natural ambient sound levels. Sounds originate from strong trade winds blowing through the grasses that dominate the vegetation of much of this zone and insects. Human sounds include aircraft activity and vehicle noise.
Zone 3 (Sparsely Vegetated Region of Coastal Lowlands)	20-33	20-37	This zone is dominated by low scattered native 'ōhi'a scrub or nearly barren, recent lava flows. Wind blowing through low trees and shrubs and over volcanic landforms is the dominant natural sound. Human sounds include human activity, aircraft activity and vehicle sounds.
Zone 4 (Montane Rainforest)	34	33	Sources of natural sounds in this zone include chirps of native crickets, bird vocalization, and frequent rains falling on the continuous canopy of

⁴ It should be noted that different techniques have been used to calculate natural ambient, resulting in two different descriptor notations. Natural ambient L_{50} refers to the natural ambient computation process described in Lee 2016, while L_{nat} refers to the natural ambient process described in Lynch 2012 and Job 2018. Although different, the processes are highly correlated and yield similar results; differences are generally less than 1 dB (Rapoza, 2008).

Acoustic Sampling Area	Daytime Natural Ambient, L ₅₀ (dBA)	Daytime Existing Ambient, L ₅₀ (dBA)	Description
			vegetation. Human sounds include aircraft activity and vehicle sounds.
Zone 5 (Mauna Loa montane/subalpine)	22-35	23-35	Broad elevational area from 4,000-8,000 feet (ft.) on the slopes of Mauna Loa, dominated by a wide range of vegetation types including forest, small grasslands, shrublands, and lava flows. Human sounds include aircraft activity and vehicle sounds.
Zone 6 (Arid Dry 'Ōhi'a Woodlands)	28-33	30-33	Located on the leeward slopes of Kīlauea above the coastal lowlands. Dominant natural sounds in this region include wind blowing through tree canopies and insects. Human sounds are from aircraft activity.
Zone 7 (Alpine Areas)	No data	No data	This zone was not studied during the initial study period in the early 2000s due to inclement weather, so data from other zones (Zone 3) was applied to this zone for noise modeling based on NPS guidance.
Zone 8 (Natural Sounds of the Young Rainforest)	30-43	31-43	Located along the wet, eastern edge of Kīlauea Caldera and the east rift zone of Kīlauea. Natural sounds include rain falling on the canopy, insects, and vocalizations from high populations of native forest birds. Human sounds include human activity, vehicles sounds (from Highway 11) and aircraft activity.
Zone 9 (New Lava Flows)	25-29	29-33	Located adjacent to the young rain forest on the east rift of Kīlauea. Natural sounds include lava flows, bird vocalizations, insects, wind, and rocks falling on the slopes of cinder cones or walls of pit craters. Noise attributed to aircraft activity is the dominant human sound, along with vehicle sounds.
Zone 10 (Kahuku Pastures)	No data	No data	Natural sounds at this site include wind, birds, insects. Human sounds were heard less than 1% of the time and include aircraft and vehicles. This zone was not a part of the Park when the sample study was being conducted, so data from other zones (Zone 3) was applied to this zone for noise modeling based on NPS guidance.

Ambient Map Data

From the detailed data collected in 2002-2003, an ambient “map” of the natural soundscape⁵ of the ATMP planning area was developed to be used in computer modeling (Figure 2). Lee et al., 2016

⁵ Natural Ambient/Soundscape (L₅₀): The sound level exceeded 50 percent of the time determined from the natural sound conditions found in a study area, including all sounds of nature (i.e., wind, streams, wildlife, etc.), and excluding all human and mechanical sounds.

provides further technical detail on the acoustical monitoring and development of the ambient map used in the computer modeling.

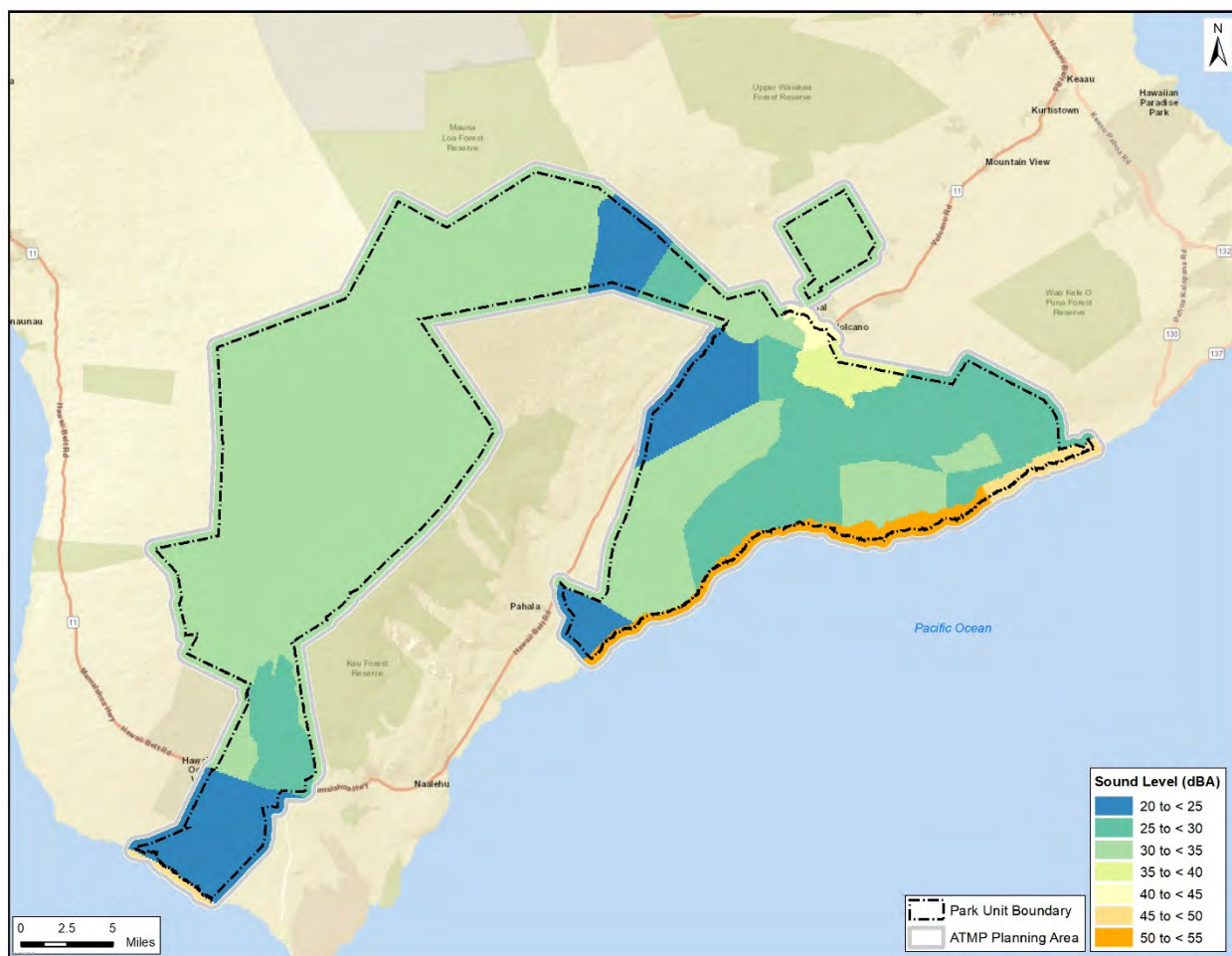
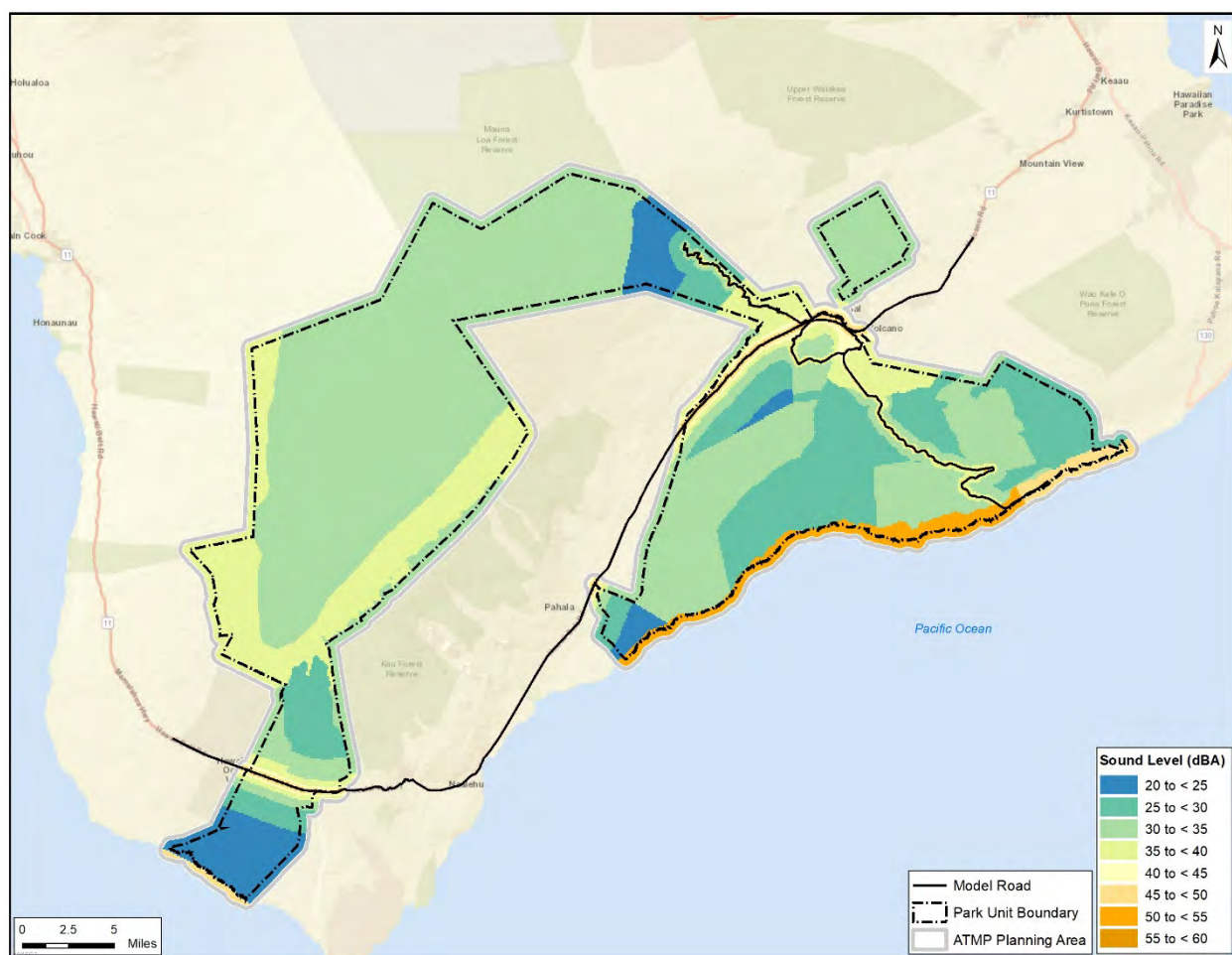


Figure 2. Ambient map – Natural Ambient L₅₀.

The contribution of aircraft noise during the sound level measurements provides a snapshot in time and is not necessarily a representative characterization of the existing ambient under current conditions (as described in the No Action Alternative and in Section 3). The existing ambient under current conditions was determined by adding the noise exposure due to existing air tours (Figure 8), modeled using the FAA Aviation Environmental Design Tool (AEDT) version 3e (see Section 4), to the Existing Ambient without Air Tours shown in Figure 3. The Existing Ambient without Air Tours is defined as the composite, all-inclusive sound associated with a given environment, excluding the sound source of interest, in this case, commercial air tour aircraft. It does include all other human-caused sound sources that were audible at the measurement site; hikers, visitor centers, commercial jets, general aviation aircraft, military aircraft, and administrative aircraft operations. The result of this process is the Cumulative Existing Ambient (Figure 4).



⁶ Because it is not feasible to carry out field data collection efforts in all areas of a park, the effect of localized sound sources, such as from roadways, were modeled using the Federal Highway Administration's Traffic Noise Model[®] (TNM). Details of modeled roadway sound sources can be found in Lee et al., 2016.

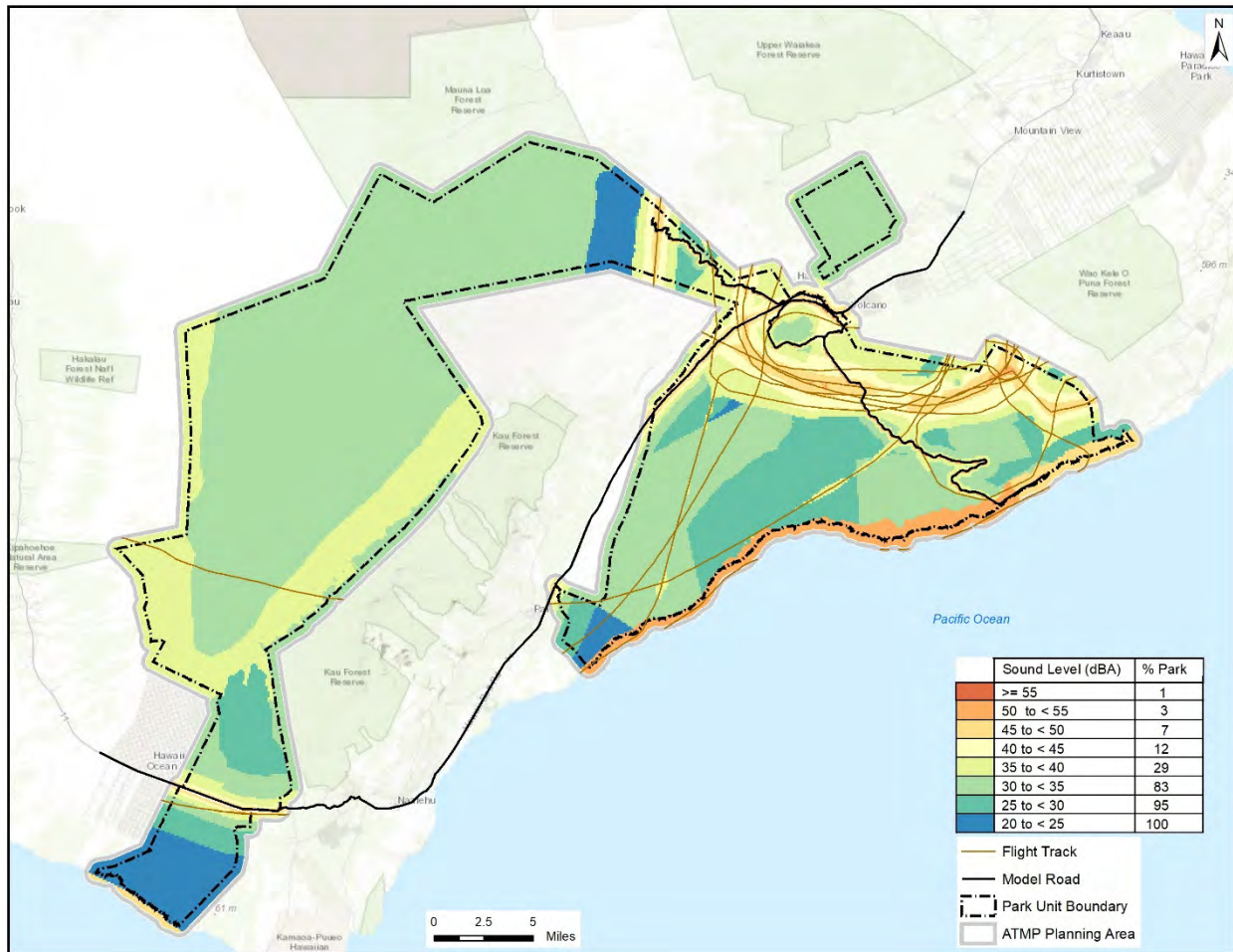


Figure 4. Cumulative Existing Ambient for Current Conditions

4. Noise Model Method

The FAA's AEDT, Version 3e (Lee et al., 2022) is the FAA-approved computer program for modeling noise under Appendix A of FAA's Part 150 Airport Noise Compatibility Planning (14 Code of Federal Regulations (CFR) sec. A150.103(a)). Requirements for aircraft noise modeling are defined in FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and in Federal Aviation Regulations (FAR) 14 CFR Part 150, Airport Noise Compatibility Planning.

The noise model requires detailed information regarding the aircraft source, operational, and flight route information, as well as other information⁷ to compute various noise metrics that can be used to assess the potential impacts of noise from commercial air tours on the acoustic environment of a park.

⁷ The noise model accounts for a number of effects over the propagation path between the aircraft source and receptor. Attenuation due to line-of-sight blockage from terrain features is computed utilizing terrain data obtained from U.S. Geological Survey along with algorithms documented in SAE Aerospace Information Report (AIR) 6501. Atmospheric absorption is based on the 2012-2021 average temperature of 78 degrees Fahrenheit and 67% relative humidity and computed according to SAE-ARP-5534.

Aircraft Data

The aircraft types and flight routes used for modeling the No Action Alternative are shown in Table 3 and Figure 5; the aircraft types and flight routes specified for Alternative 3 are shown in Table 4, Table 5, and Figure 6. The Alternative 3 routes were modeled as a single continuous route.

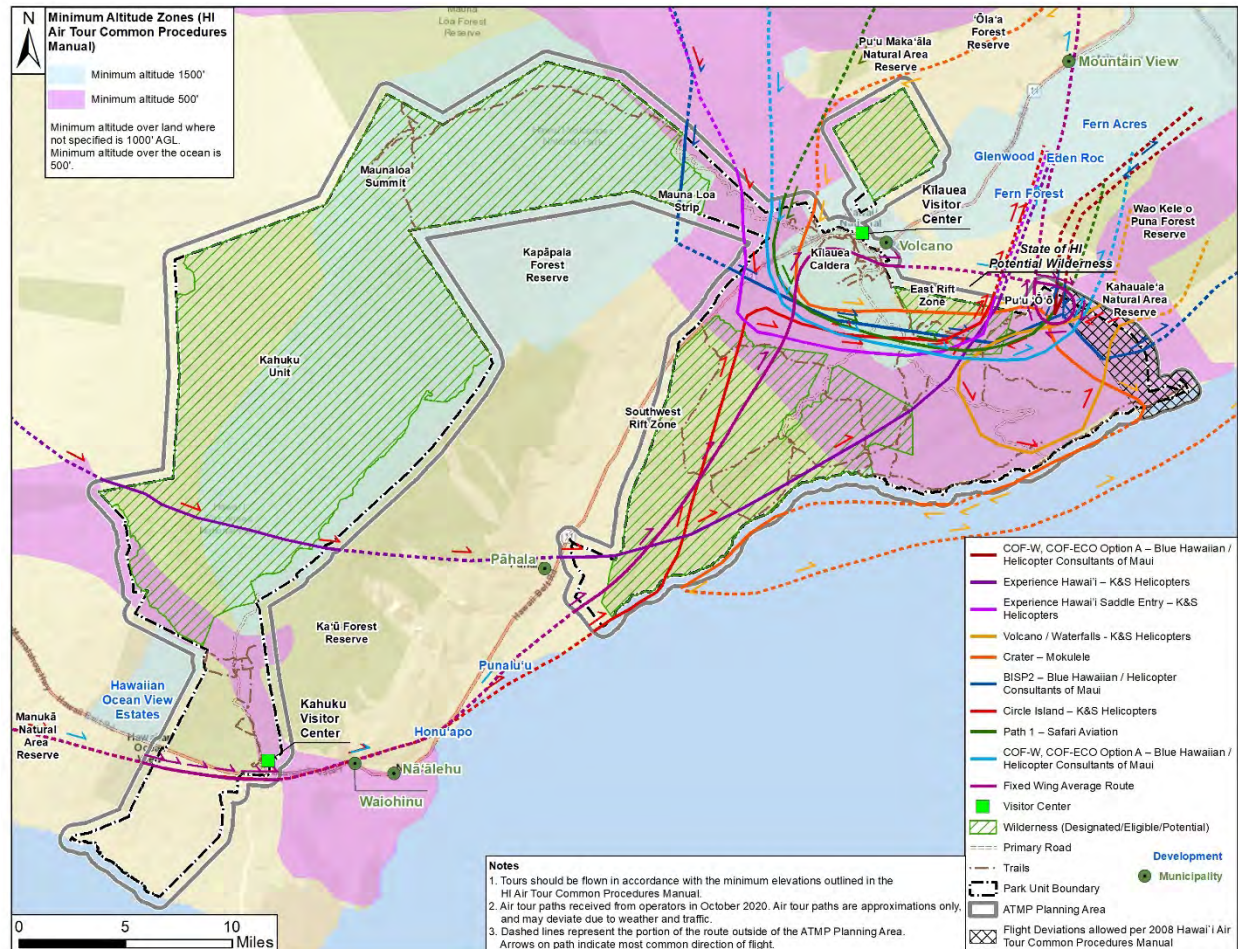


Figure 5. Air Tour Routes for modeling the No Action Alternative

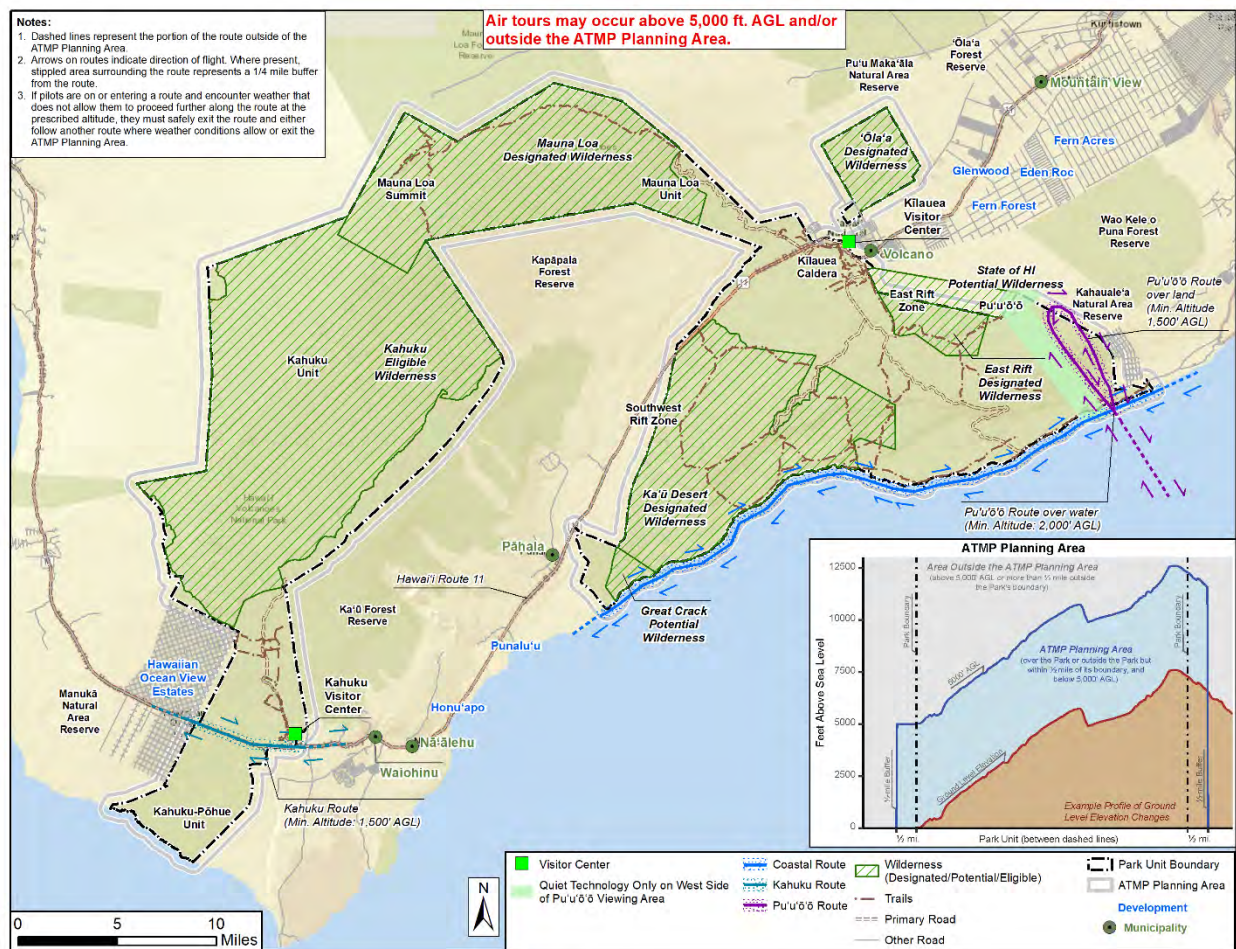


Figure 6. Air Tour Routes for Alternative 3

A unique noise modeling profile was developed for each aircraft and route combination based on typical aircraft climb rates, descent rates, power settings and speeds during the different phases of flight (cruise, climb, and descent).

The analysis for the No Action Alternative is based on a peak month, average day⁸ (PMAD) of commercial air tour activity. For the three-year average of commercial air tour activity from 2017-2019, the PMAD was identified in terms of number of operations, and then further assessed for the type of aircraft and route flown to determine if it is a reasonable representation of the commercial air tour activity over the ATMP planning area. For the ATMP planning area, the PMAD was identified as summarized in Table 3. The process of averaging and apportioning a peak month of flights to daily flights can result in a fractional number. Altitudes were modeled according to the minimum altitudes

⁸ As required by FAA policy, the FAA typically represents yearly conditions as the Average Annual Day (AAD). However, it was determined that a peak month, average day (PMAD) representation of the operations would more adequately allow for disclosure of any potential impacts. PMAD has therefore been used as a conservative representation of assessment of AAD conditions.

identified in the 2008 FAA Hawai'i Air Tour Common Procedures Manual (Hawai'i Common Procedures Manual)⁹.

Table 3. Aircraft and Number of Operations for the No Action Alternative (2017-2019 PMAD)

Aircraft	Route	Peak month average day Number of Flights
Aerospatiale SA-350D	BISP2 – Blue Hawaiian	1.0
Aerospatiale SA-350D	Path 1 – Safari Aviation	4.7
Aerospatiale SA-350D	COFW/COFECO/Option A – Blue Hawaiian	5.3
Eurocopter EC-130	BISP2 – Blue Hawaiian	12.0
Eurocopter EC-130	102V_A – Sunshine Helis	2.8
Eurocopter EC-130	COFW/COFECO/Option A – Blue Hawaiian	17.1
Cessna 208	Fixed-Wing Average – Big Island Air	0.2
Bell 407	Circle Island - K&S Helicopters	1.1
Bell 407	Experience Hawaii – K&S Helicopters	1.1
Bell 407	Experience Hawaii with Saddle Entry – K&S Helicopters	1.1
Bell 407	Volcano/Waterfalls – K&S Helicopters	1.1
Cessna 208	Crater – Mokulele	1.0
Total		48.5

Alternative 3 contains provisions for both a standard day and a quiet technology-only day. The aircraft types and number of operations used to model this alternative are summarized in Table 4 and Table 5.

Table 4. Aircraft and Number of Operations for Alternative 3, Standard Day

Aircraft	Route	Daily Number of Flights
Aerospatiale SA-350D	Proposed Route	1
Eurocopter EC-130	Proposed Route	3
Cessna 208	Proposed Route	1
Total		5

Table 5. Aircraft and Number of Operations for Alternative 3, Quiet Technology-only Day

Aircraft	Route	Daily Number of Flights
Eurocopter EC-130	Proposed Route	5

⁹ FAA DOCUMENT NUMBER: AWP13-136A

Total		5

5. Model Output

Two types of analyses were performed using FAA's AEDT, Version 3e: 1) contour analysis and 2) representative location point analysis. A noise contour presents a graphical illustration or "footprint" of the area potentially affected by the noise. Location point results present the metric results at specific points of interest. The NPS provided a list of 46 location points, geographically located both within and outside¹⁰ the ATMP planning area, where noise levels were to be evaluated. These locations are listed in Table 6 and indicated as blue dots in Figure 7.

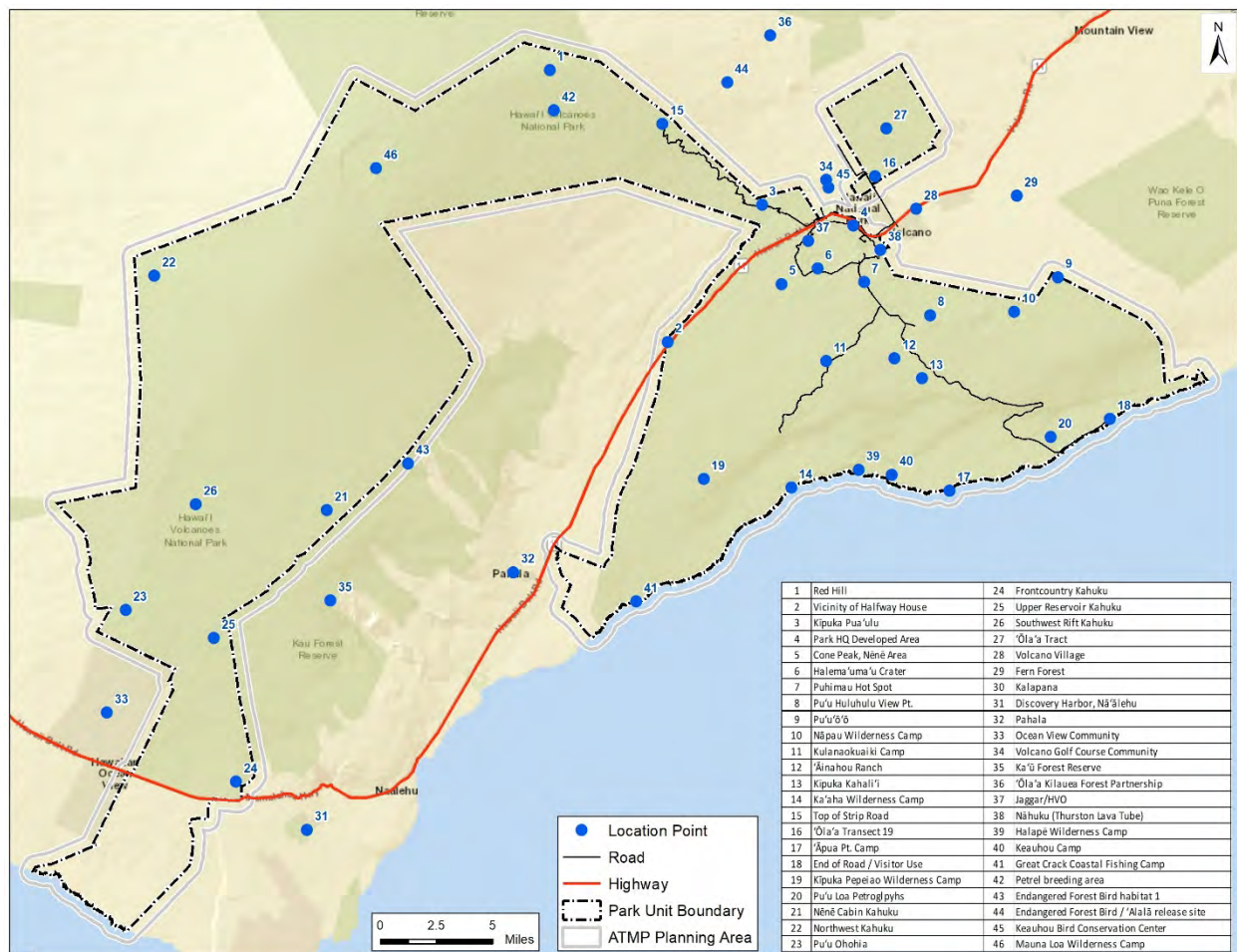


Figure 7. Location Points modeled for Hawai'i Volcanoes National Park

¹⁰ The routes, altitudes and numbers of air tours outside the ATMP planning area are unknown. This is because directly outside of the park is uncontrolled airspace, and operators fly under Visual Flight Rules (VFR). For the purposes of disclosing the potential effects on locations outside the ATMP planning area, routes within the ATMP planning area were extrapolated based on available information. Additionally, ambient data are not available outside the ATMP planning area and thus time audible results were not computed.

Table 6. Location Points modeled for Hawai'i Volcanoes National Park

Location	Longitude (decimal degrees)	Latitude (decimal degrees)	Natural Ambient L ₅₀ (dBA)
1. Red Hill	19.530080	-155.463806	30-35
2. Vicinity of Halfway House	19.354498	-155.383443	20-25
3. Kīpukapuaulu	19.443013	-155.319367	30-35
4. Park HQ Developed Area	19.429500	-155.257024	40-45
5. Cone Peak, Nēnē Area	19.391809	-155.306063	20-25
6. Halema'uma'u Crater	19.401895	-155.281344	25-30
7. Puhimau Hot Spot	19.393122	-155.249878	35-40
8. Pu'uhuluhulu View Pt.	19.371587	-155.204829	25-30
9. Pu'u'ō'ō	19.395983	-155.117809	25-30
10. Nāpau Wilderness Camp	19.373704	-155.147660	25-30
11. Kulanaokuaiki Camp	19.342075	-155.275604	25-30
12. 'Āinahou Ranch	19.343754	-155.229135	25-30
13. Kīpuka Kahālī'i	19.330945	-155.210557	25-30
14. Ka'aha Wilderness Camp	19.260423	-155.299501	50-55
15. Top of Strip Road	19.495138	-155.387203	20-25
16. 'Ōla'a Transect 19	19.461362	-155.242431	30-35
17. 'Āpua Pt. Camp	19.258268	-155.191981	50-55
18. End of Road / Visitor Use	19.304565	-155.082882	45-50
19. Kīpuka Pepeiao Wilderness Camp	19.266049	-155.359056	25-30
20. Pu'uloa Petroglyphs	19.292883	-155.123081	25-30
21. Nēnē Cabin Kahuku	19.245769	-155.615353	30-35
22. Northwest Kahuku	19.396874	-155.732880	30-35
23. Pu'u Ohohia	19.181269	-155.751963	30-35
24. Frontcountry Kahuku	19.070518	-155.676666	25-30
25. Upper Reservoir Kahuku	19.163253	-155.691977	25-30
26. Southwest Rift Kahuku	19.249415	-155.704322	30-35
27. 'Ōla'a Tract	19.492338	-155.234663	30-35
28. Volcano Village*	19.440378	-155.214365	N/A
29. Fern Forest*	19.448609	-155.145953	N/A
30. Kalapana*	19.486885	-154.907556	N/A
31. Discovery Harbor, Nā'ālehu*	19.039437	-155.628610	N/A
32. Pahala*	19.205774	-155.488392	N/A
33. Ocean View Community*	19.114855	-155.764518	N/A
34. Volcano Golf Course Community*	19.458975	-155.275586	N/A
35. Ka'ū Forest Reserve*	19.187431	-155.612783	N/A
36. 'Ōla'a Kīlauea Forest Partnership*	19.552280	-155.313631	N/A
37. Jaggar/HVO	19.419586	-155.287864	25-30
38. Nāhuku (Thurston Lava Tube)	19.413692	-155.238797	40-45
39. Halapē Wilderness Camp	19.271900	-155.253700	50-55
40. Keauhou Camp	19.268650	-155.231190	50-55
41. Great Crack Coastal Fishing Camp	19.187000	-155.405000	50-55
42. Petrel Breeding Area	-	-	20-25
43. Endangered Forest Bird Habitat 1	-	-	30-35
44. Endangered Forest Bird / 'Alalā Release Site*	-	-	N/A
45. Keauhou Bird Conservation Center*	19.454000	-155.274000	N/A
46. Mauna Loa Wilderness Camp	19.466470	-155.582010	30-35

* Location point is outside the ATMP planning area.

6. Noise Model Results / Environmental Consequences

This section provides figures and tables showing the detailed noise results, organized by alternative. Presented first within each alternative are the noise contour result maps for three metrics: 12-hour equivalent sound level (Figure 8 and Figure 11), time audible natural ambient (Figure 9 and Figure 12) and time above 35 dBA (Figure 10 and Figure 13), followed by tabular results (Table 7, Table 8, and Table 9) for the location points for each of the five acoustic metrics modeled. The noise contour map legends include the percentage of the total park area covered by each contour level.

Alternative 1 (No Action Alternative)

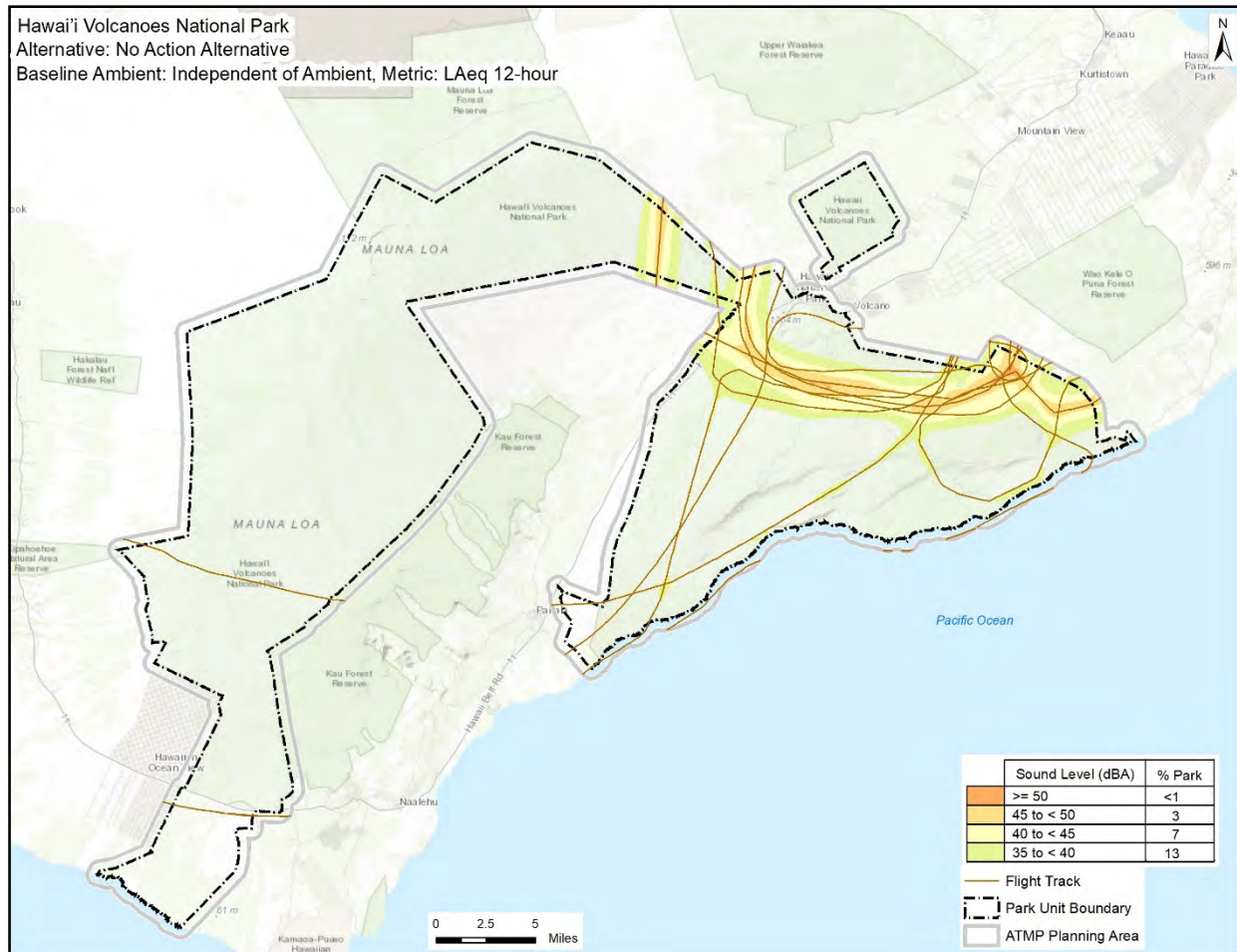


Figure 8. 12-hour equivalent sound level (LAeq,12h) map for the No Action Alternative

As there are no nighttime events, DNL will be 3 dB less than the 12-hour equivalent sound level.

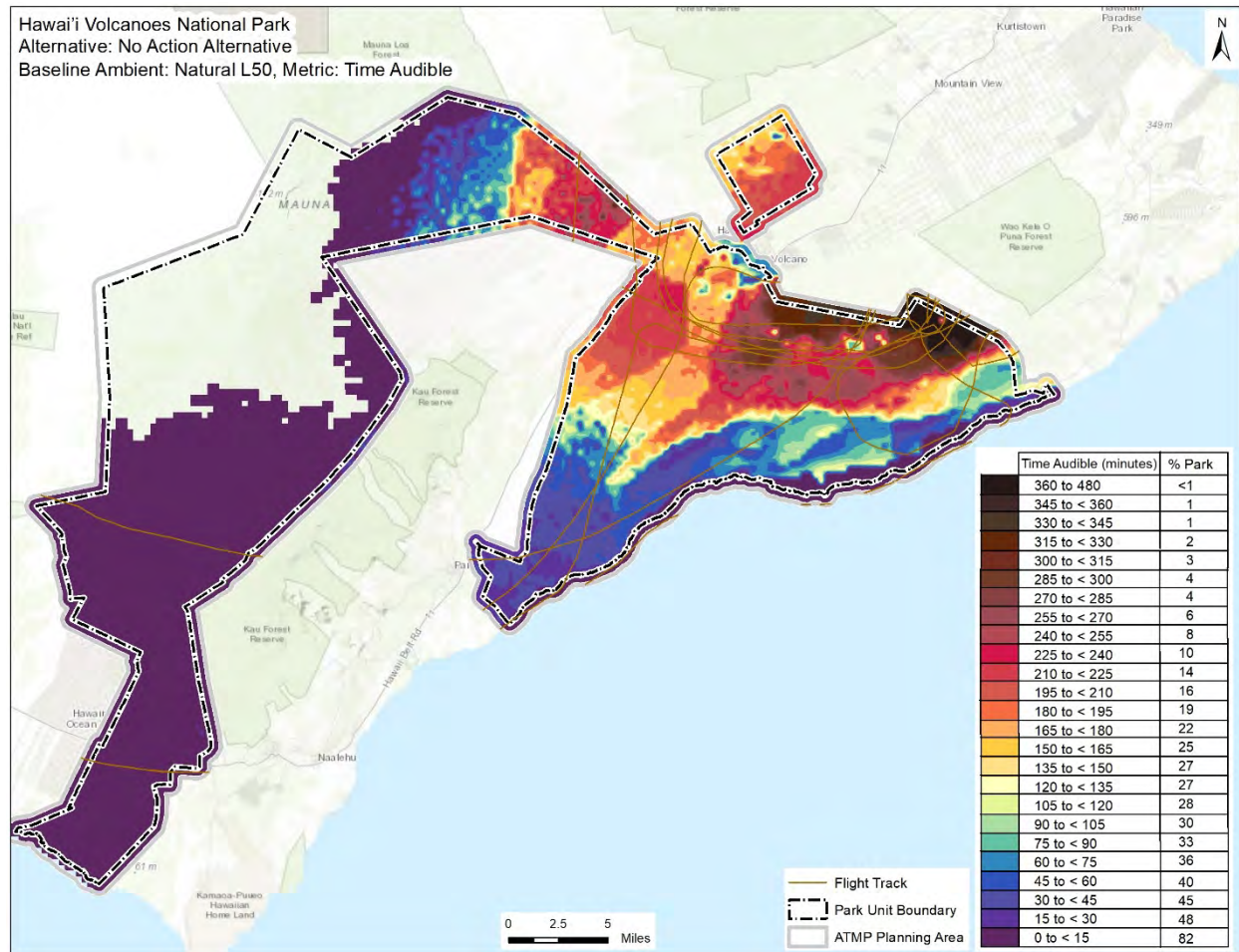


Figure 9. Time audible (for natural ambient) map for the No Action Alternative

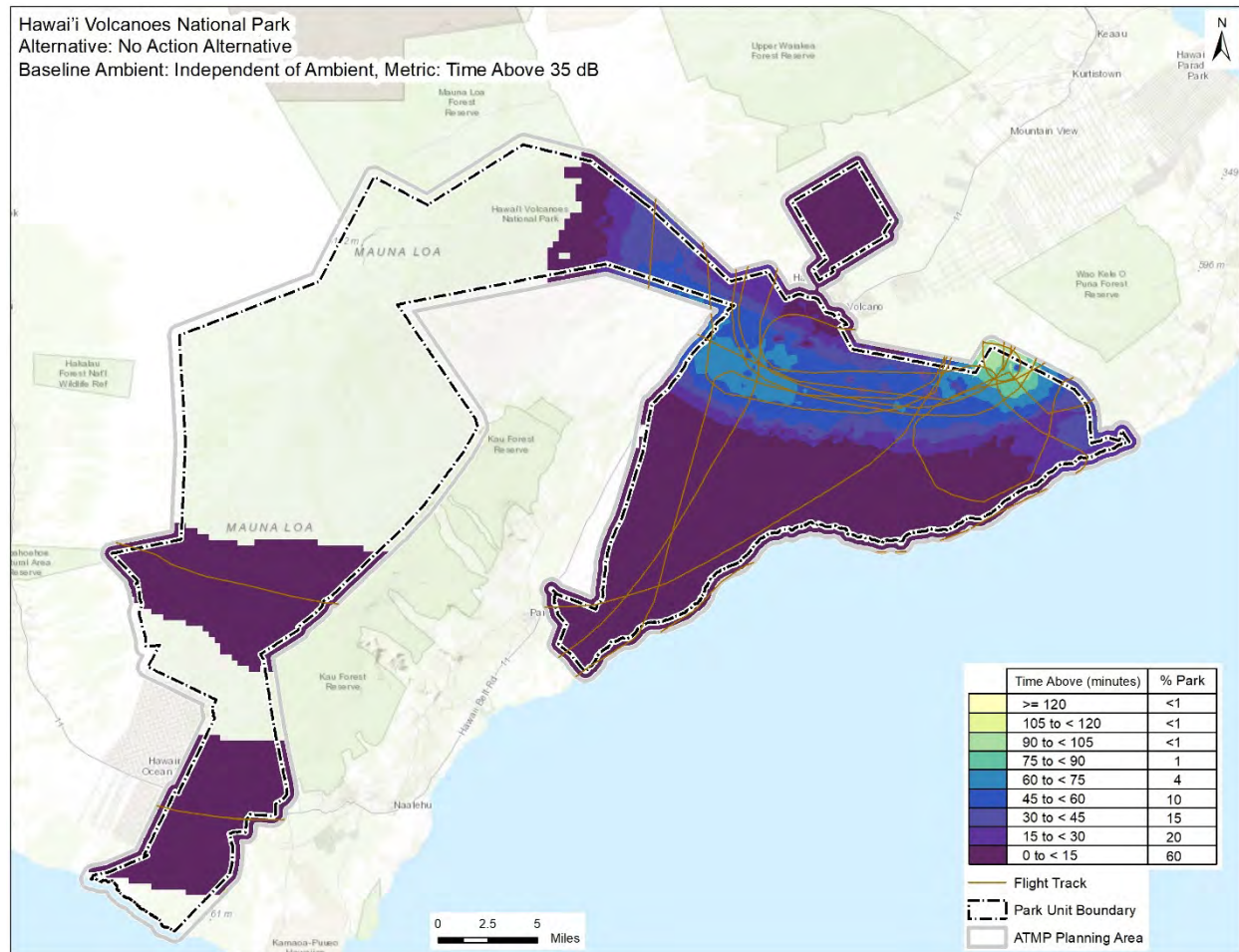


Figure 10. Time Above 35 dBA map for the No Action Alternative

Table 7. Location point results-- No Action Alternative

Location	12-Hour Equivalent Sound Level (dBA) [†]	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
1. Red Hill	10.3	30.6	0.0	0.0	32.3
2. Vicinity of Halfway House	19.9	164.3	0.8	0.0	38.7
3. Kīpukapuauulu	42.3	150.0	21.0	6.9	70.4
4. Park HQ Developed Area	23.5	88.1	4.5	<0.1	62.1
5. Cone Peak, Nēnē Area	46.8	218.9	58.0	18.9	72.0
6. Halema'uma'u Crater	32.2	163.0	51.8	0.2	54.1
7. Puhimau Hot Spot	15.1	75.4	0.1	0.0	50.2
8. Pu'uhuluhulu View Pt.	27.7	73.1	9.7	0.5	57.5
9. Pu'u'ō'ō	43.0	402.9	98.2	17.0	67.2
10. Nāpau Wilderness Camp	38.4	269.2	43.0	6.8	62.1
11. Kulanaokuaiki Camp	31.9	223.6	46.3	0.7	58.6
12. 'Āinahou Ranch	33.4	280.9	47.5	0.5	55.3
13. Kīpuka Kahālī'i	29.0	259.6	18.7	0.3	54.3
14. Ka'aha Wilderness Camp	33.9	2.1	3.5	1.1	66.7
15. Top of Strip Road	42.1	247.3	34.2	12.9	64.5
16. 'Ōla'a Transect 19	17.3	192.7	0.5	0.0	43.7
17. 'Āpua Pt. Camp	24.4	1.1	1.8	0.3	58.5
18. End of Road / Visitor Use	31.5	9.4	12.6	0.8	64.7
19. Kīpuka Pepeiao Wilderness Camp	28.6	34.1	4.9	0.7	58.8
20. Pu'uloa Petroglyphs	29.0	57.5	4.6	0.9	59.2
21. Nēnē Cabin Kahuku	10.8	5.6	0.5	0.0	36.7
22. Northwest Kahuku	0.0	0.0	0.0	0.0	4.5
23. Pu'u Ohohia	0.0	0.0	0.0	0.0	21.9
24. Frontcountry Kahuku	16.8	10.2	1.8	<0.1	52.2
25. Upper Reservoir Kahuku	3.6	8.5	0.0	0.0	33.2
26. Southwest Rift Kahuku	10.9	5.3	0.7	0.0	38.6
27. 'Ōla'a Tract	17.4	101.4	2.7	0.0	41.4
28. Volcano Village*	16.9	N/A	0.8	0.0	43.6
29. Fern Forest**	29.4	N/A	13.6	0.5	55.1
30. Kalapana**	8.4	N/A	0.0	0.0	24.6
31. Discovery Harbor, Nā'ālehu*	13.4	N/A	1.3	0.0	46.3
32. Pahala*	28.5	N/A	3.0	0.8	59.7
33. Ocean View Community*	4.0	N/A	0.1	0.0	36.8
34. Volcano Golf Course Community*	24.0	N/A	7.7	0.2	55.4
35. Ka'ū Forest Reserve*	19.9	N/A	2.5	0.0	49.3
36. 'Ōla'a Kīlauea Forest Partnership*	31.5	N/A	8.3	1.5	59.6
37. Jaggar/HVO	28.2	242.3	26.6	0.2	66.4
38. Nāhuku (Thurston Lava Tube)	24.6	59.1	3.9	<0.1	68.8
39. Halapē Wilderness Camp	20.4	0.0	1.8	0.1	53.0
40. Keauhou Camp	21.7	0.0	2.2	0.2	54.1
41. Great Crack Coastal Fishing Camp	29.0	0.8	2.9	0.9	60.7
42. Petrel Breeding Area	10.8	43.6	0.0	0.0	28.4
43. Endangered Forest Bird Habitat 1	4.5	9.8	0.0	0.0	26.0

Location	12-Hour Equivalent Sound Level (dBA) [†]	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level (dBA)
44. Endangered Forest Bird / 'Alalā Release Site*	26.0	N/A	12.1	0.0	47.6
45. Keauhou Bird Conservation Center*	24.3	N/A	8.4	0.2	54.5
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0	0.0	10.5

[†] As there are no nighttime events, DNL will be 3 dB less than the 12-hour equivalent sound level.

* Location point is outside the ATMP planning area.

Alternative 3 Standard Day

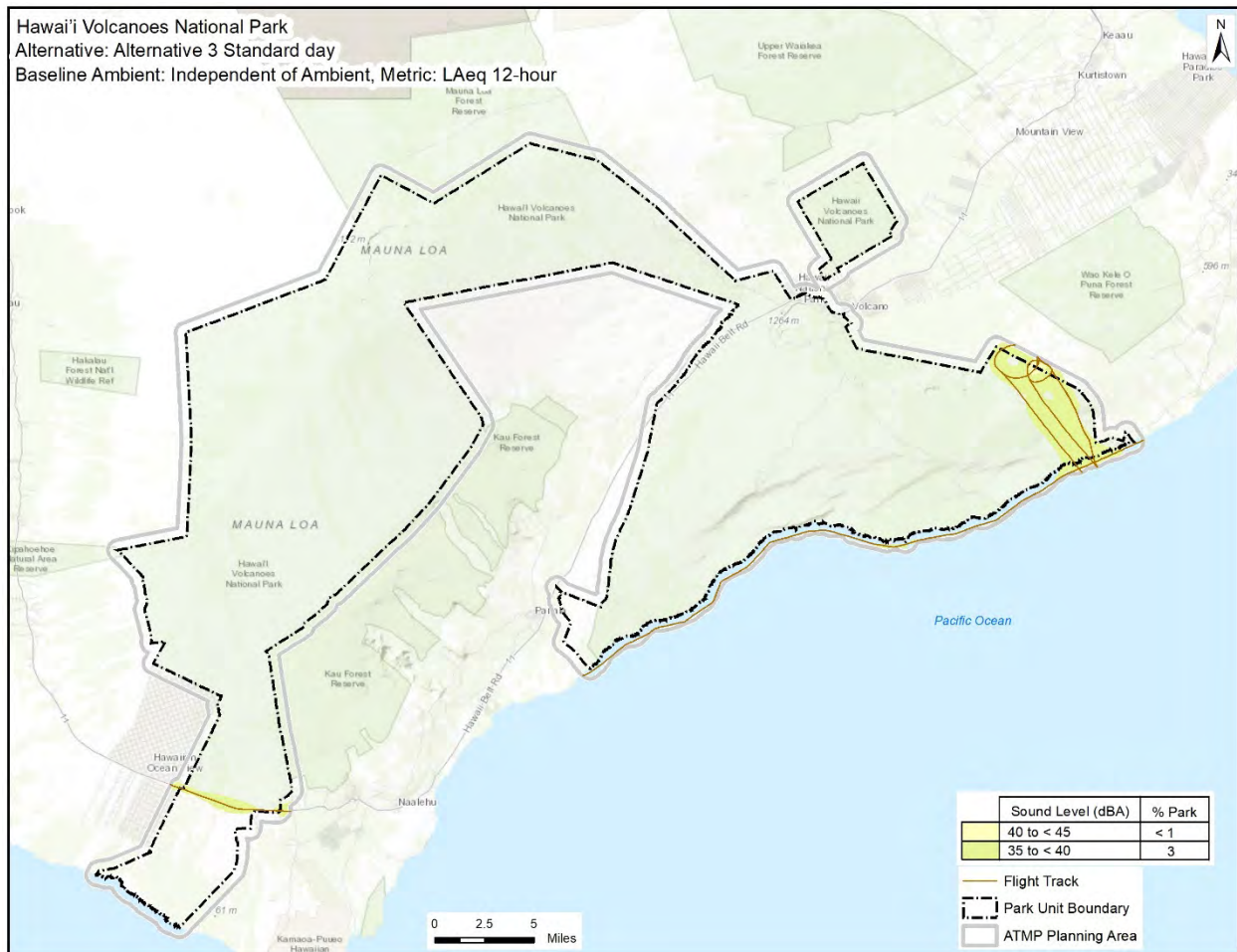


Figure 11. 12-hour equivalent sound level (LAeq,12h) map for Alternative 3 Standard Day

As there are no nighttime events, then DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating between 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

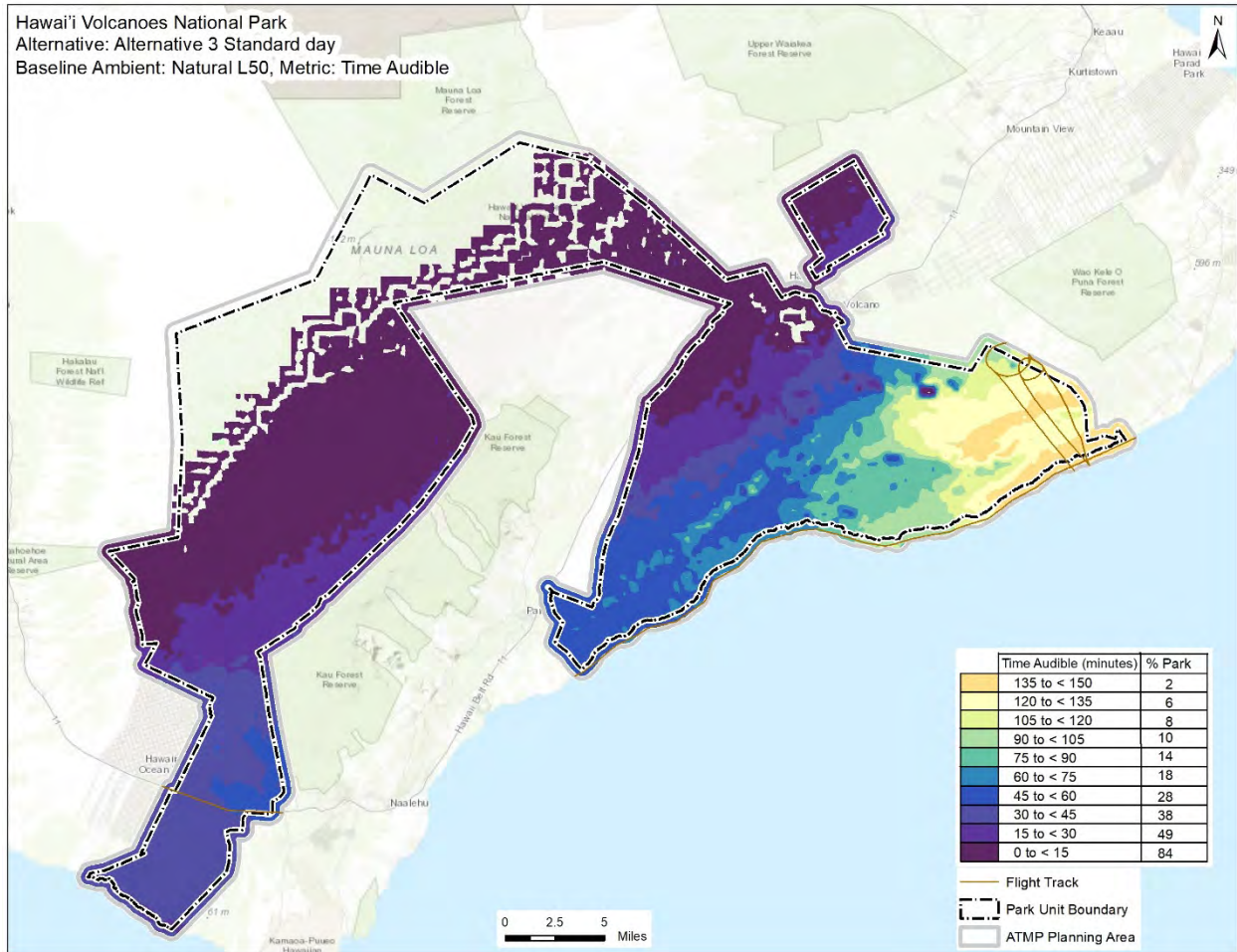


Figure 12. Time Audible (for natural ambient) map for Alternative 3 Standard Day

Table 8. Location point results for Alternative 3 Standard Day

Location	12-Hour Equivalent Sound Level (dBA) [†]	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level dBA
1. Red Hill	0.0	0.0	0.0	0.0	9.5
2. Vicinity of Halfway House	0.0	12.1	0.0	0.0	16.6
3. Kīpukapuauulu	0.0	11.1	0.0	0.0	15.3
4. Park HQ Developed Area	0.0	15.1	0.0	0.0	17.6
5. Cone Peak, Nēnē Area	0.0	13.8	0.0	0.0	16.8
6. Halema'uma'u Crater	0.0	11.5	0.0	0.0	17.1
7. Puhimau Hot Spot	0.0	0.0	0.0	0.0	6.5
8. Pu'uhuluhulu View Pt.	0.0	0.0	0.0	0.0	11.5
9. Pu'u'ō'ō	38.1	101.5	27.3	5.8	61.5
10. Nāpau Wilderness Camp	20.3	92.2	3.4	0.0	38.7
11. Kulanaokuaiki Camp	0.0	33.5	0.0	0.0	23.3
12. 'Āinahou Ranch	7.5	93.8	0.0	0.0	27.8
13. Kīpuka Kahālī'i	7.5	87.6	0.0	0.0	28.2
14. Ka'aha Wilderness Camp	30.7	62.2	7.3	1.4	62.3
15. Top of Strip Road	0.0	0.0	0.0	0.0	11.4
16. 'Ōla'a Transect 19	0.0	15.6	0.0	0.0	18.0
17. 'Āpua Pt. Camp	33.2	94.2	8.0	2.1	63.7
18. End of Road / Visitor Use	32.5	140.6	23.9	1.5	60.9
19. Kīpuka Pepeiao Wilderness Camp	8.7	51.5	0.0	0.0	34.1
20. Pu'uloa Petroglyphs	25.1	130.9	8.8	0.0	51.2
21. Nēnē Cabin Kahuku	0.0	17.6	0.0	0.0	20.2
22. Northwest Kahuku	0.0	0.0	0.0	0.0	0.0
23. Pu'u Ohohia	0.0	15.0	0.0	0.0	21.2
24. Frontcountry Kahuku	30.1	46.6	10.9	0.7	56.9
25. Upper Reservoir Kahuku	2.9	25.9	0.0	0.0	26.5
26. Southwest Rift Kahuku	0.0	8.2	0.0	0.0	17.7
27. 'Ōla'a Tract	0.0	2.3	0.0	0.0	14.3
28. Volcano Village*	1.2	N/A	0.0	0.0	20.5
29. Fern Forest*	7.3	N/A	0.0	0.0	28.2
30. Kalapana*	0.0	N/A	0.0	0.0	19.7
31. Discovery Harbor, Nā'ālehu*	24.4	N/A	7.2	0.0	52.3
32. Pahala**	9.9	N/A	0.0	0.0	33.7
33. Ocean View Community*	19.3	N/A	2.7	0.0	46.9
34. Volcano Golf Course Community**	0.0	N/A	0.0	0.0	16.4
35. Ka'ū Forest Reserve**	6.2	N/A	0.0	0.0	29.9
36. 'Ōla'a Kīlauea Forest Partnership*	0.0	N/A	0.0	0.0	11.8
37. Jaggar/HVO	0.4	35.8	0.0	0.0	21.5
38. Nāhuku (Thurston Lava Tube)	0.0	20.8	0.0	0.0	16.8
39. Halapē Wilderness Camp	30.0	60.6	7.2	1.2	60.7
40. Keauhou Camp	29.3	88.6	7.7	0.8	58.7
41. Great Crack Coastal Fishing Camp	32.7	48.0	7.2	2.0	63.2
42. Petrel Breeding Area	0.0	0.0	0.0	0.0	7.5
43. Endangered Forest Bird Habitat 1	1.5	28.5	0.0	0.0	24.9
44. Endangered Forest Bird / 'Alalā	0.0	N/A	0.0	0.0	13.6

Location	12-Hour Equivalent Sound Level (dBA) [†]	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level dBA
Release Site*					
45. Keauhou Bird Conservation Center*	0.0	N/A	0.0	0.0	16.6
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0	0.0	3.0

[†] As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating between 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

* Location point is outside the ATMP planning area.

Alternative 3 Quiet Technology-only Day

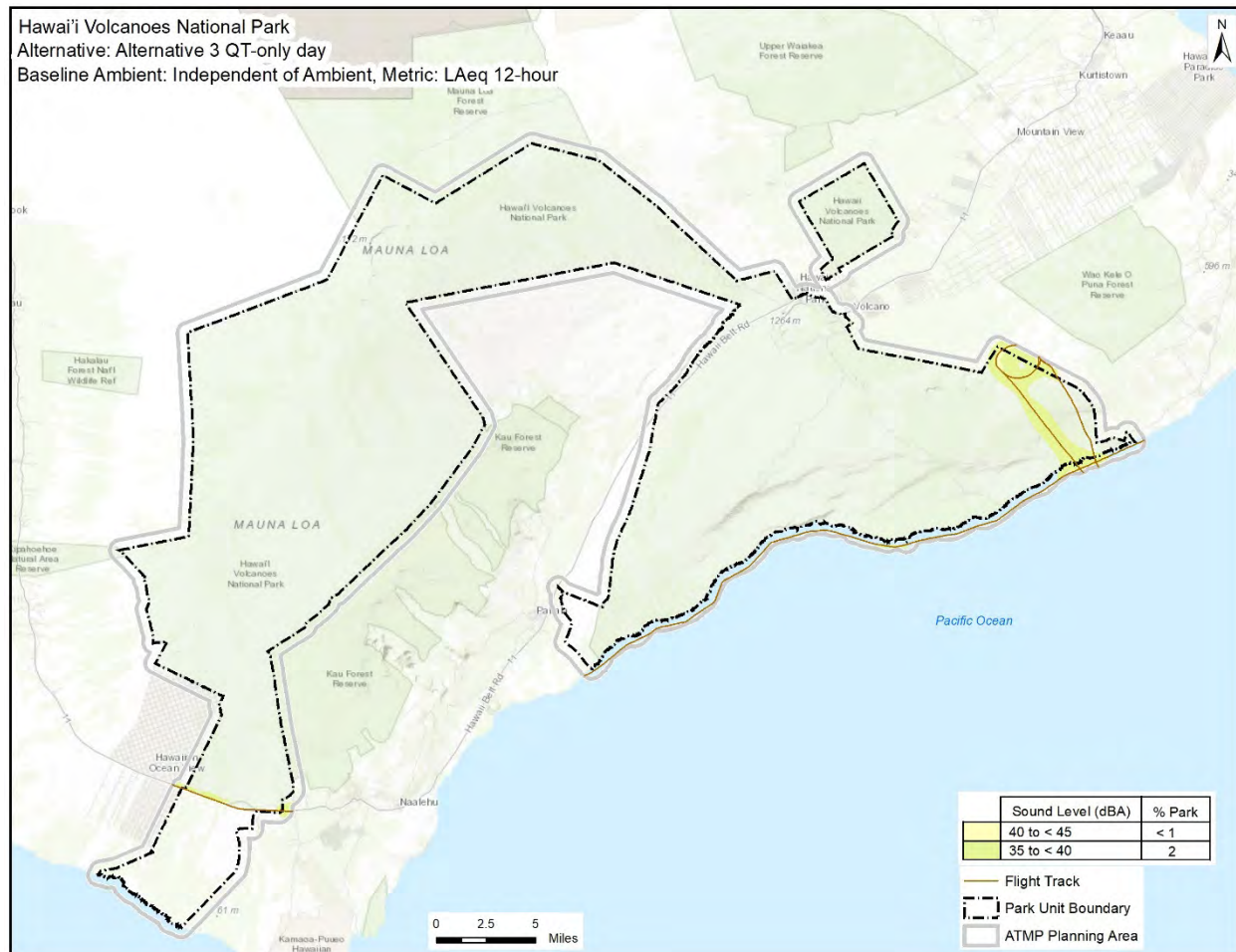


Figure 14. 12-hour equivalent sound level (LAeq,12h) map for Alternative 3 Quiet Technology-only Day

As there are no nighttime events, then DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating between 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

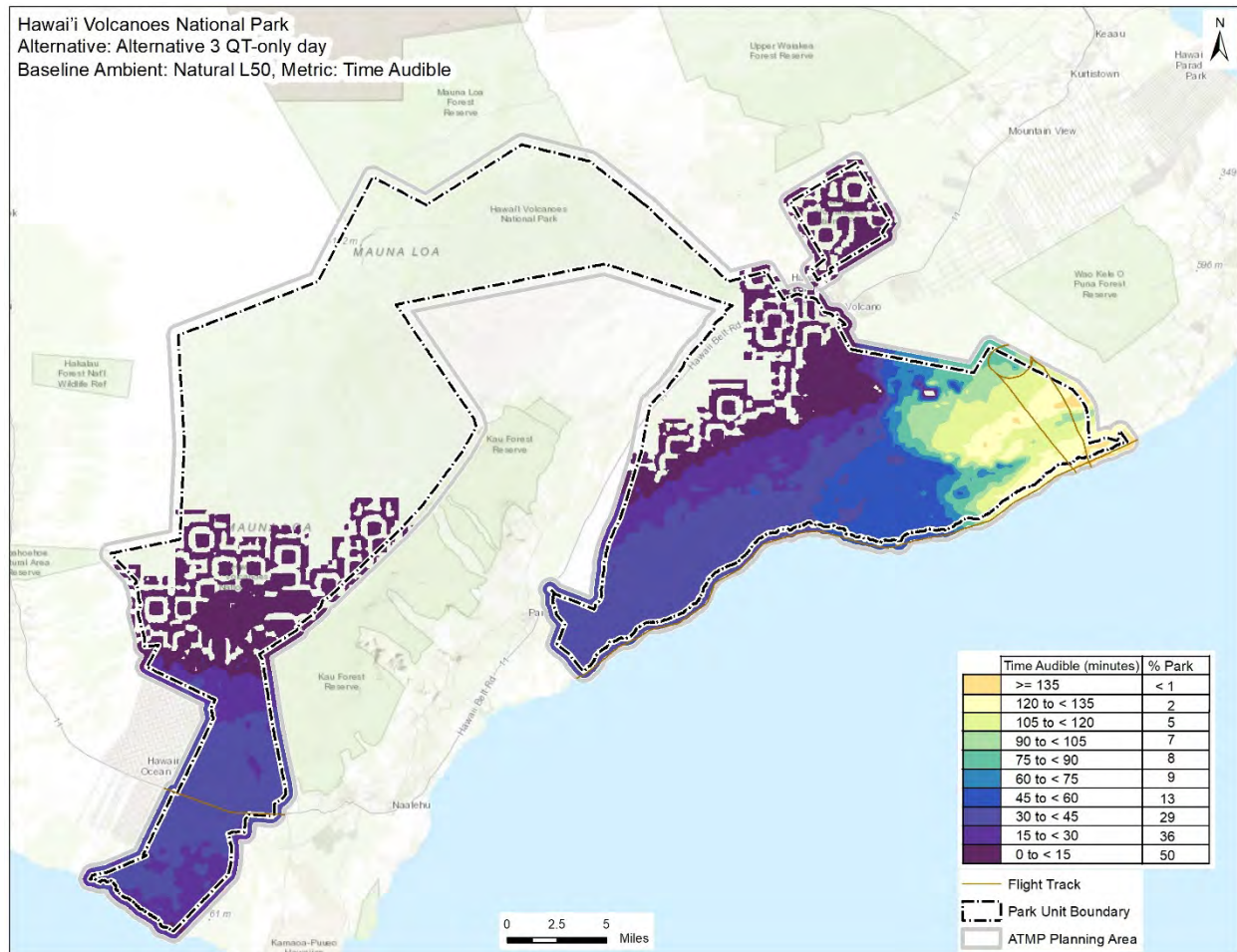


Figure 15. Time Audible (for natural ambient) map for Alternative 3 Quiet Technology-only Day

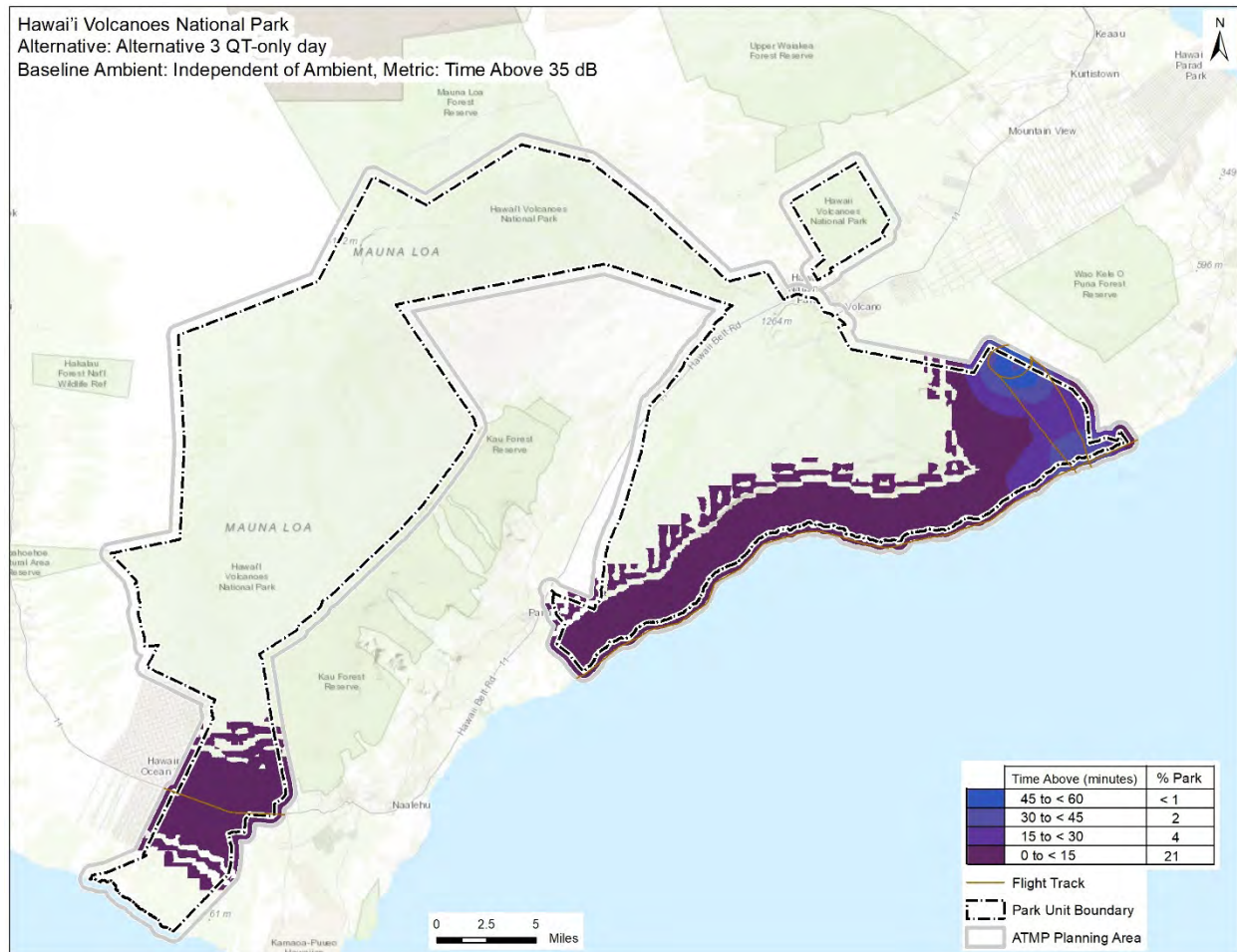


Figure 16. Time Above 35 dBA map for Alternative 3 Quiet Technology-only Day

Table 9. Location point results for Alternative 3 Quiet Technology-only Day

Location	12-Hour Equivalent Sound Level (dBA) [†]	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level dBA
1. Red Hill	0.0	0.0	0.0	0.0	0.4
2. Vicinity of Halfway House	0.0	0.0	0.0	0.0	3.6
3. Kīpukapuaulu	0.0	0.0	0.0	0.0	7.8
4. Park HQ Developed Area	0.0	0.0	0.0	0.0	11.1
5. Cone Peak, Nēnē Area	0.0	0.0	0.0	0.0	8.2
6. Halema'uma'u Crater	0.0	0.0	0.0	0.0	10.2
7. Puhimau Hot Spot	0.0	0.0	0.0	0.0	0.3
8. Pu'uhuluhulu View Pt.	0.0	0.0	0.0	0.0	6.1
9. Pu'u'ō'ō	40.2	80.6	41.6	9.7	61.5
10. Nāpau Wilderness Camp	21.9	81.0	4.0	0.0	37.4
11. Kulanaokuaiki Camp	0.0	7.3	0.0	0.0	11.2
12. 'Āinahou Ranch	6.9	51.5	0.0	0.0	21.1
13. Kīpuka Kahālī'i	5.7	45.2	0.0	0.0	19.4
14. Ka'aha Wilderness Camp	31.0	39.9	10.4	1.6	57.0
15. Top of Strip Road	0.0	0.0	0.0	0.0	2.9
16. 'Ōla'a Transect 19	0.0	0.0	0.0	0.0	11.1
17. 'Āpua Pt. Camp	32.9	53.0	11.1	2.5	58.3
18. End of Road / Visitor Use	32.5	128.6	27.0	1.4	55.4
19. Kīpuka Pepeiao Wilderness Camp	8.0	35.6	0.0	0.0	24.9
20. Pu'uloa Petroglyphs	24.1	109.1	9.7	0.0	45.1
21. Nēnē Cabin Kahuku	0.0	0.0	0.0	0.0	8.6
22. Northwest Kahuku	0.0	0.0	0.0	0.0	0.0
23. Pu'u Ohohia	0.0	0.0	0.0	0.0	12.6
24. Frontcountry Kahuku	29.9	37.7	13.0	0.0	52.0
25. Upper Reservoir Kahuku	0.0	5.5	0.0	0.0	19.6
26. Southwest Rift Kahuku	0.0	0.0	0.0	0.0	9.1
27. 'Ōla'a Tract	0.0	0.0	0.0	0.0	4.6
28. Volcano Village*	2.7	3.9	0.0	0.0	14.2
29. Fern Forest*	8.6	N/A	0.0	0.0	22.1
30. Kalapana*	0.0	N/A	0.0	0.0	6.8
31. Discovery Harbor, Nā'ālehu*	24.3	N/A	8.0	0.0	46.7
32. Pahala*	7.8	N/A	0.0	0.0	23.0
33. Ocean View Community*	16.1	N/A	0.9	0.0	35.8
34. Volcano Golf Course Community*	0.0	N/A	0.0	0.0	9.2
35. Ka'ū Forest Reserve*	0.0	N/A	0.0	0.0	17.1
36. 'Ōla'a Kīlauea Forest Partnership*	0.0	N/A	0.0	0.0	3.5
37. Jaggar/HVO	1.6	5.4	0.0	0.0	14.4
38. Nāhuku (Thurston Lava Tube)	0.0	0.0	0.0	0.0	10.0
39. Halapē Wilderness Camp	29.9	36.5	10.0	1.2	55.2
40. Keauhou Camp	28.7	51.5	10.3	0.4	52.8
41. Great Crack Coastal Fishing Camp	32.3	35.2	10.1	2.3	57.8
42. Petrel Breeding Area	0.0	0.0	0.0	0.0	0.0
43. Endangered Forest Bird Habitat 1	0.0	0.0	0.0	0.0	11.1

Location	12-Hour Equivalent Sound Level (dBA) [†]	Time Audible for Natural Ambient (minutes)	Time Above 35 dBA (minutes)	Time Above 52 dBA (minutes)	Maximum Sound Level dBA
44. Endangered Forest Bird / 'Alalā Release Site*	0.0	N/A	0.0	0.0	5.5
45. Keauhou Bird Conservation Center*	0.0	N/A	0.0	0.0	9.5
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0	0.0	0.0

[†] As there are no nighttime events, DNL would be 3 dB less than the 12-hour equivalent sound level. If air tours are restricted to operating between 9:00 AM and 5:00 PM (i.e., 8 hours), then the 8-hour equivalent sound level would be 1.8 dBA greater than the 12-hour equivalent sound level.

* Location point is outside the ATMP planning area

7. Comparison of Alternatives by Metric

This section provides tables showing the detailed noise results, organized by metric for each of the five acoustic metrics modeled. These tables allow for comparison across the alternatives. High-level observations of the differences between alternatives by metric include:

- 12-hour Equivalent Sound Level (Table 10 and Table 13):
 - Compared to the No Action Alternative, the average sound levels under Alternative 3 would be lower for the regions of the Park near Halema'uma'u Crater and the Kīlauea Visitor Center (see points 3, 4, 5, 11, and 15) but may be higher in coastal regions (see results for points 24, 31, 33, 39, 40, 41).
 - The noise footprint for Alternative 3 potentially affects 10% less of the park on standard days, and 11% less on quiet technology-only days.
- Time Audible Natural Ambient (Table 11 and Table 14):
 - Compared to the No Action Alternative, the overall time audible noise footprint for Alternative 3 potentially would be 2% larger than the No Action Alternative due to higher aircraft altitudes under Alternative 3. For the quiet technology-only day the overall time audible noise footprint potentially is 32% smaller than the No Action Alternative. The approximately 25% of the Park where time audible exceeds 150 minutes would no longer exceed this threshold on both standard and quiet technology-only days.
 - The largest reductions would be at point 9 (Pu'u'ō'ō, 301 minutes) and point 15 (Top of Strip Road, 247 minutes).
 - However, increases in time audible would occur at 14 locations (14, 17, 18, 19, 20, 21, 23, 24, 25, 26, 39, 40, 41, and 43).
- Time Above 35 (Table 12 and Table 15):
 - Compared to the No Action Alternative, the time above 35 dBA under Alternative 3 would be up to 70 minutes less (see point 9, Pu'u'ō'ō).
 - However, time above 35 dBA would be greater under Alternative 3 at ten locations (up to 11 minutes).
 - The noise footprint for Alternative 3 (standard day) potentially affects 31% less of the ATMP planning area and 39% less for Alternative 3 quiet technology-only day.
- Time Above 52 (Table 16):
 - Compared to the No Action Alternative, the time above 52 dBA under Alternative 3 would be up to 19 minutes less (see point 5 Cone Peak, Nēnē Area).
 - Time above 52 dBA would be only slightly greater (up to 2.2 minutes) under Alternative 3 at 7 locations (points 14, 17, 18, 24, 39, 40 and 41).
- Maximum Sound Level (Table 17):
 - Compared to the No Action Alternative, the maximum sound levels under Alternative 3 would be significantly lower (more than 20 dBA) in 27 locations in areas surrounding near Halema'uma'u Crater and the Kīlauea Visitor Center.
 - Standard day maximum sound levels may be greater at points such as 33 (Ocean View Community; 10 dBA greater), 39 (Halapē Wilderness Camp; 8 dBA greater), and 31

(Discovery Harbor, Nā'ālehu; 6 dBA greater), as well as 17, 24, and 40 (all 5 dBA greater). These increases, however, would be potentially mitigated under quiet technology-only days as the maximum sound levels would be 5-10 dB lower than on standard days.

Table 10. Comparison of contour results for 12-hour Equivalent Sound Level

12-hour Equivalent Sound Level Contour Results		% Park for No Action	% Park for Alternative 3 Standard Day	% Park for Alternative 3 Quiet Technology-only Day
	50 to < 55	<1	0	0
	45 to < 50	3	0	0
	40 to < 45	7	<1	<1
	35 to < 40	13	3	2

Table 11. Comparison of contour results for Time Audible for Natural Ambient

Time Audible for Natural Ambient Contour Results		% Park for No Action	% Park for Alternative 3 Standard Day	% Park for Alternative 3 Quiet Technology-only Day
	360 to 480	<1	0	0
	345 to < 360	1	0	0
	330 to < 345	1	0	0
	315 to < 330	2	0	0
	300 to < 315	3	0	0
	285 to < 300	4	0	0
	270 to < 285	4	0	0
	255 to < 270	6	0	0
	240 to < 255	8	0	0
	225 to < 240	10	0	0
	210 to < 225	14	0	0
	195 to < 210	16	0	0
	180 to < 195	19	0	0
	165 to < 180	22	0	0
	150 to < 165	25	0	0
	135 to < 150	27	2	<1
	120 to < 135	27	6	2
	105 to < 120	28	8	5
	90 to < 105	30	10	7
	75 to < 90	33	14	8
	60 to < 75	36	18	9
	45 to < 60	40	28	13
	30 to < 45	45	38	29
	15 to < 30	48	49	36
	0 to < 15	82	84	50

Table 12. Comparison of contour results for Time Above 35 dBA

Time Above 35 dBA Contour Results		% Park for No Action	% Park for Alternative 3 Standard Day	% Park for Alternative 3 Quiet Technology-only Day
	>=120	<1	0	0
	105 to < 120	<1	0	0
	90 to < 105	<1	0	0
	75 < 90	1	0	0
	60 to < 75	4	0	0
	45 to < 60	10	0	<1
	30 to < 45	15	1	2
	15 to < 30	20	4	4
	0 to < 15	60	29	21

Table 13. Comparison of location point results for 12-hour Equivalent Sound Level (dB(A))

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	10.3	0.0	0.0
2. Vicinity of Halfway House	19.9	0.0	0.0
3. Kīpukapuauulu	42.3	0.0	0.0
4. Park HQ Developed Area	23.5	0.0	0.0
5. Cone Peak, Nēnē Area	46.8	0.0	0.0
6. Halema'uma'u Crater	32.2	0.0	0.0
7. Puhimau Hot Spot	15.1	0.0	0.0
8. Pu'uhuluhulu View Pt.	27.7	0.0	0.0
9. Pu'u'ō'ō	43.0	38.1	40.2
10. Nāpau Wilderness Camp	38.4	20.3	21.9
11. Kulanaokuaiki Camp	31.9	0.0	0.0
12. 'Āinahou Ranch	33.4	7.5	6.9
13. Kīpuka Kahālī'i	29.0	7.5	5.7
14. Ka'aha Wilderness Camp	33.9	30.7	31.0
15. Top of Strip Road	42.1	0.0	0.0
16. 'Ōla'a Transect 19	17.3	0.0	0.0
17. 'Āpua Pt. Camp	24.4	33.2	32.9
18. End of Road / Visitor Use	31.5	32.5	32.5
19. Kīpuka Pepeiao Wilderness Camp	28.6	8.7	8.0
20. Pu'uloa Petroglyphs	29.0	25.1	24.1
21. Nēnē Cabin Kahuku	10.8	0.0	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Pu'u Ohohia	0.0	0.0	0.0
24. Frontcountry Kahuku	16.8	30.1	29.9
25. Upper Reservoir Kahuku	3.6	2.9	0.0
26. Southwest Rift Kahuku	10.9	0.0	0.0
27. 'Ōla'a Tract	17.4	0.0	0.0
28. Volcano Village*	16.9	1.2	2.7
29. Fern Forest*	29.4	7.3	8.6
30. Kalapana*	8.4	0.0	0.0
31. Discovery Harbor, Nā'ālehu*	13.4	24.4	24.3
32. Pahala*	28.5	9.9	7.8
33. Ocean View Community*	4.0	19.3	16.1
34. Volcano Golf Course Community*	24.0	0.0	0.0
35. Ka'ū Forest Reserve*	19.9	6.2	0.0
36. 'Ōla'a Kīlauea Forest Partnership	31.5	0.0	0.0
37. Jaggar/HVO	28.2	0.4	1.6
38. Nāhuku (Thurston Lava Tube)	24.6	0.0	0.0
39. Halapē Wilderness Camp	20.4	30.0	29.9
40. Keauhou Camp	21.7	29.3	28.7
41. Great Crack Coastal Fishing Camp	29.0	32.7	32.3
42. Petrel Breeding Area	10.8	0.0	0.0
43. Endangered Forest Bird Habitat 1	4.5	1.5	0.0
44. Endangered Forest Bird / 'Alalā Release Site*	26.0	0.0	0.0
45. Keauhou Bird Conservation Center*	24.3	0.0	0.0
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

* Location point is outside the ATMP planning area.

Table 14. Comparison of location point results for Time Audible for Natural Ambient (minutes)

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	30.6	0.0	0.0
2. Vicinity of Halfway House	164.3	12.1	0.0
3. Kīpukapuauulu	150.0	11.1	0.0
4. Park HQ Developed Area	88.1	15.1	0.0
5. Cone Peak, Nēnē Area	218.9	13.8	0.0
6. Halema'uma'u Crater	163.0	11.5	0.0
7. Puhimau Hot Spot	75.4	0.0	0.0
8. Pu'uhuluhulu View Pt.	73.1	0.0	0.0
9. Pu'u'ō'ō	402.9	101.5	80.6
10. Nāpau Wilderness Camp	269.2	92.2	81.0
11. Kulanaokuaiki Camp	223.6	33.5	7.3
12. 'Āinahou Ranch	280.9	93.8	51.5
13. Kīpuka Kahālī'i	259.6	87.6	45.2
14. Ka'aha Wilderness Camp	2.1	62.2	39.9
15. Top of Strip Road	247.3	0.0	0.0
16. 'Ōla'a Transect 19	192.7	15.6	0.0
17. 'Āpua Pt. Camp	1.1	94.2	53.0
18. End of Road / Visitor Use	9.4	140.6	128.6
19. Kīpuka Pepeiao Wilderness Camp	34.1	51.5	35.6
20. Pu'uloa Petroglyphs	57.5	130.9	109.1
21. Nēnē Cabin Kahuku	5.6	17.6	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Pu'u Ohohia	0.0	15.0	0.0
24. Frontcountry Kahuku	10.2	46.6	37.7
25. Upper Reservoir Kahuku	8.5	25.9	5.5
26. Southwest Rift Kahuku	5.3	8.2	0.0
27. 'Ōla'a Tract	101.4	2.3	0.0
28. Volcano Village*	N/A	N/A	N/A
29. Fern Forest*	N/A	N/A	N/A
30. Kalapana*	N/A	N/A	N/A
31. Discovery Harbor, Nā'ālehu*	N/A	N/A	N/A
32. Pahala*	N/A	N/A	N/A
33. Ocean View Community*	N/A	N/A	N/A
34. Volcano Golf Course Community*	N/A	N/A	N/A
35. Ka'ū Forest Reserve*	N/A	N/A	N/A
36. 'Ōla'a Kīlauea Forest Partnership*	N/A	N/A	N/A
37. Jaggar/HVO	242.3	35.8	5.4
38. Nāhuku (Thurston Lava Tube)	59.1	20.8	0.0
39. Halapē Wilderness Camp	0.0	60.6	36.5
40. Keauhou Camp	0.0	88.6	51.5
41. Great Crack Coastal Fishing Camp	0.8	48.0	35.2
42. Petrel Breeding Area	43.6	0.0	0.0
43. Endangered Forest Bird Habitat 1	9.8	28.5	0.0
44. Endangered Forest Bird / 'Alalā Release Site*	N/A	N/A	N/A
45. Keauhou Bird Conservation Center*	N/A	N/A	N/A
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

* Location point is outside the ATMP planning area.

Table 15. Comparison of location point results for Time Above 35 dBA (minutes)

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	0.0	0.0	0.0
2. Vicinity of Halfway House	0.8	0.0	0.0
3. Kīpukapuau	21.0	0.0	0.0
4. Park HQ Developed Area	4.5	0.0	0.0
5. Cone Peak, Nēnē Area	58.0	0.0	0.0
6. Halema'uma'u Crater	51.8	0.0	0.0
7. Puhimau Hot Spot	0.1	0.0	0.0
8. Pu'uhuluhulu View Pt.	9.7	0.0	0.0
9. Pu'u'ō'ō	98.2	27.3	41.6
10. Nāpau Wilderness Camp	43.0	3.4	4.0
11. Kulanaokuaiki Camp	46.3	0.0	0.0
12. 'Āinahou Ranch	47.5	0.0	0.0
13. Kīpuka Kahālī'i	18.7	0.0	0.0
14. Ka'aha Wilderness Camp	3.5	7.3	10.4
15. Top of Strip Road	34.2	0.0	0.0
16. 'Ōla'a Transect 19	0.5	0.0	0.0
17. 'Āpua Pt. Camp	1.8	8.0	11.1
18. End of Road / Visitor Use	12.6	23.9	27.0
19. Kīpuka Pepeiao Wilderness Camp	4.9	0.0	0.0
20. Pu'uloa Petroglyphs	4.6	8.8	9.7
21. Nēnē Cabin Kahuku	0.5	0.0	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Pu'u Ohohia	0.0	0.0	0.0
24. Frontcountry Kahuku	1.8	10.9	13.0
25. Upper Reservoir Kahuku	0.0	0.0	0.0
26. Southwest Rift Kahuku	0.7	0.0	0.0
27. 'Ōla'a Tract	2.7	0.0	0.0
28. Volcano Village*	0.8	0.0	0.0
29. Fern Forest*	13.6	0.0	0.0
30. Kalapana*	0.0	0.0	0.0
31. Discovery Harbor, Nā'ālehu*	1.3	7.2	8.0
32. Pahala*	3.0	0.0	0.0
33. Ocean View Community*	0.1	2.7	0.9
34. Volcano Golf Course Community*	7.7	0.0	0.0
35. Ka'ū Forest Reserve*	2.5	0.0	0.0
36. 'Ōla'a Kīlauea Forest Partnership*	8.3	0.0	0.0
37. Nāhuku (Thurston Lava Tube)	26.6	0.0	0.0
38. Jaggar/HVO	3.9	0.0	0.0
39. Halapē Wilderness Camp	1.8	7.2	10.0
40. Keauhou Camp	2.2	7.7	10.3
41. Great Crack Coastal Fishing Camp	2.9	7.2	10.1
42. Petrel Breeding Area	0.0	0.0	0.0
43. Endangered Forest Bird Habitat 1	0.0	0.0	0.0
44. Endangered Forest Bird / 'Alalā Release Site*	12.1	0.0	0.0
45. Keauhou Bird Conservation Center*	8.4	0.0	0.0
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

* Location point is outside the ATMP planning area.

Table 16. Comparison of location point results for Time Above 52 dBA (minutes)

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	0.0	0.0	0.0
2. Vicinity of Halfway House	0.0	0.0	0.0
3. Kīpukapuaulu	6.9	0.0	0.0
4. Park HQ Developed Area	<0.1	0.0	0.0
5. Cone Peak, Nēnē Area	18.9	0.0	0.0
6. Halema'uma'u Crater	0.2	0.0	0.0
7. Puhimau Hot Spot	0.0	0.0	0.0
8. Pu'uhuluhulu View Pt.	0.5	0.0	0.0
9. Pu'u'ō'ō	17.0	5.8	9.7
10. Nāpau Wilderness Camp	6.8	0.0	0.0
11. Kulanaokuaiki Camp	0.7	0.0	0.0
12. 'Āinahou Ranch	0.5	0.0	0.0
13. Kīpuka Kahālī'i	0.3	0.0	0.0
14. Ka'aha Wilderness Camp	1.1	1.4	1.6
15. Top of Strip Road	12.9	0.0	0.0
16. 'Ōla'a Transect 19	0.0	0.0	0.0
17. 'Āpua Pt. Camp	0.3	2.1	2.5
18. End of Road / Visitor Use	0.8	1.5	1.4
19. Kīpuka Pepeiao Wilderness Camp	0.7	0.0	0.0
20. Pu'uloa Petroglyphs	0.9	0.0	0.0
21. Nēnē Cabin Kahuku	0.0	0.0	0.0
22. Northwest Kahuku	0.0	0.0	0.0
23. Pu'u Ohohia	0.0	0.0	0.0
24. Frontcountry Kahuku	<0.1	0.7	0.0
25. Upper Reservoir Kahuku	0.0	0.0	0.0
26. Southwest Rift Kahuku	0.0	0.0	0.0
27. 'Ōla'a Tract	0.0	0.0	0.0
28. Volcano Village*	0.0	0.0	0.0
29. Fern Forest*	0.5	0.0	0.0
30. Kalapana*	0.0	0.0	0.0
31. Discovery Harbor, Nā'ālehu*	0.0	0.0	0.0
32. Pahala*	0.8	0.0	0.0
33. Ocean View Community*	0.0	0.0	0.0
34. Volcano Golf Course Community*	0.2	0.0	0.0
35. Ka'ū Forest Reserve*	0.0	0.0	0.0
36. 'Ōla'a Kīlauea Forest Partnership*	1.5	0.0	0.0
37. Jaggar/HVO	0.2	0.0	0.0
38. Nāhuku (Thurston Lava Tube)	<0.1	0.0	0.0
39. Halapē Wilderness Camp	0.1	1.2	1.2
40. Keauhou Camp	0.2	0.8	0.4
41. Great Crack Coastal Fishing Camp	0.9	2.0	2.3
42. Petrel Breeding Area	0.0	0.0	0.0
43. Endangered Forest Bird Habitat 1	0.0	0.0	0.0
44. Endangered Forest Bird / 'Alalā Release Site*	0.0	0.0	0.0
45. Keauhou Bird Conservation Center*	0.2	0.0	0.0
46. Mauna Loa Wilderness Camp	0.0	0.0	0.0

* Location point is outside the ATMP planning area.

Table 17. Comparison of location point results for Maximum Sound Level (dB(A))

Location	No Action	Alternative 3, Standard Day	Alternative 3, Quiet Technology-only Day
1. Red Hill	32.3	9.5	0.4
2. Vicinity of Halfway House	38.7	16.6	3.6
3. Kīpukapuaulu	70.4	15.3	7.8
4. Park HQ Developed Area	62.1	17.6	11.1
5. Cone Peak, Nēnē Area	72.0	16.8	8.2
6. Halema'uma'u Crater	54.1	17.1	10.2
7. Puhimau Hot Spot	50.2	6.5	0.3
8. Pu'uhuluhulu View Pt.	57.5	11.5	6.1
9. Pu'u'ō'ō	67.2	61.5	61.5
10. Nāpau Wilderness Camp	62.1	38.7	37.4
11. Kulanaokuaiki Camp	58.6	23.3	11.2
12. 'Āinahou Ranch	55.3	27.8	21.1
13. Kīpuka Kahālī'i	54.3	28.2	19.4
14. Ka'aha Wilderness Camp	66.7	62.3	57.0
15. Top of Strip Road	64.5	11.4	2.9
16. 'Ōla'a Transect 19	43.7	18.0	11.1
17. 'Āpua Pt. Camp	58.5	63.7	58.3
18. End of Road / Visitor Use	64.7	60.9	55.4
19. Kīpuka Pepeiao Wilderness Camp	58.8	34.1	24.9
20. Pu'uloa Petroglyphs	59.2	51.2	45.1
21. Nēnē Cabin Kahuku	36.7	20.2	8.6
22. Northwest Kahuku	4.5	0.0	0.0
23. Pu'u Ohohia	21.9	21.2	12.6
24. Frontcountry Kahuku	52.2	56.9	52.0
25. Upper Reservoir Kahuku	33.2	26.5	19.6
26. Southwest Rift Kahuku	38.6	17.7	9.1
27. 'Ōla'a Tract	41.4	14.3	4.6
28. Volcano Village*	43.6	20.5	14.2
29. Fern Forest*	55.1	28.2	22.1
30. Kalapana*	24.6	19.7	6.8
31. Discovery Harbor, Nā'ālehu*	46.3	52.3	46.7
32. Pahala*	59.7	33.7	23.0
33. Ocean View Community*	36.8	46.9	35.8
34. Volcano Golf Course Community*	55.4	16.4	9.2
35. Ka'ū Forest Reserve*	49.3	29.9	17.1
36. 'Ōla'a Kīlauea Forest Partnership*	59.6	11.8	3.5
37. Jaggar/HVO	66.4	21.5	14.4
38. Nāhuku (Thurston Lava Tube)	68.8	16.8	10.0
39. Halapē Wilderness Camp	53.0	60.7	55.2
40. Keauhou Camp	54.1	58.7	52.8
41. Great Crack Coastal Fishing Camp	60.7	63.2	57.8
42. Petrel Breeding Area	28.4	7.5	0.0
43. Endangered Forest Bird Habitat 1	26.0	24.9	11.1
44. Endangered Forest Bird / 'Alalā Release Site*	47.6	13.6	5.5
45. Keauhou Bird Conservation Center*	54.5	16.6	9.5
46. Mauna Loa Wilderness Camp	10.5	3.0	0.0

* Location point is outside the ATMP planning area.

8. Indirect Effects of Potential Displacement of Air Tours outside of the ATMP Planning Area

For alternatives that limit the number of flights per year to a level below existing conditions (11,376 flights per year), it is reasonably foreseeable that current air tour operators could seek to make up lost revenue in other ways. One of the ways that operators could potentially generate revenue is by offering air tours outside of the ATMP planning area, as these would not be regulated by the ATMP. This type of shift in air tour activity is referred to as “air tour displacement,” and could consist of air tour operators shifting routes or altitudes to just outside the ATMP planning area. This could result in impacts to resources to the extent that they are present near the locations where displaced air tours would occur.

Indirect effects to ATMP planning area

Displaced air tours above the ATMP planning area (above 5,000 ft. above ground level (AGL)) would result in noise within the ATMP planning area. Compared to current conditions, the noise would be spread over a larger geospatial area and would be audible for a longer period, but at lower intensity. Thus, under Alternatives 2 and 3, some locations within the ATMP planning area may experience less intense noise but for a longer period when compared to current conditions. Additionally, other locations within the ATMP planning area not currently experiencing air tour noise may experience some noise under these alternatives when compared to current conditions. However, in both cases, the intensity of noise would likely be low given the aircraft altitude; any noise that might result could also be more easily masked by opportunistic sounds such as wind and various anthropogenic noise sources. In summary, while the area of noise could be greater under these alternatives, the intensity of noise, especially when compared to current conditions at locations near or directly below existing air tour routes, would be less.

Indirect effects outside the ATMP planning area

Displaced air tours have the potential to affect noise-sensitive locations outside the ATMP planning area. However, it is unlikely that displaced air tours would generate noise at or above DNL 65 dB. To illustrate this, a conservative, screening-level noise analysis was conducted. The analysis considers the air tour aircraft types currently operating at the Park, and assesses the activity threshold that would generate noise at or above DNL 65 dB. For the purposes of this illustration only, the analysis assumes a hypothetical, worst-case scenario where all operations occur at a low altitude (500 ft. AGL for helicopters and 1,000 ft. AGL for fixed-wing aircraft) on a common route outside the ATMP planning area. The noise analysis considers aircraft activity in two ways:

- For the aircraft type with the loudest noise level, what is the activity level that would generate a noise level at or above DNL 65 dB?
- For the aircraft types and fleet mix distribution within the 2017-2019 PMAD, what is the activity level that would generate a noise level at or above DNL 65 dB?

Analysis for aircraft with loudest noise level

The aircraft with the loudest noise level¹¹ currently operating at the park is the Bell 407. For overflight operations at 500 ft. AGL, the number of operations over a 12-hour period to exceed a DNL 65 dB level is 494 (see Table 18). Other aircraft operating at the Park are the Aerospatiale SA350D, Eurocopter EC-130 and the Cessna 208. The number of operations over a 12-hour period to exceed a DNL 65 dB level for these aircraft are 1,654, 11,534, and 3,855 respectively.

Table 18. Overflight sound exposure levels and number of daily flights of each aircraft type that would generate a noise exposure level at or above DNL 65 dB

Aircraft	Altitude, AGL (ft)	Overflight Sound Exposure Level (dB)	# daily flights for DNL to exceed 65
B407	500	87.4	494
SA350D	500	82.2	1,654
EC130	500	73.7	11,534
Cessna 208	1000	78.5	3,855

Analysis for the aircraft types and fleet mix distribution within the 2017-2019 reporting data

This analysis compares the number of PMAD operations and peak day operations, since they could occur outside the ATMP planning area as a result of Alternatives 2 and 3, to the number of daily flights it would take to exceed DNL 65 dB. Based on the fleet mix assessed for the PMAD, it would take at least 2,478 operations at low altitude over a 12-hour period to exceed a DNL 65 dB level (see Table 19). This activity level represents an increase in daily operations of 2,429 compared to the PMAD (49 operations) and an increase of 2,388 compared to the peak day (90 operations). This, coupled with the likely dispersal of air tours outside the boundary for the reasons discussed previously, indicates that it would be highly unlikely that air tours that are displaced to outside the boundary under these Alternatives would generate noise at or above DNL 65 dB.

Table 19. Number of daily flights of each aircraft type that would generate a noise exposure level at or above DNL 65 dB for the aircraft types and fleet mix distribution within the 2017-2019 PMAD

Aircraft	Altitude, AGL (ft)	Overflight Sound Exposure Level (dB)	# daily flights in 2017-2019 PMAD	2017-2019 PMAD Fleet Distribution %	# daily flights for DNL to exceed 65
B407	500	87.4	5	10.2%	253
SA350D	500	82.2	11	22.5%	557
EC130	500	73.7	32	65.3%	1,617
Cessna 208	1000	78.5	1	2.0%	51
Total			49	100%	2,478

¹¹ The determination of loudest is based on the aircraft with the highest overflight sound exposure level at 500 ft. within the noise-power-distance data that form the basis of FAA's AEDT. Sound exposure level describes the cumulative noise exposure from a single overflight. It is represented by the total A-weighted sound energy during the overflight, normalized to a 1-second interval.

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Appendix G: Cultural Resources Consultation and Summary

Historic Property List

Section 106 Consultation Correspondence

List of Historic Properties in the APE and Description of Historic Characteristics

Property Name	Property Type	Eligibility Status	Significant Characteristics
1790 Footprints	District, Site	Listed	The 1790 Footprints are scattered sets of footprints of men, women, and children and hoofprints of hogs in hardened, cement-like ash that may have been laid down during the 1790 phreatic explosions of the Kīlauea volcano. The footprints are significant for their potential association with the warriors of Keoua Kuahu‘ula, a high Hawaiian chief, who passed through the Ka‘u Desert during the 1790 eruption of Kīlauea. They are also significant for their potential to yield information for this historic period. Significant characteristics for the site include its location, cement-like ash, and the size, spacing, and configuration of the footprints.
‘Āinahou Ranch House and Gardens (Cultural Landscape)	Cultural Landscape	Listed	The ‘Āinahou Ranch House and Gardens is significant for its association with Herbert C. Shipman, a Big Island rancher, horticulturist, philanthropist, and conservationist. It is also significant as an example of a Craftsman/Bungalow style of architecture in Hawai‘i. The period of significance extends from 1941, when Shipman constructed the house as a safe haven from possible Japanese invasion during World War II, to 1971. Although the plant species on the property are more limited than during the period of significance, the landscape still retains several plant varieties, and the landscape design and association with agriculture contributes to the property’s significance. Other significant characteristics include the property’s Craftsman bungalow style, intact materials, and Japanese-influenced design.
‘Āinapō Trail	Structure	Listed	The ‘Āinapō Trail was a 34-mile-long trail that served as the customary route to the summit of Mauna Loa from the prehistoric period until 1916. The trail was engineered to ensure availability of shelter, drinking water, and firewood between the nearest permanent settlement and the summit crater; it was often used during summit eruptions to honor Pele, the goddess of volcanoes, with chants and offerings. The U.S. Army constructed a new trail to the summit for volcanologists headquartered at Kīlauea in 1916, which led to diminished usage of the ‘Āinapō Trail. The trail is significant for its prehistoric and historic use as the main route to the summit, for its engineering, and for its potential to yield information. The trail’s alignment, association with the summit of Mauna Loa, and secluded, natural setting are all significant characteristics.
Ala Wai‘i Parcel	TBD	Unevaluated ¹	The Ala Wai‘i Parcel has not been formally evaluated, but it contains known significant archeological resources (Pu‘uUla‘ula) within the parcel as well as traditional fishing areas. Potential significant characteristics of the sites include extant material culture remains,

¹ For the purposes of Section 106, the FAA is treating identified but unevaluated properties as eligible for the National Register of Historic Places.

Property Name	Property Type	Eligibility Status	Significant Characteristics
			natural sounds, quiet setting for traditional practices, an association with the ocean and surrounding landscape.
Boles Field (Kīlauea Airfield Study Areas)	Site	Eligible	Boles Field was named after the Park's first superintendent, Thomas R. Boles, and was constructed on the bluff between Uwēkahuna and the Kīlauea Military Camp in 1925. Boles Field was constructed after the previous landing field, built in 1923, was destroyed by the eruption of Halema'uma'u. Soon after construction, Boles Field was found to be dangerously short, but it was used over the next 15 years. It was also used as a location for military trucks and heavy equipment during World War II. It is significant for its association with aviation and World War II history on the island; significant characteristics include the site's location and configuration as a landing field.
Chain of Craters Road	Structure	Unevaluated	Chain of Craters Road was constructed starting in 1927. The first iteration of the road was opened in 1928 with the original alignment connecting 8 craters to Makaopuhi Crater. The road was lengthened into the Kalapana Extension in 1960, opening in 1964. The Mauna Ulu eruptions of 1969-1974 covered portions of the original alignment, which was rebuilt in 1979. The road was again damaged by eruptions in 1983. During the Kīlauea eruptions of 2014, the road was again extended into the Kalapana extension as an emergency access road. It is one of the primary roadways in the Park connecting the summit to the coastal area. Potential significant characteristics of the property include the road's alignment and its association with several craters, the summit, and the coast.
Crater Rim Drive	District, Structure	Listed	Crater Rim Drive is a 10.6-mile scenic main road within the Park that loops around the caldera rim and onto the caldera floor. The road passes through a variety of natural settings within the Park, including forests, high scrub desert, and lava fields. It is significant for its association with the early development of the Park, for its association with the Civilian Conservation Corps (CCC) program and NPS rustic style, and as an engineering feat that was designed around the Park's natural landscape. The road's alignment and design, natural setting, and association with the caldera and the CCC are all significant characteristics of the district.
Crater Rim Drive Historic District	District, Cultural Landscape	Listed	The Crater Rim Drive Historic District encompasses approximately 5,000 acres in and around the Kīlauea Caldera and contains Crater Rim Drive and its associated surrounding developments. It is significant for its association with the CCC program and early Park development between the periods of 1916 and 1942. It is also architecturally significant for its distinctive NPS Rustic-style architecture and naturalistic landscape architecture. Significant characteristics of the district include Crater Rim Drive's alignment and the district's natural setting, landscape design, rustic architecture, and association with the CCC.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Great Crack Parcel	TBD	Unevaluated	The Great Crack has not been formally evaluated, but it contains known potentially significant archeological resources and traditional fishing areas. Potential significant characteristics of the sites include any extant material culture remains and an association with the ocean and surrounding landscape.
Hale Ōhiʻa Tract Historic District	District	Listed	The Hale Ōhiʻa Tract Historic District is a small subdivision in Volcano Village containing historic buildings and structures that is marked by two large lava rock pillars. It is significant for its association with the development of the area of summer retreats in the early-twentieth century. Significant characteristics of the district include its varied, intact concentration of architecture, stone pillars, narrow roadway, and association with Volcano Village as a summer retreat.
Hawaiʻi Volcanoes National Park	TCP	Eligible	The entirety of Hawaiʻi Volcanoes National Park is significant as a Traditional Cultural Property (TCP) for its association with Native Hawaiian culture, traditions, and sacred uses. This includes the physical manifestations of the volcano, the forested areas as well as the soundscape and the airspace. Many Native Hawaiian cultural practitioners also come to Kīlauea for ceremonies, hoʻokupu, and paying tribute to the deity Pelehonuamea. The exceptional stillness and serenity of the TCP are significant characteristics that allow Native Hawaiians to continue conducting traditional ceremonies that require a quiet setting.
Hilina Pali Road	District	Listed	Hilina Pali Road is a secondary road in the Park road system that was built by the CCC between 1933 and 1942 and extends westerly from Chain of Craters Road for approximately 8.35 miles in a descent towards an overlook with a historic shelter overlooking the coastline. The road has several developed areas that are connected to the roadway containing a total of over 69 acres. It is significant for its association with the CCC and early Park development, as well as for its distinctive design and construction, including its use of NPS Rustic-style architecture. Significant characteristics of the district include the road's alignment and design, its viewshed of the surrounding landscape, rustic design, descent towards the Hilina Pali overlook, and location near the coastline.
Historical Corral and Chute	Structure	Eligible	The Historical Corral and Chute is significant for its association with the agricultural history of the Kahuku Ranch. Significant characteristics include the structure's materials and association with the Kahuku Ranch.
Historic Trails	Structures	Eligible	The majority of the trails in the Park are historic, ranging in age from ancient trails, trails associated with cattle ranching, historical Park trails, CCC era trails, and trails related to Thomas Jaggar and the Buffalo Soldiers (Mauna Loa Trail). Significant characteristics of various

Property Name	Property Type	Eligibility Status	Significant Characteristics
			historic trails throughout the Park include their locations, alignments, viewsheds, natural setting, natural sounds, and surrounding landscapes.
Johnston Summer Residence (aka Hale Ōhiʻa Cottages, Uluwena)	Building	Listed	The Johnston Summer Residence, constructed in 1931, consists of a main house, maid's quarters, and two-story carriage house with a landscaped Japanese garden. It is significant for its association with the development of Volcano Village as a summer retreat and as an example of the Queen Anne style. The residence's Queen Anne features (including its asymmetrical layout, complex roof form, fishscale shingles, turret and bay windows), association with summer tourism in the area, and surrounding landscape designed to hide the property from the street are all significant characteristics of the property.
Kahuku Ranch Base Camp	Site	Eligible	The Kahuku Ranch Base Camp Historic Site spans over 5 acres and is part of the larger Kahuku Ranch. It is significant for the U.S. military's use of the ranch between 1939 to 1947 for strategic operations during World War II. The site's significant characteristics include its rolling, pastoral landscape and location near Mauna Loa.
Kahuku Ranch Cultural Landscape	District, Cultural Landscape	Eligible	The Kahuku Ranch Cultural Landscape is locally significant for its association with the patterns of development in the cattle industry on the Island of Hawai'i and is particularly representative of the transition point in ranching history from land-responsive methods of cattle operations to more intensive infrastructure development and range management to support ranching operations in the first half of the twentieth century. The period of significance begins in 1912 when Kahuku underwent the first development as a part of the Parker Ranch and ends in 1947 when this initial phase of development was completed, and the ranch was sold to James W. Glover. This period reflects the establishment of the foundation of modern cattle ranching on the island. The Parker-era Kahuku represents the integration of early ranching practices, of large pastures and open ranges, and the first efforts to operate the ranch through infrastructural development and range management. Significant characteristics include the rolling, pastoral landscape and association with cattle ranching.
Kahuku Shrines	Site	Eligible	The entire archeological complex of the Kahuku Shrines is significant in its named association with the 16th/17th century ruling chief 'Umi-a-Līloa. Although the ties of this chief to specific features within the complex are tenuous, there are sufficient other regional associations with camps, trails, and temples in the high elevation area that support this evaluation. The Kahuku shrine also embodies the distinctive characteristics of Emory's Necker-style marae and those of shrines on Mauna Kea and Haleakalā. Further, the complex exhibits distinctive construction methods of stacked and set slabs on edge and end that are not typically found in such concentrations in low elevation areas and thus may represent an alpine/sub-alpine

Property Name	Property Type	Eligibility Status	Significant Characteristics
			construction style. Additionally, the 'Umi Caverns complex offers an opportunity to examine the convergence of high elevation land use, transportation, and ceremonial activities. Significant characteristics of the complex include its high elevation, quiet setting, and distinctive construction methods and style.
Kahuku-Āinapō Trail	Structure	Eligible	The Kahuku-Āinapō Trail is a segment of an “old trail system” that was used in historic times for driving cattle between various cattle ranching operations associated with Parker Ranch (ca. 1912-1947). Stop over locations includes various ranches in route including Kapāpala Ranch, Keahou Ranch, Humuula Sheep Station, and Pu‘u‘ō‘ō Ranch. The trail is significant as it contributes to broad patterns of history and has the potential to yield information. Significant characteristics of the trail include its alignment and its association with and location near various ranches.
Kahuku-Pōhue Parcel Archaeological Sites	Site	Eligible	The Kahuku-Pōhue Parcel contains a total of 60 sites made up of hundreds of archeological features and ethnographic resources that have the potential to yield information on Hawaiian history and prehistory. The parcel contains four resources that have architectural/engineering significance, including the traditional Hawaiian village at Kahakahakea, which was designed around the local topography. Sites also include a quarry, habitation features, shrines, and trail segments associated with the traditional practice of commuting between residences. Significant characteristics of the site include extant material culture remains, their configuration and materials, Kahakahakea’s landscape design, natural sounds, quiet setting for traditional practices, the surrounding topography, and trail alignments and their association with residences.
Kalapana Fishing and Homesteading Rights (TCP)	TCP	Eligible	The Kalapana Fishing and Homesteading Rights area is a TCP significant for its association with Native Hawaiian culture and traditions. It is located within the Puna-Ka’ū Historic District and is contributing to the district. Pursuant to the act of June 20, 1938 (52 Stat. 781; 16 U.S.C. 391b and 396a) Native Hawaiian residents of the villages adjacent to the Kalapana extension area added to the Park by the above act and visitors under their guidance are granted the exclusive privileges of fishing or gathering seafood from parklands (above the high waterline) along the coastline of such extension area. These persons may engage in commercial fishing under proper State permit. Significant characteristics of the TCP include its use and association with the ocean and coastline, quiet setting for traditional practices, and its natural coastal sounds and setting.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Kīlauea Administration and Employee Housing Historic District (Cultural Landscape)	District, Cultural Landscape	Eligible	The Kīlauea Administration and Employee Housing Historic District encompasses a collection of small-scale, rustic houses and buildings along the northeast edge of the Kīlauea Caldera. Most of the buildings and landscape features were built by CCC crews and designed following a series of master plans developed from 1931 to 1941 by the NPS Landscape and Engineering Division. The period of significance for the district is between 1927 and 1942, and it is significant for its association with the CCC and early Park planning and for its NPS Rustic-style architecture and landscape design. Significant characteristics of the district include the configuration and rustic design of the buildings, its location near the caldera, landscape design, and association with the CCC.
Kīlauea Crater	Site	Listed	Kīlauea Crater is located within the summit depression of Kīlauea Volcano, one of the earth's most active volcanoes. It is significant for its association with Native Hawaiian culture and tradition centered around the goddess Pele. It is also significant as a focal point of tourism and scientific study within the Park. The crater is used for traditional practices. Significant characteristics of the site include its quiet setting that allows Native Hawaiians to continue conducting traditional ceremonies.
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	Site	Eligible	Kīlauea Landing Field was a military landing field that was built in 1923 at the request of the US Army Hawaiian Department. It was the first airfield constructed on the Island of Hawai'i and used to photograph the Caldera for the first time from the air. The field was destroyed by the eruption of Halema'uma'u in the following year and was replaced by Boles Field. Kīlauea Landing Field is significant for its association with Hawaiian aviation history, military history, aerial photography, and the 1924 eruption of Kīlauea. The site's significant characteristics include its association with and location near Kīlauea.
Kīlauea Military Camp Historic District (Cultural Landscape)	District, Cultural Landscape	Eligible	The Kīlauea Military Camp Historic District was established in 1916 and encompasses approximately 50 acres of land. It served as the location for training the local National Guard members and also served as a rest and relaxation facility for the military. During World War II, the camp was used as a Japanese internment and prisoner-of-war camp. It is significant for its association with the military history of the area as well as for its planning and design. Significant characteristics of the district include its architecture and landscape design.
Kīpuka Ka'ōpapa	Site	Eligible	Kīpuka Ka'ōpapa is a significant archeological resource and is a vestige of the Ka'ū Agricultural Field Systems, an expansive area of intensive agriculture that was built as early as the 1400s. The site is made up of a complex network of rock walls, mounds and structures and is eligible for having information potential into past traditional agricultural practices. The site's stone

Property Name	Property Type	Eligibility Status	Significant Characteristics
			materials, extant structures and features and their configurations, natural sounds, and the agricultural landscape are all significant characteristics.
Kīpukakī	Site	Unevaluated	Kīpukakī has not been formally evaluated, but it is considered an ‘Ōiwi holy place of worship. Potential significant characteristics include the natural soundscape including birds singing and the sound of leaves in the wind.
Lithic Block Quarry	Site	Eligible	The Lithic Block Quarry is a traditional ancient stone tool production site that is significant for its potential to yield information regarding production practices. It has been mapped with 277 individual workshops where fine-grained basalt rocks were shaped into stone tools by Native Hawaiians after the late-1600s. Significant characteristics include the extant remains of lithic production and the site’s geology and location.
Mauna Loa Road	District	Listed	Mauna Loa Road, constructed between 1934 and 1962, is a secondary road through the Park that has several developments along its route. It is significant for its association with the CCC and for its NPS Rustic-style design. Significant characteristics include the road’s alignment and location near the Kīlauea Crater and Mauna Loa and the district’s rustic architecture and landscape design.
Moku‘āweoweo Caldera	Site	Eligible	Moku‘āweoweo Caldera is located at the summit of Mauna Loa and is considered a sacred place and ethnographic resource to many Native Hawaiians. Significant characteristics of the site include its quiet setting that allows Native Hawaiians to continue conducting traditional ceremonies.
Nāhuku (Thurston Lava Tube) Cultural Landscape	District, Cultural Landscape	Eligible	The Nāhuku (Thurston Lava Tube) Cultural Landscape is significant for its role in the development of tourism at Hawai‘i Volcanoes National Park and the Hawaiian Islands. The identification of the lava tube in 1912 and its popularity as a visitor destination drew attention to the site as the Park was being established. The Thurston Lava Tube complex is also significant in the history of volcanology, allowing scientists and visitors to experience the effects of volcanic activity at close range. Furthermore, features of the Thurston Lava Tube complex are significant for the association with the history of NPS design and construction and the NPS Rustic style. Certain features, such as stone walls and steps, constructed with native materials, are associated with the work of the CCC. Other improvement campaigns are related to Mission 66 goals. The Thurston Lava Tube complex is also contributing to the National Register-nominated Crater Rim Drive Historic District. Significant characteristics of the district include its rustic architecture, natural design, association with the CCC and Mission 66, and association with tourism.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Nāmakanipaio Cabin Camp District	District	Eligible	The Nāmakanipaio Cabin Camp District is a campground built in the 1960s that contains rustic cabins, camp sites, comfort stations, and picnic areas. It is significant due to its construction and design as part of the Mission 66 program and as a rare example of Hawaiian Mission 66-style architecture. Significant characteristics of the district include its rustic design and its association with camping and the Mission 66 program.
1877 Volcano House (Old Volcano House No. 42)	Building	Listed	The 1877 Volcano House (Old Volcano House No. 42) is a one-story building built in 1877 that formerly served as a hotel for visitors of Kīlauea Volcano. It is significant for its association with tourism and visitation within the Park and as an early representation of Western architecture in the area.
Pi'i Mauna Dump Site	Site	Unevaluated	The Pi'i Mauna Dump Site has not been formally evaluated, but it is a historic-age dump site encompassing approximately 450 square meters that contains a large rubble pile of old concrete, red clay fire bricks, boulders, metal fragments, and ceramics. Potential significant characteristics include the extant material culture remains.
Puna-Ka'ū Historic District	District	Listed	The Puna Ka'ū Historic District encompasses over 300 sites including village complexes, temple sites, cave shelters, petroglyph fields, and coastal trails. These sites are significant for their potential to yield information regarding Native Hawaiian socio-political religious systems, land use, and arts. The district encompasses land that is used for traditional practices. Significant characteristics include extant material culture and structure remains, trail alignments, natural sounds, quiet setting for traditional practices, and other evidence of prehistoric and historic land use.
Punalu'u Heiau	Site	Unevaluated	The Punalu'u Heiau is a Native Hawaiian temple constructed of heavy lava slabs. It is potentially significant for its association with Native Hawaiian rituals and culture. Potential significant characteristics include the heiau's materials and natural sounds and setting.
Punalu'u Springs	Site	Unevaluated	The Punalu'u Springs, also referred to as "Queen's Bath," is the location of a natural spring associated with Native Hawaiian culture. It was covered by lava flows in the 1980s and 1990s. Potential significant characteristics include the site's natural sounds and setting.
Pu'uloa Petroglyphs	Cultural Landscape	Eligible (and contributing feature to the Puna-Ka'ū Historic District)	Pu'uloa is a very sacred and religious place for many of the people of Hawai'i and has been used ritually for over 500 years. It is the largest petroglyph field in the state. There are more than 23,000 petroglyph images, mostly <i>poho</i> (cupules, or depressions) in which a portion of the umbilical cord of a newborn was placed to ensure a long life. Motifs of circles, other geometric designs, as well as cryptic designs of human representations known as anthropomorphisms, canoe sails, and even feathered cape motifs can all be found in this dense concentration. Significant characteristics of the cultural landscape include the

Property Name	Property Type	Eligibility Status	Significant Characteristics
			petroglyph designs and configurations and the site's natural sounds and quiet setting for traditional practices.
Rain Shed, Building 43	Building	Eligible	The Rain Shed, Building 43 is eligible for its design and engineering. The water collection system is an example of how water supplies were developed in areas lacking wells and how the collection technology changed over time. The water collection system was an essential element in the development of the Park. Significant characteristics of the building include its extant historic materials from the period of significance, such as its corrugated metal siding and roof, and its engineering.
Volcano Residential District	District	Eligible	The Volcano Residential District encompasses several residences in Volcano Village, located just east of the Park, that were constructed prior to World War II. The district is significant for its architecture and design. Significant characteristics of the district include its location and near Hawai'i Volcanoes National Park, its architecture, and its secluded and forested setting.
Whitney Seismograph Vault No. 29	Building	Listed	The Whitney Seismograph Vault No. 29 is an underground room constructed in 1912 that housed the study of volcanic and seismic activity at Kīlauea and Mauna Loa by American scientists between 1912 and 1961. The above-ground portion of the vault consists of a free-standing, reinforced concrete pier. The building is significant for its association with the history of the study of volcanic and seismic activity in the area. Significant characteristics of the vault include its location and association with Kīlauea.
Wilkes Campsite	Site	Listed	Wilkes Campsite is the location and remains of an 1840-1841 expedition by American scientists on the summit of Mauna Loa. It is significant for its association with military history and the history of scientific study on the island as well as for its association with Lieutenant Charles Wilkes, the leader of the expedition. It is also significant in the areas of transportation and engineering. The campsite's secluded location at Mauna Loa, volcanic setting, and extant remains of the campsite are all significant characteristics.
World War II Scrape Mounds (Kīlauea Airfield Study Areas)	Site	Eligible	The World War II Scrape Mounds were the result of efforts by the CCC and the U.S. military to destroy the two airfields and any other potential landing site for Japanese military aircraft after the Pearl Harbor attack. The features were generally caused by a 1.5-meter bulldozer bucket that was used to create mounds and depressions across the landscape. The mounds are significant due to their association with the CCC personnel efforts to deny use to the airfields, World War II in Hawai'i, and their information potential. Significant characteristics include the extant remains of the scrape mounds and depressions.



United States Department of the Interior
NATIONAL PARK SERVICE
Natural Resource Stewardship & Science
Natural Sounds and Night Skies Division



United States Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Office of Policy, International Affairs & Environment
Office of Environment and Energy

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

March 29, 2021

Re: Initiation of consultation under Section 106 of the National Historic Preservation Act for the development of Air Tour Management Plans at Hawai'i Volcanoes and Haleakalā National Parks

Suzanne Case
Chairperson and State Historic Preservation Officer
State Historic Preservation Division
1151 Punchbowl Street, Suite 555
Honolulu, HI 96813

Dear Ms. Case:

The Federal Aviation Administration (FAA) and the National Park Service (NPS) (collectively, the agencies) are developing Air Tour Management Plans (ATMPs) for 23 parks including Hawai'i Volcanoes and Haleakalā National Parks. ATMPs apply to commercial air tours flown at or below 5,000 feet above ground level in and within ½ mile of a park boundary. The agencies have determined that development of an ATMP qualifies as an "undertaking" subject to Section 106 of the National Historic Preservation Act (NHPA). The purpose of this letter is to initiate Section 106 consultation with your office in accordance with 36 CFR 800.3(c), and solicit any initial comments you may have about the proposed undertaking.

In response to a May 1, 2020 court order, the agencies are working to complete all of the ATMPs by August 31, 2022.¹ The ATMPs are being developed in accordance with the National Parks Air Tour Management Act (NPATMA). NPATMA directs the agencies to either enter into voluntary agreements with air tour operators or establish ATMPs for national parks and adjacent tribal lands where commercial air tour operations are conducted or proposed, subject to certain exceptions not relevant here.

The FAA is acting as the lead federal agency overseeing compliance with Section 106 of the NHPA for this undertaking. The FAA will be coordinating its review under Section 106 with its compliance with the National Environmental Policy Act (NEPA). Each ATMP will be unique and therefore, each ATMP will be assessed individually under Section 106 and NEPA. We look forward to meaningful consultation on the air tours and their overall effect on historic properties.

¹ For more information about the court order and proposed plan, see:
https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/

There will be no ground disturbance, construction or demolition associated with this undertaking. Air tours have been operating in Hawai'i Volcanoes and Haleakalā National Parks for over 20 years. Since 2005, these air tours have been conducted pursuant to interim operating authorizations (IOAs) as provided in NPATMA. The agencies are creating ATMPs to replace IOAs.

In accordance with 36 CFR 800.3 and NPATMA, the agencies have identified and initiated consultation with Native Hawaiian organizations, individuals, and other consulting parties who have an interest or ancestral connections to one or more of the parks (See Attachment A). We would welcome your assistance in identifying additional consulting parties along with meaningful ways to engage the public. Information regarding ATMPs is available through a dedicated web site located at: https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/. During the next phase of consultation, we will seek your input regarding the Area of Potential Effect and the identification of historic properties.

We will follow up with you in the next month. Should you wish to receive additional information regarding this undertaking, please contact Cathy Nadals at ATMPTeams@dot.gov or (202) 267-0746.

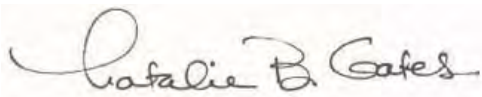
Sincerely,



Raquel Girvin
Regional Administrator
Western-Pacific Region
Federal Aviation Administration



Rhonda K. Loh
Park Superintendent
Hawai'i Volcanoes National Park
National Park Service



Natalie B. Gates
Park Superintendent
Haleakalā National Park
National Park Service

cc: Dr. Alan S. Downer via HICRIS

Attachment A: List of Consulting Parties

ATTACHMENT A
CONSULTING PARTIES LIST

Organizations
Office of Hawaiian Affairs
O Ka'u Kakou
Department of Land and Natural Resources
Office of Native Hawaiian Relations, US Department of Interior
Historic Hawai'i Foundation
Na Kupuna Moku O Keawe
The Nature Conservancy of Hawai'i
Kalapana Fishing Council
Kalauonaone O Puna Association
Edith Kanaka'ole Foundation
Kamehameha Schools
Kalapana 'Ohana Association
Maku'u Farmers Association
Kona Hawaiian Civic Club
National Trust for Historic Preservation
Naki'i Ke Aho
Na Ohana O Kalapana
Royal Hawaiian Academy of Traditional Arts
The Mary Kawena Pūku'i Cultural Preservation Society
Advisory Council on Historic Preservation
The Nature Conservancy
Department of Hawaiian Home Lands
County of Hawaii
Kalapana Community Organization
Aha Moku o Kahikinui
Aha Moku o Kaupo
Aha Moku o Maui Inc.
Ali'i 'Ai Moku O Kahekili
Royal Order of Kamehameha I
Brian Kaniela Nae'ole Na'auao
George K. Cypher 'Ohana
Na Koa Ikaika Ka Lahui Hawai'i
Nekaifes 'Ohana
Waiehu Kou Phase 3 Assoc.
Kaupo Community Association
Kipahulu 'Ohana

Kumu A`o
Wananalua Congregational Church
Friends of Haleakalā National Park
Leeward Haleakalā Watershed Restoration Partnership

Individuals
Kauilani Almeida
Gladys Brigham
Bobby Camara
Greg Herbst
Leialoha Ilae-Kaleimamahu
Piilani Kaawaloa
Mr. Sam Kahookaulana
Mr. Brian Kaniela Nae'ole Naauao
Kekuhi Keliikanakaole
Gladys Konanui
Larry Kuamo'o
Julie Leialoha
Earl Louis
Violet Makuakane
JoniMae Makuakane-Jarrell
Demetrius Olivera
John Replogle
Mabel Wilson
Nona and Herb Wilson
Paulette K. Ke
Jessie Ke
Clifford Hashimoto
Daisy Lind
Tweetie Lind
Kahu Dane Maxwell
Kahu Lyons Naone
Terry Poaipuni
Angela Tavares
Ma'ano Smith
Dana Hall
Ki'ope Raymond
Jade Alohalani Smith
Donna Sterling



United States Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Office of Policy, International Affairs & Environment
Office of Environment and Energy

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

February 21, 2023

Re: Response to Comments on the Development of an Air Tour Management Plan for Hawai'i Volcanoes National Park Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800 (HICRIS Project 2021PR00353)

Kiersten Faulkner
Historic Hawai'i Foundation
The Dole Cannery
680 Iwilei Rd., Dole Office Bldg. Tower, Suite 690
Honolulu, HI 96817

Dear Kiersten Faulkner:

The Federal Aviation Administration (FAA), in coordination with the National Park Service (NPS), seeks to continue consultation with your office under Section 106 of the National Historic Preservation Act (NHPA) regarding the development of an Air Tour Management Plan (ATMP) for Hawai'i Volcanoes National Park (the Park). The Federal Aviation Administration (FAA) hosted a consulting party meeting on November 21, 2022, for the development of an Air Tour Management Plan (ATMP) for the Park, pursuant to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800. The purposes of the meeting were to discuss the identification of historic properties that may be affected by the implementation of the ATMP, identify the area of potential effects (APE), and explain how the agency would assess effects on historic properties within the proposed APE (**Attachment 1**). At the meeting, and via email on November 22, 2022, the FAA requested consulting parties provide written comments for the agency's consideration regarding the ATMP's APE, the identification of cultural resources, and the potential effects of the undertaking on cultural resources. This letter serves as the FAA's response to comments it received from consulting parties and provides recent revisions to the APE and requests assistance identifying cultural resources within the revised APE.

The FAA received and reviewed comments from eight consulting parties, including the Historic Hawai'i Foundation and the Park's Kūpuna consultation group. The FAA considered the comments from the consulting parties in revising the APE and also sought input from the Hawai'i State Historic Preservation Division (SHPD). On January 24, 2023, the SHPD offered no objections to the revised APE, but noted that

their office looked forward to receiving and reviewing the agencies' responses to the consulting parties' comments. **Attachment 2** summarizes consulting parties' comments and provides the FAA's response.

Description of the Undertaking

Consistent with the National Parks Air Tour Management Act of 2000 (Act), the proposed ATMP for the Park would regulate commercial air tours over the Park or within a half-mile outside the boundary of the Park, referred to as the ATMP planning area. Further background information regarding the history of commercial air tours over the Park, the authority under which they are currently conducted, and the area to be regulated under the ATMP is available in the February 2022 Scoping Newsletter, prepared by the FAA and the NPS (together, the agencies) is available at the following link:

- Hawai'i Volcanoes National Park: <https://parkplanning.nps.gov/HawaiiVolcanoesATMP>

The proposed ATMP would authorize or prohibit commercial air tour operations over the Park in accordance with the conditions included in the preferred alternative. The agencies are working to select the preferred alternative for the ATMP. The preferred alternative selected will be the undertaking for the Park. The current draft action alternatives are shown in the table below, and a summary of the elements in each alternative being considered can be found in **Attachment A**. Maps of the revised alternatives under consideration were previously provided to your office in the invitations to the November 21, 2022, consulting party meeting.

Potential Undertakings for Hawai'i Volcanoes National Park

Alternative 2 – No Air Tours in the Planning Area
Revised Public Scoping Alternative 4 – Reduction of Air Tours

Revised Area of Potential Effects

The APE as defined at 36 CFR 800.16(d) is the geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of any historic properties, if any such properties exist. The proposed FAA and NPS establishment of the ATMP does not require land acquisition, construction, or ground disturbance, and the FAA anticipates no physical effects to historic properties. The FAA is therefore focusing its assessment on the potential introduction of visual or audible elements resulting from the undertaking that could diminish the integrity of any identified historic properties.

In establishing the proposed APE, the FAA sought to include areas where any historic property present could be affected by the introduction of noise from or sight of commercial air tours as a result of the implementation of the ATMP. The FAA will consider the number and altitude of commercial air tours over historic properties in these areas to further assess the potential for visual effects and any incremental change in noise levels that may result in alteration of the characteristics of historic properties qualifying them for listing in the National Register of Historic Places (NRHP).

Under Alternative 2 (no air tours) it is expected that operators would continue to fly to points of interest on the island outside of the ATMP planning area or continue routes over the Park similar to existing conditions but above 5,000 feet (ft.) above ground level (AGL). Under Alternative 2 (no air tours) and Revised Public Scoping Alternative 4 (reduction of air tours), it is reasonably foreseeable that operators would fly just outside of the ATMP planning area surrounding the volcanoes in order to view Kīlauea

crater or any active lava. While operators currently fly along most of the eastern edge of the ATMP planning area and along the flight paths proposed under Revised Public Scoping Alternative 4, automatic dependent surveillance-broadcast (ADS-B) systems data¹ of flight paths shows an absence of existing flights in a small area to the southwest of the 'Ōla'a Forest tract. It is reasonably foreseeable that if operators are unable to fly within the ATMP planning area, the implementation of the ATMP may result in more flights in this area as they may be able to hover and view the crater.

Therefore, the FAA proposes an APE comprised of the ATMP planning area (the Park and areas outside the Park but within ½ mile of its boundary) and a small area to the southwest of the 'Ōla'a Forest tract between it and the main Park as depicted in **Attachment B**. This APE encompasses the reasonably foreseeable areas where operators may fly given the implementation of the ATMP and therefore the areas within which the undertaking may directly or indirectly cause alterations in the character or use of historical properties within the APE if any such properties exist. The APE extends vertically from ground level to above-5,000 ft. AGL with no upper ceiling to encompass areas where historic properties may be affected by operators flying above the ATMP planning area. In the event that operators choose to fly above the ATMP planning area, they would likely keep to an altitude close to but just above 5,000 ft. AGL, as flights at higher altitudes would provide limited value to a sightseeing operation.

Review Request

The FAA requests assistance in identifying cultural resources within the revised APE by March 10, 2023. Specifically, please provide any additional information you may have on historic properties that may exist within the revised APE that have not yet been identified for which setting or feeling are significant characteristics. Please send information responsive to this request to Judith.Walker@faa.gov, copying the ATMP team at ATMPTeam@dot.gov

Should you have any questions regarding this letter or its attachments, please contact me at 202-267-4185 or Judith.Walker@faa.gov and copy the ATMP team at ATMPTeam@dot.gov.

Sincerely,



Judith Walker
Federal Preservation Officer
Senior Environmental Policy Analyst
Environmental Policy Division (AEE-400)
Federal Aviation Administration

CCs: Dr. Alan Downer, Deputy State Historic Preservation Officer, Hawai'i SHPD
Stephanie Hacker, Archaeologist, Hawai'i SHPD

Enclosure:

¹ ADS-B systems periodically transmits aircraft location data in real-time.

Attachment 1 – November 21, 2022, Section 106 Consulting Party Meeting Presentation
Regarding the Development of an ATMP for Hawai'i Volcanoes National Park

Attachment 2 – Response to Comments on the Development of an ATMP for Hawai'i Volcanoes
National Park

Attachment 3 – Summary of Alternatives for an ATMP for Hawai'i Volcanoes National Park

Attachment 4 – Revised APE Map for an ATMP for Hawai'i Volcanoes National Park

Attachment 5 – Revised Historic Property Identification List for Hawai'i Volcanoes National Park

ATTACHMENT 1

**NOVEMBER 21, 2022, SECTION 106 CONSULTING PARTY MEETING PRESENTATION REGARDING THE
DEVELOPMENT OF AN ATMP FOR HAWAI'I VOLCANOES NATIONAL PARK**

Section 106 Consulting Party Meeting for Hawai'i Volcanoes National Park Air Tour Management Plan

November 21, 2022

NPS Photo

National Parks ATMP Program
November 21, 2022



Federal Aviation
Administration



National
Park Service

Agenda

- Oli
- Housekeeping
- Introductions
- Provide Project Overview
- Development of Area of Potential Effects
- Identification of Historic Properties
- Review Proposed Alternatives
- Discuss Agencies' Assessment of Effects
- Next Steps
- Request Input from Consulting Parties



E Hō Mai

Composed by: Edith Kanaka'ole

E Hō Mai

—

*E hō mai (i) ka 'ike mai luna mai ē
'O nā mea huna no'eau o nā mele ē*

Grant us the knowledge from above
Concerning the hidden wisdom of songs,

E hō mai

Grant,

E hō mai

Grant,

E hō mai ē (a)

Grant us these things

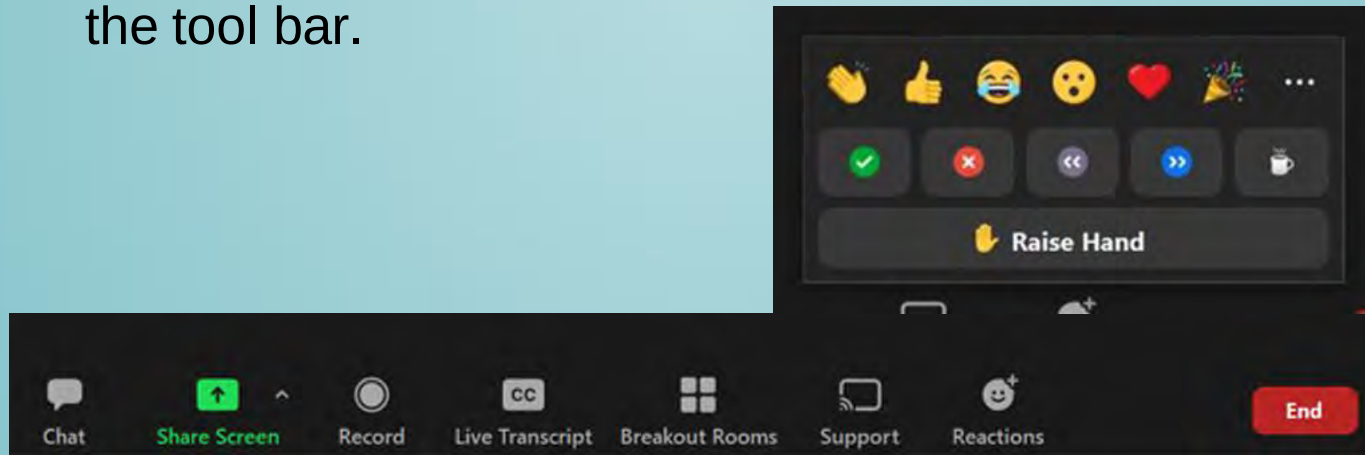
Repeat 3x

Edith K. Kanaka'ole composed this *oli* (chant) for her hula school, *Hālau O Kekuhi*. Students would perform the chant to ask for guidance from their ancestors for the undertaking that lay ahead.

Today, this *oli* is used to start an event or gathering in order to ask for guidance and direction with the endeavor at hand.

Housekeeping

- Please **mute your mic** except when talking, this improves the sound quality for all.
- Please type your full name in chat box to identify yourself if your name does not appear in Zoom.
- If you have any questions/comments please use the "Raise Hand" icon or submit your comment in the chat box.
 - The raise your hand icon can found under "Reactions" on the tool bar.



Introductions – Federal Agencies

Federal Aviation Administration

- Judith Walker – Federal Preservation Officer
- Keith Lusk – Program Manager

National Park Service, Hawai'i Volcanoes National Park

- Rhonda Loh - Superintendent
- Danielle Foster- Environmental Protection Specialist
- Summer Roper Todd - Archeologist & Cultural Resources Program Manager
- Charone O'Neil-Naeole – Hawaiian Community Liaison



Introductions – Consulting Parties

- Native Hawaiian Organizations
- Kūpuna
- Hawai‘i State Historic Preservation Division (SHPD)
- Adjacent Land Managers
- Operators



NPATMA Overview

- Enacted April 5, 2000
- Requires an ATMP or Voluntary Agreement
- The agencies have chosen to develop an ATMP for this park
- Required FAA to grant Interim Operating Authority (IOA) for existing commercial air tour operations
 - Based on the number of flights conducted in the 12-month period prior to enactment of NPATMA (or average of three prior years)
 - Granted 26,664 IOA to 10 operators for Hawai'i Volcanoes
 - IOA was published in the Federal Register in 2005
- Established the National Parks Overflights Advisory Group (NPOAG) to provide advice and guidance to the agencies from personnel with aviation, environmental, and tribal interests.



Project Overview

- **Purpose:** comply with National Parks Air Tour Management Act (NPATMA) and other applicable laws, consistent with the Plan and Schedule for Completion of Air Tour Management Plans (ATMPs) at 23 Parks under Court Order
- **Need:** NPATMA requires the FAA, in cooperation with the NPS, to develop an ATMP for Parks with applications to conduct commercial air tours.
- **Objective of the ATMP:** under NPATMA - develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tour operations on the natural and cultural resources, traditional cultural properties (TCPs), sacred sites and ceremonial areas, wilderness character, and visitor experiences

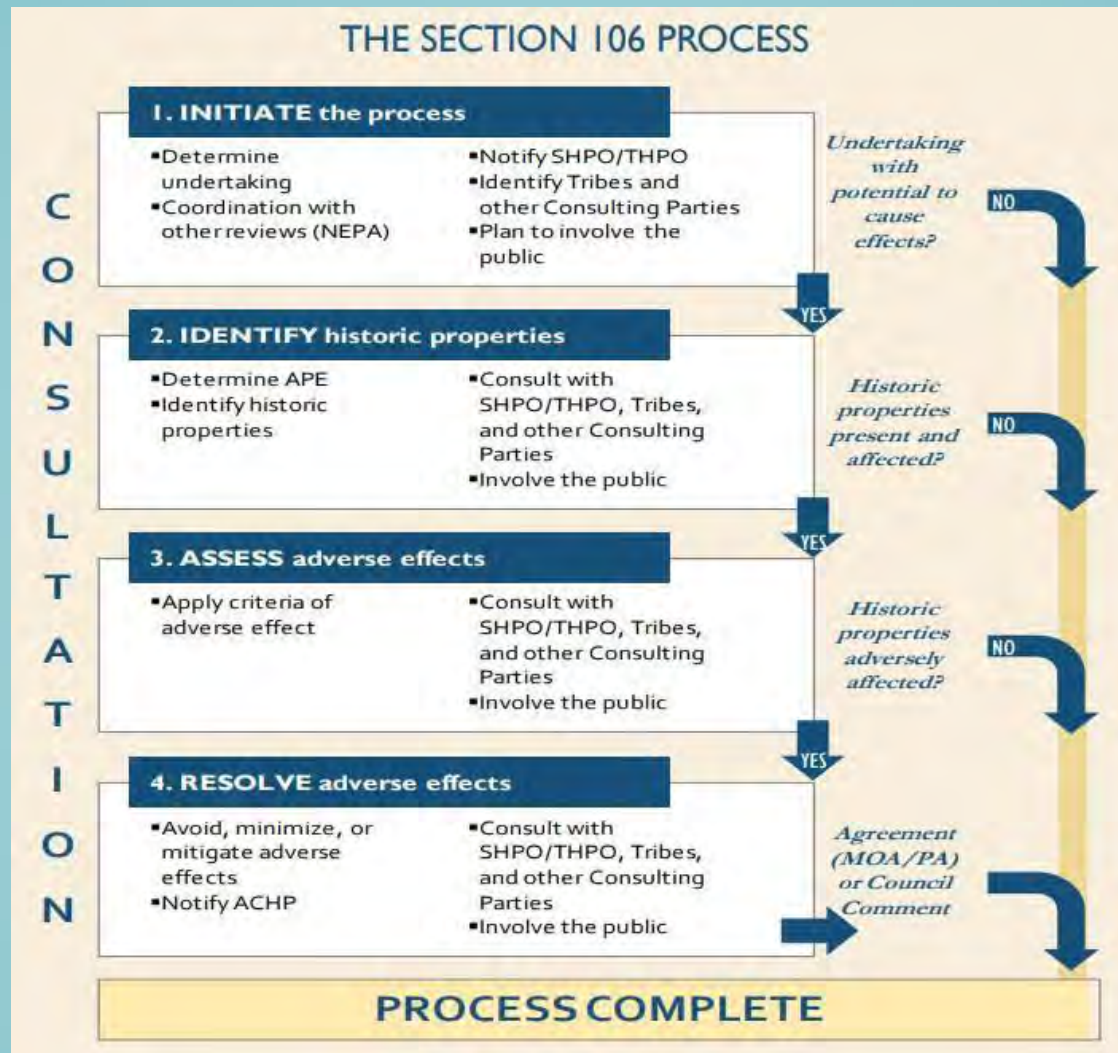


Project Overview

- Undertaking- development of an ATMP for the Park
- ATMP would regulate commercial air tours over the Park or within a half-mile buffer during which the aircraft flies below 5,000 ft. AGL
- Three alternatives are being considered for the ATMP at the Park
- Consultation under Section 106 was re-initiated in 2021 and is ongoing
- Both the FAA and NPS must prepare National Environmental Policy Act (NEPA) documentation and sign the decision document for the ATMP
 - The FAA is acting as the lead agency overseeing compliance with NEPA and Section 106 consultation under the National Historic Preservation Act (NHPA), with the NPS serving as a cooperating agency
 - An Environmental Assessment (EA) will be prepared for the Park



Steps of the Section 106 Process



Graphic from *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106*

Development of Area of Potential Effects

Area of Potential Effects (APE) is defined as *“the geographic area or areas within which an undertaking may directly or indirectly cause alteration in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.”* 36 CFR 800.16(d)

- The APE is based on the undertaking and its potential impacts to cultural resources in accordance with 36 CFR 800.
- Potential impacts include the introduction of audible or visual elements



Area of Potential Effects with Historic Properties at Hawai'i Volcanoes National Park

• Historic Site

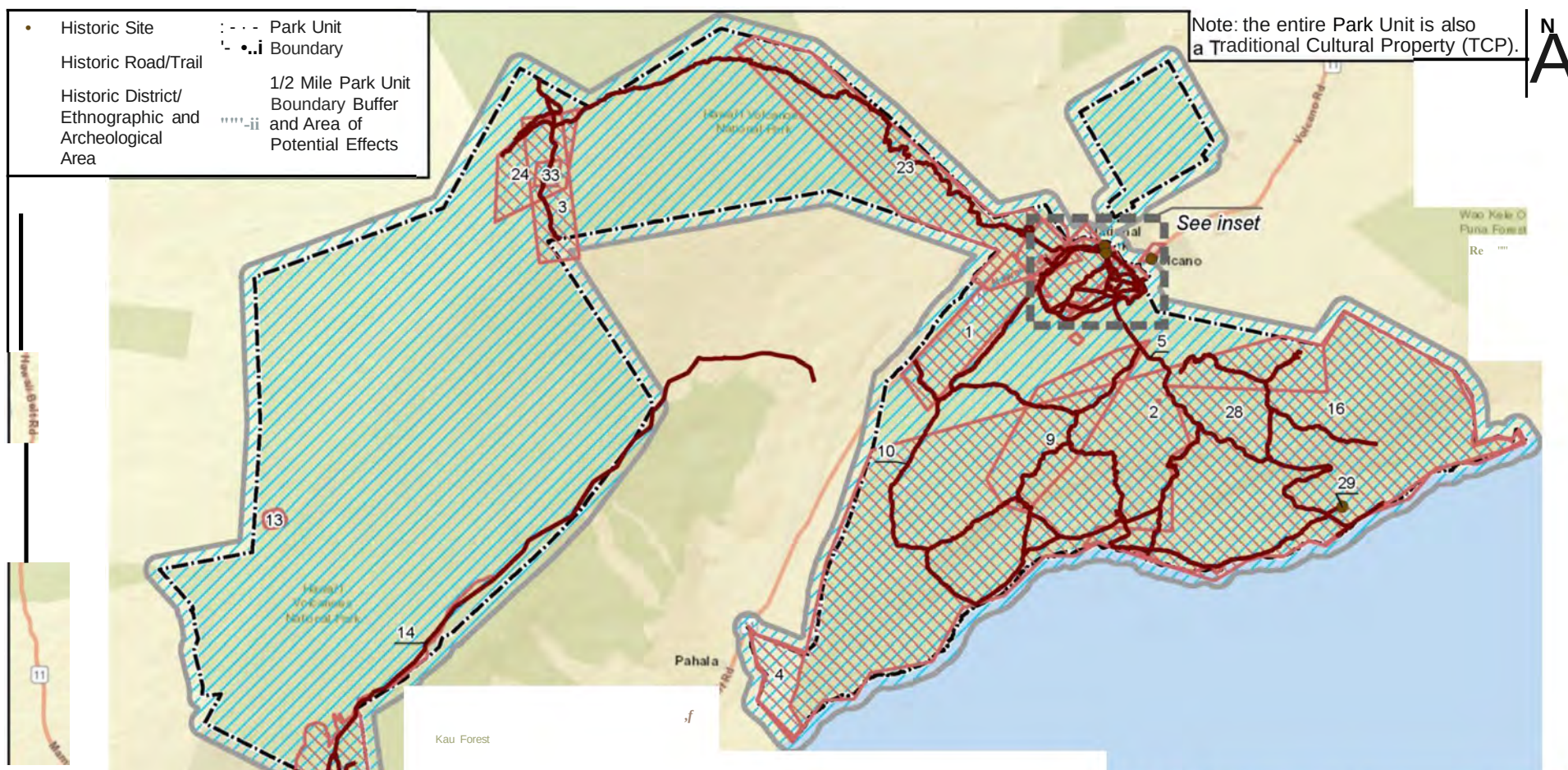
Historic Road/Trail

Historic District/
Ethnographic and
Archeological
Area

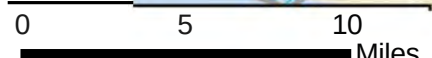
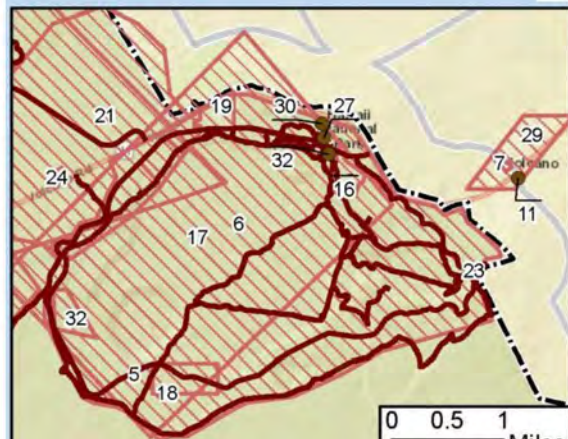
- - - Park Unit
Boundary

••••• 1/2 Mile Park Unit
Boundary Buffer
and Area of
Potential Effects

Note: the entire Park Unit is also a Traditional Cultural Property (TCP).



Key	Property	Key	Property
1	1790 Footprints	18	Kīlauea Crater
2	'Aīnahou Ranch House and Gardens (Cultural Landscape)	19	Kīlauea Landing Field (Kīlauea Airfield Study Areas)
3	'Aīnap6 Trail	20	Kīlauea Military Camp Historic District
4	Alawai'i Parcel	21	Kīpuka Ka'Opapa
5	Chain of Craters Road	22	Uthic Block Quarry
6	Crater Rim Drive	23	Mauna Loa Road
7	Crater Rim Historic District (Cultural Landscape)	24	Moku'aweoweo caldera
8	Hale Ohī'a Tract Historic District	25	Nahuku Cultural Landscape
9	Hilina Pali Road	26	Namakani Pato Cabin camp District
10	Historic Trails	27	Old Volcano House No. 42
11	Johnston Summer Residence (aka Hale Ohī'a Cottages, Uluwena)	28	Puna-Ka'OHistoric District
12	Kahuku Ranch Base Camp Historic Site	29	Pū'uloa Petroglyphs
13	Kahuku Shrines	30	Rain Shed, Building 43
14	Kahuku-'Aīnao6 Trail	31	Volcano Residential District
15	Kahuku-POhue Parcel Archaeological Sites	32	Whitney Selsmo'1:raph Vault No. 29
16	Kalapana Fishing and Homesteading Rights (TCP)	33	Wilkes Campsite
17	Kīlauea Administration & Employee Housing		



Preliminary Identification of Historic Properties

For identifying historic properties within the APE, the FAA and NPS consider the:

- views of consulting parties, planning, research, and studies
- the magnitude and nature of the undertaking
- the nature and extent of potential effects on historic properties, and the use of traditional cultural properties associated with cultural practices, customs or beliefs that continue to be practiced today

Current Identification Efforts include:

- data pulled from NPS and the Hawai'i State Historic Preservation Division's (SHPD) Hawai'i Cultural Resource Information System identified 41 above-ground historic properties within the APE, which includes a TCP, the entire boundary of the park, and several cultural landscapes

Preliminary Identification of Historic Properties

- Traditional Cultural Property (TCP) defined as entire park boundary
- 'Āinahou Ranch
- 1790 Footprints
- Wilkes Campsite
- Whitney Vault
- Kīlauea Crater
- Old Volcano House No. 42 (1877 Volcano House)
- Hilina Pali Road
- Mauna Loa Road
- 'Āinapō Trail
- Puna-Ka'ū Historic District
- Pu'uloa Petroglyphs
- Crater Rim Drive National Register
- Kahuku Ranch Base Camp Historic Site
- Boles Field (Kīlauea Airfield Study areas)
- Kīlauea Landing Field (Kīlauea Airfield Study areas)
- World War II Scrape Mounds (Kīlauea Airfield study areas)
- Historic Trails
- Moku'āweoweo Caldera
- Kahuku-Pōhue parcel
- Alawai'i parcel
- Great Crack
- Kilauea Military Camp Historic District
- Lithic Block Quarry
- Crater Rim Historic District
- Kīlauea Administration and Employee Housing Historic District
- Historical Corral and Chute
- Kahuku Shrines
- Kalapana Fishing and Homesteading Rights
- Nāhuku Cultural Landscape
- Namakani Paio Cabin Camp District
- Rain shed, building 43
- Kipuka Kaopapa- Ka'ū Agricultural Field Systems
- Kahuku Ranch Cultural Landscape
- Kahuku-'Āinapō Trail
- Volcano Residential District
- Chain of Crater Road
- Hale Ōhi'a Tract Historic District
- Johnston Summer Residence (aka Hale Ōhi'a cottages, Uluwena)
- Punalu'u Heiau
- Punalu'u Springs



Questions or Comments?



Existing Air Tour Operations – Hawai'i Volcanoes National Park

Operator	Aircraft Type	2017 Reported Tours	2018 Reported Tours	2019 Reported Tours	3-year Reported Average No. of Air Tours (2017-2019)	Interim Operating Authority (IOA)
Above itAll Inc. (Sporty's Academy Hawai'i, Hawai'i Island Hoppers, Hawai'i Airventures, Benchmark Flight Center)	no data	0	0	0	0	3,878
Big Island Air Inc.	fixed wing	102	7	0	36	1,643
Hawai'i Helicopters Inc. (Helicopter Consultants of Maui, Inc.)	helicopter	139	50	67	85	141
Helicopter Consultants of Maui Inc. (Hawai'i Helicopter, Blue Hawaiian Helicopters)	helicopter	12,300	6,059	7,325	8561	12,413
K&S Helicopters (Paradise Helicopters)	helicopter	877	552	248	559	1,684
Manuiwa Airways Inc. (Volcano Helicopters, Volcano Heli-Tours)	no data	0	0	0	0	800
Mokulele Flight Service Inc. (Mokulele Airlines)	fixed wing	0	15	0	5	60
Safari Aviation Inc. (Safari Helicopter Tours)	helicopter	1,977	1,050	995	1341	3,920
Schuman Aviation Company, Ltd. (Makani Kai Helicopters)	no data	0	0	0	0	25
Sunshine Helicopters Inc.	helicopter	1,125	600	641	789	2,100
		16,520	8,333	9,276	11,376	26,664

Existing Air Tour Operations

- 10 operators with Interim Operating Authority (IOA) – 7 are reporting tours
- 11,376 flights per year on average.
- IOA for up to 26,664 flights, most are helicopter operations with a few fixed wing operations
- No time-of-day restrictions
- No provisions for NPS to establish temporary no-fly periods.
- Tours occur year-round on most days of the year.
- January is the peak operation month with a 3-year average of 1,474 flights or about 47.5 flights per day during the peak month



Proposals for the Undertaking

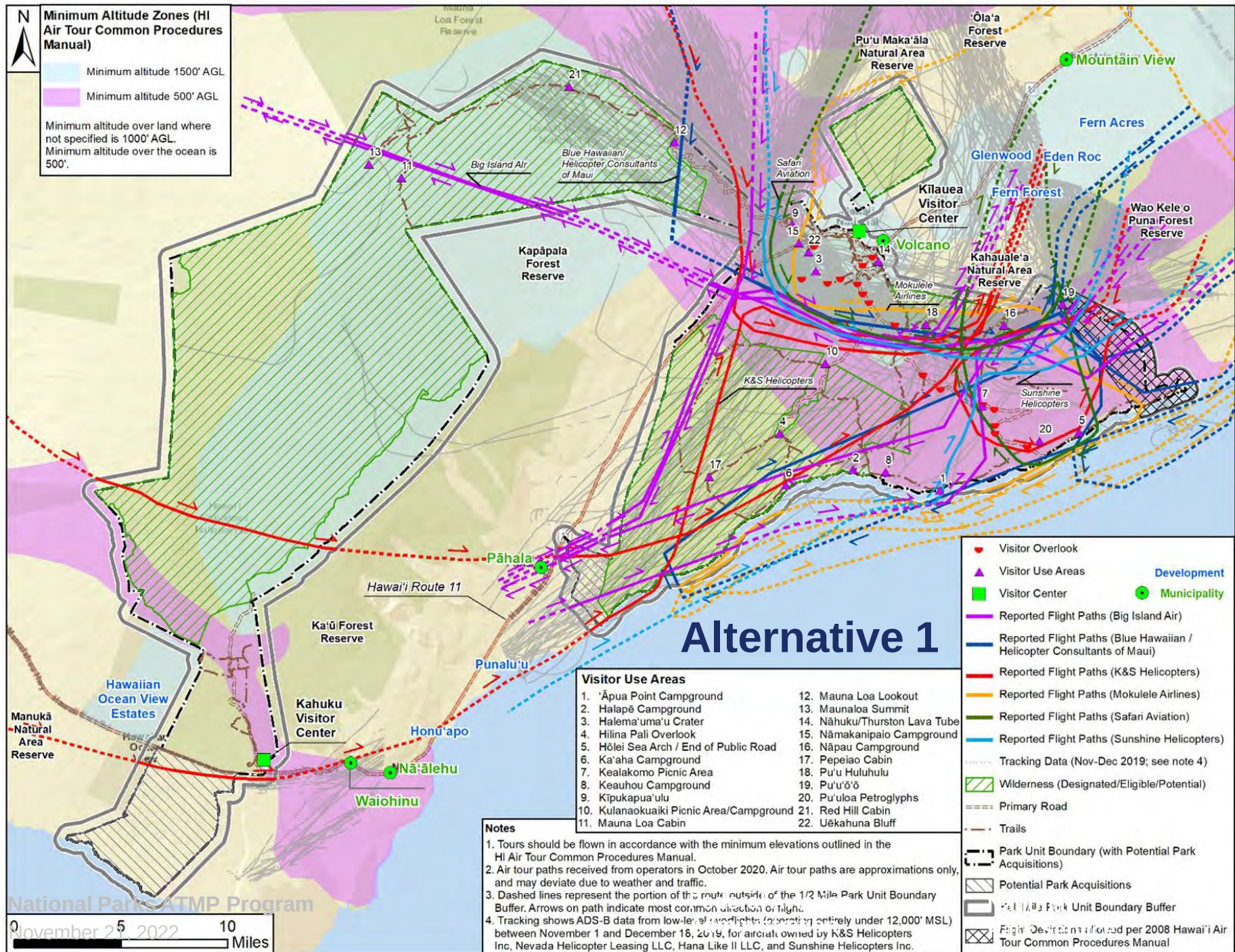
- ~~Alternative 1 (No Action)~~
 - No Action – Continuation of current conditions up to IOA limits
 - Not selectable as NPATMA requires implementation of ATMP or Voluntary Agreement
- **Alternative 2 (No Air Tours within Planning Area)**
 - No air tours within 5,000ft AGL over or within ½ mile of the Park
 - Air tours could still occur outside of this area and around the Park
- **Alternative 4 (Revised from Public Scoping)**
 - Reduction in annual number of commercial air tours over the Park
 - Three routes with altitudes ranging from 1,500 – 2,000ft AGL
 - Flights permitted between 10AM-2PM/QT flights from 9AM – 5 PM
 - No air tours on Sundays
 - Only QT flights on Wednesdays
 - Circling allowed only on one route

Minimum Altitude Zones (HI Air Tour Common Procedures Manual)

Minimum altitude 1500' AGL

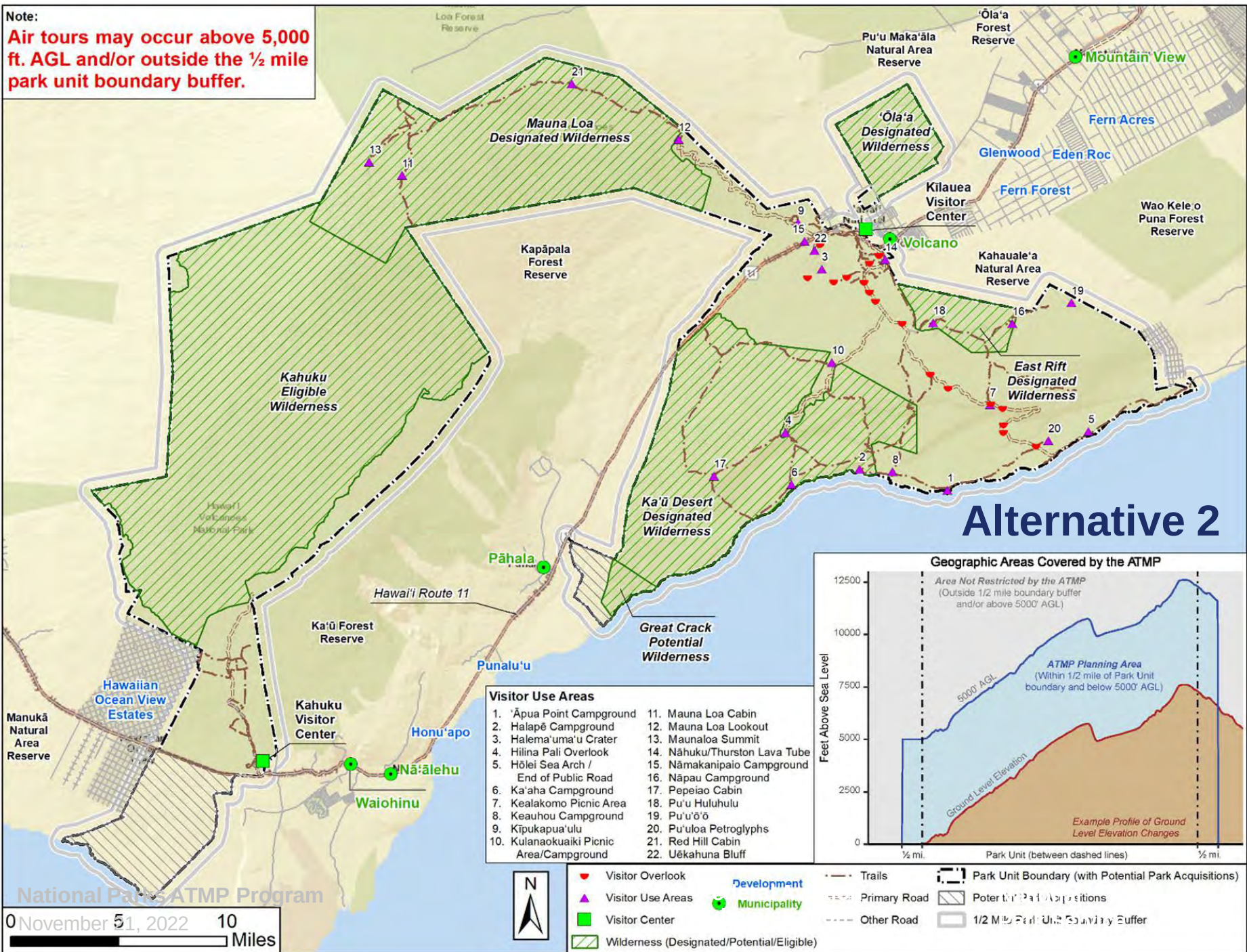
Minimum altitude 500' AGL

Minimum altitude over land where not specified is 1000' AGL. Minimum altitude over the ocean is 500'.



Note:

Air tours may occur above 5,000 ft. AGL and/or outside the ½ mile park unit boundary buffer.



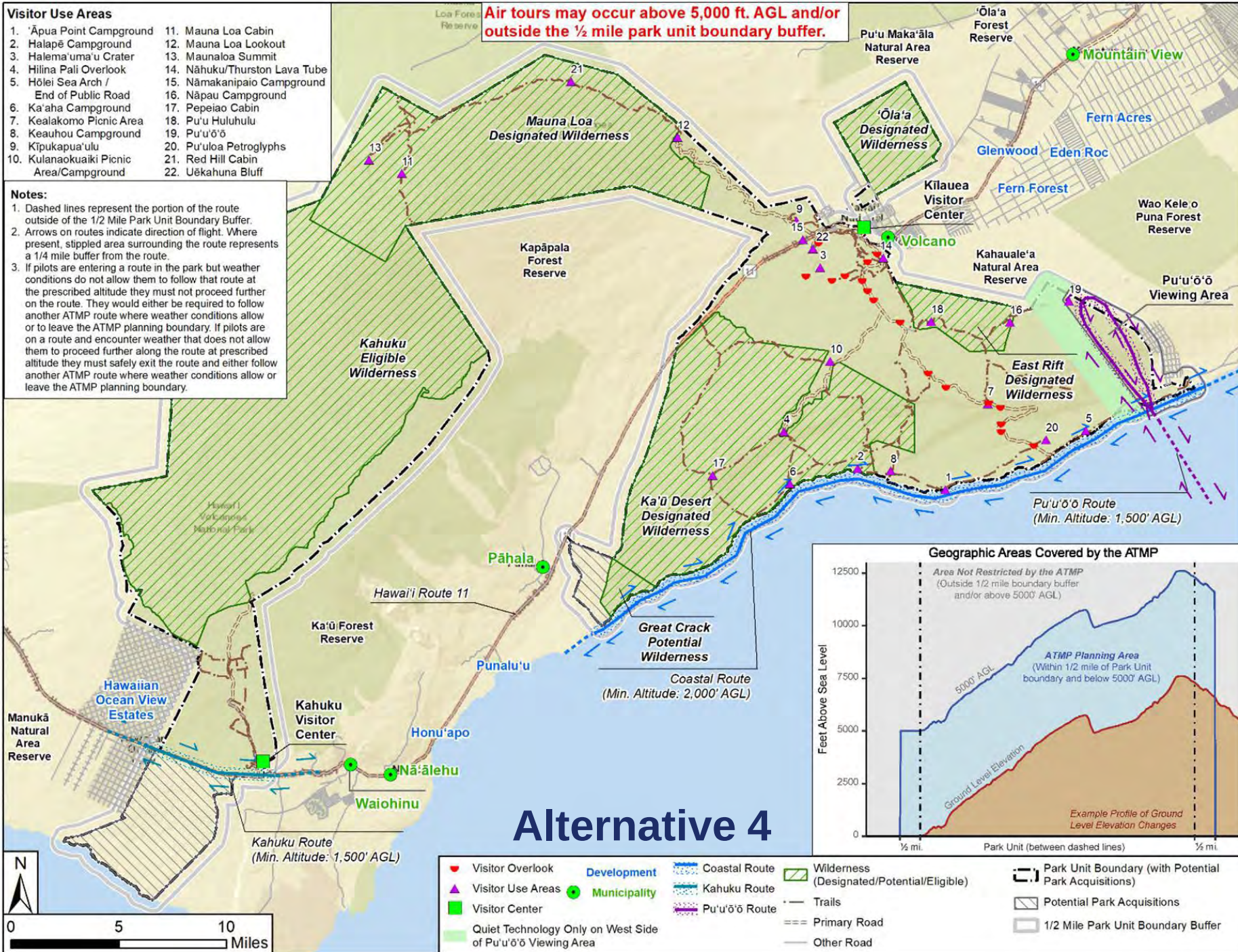
Visitor Use Areas

1. Āpuā Point Campground
2. Halapē Campground
3. Halema'uma'u Crater
4. Hilina Pali Overlook
5. Hōlei Sea Arch / End of Public Road
6. Ka'aha Campground
7. Kealakomo Picnic Area
8. Keauhou Campground
9. Kīpukapua'u
10. Kulanaokuaiki Picnic Area/Campground
11. Mauna Loa Cabin
12. Mauna Loa Lookout
13. Maunaloa Summit
14. Nāhuku/Thurston Lava Tube
15. Nāmakanipaio Campground
16. Nāpau Campground
17. Pepeiao Cabin
18. Pu'u Huluhulu
19. Pu'u'ō'ō
20. Pu'uoloa Petroglyphs
21. Red Hill Cabin
22. Uēkahuna Bluff

Notes:

1. Dashed lines represent the portion of the route outside of the 1/2 Mile Park Unit Boundary Buffer.
2. Arrows on routes indicate direction of flight. Where present, stippled area surrounding the route represents a 1/4 mile buffer from the route.
3. If pilots are entering a route in the park but weather conditions do not allow them to follow that route at the prescribed altitude they must not proceed further on the route. They would either be required to follow another ATMP route where weather conditions allow or to leave the ATMP planning boundary. If pilots are on a route and encounter weather that does not allow them to proceed further along the route at prescribed altitude they must safely exit the route and either follow another ATMP route where weather conditions allow or leave the ATMP planning boundary.

Air tours may occur above 5,000 ft. AGL and/or outside the 1/2 mile park unit boundary buffer.



Alternative 4

Assessment of Effects

- **The proposed ATMP draft alternatives would not require land acquisition, construction, or ground disturbance**
 - No physical effects to historic properties anticipated
- **Focus of the assessment – new introduction of visual or audible elements beyond current effects that could diminish the integrity of any identified significant historic property**
 - The FAA and NPS will consider consulting parties' input on potential adverse effects
 - Analyze visual and audible elements of air tours



Questions or Comments?



Next Steps – Section 106 Consultations

The FAA and the NPS will:

- Revise alternatives as needed based on the comments received during consultation
- Continue to consult on the APE and identification of historic properties (including TCPs or sacred sites) within the APE
- Complete impact modeling and analysis
- Complete and distribute EA and Draft ATMP for comment
- Be open to holding additional consultation meetings to discuss development of an ATMP and ways to avoid or minimize any adverse effects that could result from air tours in the APE
- Send a consolidated consultation letter summarizing the FAA's steps in the Section 106 process and the effects to historic properties for consulting party input this winter
- Complete and distribute EA and Draft ATMP for comment and hold a public meeting

The findings reached during the Section 106 consultation process will inform decision on the final ATMP.



THANK YOU

- **Should you wish to provide further input on cultural property identification and/or the area of potential effects, please contact:**
 - Judith Walker at (202) 267-4185 or at judith.walker@faa.gov, copying ATMPTeam@dot.gov



ATTACHMENT 2

RESPONSE TO COMMENTS ON THE DEVELOPMENT OF AN ATMP FOR HAWAI'I VOLCANOES NATIONAL PARK

The following table provides an overview of consulting parties' comments on the development of an Air Tour Management Plan (ATMP) for Hawai'i Volcanoes National Park (the Park) and the Federal Aviation Administration's (FAA) responses to those comments.

Commenter	Correspondence	Summary of Comments	Response
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Instead of an ATMP, requests info on Voluntary Agreements and recommends a negotiated Agreement that addresses the full range of impacts—including those which may occur from flights within the park boundary that are higher than 5,000 feet AGL—could be more effective than an ATMP.	This request is outside the scope of the Section 106 assessment.
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Disagrees with the proposed APE - should include areas potentially affected by the commercial air tours, including areas in which tours either are currently operating or in which they may begin to fly over if the ATMP is changed from the current conditions.	In establishing the revised APE, the FAA sought to include areas where any historic property present could be affected by introduction of noise from or sight of commercial air tours as a result of the implementation of the Air Tour Management Plan (ATMP).
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Recommends the summary table of historic properties include a summary of the properties' character-defining features, with attention to those that may be affected by the air tours through visual, audible or atmospheric elements (ex: HAVO NPS TCP - the importance of its natural soundscape)	The agencies are including a summary of character defining features for the list of historic properties identified within the revised APE.

Commenter	Correspondence	Summary of Comments	Response
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Requests inclusion of historic districts and resources in the APE in the adjacent towns of Volcano Village, Wai'ōhinu and Nā'ālehu, as well as the cultural landscapes in Wao Kele o Puna	Portions of Volcano Village are included in the revised APE, including the Hale Ōhi'a Tract Historic District, Johnston Summer Residence (aka Hale Ōhi'a Cottages, Uluwena), and Volcano Residential District. Wai'ōhinu, Nā'ālehu, and Wao Kele o Puna are outside the revised APE.
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Recommends a fourth Alternative to manage air tours to avoid or minimize adverse effects on historic properties in the (recommended and expanded) APE, including areas impacts from flights that are higher than 5,000 AGL or that occur over sensitive areas that are more than half-mile from the park boundary - would need to be implemented via Agreement instead of ATMP Concerns that Alternatives would allow for flights over Halema'uma'u Crater higher than 5,000 feet above ground level	The ATMP for this park is being implemented pursuant to the National Air tour Management Act (the Act) and its implementing regulations. The regulations define a commercial air tour as: [A]ny flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of any national park, or over tribal lands during which the aircraft flies: (i) Below 5,000 feet above ground level (except for the purpose of takeoff or landing, or as necessary for the safe operation of an aircraft as determined under the rules and regulations of the Federal Aviation Administration requiring the pilot-in-command to take action to ensure the safe operation of the aircraft); [or] (ii) Less than 1 mile laterally from any geographic feature within the park (unless more than ½ mile outside the boundary). Therefore, the agencies do not have authority to regulate air tours above 5,000 ft. above ground level.

Commenter	Correspondence	Summary of Comments	Response
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Supports the Kūpuna Advisory Council's and the Office of Hawaiian Affairs' recommendations against commercial tours and request for a minimum vertical buffer of 9,000 feet above the volcano (or other minimum level to be determined by the Traditional Cultural Property study) and/or a complete "no fly zone" over HAVO	Comment noted.
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Concerns with effects on the designated and eligible wilderness areas that are also rich cultural landscapes, including those on Mauna Loa, 'Ōla'a, East Rift, Ka'ū Desert, Great Crack and Kahuku	The agencies are taking into consideration natural resources that contribute to the cultural resources in the APE.
Kiersten Faulkner, Historic Hawai'i Foundation	12/01/22 Letter	Supports working meetings with consulting parties (including air tour operators) about historic properties to craft another alternative	This request is outside the scope of the Section 106 process. The agencies have considered input from the public and stakeholders including the consulting parties in the development of the alternatives included in the draft Environmental Assessment and the alternatives presented at the Nov. 21, 2022, consulting party meeting.
Kūpuna consultation group providing input to the leadership of Hawai'i Volcanoes National Park	11/21/22 Letter	Opposes any commercial air tours over the Park	Comment noted.
Nona Wilson	12/21/22 Letter	Opposes any commercial air tours over the Park. Provided past documentation summarizing Kūpuna opposition to commercial air tours over the Park and expressed concerns regarding air tour impacts on the sacredness of the entire Park (including the ground, air, and ocean) and	Comment noted.

Commenter	Correspondence	Summary of Comments	Response
		the effects of noise pollution on cultural resources and ceremonies. The past documentation noted that natural resources are also cultural resources.	
Aku Hauanio, former HAVO National Park Specialist	12/01/22 Email	Concerns about lands adjacent to Mauna Loa Strip, home to critically endangered species of birds (‘akiapōlā’au, ‘akepa and ‘alawī) only found on this island. Areas of concern include Keauhou Ranch, Kīlauea Forest, Kulani, and Pu‘u Maka‘ala Natural Area Reserve as critical habitats that need protection. These birds are the last of their kind in the world. Any type of aerial commotion can put these birds at high-risk of extinction. Each species has a different breeding season and cannot have any type of disturbances all year. The State Department of Land and Resources are breeding the endangered ‘alalā and introducing them back into the wild. For them to be successful in their plan to repopulate, there absolutely needs to be no aerial uproar, as they are hunted by other birds and fear anything flying above them. Kapāpala Ranch is the preferred and best route to prevent the extinction of Native Birds in Hawai‘i since there are currently no endangered species of forest birds.	This comment was shared with the NEPA team for consideration.

Commenter	Correspondence	Summary of Comments	Response
Kalena K. Blakemore, Office of Hawaiian Affairs, OHA (NHO) Representative, Land Agent for Wao Kele o Puna Forest Reserve	12/01/22 Email	Notes that the Office of Hawaiian Affairs (OHA), Compliance Enforcement Program, previously provided a comprehensive written response detailing the concerns and issues with the ATMP (see OHA letter to Cathy Nadals, Cultural Resource Specialist, FAA, dated January 24, 2022) and has also expressed a preference for Alternative 2 as part of the ATMP public scoping process (see OHA letter to Cathy Nadals, Cultural Resource Specialist, dated April 1, 2022).	Comment noted.
Kalena K. Blakemore, Office of Hawaiian Affairs, OHA (NHO) Representative, Land Agent for Wao Kele o Puna Forest Reserve	12/01/22 Email	Concerns about FAA's understanding and definitions of cultural resources. 'Ōiwi culture includes a multitude of gods (Kū, Kāne, Kanaloa, Lono, Hina, Pele), represented in elements such as plants, marine and terrestrial animals, birds, fire, lava, wind, rain, clouds, water, lightning, thunder, ocean currents, mountains, ridges, rock and forests. 'Ōiwi cannot separate these elements from the historic properties identified in the NHPA Section 106 consultation process and endeavor to protect all these resources as they directly relate to 'aumakua (family guardians), genealogy and ancestors.	Comment noted.
Kalena K. Blakemore, Office of Hawaiian Affairs, OHA (NHO) Representative, Land Agent for Wao Kele o Puna Forest Reserve	12/01/22 Email	Concerns about the APE and requests its expansion to include the atmosphere of the height of Pele's plume to better protect OHA's natural and cultural resources.	See above APE comment. The revised APE extends vertically from the ground level to encompass areas where operators may fly above the ATMP planning area (i.e., higher than 5,000 ft. AGL).

Commenter	Correspondence	Summary of Comments	Response
Kalena K. Blakemore, Office of Hawaiian Affairs, OHA (NHO) Representative, Land Agent for Wao Kele o Puna Forest Reserve	12/01/22 Email	Concerns about flight safety. OHA endured a helicopter crash in March 2020. The accident occurred in our 5-acre clearing where OHA practices their culture through hosting school groups for 'Ōiwi-place based learning. Several 'ōhi'a (keystone trees) were sacrificed to the accident and oil/fuel spilled on the grounds of the watershed (Pāhoa Aquifer). This was not just a major safety issue but a violation to OHA's natural and cultural resources and cultural practices. The FAA's conceived safety concerns and 'Ōiwi natural/cultural resources and practices are not mutually exclusive.	This comment is beyond the scope of the Section 106 assessment. However, this comment has been provided to agency personnel for consideration.
Kalena K. Blakemore, Office of Hawaiian Affairs, OHA (NHO) Representative, Land Agent for Wao Kele o Puna Forest Reserve	12/01/22 Email	Requests Kipukakī be considered as a sacred site. It is not listed as a historic property but is an 'Ōiwi holy place of worship in the path of air tours which can run every 15 minutes, creating great noise impacts. Asks it be acknowledged in the NHPA Section 106 consultation process.	Kīpukakī has been added to the historic property list.
Kalena K. Blakemore, Office of Hawaiian Affairs, OHA (NHO) Representative, Land Agent for Wao Kele o Puna Forest Reserve	12/01/22 Email	Requests FAA and NPS consider the impacts of air tours on the 'Ōiwi, who sacrifice their natural and cultural resources to for-profit commercial helicopter tours, with no benefit.	All contributing features of the sacred sites, ethnographic resources and traditional cultural properties entirely or partially within the revised APE will be considered in the evaluation of effects.

Commenter	Correspondence	Summary of Comments	Response
Earl Louis	12/05/22 Telephone Conversation	Against any air tours or traffic where he lives, which is about 80 miles from the coastline and part of HAVO in the District of Ka'ū on Hawai'i Island. Also noted that the coastline is pristine.	Comment noted.
John Carse	12/01/22 Email	Asks why historic properties outside of the park are not identified, since aircraft routes show overflights will go inside and outside the park boundaries. All government programs are responsible for indirect effects of any action (40 CFR, Section 1508.8). Asks why NPS is not cataloging historical sites along the established routes effected by the pollution caused by aircraft all the way back to the airports.	In establishing the revised APE, the FAA sought to include areas where any historic property present could be affected by introduction of noise from or sight of commercial air tours as a result of the implementation of the ATMP. Historic properties outside the park but within the APE are included in the historic property identification. See comment above explaining agency authority to regulate air tours.
John Carse	12/01/22 Email	Asks how the regulation of flights over historic sites will be enforced. Asks how air tours flying over park historical sites in violation of the ATMP will be identified and held accountable.	This comment is beyond the scope of the Section 106 process. However, as stated in the Park's February 2022 Newsletter, aircraft monitoring and enforcement will occur under the ATMP and NPS will continue to maintain its ADS-B flight tracking system to monitor commercial air tour activity within the Act's jurisdictional boundaries.
John Carse	12/01/22 Email	Asks if the November 21, 2022 meeting minutes will be made available online.	The agencies are providing the slide deck presentation for the November 21, 2022 consulting party meeting in the attachments to this letter. No further notes will be provided.

ATTACHMENT 3

SUMMARY OF ALTERNATIVES FOR AN ATMP FOR HAWAI'I VOLCANOES NATIONAL PARK

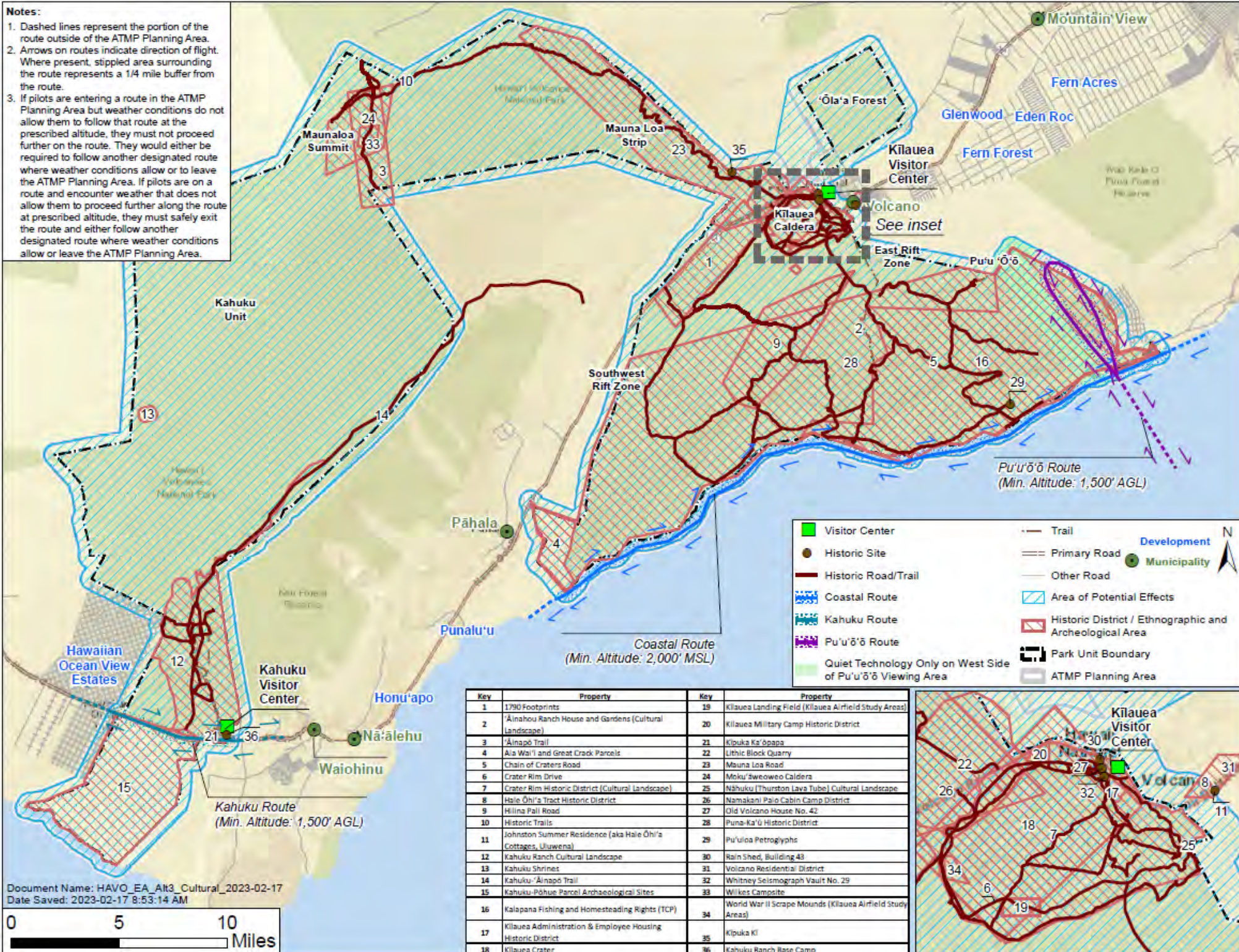
Alternative Attributes	Alternative 2 (No Air Tours in the Planning Area)	Revised Public Scoping Alternative 4 (Reduction of Air Tours)
General Description and Objectives	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could continue to fly outside the ATMP planning area (i.e., above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Three routes provide air tour access over the Park with soundscape mitigations, while keeping the heart of the Park free of air tours. Avoids flights over the summit of Kilauea and minimizes impacts on coastal backcountry users.
Routes	None in ATMP planning area.	Three routes (Kahuku route, coastal route, Pu'u'ō'ō route).
Minimum Altitudes	No minimum altitude would be set. However, flights over the Park that are above 5,000 ft. AGL could occur as they are outside the ATMP planning area. The minimum altitude for air tour operations conducted more than ½ mile outside the Park boundary would be 1,500 ft. AGL unless the operator has OpSpecs B048 (air tour operations below 1,500 ft. AGL in the State of Hawaii), in which case the operator must comply with the requirements and procedures of the Hawaii Air Tour Common Procedures Manual (HI Manual) for conducting commercial air tour operations below 1,500 ft. AGL. ^(OBJ)	Minimum 1,500 ft. AGL; minimum 2,000 ft. AGL over wilderness areas and sensitive sites. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and are subject to the altitude requirements and procedures of the HI Manual.
Time of Day	N/A	10 AM – 2 PM for non-QT flights. 9 AM – 5 PM for QT flights.
Day of Week	N/A	No-fly day on Sunday. Wednesday is QT flights only.
Loitering/ Circling	N/A	Permits limited loitering/circling (e.g. 3-5 minutes) from the Pu'u'ō'ō route.
Quiet Technology (QT) Incentives	N/A	QT flights may fly 9AM - 5PM QT flights may fly on Wednesday Additional fly locations in the Pu'u'ō'ō viewing area for QT flights.

Alternative Attributes	Alternative 2 (No Air Tours in the Planning Area)	Revised Public Scoping Alternative 4 (Reduction of Air Tours)
Interpretative Training and Education	N/A	Mandatory if offered by the Park.
Alternative Attributes	Alternative 2 (No Air Tours)	Revised Public Scoping Alternative 4 (Reduction of Air Tours)
Annual Meeting	N/A	Included.
Restrictions for Particular Events	N/A	Mandatory 5-mile standoff distance (within the planning area only, does not extend outside planning area). Two months' notice provided to operators.
Operators, Initial Allocation of Air Tours, and Aircraft Types	N/A	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the seven operators that have reported operating in the period from 2017-2019. Then it would move to competitive bidding.

ATTACHMENT 4

REVISED APE MAP FOR AN ATMP FOR HAWAI'I VOLCANOES NATIONAL PARK

1. Dashed lines represent the portion of the route outside of the ATMP Planning Area.
2. Arrows on routes indicate direction of flight. Where present, stippled area surrounding the route represents a 1/4 mile buffer from the route.
3. If pilots are entering a route in the ATMP Planning Area but weather conditions do not allow them to follow that route at the prescribed altitude, they must not proceed further on the route. They would either be required to follow another designated route where weather conditions allow or to leave the ATMP Planning Area. If pilots are on a route and encounter weather that does not allow them to proceed further along the route at prescribed altitude, they must safely exit the route and either follow another designated route where weather conditions allow or leave the ATMP Planning Area.



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ATTACHMENT 5

REVISED HISTORIC PROPERTY IDENTIFICATION LIST FOR HAWAII VOLCANOES NATIONAL PARK

Property Name	Property Type	Eligibility Status	Significant Characteristics
1790 Footprints	District, Site	Listed	The 1790 Footprints are scattered sets of footprints of men, women, and children and hoofprints of hogs in hardened, cement-like ash that may have been laid down during the 1790 phreatic explosions of the Kīlauea volcano. The footprints are significant for their potential association with the warriors of Keoua Kuahu‘ula, a high Hawaiian chief, who passed through the Ka‘ū Desert during the 1790 eruption of Kīlauea. They are also significant for their potential to yield information for this historic period. Significant characteristics for the site include its location, cement-like ash, and the size, spacing, and configuration of the footprints.
‘Āinahou Ranch House and Gardens (Cultural Landscape)	Cultural Landscape	Listed	The ‘Āinahou Ranch House and Gardens is significant for its association with Herbert C. Shipman, a Big Island rancher, horticulturist, philanthropist, and conservationist. It is also significant as an example of a Craftsman/Bungalow style of architecture in Hawai‘i. The period of significance extends from 1941, when Shipman constructed the house as a safe haven from possible Japanese invasion during World War II, to 1971. Although the plant species on the property are more limited than during the period of significance, the landscape still retains several plant varieties, and the landscape design and association with agriculture contributes to the property’s significance. Other significant characteristics include the property’s Craftsman bungalow style, intact materials, and Japanese-influenced design.
‘Āinapō Trail	Structure	Listed	The ‘Āinapō Trail was a 34-mile-long trail that served as the customary route to the summit of Mauna Loa from the prehistoric period until 1916. The trail was engineered to ensure availability of shelter, drinking water, and firewood between the nearest permanent settlement and the summit crater; it was often used during summit eruptions to honor Pele, the goddess of volcanoes, with chants and offerings. The U.S. Army constructed a new trail to the summit for volcanologists headquartered at Kīlauea in 1916, which led to diminished usage of the ‘Āinapō Trail. The trail is significant for its prehistoric and historic use as the main route to the summit, for its engineering, and for its potential to yield information. The trail’s alignment, association with the summit of Mauna Loa, and secluded, natural setting are all significant characteristics.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Ala Wai'i Parcel	TBD	Unevaluated ²	The Ala Wai'i Parcel has not been formally evaluated, but it contains known significant archeological resources (Pu'u Ula'ula) within the parcel as well as traditional fishing areas. Potential significant characteristics of the sites include extant material culture remains and an association with the ocean and surrounding landscape.
Boles Field (Kīlauea Airfield Study Areas)	Site	Eligible	Boles Field was named after the Park's first superintendent, Thomas R. Boles, and was constructed on the bluff between Uwēkahuna and the Kīlauea Military Camp in 1925. Boles Field was constructed after the previous landing field, built in 1923, was destroyed by the eruption of Halema'uma'u. Soon after construction, Boles Field was found to be dangerously short, but it was used over the next 15 years. It was also used as a location for military trucks and heavy equipment during World War II. It is significant for its association with aviation and World War II history on the island; significant characteristics include the site's location and configuration as a landing field.
Chain of Craters Road	Structure	Unevaluated	Chain of Craters Road was constructed starting in 1927. The first iteration of the road was opened in 1928 with the original alignment connecting 8 craters to Makaopuhi Crater. The road was lengthened into the Kalapana Extension in 1960, opening in 1964. The Mauna Ulu eruptions of 1969-1974 covered portions of the original alignment, which was rebuilt in 1979. The road was again damaged by eruptions in 1983. During the Kīlauea eruptions of 2014, the road was again extended into the Kalapana extension as an emergency access road. It is one of the primary roadways in the Park connecting the summit to the coastal area. Potential significant characteristics of the property include the road's alignment and its association with several craters, the summit, and the coast.
Crater Rim Drive	District, Structure	Listed	Crater Rim Drive is a 10.6-mile scenic main road within the Park that loops around the caldera rim and onto the caldera floor. The road passes through a variety of natural settings within the Park, including forests, high scrub desert, and lava fields. It is significant for its association with the early development of the Park, for its association with the Civilian Conservation Corps (CCC) program and NPS rustic style, and as an engineering feat that was designed around the Park's natural landscape. The road's alignment and design, natural setting, and association with the caldera and the CCC are all significant characteristics of the district.

² For the purposes of Section 106, the FAA is treating identified but unevaluated properties as eligible for the National Register of Historic Places.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Crater Rim Drive Historic District	District, Cultural Landscape	Listed	The Crater Rim Historic District encompasses approximately 5,000 acres in and around the Kīlauea Caldera and contains Crater Rim Drive and its associated surrounding developments. It is significant for its association with the CCC program and early Park development between the periods of 1916 and 1942. It is also architecturally significant for its distinctive NPS Rustic-style architecture and naturalistic landscape architecture. Significant characteristics of the district include Crater Rim Drive's alignment and the district's natural setting, landscape design, rustic architecture, and association with the CCC.
Great Crack Parcel	TBD	Unevaluated	The Great Crack has not been formally evaluated, but it contains known potentially significant archeological resources and traditional fishing areas. Potential significant characteristics of the sites include any extant material culture remains and an association with the ocean and surrounding landscape.
Hale Ōhi'a Tract Historic District	District	Listed	The Hale Ōhi'a Tract Historic District is a small subdivision in Volcano Village containing historic buildings and structures that is marked by two large lava rock pillars. It is significant for its association with the development of the area of summer retreats in the early-twentieth century. Significant characteristics of the district include its varied, intact concentration of architecture, stone pillars, narrow roadway, and association with Volcano Village as a summer retreat.
Hawai'i Volcanoes National Park	TCP	Eligible	The entirety of Hawai'i Volcanoes National Park is significant as a Traditional Cultural Property (TCP) for its association with Native Hawaiian culture, traditions, and sacred uses. This includes the physical manifestations of the volcano, the forested areas as well as the soundscape and the airspace. Many Native Hawaiian cultural practitioners also come to Kīlauea for ceremonies, ho'okupu, and paying tribute to the deity Pelehonuamea. The exceptional stillness and serenity of the TCP are significant characteristics that allow Native Hawaiians to continue conducting traditional ceremonies that require a quiet setting.
Hilina Pali Road	District	Listed	Hilina Pali Road is a secondary road in the Park road system that was built by the CCC between 1933 and 1942 and extends westerly from Chain of Craters Road for approximately 8.35 miles in a descent towards an overlook with a historic shelter overlooking the coastline. The road has several developed areas that are connected to the roadway containing a total of over 69 acres. It is significant for its association with the CCC and early Park development, as well as for its distinctive design and construction, including its use of NPS Rustic-style architecture. Significant characteristics of the district include the road's alignment and design,

Property Name	Property Type	Eligibility Status	Significant Characteristics
			its viewshed of the surrounding landscape, rustic design, descent towards the Hilina Pali overlook, and location near the coastline.
Historical Corral and Chute	Structure	Eligible	The Historical Corral and Chute is significant for its association with the agricultural history of the Kahuku Ranch. Significant characteristics include the structure's materials and association with the Kahuku Ranch.
Historic Trails	Structures	Eligible	The majority of the trails in the Park are historic, ranging in age from ancient trails, trails associated with cattle ranching, historical Park trails, CCC era trails, and trails related to Thomas Jaggar and the Buffalo Soldiers (Mauna Loa Trail). Significant characteristics of various historic trails throughout the Park include their locations, alignments, viewsheds, and surrounding landscapes.
Johnston Summer Residence (aka Hale Ōhi'a Cottages, Uluwena)	Building	Listed	The Johnston Summer Residence, constructed in 1931, consists of a main house, maid's quarters, and two-story carriage house with a landscaped Japanese garden. It is significant for its association with the development of Volcano Village as a summer retreat and as an example of the Queen Anne style. The residence's Queen Anne features (including its asymmetrical layout, complex roof form, fishscale shingles, turret and bay windows), association with summer tourism in the area, and surrounding landscape designed to hide the property from the street are all significant characteristics of the property.
Kahuku Ranch Base Camp Historic Site	Site	Eligible	The Kahuku Ranch Base Camp Historic Site spans over 5 acres and is part of the larger Kahuku Ranch. It is significant for the U.S. military's use of the ranch between 1939 to 1947 for strategic operations during World War II. The site's significant characteristics include its rolling, pastoral landscape and setting near Mauna Loa.
Kahuku Ranch Cultural Landscape	District, Cultural Landscape	Eligible	The Kahuku Ranch Cultural Landscape is locally significant for its association with the patterns of development in the cattle industry on the Island of Hawai'i and is particularly representative of the transition point in ranching history from land-responsive methods of cattle operations to more intensive infrastructure development and range management to support ranching operations in the first half of the twentieth century. The period of significance begins in 1912 when Kahuku underwent the first development as a part of the Parker Ranch and ends in 1947 when this initial phase of development was completed, and the ranch was sold to James W. Glover. This period reflects the establishment of the foundation of modern cattle ranching on the island. The Parker-era Kahuku represents the integration of early ranching practices, of large pastures and open ranges, and the first efforts

Property Name	Property Type	Eligibility Status	Significant Characteristics
			to operate the ranch through infrastructural development and range management. Significant characteristics include the rolling, pastoral landscape and association with cattle ranching.
Kahuku Shrines	Site	Eligible	The entire archeological complex of the Kahuku Shrine is significant in its named association with the 16th/17th century ruling chief 'Umi-a-Līloa. Although the ties of this chief to specific features within the complex are tenuous, there are sufficient other regional associations with camps, trails, and temples in the high elevation area that support this evaluation. The Kahuku shrine also embodies the distinctive characteristics of Emory's Necker-style marae and those of shrines on Mauna Kea and Haleakalā. Further, the complex exhibits distinctive construction methods of stacked and set slabs on edge and end that are not typically found in such concentrations in low elevation areas and thus may represent an alpine/sub-alpine construction style. Additionally, the 'Umi Caverns complex offers an opportunity to examine the convergence of high elevation land use, transportation, and ceremonial activities.
Kahuku-'Āinapō Trail	Structure	Eligible	The Kahuku-'Āinapō Trail is a segment of an "old trail system" that was used in historic times for driving cattle between various cattle ranching operations associated with Parker Ranch (ca. 1912-1947). Stop over locations includes various ranches in route including Kapāpala Ranch, Keahou Ranch, Humuula Sheep Station, and Pu'u'ō'ō Ranch. The trail is significant as it contributes to broad patterns of history and has the potential to yield information. Significant characteristics of the trail include its alignment and its association with and location near various ranches.
Kahuku-Pōhue Parcel Archaeological Sites	Site	Eligible	The Kahuku-Pōhue Parcel contains a total of 60 sites made up of hundreds of archeological features and ethnographic resources that have the potential to yield information on Hawaiian history and prehistory. The parcel contains four resources that have architectural/engineering significance, including the traditional Hawaiian village at Kahakahakea, which was designed around the local topography. Sites also include a quarry, habitation features, shrines, and trail segments associated with the traditional practice of commuting between residences. Significant characteristics of the site include extant material culture remains, their configuration and materials, Kahakahakea's landscape design, the surrounding topography, and trail alignments and their association with residences.
Kalapana Fishing and Homesteading Rights (TCP)	TCP	Eligible	The Kalapana Fishing and Homesteading Rights area is a TCP significant for its association with Native Hawaiian culture and traditions. It is located within the Puna-Ka'ū Historic District and is contributing to the district. Pursuant to the act of June 20, 1938 (52 Stat.

Property Name	Property Type	Eligibility Status	Significant Characteristics
			781; 16 U.S.C. 391b and 396a) Native Hawaiian residents of the villages adjacent to the Kalapana extension area added to the Park by the above act and visitors under their guidance are granted the exclusive privileges of fishing or gathering seafood from parklands (above the high waterline) along the coastline of such extension area. These persons may engage in commercial fishing under proper State permit. Significant characteristics of the TCP include its use and association with the ocean and coastline.
Kīlauea Administration and Employee Housing Historic District (Cultural Landscape)	District, Cultural Landscape	Eligible	The Kīlauea Administration and Employee Housing Historic District encompasses a collection of small-scale, rustic houses and buildings along the northeast edge of the Kīlauea Caldera. Most of the buildings and landscape features were built by CCC crews and designed following a series of master plans developed from 1931 to 1941 by the NPS Landscape and Engineering Division. The period of significance for the district is between 1927 and 1942, and it is significant for its association with the CCC and early Park planning and for its NPS Rustic-style architecture and landscape design. Significant characteristics of the district include the configuration and rustic design of the buildings, its location near the caldera, landscape design, and association with the CCC.
Kīlauea Crater	Site	Listed	Kīlauea Crater is located within the summit depression of Kīlauea Volcano, one of the earth's most active volcanoes. It is significant for its association with Native Hawaiian culture and tradition centered around the goddess Pele. It is also significant as a focal point of tourism and scientific study within the Park. The crater is used for traditional practices. Significant characteristics of the site include its quiet setting that allows Native Hawaiians to continue conducting traditional ceremonies.
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	Site	Eligible	Kīlauea Landing Field was a military landing field that was built in 1923 at the request of the US Army Hawaiian Department. It was the first airfield constructed on the Island of Hawai'i and used to photograph the Caldera for the first time from the air. The field was destroyed by the eruption of Halema'uma'u in the following year and was replaced by Boles Field. Kīlauea Landing Field is significant for its association with Hawaiian aviation history, military history, aerial photography, and the 1924 eruption of Kīlauea. The site's significant characteristics include its association with and location near Kīlauea.
Kīlauea Military Camp Historic	District, Cultural Landscape	Eligible	The Kīlauea Military Camp Historic District was established in 1916 and encompasses approximately 50 acres of land. It served as the location for training the local National Guard members and also served as a rest and relaxation facility for the military. During World War II,

Property Name	Property Type	Eligibility Status	Significant Characteristics
District (Cultural Landscape)			the camp was used as a Japanese internment and prisoner-of-war camp. It is significant for its association with the military history of the area as well as for its planning and design. Significant characteristics of the district include its architecture and landscape design.
Kīpuka Ka'ōpapa	Site	Eligible	Kīpuka Ka'ōpapa is a significant archeological resource and is a vestige of the Ka'ū Agricultural Field Systems, an expansive area of intensive agriculture that was built as early as the 1400s. The site is made up of a complex network of rock walls, mounds and structures and is eligible for having information potential into past traditional agricultural practices. The site's stone materials, extant structures and features and their configurations, and the agricultural landscape are all significant characteristics.
Kīpuka Kī	Site	Unevaluated	Kīpuka Kī has not been formally evaluated, but it is considered an 'Ōiwi holy place of worship. Potential significant characteristics include the natural soundscape including birds singing and the sound of leaves in the wind.
Lithic Block Quarry	Site	Eligible	The Lithic Block Quarry is a traditional ancient stone tool production site that is significant for its potential to yield information regarding production practices. It has been mapped with 277 individual workshops where fine-grained basalt rocks were shaped into stone tools by Native Hawaiians after the late-1600s. Significant characteristics include the extant remains of lithic production and the site's geology and location.
Mauna Loa Road	District	Listed	Mauna Loa Road, constructed between 1934 and 1962, is a secondary road through the Park that has several developments along its route. It is significant for its association with the CCC and for its NPS Rustic-style design. Significant characteristics include the road's alignment and location near the Kīlauea Crater and Mauna Loa and the district's rustic architecture and landscape design.
Moku'āweoweo Caldera	Site	Eligible	Moku'āweoweo Caldera is located at the summit of Mauna Loa and is considered a sacred place and ethnographic resource to many Native Hawaiians. Significant characteristics of the site include its quiet setting that allows Native Hawaiians to continue conducting traditional ceremonies.
Nāhuku (Thurston Lava Tube) Cultural Landscape	District, Cultural Landscape	Eligible	The Nāhuku Cultural Landscape (Thurston Lava Tube) is significant for its role in the development of tourism at Hawai'i Volcanoes National Park and the Hawaiian Islands. The identification of the lava tube in 1912 and its popularity as a visitor destination drew attention to the site as the Park was being established. The Thurston Lava Tube complex is also significant in the history of volcanology, allowing scientists and visitors to experience the

Property Name	Property Type	Eligibility Status	Significant Characteristics
			effects of volcanic activity at close range. Furthermore, features of the Thurston Lava Tube complex are significant for the association with the history of NPS design and construction and the NPS Rustic style. Certain features, such as stone walls and steps, constructed with native materials, are associated with the work of the CCC. Other improvement campaigns are related to Mission 66 goals. The Thurston Lava Tube complex is also contributing to the National Register-nominated Crater Rim Drive Historic District. Significant characteristics of the district include its rustic architecture, natural design, association with the CCC and Mission 66, and association with tourism.
Nāmakaniāpaio Cabin Camp District	District	Eligible	The Nāmakaniāpaio Cabin Camp District is a campground built in the 1960s that contains rustic cabins, camp sites, comfort stations, and picnic areas. It is significant due to its construction and design as part of the Mission 66 program and as a rare example of Hawaiian Mission 66-style architecture. Significant characteristics of the district include its rustic design and its association with camping and the Mission 66 program.
1877 Volcano House (Old Volcano House No. 42)	Building	Listed	The 1877 Volcano House (Old Volcano House No. 42) is a one-story building built in 1877 that formerly served as a hotel for visitors of Kīlauea Volcano. It is significant for its association with tourism and visitation within the Park and as an early representation of Western architecture in the area.
Piʻi Mauna Dump Site	Site	Unevaluated	The Piʻi Mauna Dump Site has not been formally evaluated, but it is a historic-age dump site encompassing approximately 450 square meters that contains a large rubble pile of old concrete, red clay fire bricks, boulders, metal fragments, and ceramics. Potential significant characteristics include the extant material culture remains.
Puna-Kaʻū Historic District	District	Listed	The Puna Kaʻū Historic District encompasses over 300 sites including village complexes, temple sites, cave shelters, petroglyph fields, and coastal trails. These sites are significant for their potential to yield information regarding Native Hawaiian socio-political religious systems, land use, and arts. The district encompasses land that is used for traditional practices. Significant characteristics include extant material culture and structure remains, trail alignments, and other evidence of prehistoric and historic land use.
Punaluʻu Heiau	Site	Unevaluated	The Punaluʻu Heiau is a Native Hawaiian temple constructed of heavy lava slabs. It is potentially significant for its association with Native Hawaiian rituals and culture. Potential significant characteristics include the heiau's materials and quiet setting.

Property Name	Property Type	Eligibility Status	Significant Characteristics
Punalu'u Springs	Site	Unevaluated	The Punalu'u Springs, also referred to as "Queen's Bath," is the location of a natural spring associated with Native Hawaiian culture. It was covered by lava flows in the 1980s and 1990s. Potential significant characteristics include the site's quiet, natural setting.
Pu'uloa Petroglyphs	Cultural Landscape	Eligible (and contributing feature to the Puna-Ka'u Historic District)	Pu'uloa is a very sacred and religious place for many of the people of Hawai'i and has been used ritually for over 500 years. It is the largest petroglyph field in the state. There are more than 23,000 petroglyph images, mostly <i>poho</i> (cupules, or depressions) in which a portion of the umbilical cord of a newborn was placed to ensure a long life. Motifs of circles, other geometric designs, as well as cryptic designs of human representations known as anthropomorphisms, canoe sails, and even feathered cape motifs can all be found in this dense concentration. Significant characteristics of the cultural landscape include the petroglyph designs and configurations.
Rain Shed, Building 43	Building	Eligible	The Rain Shed, Building 43 is eligible for its design and engineering. The water collection system is an example of how water supplies were developed in areas lacking wells and how the collection technology changed over time. The water collection system was an essential element in the development of the Park. Significant characteristics of the building include its extant historic materials from the period of significance, such as its corrugated metal siding and roof, and its engineering.
Volcano Residential District	District	Eligible	The Volcano Residential District encompasses several residences in Volcano Village, located just east of the Park, that were constructed prior to World War II. The district is significant for its architecture and design. Significant characteristics of the district include its location and near Hawai'i Volcanoes National Park, its architecture, and its secluded and forested setting.
Whitney Seismograph Vault No. 29	Building	Listed	The Whitney Seismograph Vault No. 29 is an underground room constructed in 1912 that housed the study of volcanic and seismic activity at Kilauea and Mauna Loa by American scientists between 1912 and 1961. The above-ground portion of the vault consists of a free-standing, reinforced concrete pier. The building is significant for its association with the history of the study of volcanic and seismic activity in the area. Significant characteristics of the vault include its location and association with Kilauea.
Wilkes Campsite	Site	Listed	Wilkes Campsite is the location and remains of an 1840-1841 expedition by American scientists on the summit of Mauna Loa. It is significant for its association with military history and the history of scientific study on the island as well as for its association with Lieutenant Charles Wilkes, the leader of the expedition. It is also significant in the areas of transportation and engineering. The campsite's secluded location at Mauna Loa, volcanic setting, and extant remains of the campsite are all significant characteristics.

Property Name	Property Type	Eligibility Status	Significant Characteristics
World War II Scrape Mounds (Kīlauea Airfield Study Areas)	Site	Eligible	The World War II Scrape Mounds were the result of efforts by the CCC and the U.S. military to destroy the two airfields and any other potential landing site for Japanese military aircraft after the Pearl Harbor attack. The features were generally caused by a 1.5-meter bulldozer bucket that was used to create mounds and depressions across the landscape. The mounds are significant due to their association with the CCC personnel efforts to deny use to the airfields, World War II in Hawai'i, and their information potential. Significant characteristics include the extant remains of the scrape mounds and depressions.

APPENDIX H

Section 7 Consultation



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish And Wildlife Office
300 Ala Moana Boulevard, Box 50088
Honolulu, HI 96850-5000
Phone: (808) 792-9400 Fax: (808) 792-9580



In Reply Refer To:

March 22, 2023

Project Code: 2023-0058774

Project Name: Hawai'i Volcanoes National Park - Air Tour Management Plan

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened and endangered species, as well as designated critical habitat that may occur within the boundary of your proposed project and that may be affected by project related actions. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Please contact the Service's Pacific Islands Fish and Wildlife Office (PIFWO) at 808-792-9400 if you have any questions regarding your IPaC species list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may adversely affect threatened and endangered species and/or designated critical habitat.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a Biological

Evaluation, similar to a Biological Assessment, be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment or Biological Evaluation are described at 50 CFR 402.12.

Due to the significant number of listed species found on each island within PIFWO's regulatory jurisdiction, and the difficulty in accurately mapping ranges for species that we have limited information about, your species list may include more species than if you obtained the list directly from a Service biologist. We recommend you use the species links in IPaC to view the life history, habitat descriptions, and recommended avoidance and minimization measures to assist with your initial determination of whether the species or its habitat may occur within your project area. If appropriate habitat is present for a listed species, we recommend surveys be conducted to determine whether the species is also present. If no surveys are conducted, we err on the side of the species, by regulation, and assume the habitat is occupied. Updated avoidance and minimization measures for plants and animals, best management practices for work in or near aquatic environments, and invasive species biosecurity protocols can be found on the PIFWO website at: <https://www.fws.gov/office/pacific-islands-fish-and-wildlife/library>.

If a Federal agency determines, based on the Biological Assessment or Biological Evaluation, that a listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/index>.

Non-federal entities can also use the IPaC generated species list to develop Habitat Conservation Plans (HCP) in accordance with section 10(a)(1)(B) of the Act. We recommend HCP applicants coordinate with the Service early during the HCP development process. For additional information on HCPs, the Habitat Conservation Planning handbook can be found at <https://www.fws.gov/sites/default/files/documents/habitat-conservation-planning-handbook-entire.pdf>.

Please be aware that wind energy projects should follow the Service's wind energy guidelines (<http://www.fws.gov/windenergy>) for minimizing impacts to migratory birds. Listed birds and the Hawaiian hoary bat may also be affected by wind energy development and we recommend development of a Habitat Conservation Plan for those species, as described above. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at:

- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers>
- <http://www.towerkill.com>
- <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation actions that benefit threatened and endangered species into their project planning to further the purposes of the Act in accordance with section 7(a)(1). Please include the Consultation Tracking Number associated with your IPaC species list in any

request for consultation or correspondence about your project that you submit to our office. Please feel free to contact us at PIFWO_admin@fws.gov or 808-792-9400 if you need more current information or assistance regarding the potential impacts to federally listed species and federally designated critical habitat.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Pacific Islands Fish And Wildlife Office

300 Ala Moana Boulevard, Box 50088

Honolulu, HI 96850-5000

(808) 792-9400

PROJECT SUMMARY

Project Code: 2023-0058774

Project Name: Hawai'i Volcanoes National Park - Air Tour Management Plan

Project Type: Recreation Operations

Project Description: The Federal Aviation Administration (FAA) and the National Park Service (NPS) are working together to develop an air tour management plan (ATMP) pursuant to the National Parks Air Tour Management Act of 2000. The National Parks Air Tour Management Act applies to all commercial air tour operations over a unit of the national park system and requires the FAA, in cooperation with the NPS, to develop an ATMP or Voluntary Agreement for parks and tribal lands where operators have applied to conduct commercial air tours.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@19.26080965,-155.67585817112186,14z>



Counties: Hawaii County, Hawaii

ENDANGERED SPECIES ACT SPECIES

There is a total of 85 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Hawaiian Hoary Bat <i>Lasiurus cinereus semotus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/770 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6477.pdf	Endangered

BIRDS

NAME	STATUS
Band-rumped Storm-petrel <i>Oceanodroma castro</i> Population: USA (HI) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1226 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6939.pdf	Endangered
Hawaii Akepa <i>Loxops coccineus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5714 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6938.pdf	Endangered
Hawaiian (=koloa) Duck <i>Anas wyvilliana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7712 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6934.pdf	Endangered
Hawaiian Coot <i>Fulica americana alai</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7233 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6934.pdf	Endangered
Hawaiian Goose <i>Branta (=Nesochen) sandvicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1627 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6925.pdf	Threatened
Hawaiian Petrel <i>Pterodroma sandwichensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6746 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6939.pdf	Endangered
Hawaiian Stilt <i>Himantopus mexicanus knudseni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2082 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6934.pdf	Endangered

NAME	STATUS
Newell's Townsend's Shearwater <i>Puffinus auricularis newelli</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2048 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6939.pdf	Threatened
Short-tailed Albatross <i>Phoebastria (=Diomedea) albatrus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered

REPTILES

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: Central North Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6929.pdf	Threatened

INSECTS

NAME	STATUS
Blackburn's Sphinx Moth <i>Manduca blackburni</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4528 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6926.pdf	Endangered
Hawaiian Picture-wing Fly <i>Drosophila digressa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1543 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6937.pdf	Endangered
Hawaiian Picture-wing Fly <i>Drosophila mulli</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5064 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6937.pdf	Threatened
Hawaiian Picture-wing Fly <i>Drosophila ochrobasis</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4161 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6937.pdf	Endangered
Orangeblack Hawaiian Damselfly <i>Megalagrion xanthomelas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6224 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/6935.pdf	Endangered

FLOWERING PLANTS

NAME	STATUS
`aiea <i>Nothocestrum breviflorum</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7493 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
`aku`aku <i>Cyanea platyphylla</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2041 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
`aku <i>Cyanea tritomantha</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7678 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
`anunu <i>Sicyos albus</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4226 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
`anunu <i>Sicyos macrophyllus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2768 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
`oha Wai <i>Clermontia lindseyana</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5493 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
`oha Wai <i>Clermontia peleana</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/849 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
`oha Wai <i>Clermontia pyrularia</i>	Endangered

NAME	STATUS
There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6165 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	
<i>ohe Joinvillea ascendens ascendens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2412 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>A`e Zanthoxylum dipetalum var. tomentosum</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2297 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>A`e Zanthoxylum hawaiiense</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4645 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>Alani Melicope zahlbruckneri</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7338 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Carter's Panicgrass Panicum fauriei var. carteri</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5578 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Cyperus fauriei</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3364 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Delissea undulata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1565 General project design guidelines:	Endangered

NAME	STATUS
https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf Gouania vitifolia There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6347 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Ha`iwale <i>Cyrtandra giffardii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1460 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Ha`iwale <i>Cyrtandra tintinnabula</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5755 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Haha <i>Cyanea copelandii</i> ssp. <i>copelandii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5832 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Haha <i>Cyanea hamatiflora</i> ssp. <i>carlsonii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4558 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Haha <i>Cyanea stictophylla</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4068 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Haiwale <i>Cyrtandra nanawaleensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9492 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered

NAME	STATUS
Haiwale <i>Cyrtandra wagneri</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9493	Endangered
Hala Pepe <i>Pleomele hawaiiensis</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2910 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Hau Kuahiwi <i>Hibiscadelphus giffardianus</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3458 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Hawaiian Gardenia (=na`u) <i>Gardenia brighamii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6853 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Hawaiian Vetch <i>Vicia menziesii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/594 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Heau <i>Exocarpos menziesii</i> Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9607	Endangered
Hilo Ischaemum <i>Ischaemum byrone</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3903 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Hoawa <i>Pittosporum hawaiiense</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/402	Endangered
Holei <i>Ochrosia haleakalae</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/884 General project design guidelines:	Endangered

NAME	STATUS
https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	
<i>Holei Ochrosia kilaueaensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5248 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Ihi Portulaca villosa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4886	Endangered
<i>Kauila Colubrina oppositifolia</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/850 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>Kiponapona Phyllostegia racemosa</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5226 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Kuahiwi Laukahi Plantago hawaiiensis</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3749 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>Loulu Pritchardia lanigera</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5812	Endangered
<i>Loulu Pritchardia maideniana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4945 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Ma`oli`oli Schiedea hawaiiensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2509	Endangered
<i>Makou Ranunculus hawaiiensis</i> No critical habitat has been designated for this species.	Endangered

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/4033 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	
Makou <i>Ranunculus mauianus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3594 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Maui Reedgrass <i>Calamagrostis expansa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1742 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Mauna Loa (=ka'u) Silversword <i>Argyroxiphium kauense</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1069 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Mehamehame <i>Flueggea neowawraea</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/109 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Nanu <i>Gardenia remyi</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5835 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Neraudia ovata There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3669 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Ohai <i>Sesbania tomentosa</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8453 General project design guidelines:	Endangered

NAME	STATUS
https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	
Phyllostegia brevidens No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3184	Endangered
Phyllostegia floribunda No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5986 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Phyllostegia parviflora There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/255 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Phyllostegia stachyoides No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4922	Endangered
Phyllostegia velutina There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6699 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Po`e <i>Portulaca sclerocarpa</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1719 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Popolo Ku Mai <i>Solanum incompletum</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3199 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Popolo <i>Solanum nelsonii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2281 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered

NAME	STATUS
Sanicula sandwicensis No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5580 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Schiedea diffusa ssp. macraei No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9495	Endangered
Schiedea diffusa subsp. diffusa No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9616	Endangered
Silene hawaiiensis There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4189 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Threatened
Spermolepis hawaiiensis There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1670 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
Stenogyne angustifolia var. angustifolia No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1591 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Stenogyne cranwelliae No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2536 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
Vigna o-wahuensis There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8445 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered

FERNS AND ALLIES

NAME	STATUS
<i>Asplenium peruvianum</i> var. <i>insulare</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4357 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>Asplenium-leaved Diellia Asplenium dielirectum</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7361 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>Deparia kaalaana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9612	Endangered
<i>Hohiu Dryopteris glabra</i> var. <i>pusilla</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8583 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7060.pdf	Endangered
<i>Microlepidia strigosa</i> var. <i>mauiensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4737 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered
<i>Pendant Kihi Fern Adenophorus periens</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1916 General project design guidelines: https://ipac.ecosphere.fws.gov/project/OPS4MRLQZBHXNDUQ3LOEHZNYKI/documents/generated/7051.pdf	Endangered

CRITICAL HABITATS

There are 17 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
ʻānunu <i>Sicyos albus</i> https://ecos.fws.gov/ecp/species/4226#crithab	Final
ʻiʻiwi <i>Drepanis coccinea</i>	Proposed

NAME	STATUS
For information on why this critical habitat appears for your project, even though `i`iwi is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/9076#crithab	
Alani <i>Melicope zahlbruckneri</i> https://ecos.fws.gov/ecp/species/7338#crithab	Final
Ha`iwale <i>Cyrtandra giffardii</i> https://ecos.fws.gov/ecp/species/1460#crithab	Final
Haha <i>Cyanea hamatiflora</i> ssp. <i>carlsonii</i> https://ecos.fws.gov/ecp/species/4558#crithab	Final
Haha <i>Cyanea stictophylla</i> https://ecos.fws.gov/ecp/species/4068#crithab	Final
Hala Pepe <i>Pleomele hawaiiensis</i> https://ecos.fws.gov/ecp/species/2910#crithab	Final
Hau Kuahiwi <i>Hibiscadelphus giffardianus</i> https://ecos.fws.gov/ecp/species/3458#crithab	Final
Hawaiian Picture-wing Fly <i>Drosophila heteroneura</i> For information on why this critical habitat appears for your project, even though Hawaiian Picture-wing Fly is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/7895#crithab	Final
Hawaiian Picture-wing Fly <i>Drosophila ochrobasis</i> https://ecos.fws.gov/ecp/species/4161#crithab	Final
Hilo Ischaemum <i>Ischaemum byrone</i> https://ecos.fws.gov/ecp/species/3903#crithab	Final
Kuahiwi Laukahi <i>Plantago hawaiiensis</i> https://ecos.fws.gov/ecp/species/3749#crithab	Final
Mauna Loa (=ka'u) Silversword <i>Argyroxiphium kauense</i> https://ecos.fws.gov/ecp/species/1069#crithab	Final
Ohai <i>Sesbania tomentosa</i> https://ecos.fws.gov/ecp/species/8453#crithab	Final
Pendant Kihī Fern <i>Adenophorus periens</i> https://ecos.fws.gov/ecp/species/1916#crithab	Final
Po`e <i>Portulaca sclerocarpa</i> https://ecos.fws.gov/ecp/species/1719#crithab	Final
Silene <i>hawaiiensis</i> https://ecos.fws.gov/ecp/species/4189#crithab	Final

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United States Department of the Interior
NATIONAL PARK SERVICE
Natural Resource Stewardship & Science
Natural Sounds and Night Skies Division



U.S. Department
of Transportation
**Federal Aviation
Administration**

United States Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Office of Policy, International Affairs & Environment
Office of Environment and Energy

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

April 13, 2023

Mr. Earl Campbell
U.S. Fish and Wildlife Service, Pacific Islands Ecoregion
300 Ala Moana Blvd, Rm 3-122, PO Box 50088
Honolulu, HI 96850

Re: Informal Section 7 Consultation for Hawai'i Volcanoes National Park Air Tour Management Plan

Dear Mr. Campbell,

The Federal Aviation Administration (FAA), in cooperation with the National Park Service (NPS) (collectively, the agencies), is developing an Air Tour Management Plan (ATMP) for Hawai'i Volcanoes National Park (the Park). The agencies are preparing documentation for the draft ATMP in accordance with the National Parks Air Tour Management Act of 2000 (NPATMA) and other applicable laws. This letter is a request for informal consultation with your office by the agencies pursuant to Section 7 of the Endangered Species Act (the ESA). We are seeking your concurrence that the proposed action in the draft ATMP will not adversely affect threatened and endangered species occurring within the study area.

Project Background and Purpose of the Action

NPATMA directs the agencies to develop ATMPs or voluntary agreements for National Park System units over which more than 50 commercial air tours occur annually (49 U.S.C. § 40128). A commercial air tour operation is defined as "a flight conducted for compensation or hire in a powered aircraft where the purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of a national park ... during which the aircraft flies below an altitude of 5,000 feet (ft.) above ground level (AGL) or less than 1 mile laterally from any geographic feature within the Park (unless more than ½ mile outside the boundary)." When NPATMA was passed in 2000 it required the FAA to grant Interim Operating Authority (IOA) to existing air tour operators who were permitted to continue air tour operations over parks until an ATMP was completed. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator but does not represent the actual number of air tours conducted and does not designate the route(s), time-of-day, or altitude(s) of such tours. In 2012, NPATMA was amended to require operators to report the number of commercial air tours conducted each year.

On February 14, 2019, Public Employees for Environmental Responsibility and the Hawai'i Coalition Malama Pono filed a petition for writ of mandamus seeking to have the agencies complete air tour management plans or voluntary agreements at seven specified parks, *In re Public Employees for*

Environmental Responsibility, et al., Case No. 19-1044 (D.C. Cir.). On May 1, 2020, the United States Court of Appeals for the District of Columbia Circuit granted the petition and ordered the agencies to file a proposed schedule for bringing twenty-three eligible parks, including Hawai'i Volcanoes National Park, into compliance with NPATMA within two years. The D.C. Circuit subsequently entered an order requiring the agencies to propose firm completion dates to bring all parks into compliance with NPATMA. The completion date set for the Park is December 31, 2023.

Past and Current Commercial Air Tour Activity

Table 1 describes the current commercial air tour activity over the Park along with the average number of flights typically flown over the Park, based on data reported to the NPS and FAA. Based on reported data from 2017-2019, the average annual number of commercial air tours over the Park is 11,376. The flights currently conducted over the Park are flown at altitudes ranging from 500 ft. to 1,500 ft. AGL depending on location over the Park. Details regarding the proposed action, which is implementation of an ATMP for the Park, are described in the following sections.

Table 1. Current Commercial Air Tour Activity

Park Unit	IOA	Current AGL	Average Total Annual Flights (2017-2019)
Hawai'i Volcanoes National Park	26,664	500 ft. – 1,500 ft.	11,376

Action Area

The action area is the area that includes all direct and indirect effects. The action area includes the Park and the land within a ½-mile of the Park's boundary, depicted in Figure 1, and is also referred to as the ATMP planning area. The ATMP applies to all commercial air tours within the ATMP planning area. A commercial air tour subject to the ATMP is any flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over the Park, during which the aircraft flies:

- (1) Below 5,000 ft. above ground level (except solely for the purposes of takeoff or landing, or necessary for safe operation of an aircraft as determined under the rules and regulations of the FAA requiring the pilot-in-command to take action to ensure the safe operation of the aircraft); or
- (2) Less than one mile laterally from any geographic feature within the Park (unless more than ½-mile outside the Park boundary).

As air tours outside of the ATMP planning area are outside the jurisdiction of the ATMP and not subject to NPATMA, there would be no limitations on the annual number of air tours that could occur, and no designated routes could be set outside the ATMP planning area.

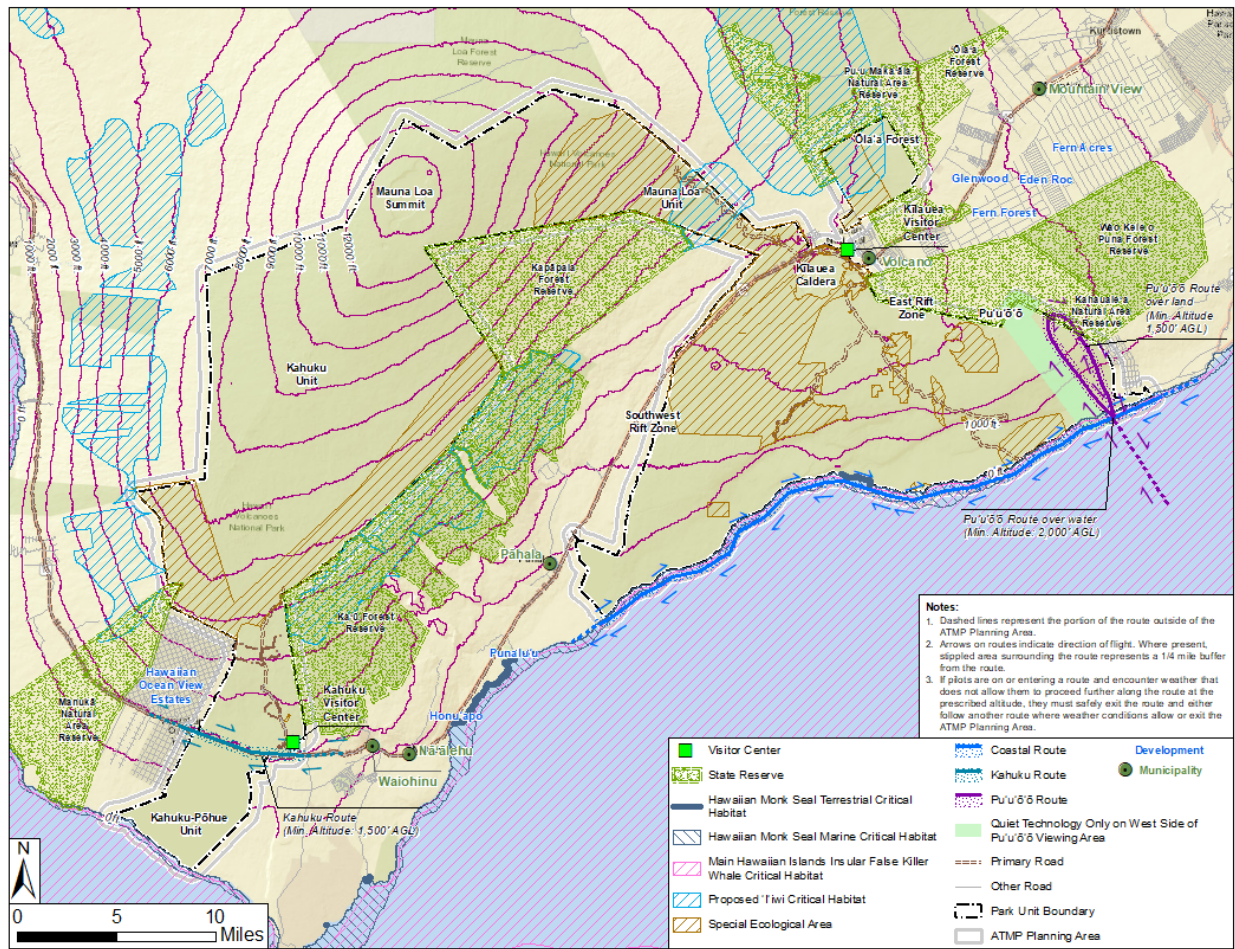


Figure 1. Commercial Air Tour Routes at Hawai'i Volcanoes National Park Under the Proposed Action¹

Description of Proposed Action

The proposed action is implementation of an ATMP for the Park which establishes conditions for the management of commercial air tour operations. The ATMP will remain in effect until amended, at which time the agencies would reinstitute consultation pursuant to 50 CFR 402.16. A summary of operating parameters of the draft ATMP are discussed in detail below. See Attachment 1 for the draft ATMP.

Commercial Air Tours Per Year

The draft ATMP authorizes 1,565 commercial air tours over the Park each year—14% of the existing number of flights.

¹ Figure 1 includes designated and proposed critical habitat under the jurisdiction of both the National Marine Fisheries Service and U.S. Fish and Wildlife Service.

Commercial Air Tour Routes and Altitudes

The draft ATMP requires aircraft operators follow three designated flight paths with a minimum altitude of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean. Flights more than ½-mile outside the Park boundary are outside of the action area and are subject to the altitude restrictions of the 2008 FAA Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual).

There are three designated routes that operators must follow:

- Pu'u'ō'ō Route: Travels on the east rift of Kīlauea in the Pu'u'ō'ō area with a single entry and exit point over the ocean. Operators that have converted to quiet technology aircraft may request to be allowed to conduct air tours in an expanded fly zone directly west of this route near Pu'u'ō'ō (the Pu'u'ō'ō Quiet Technology Zone). The minimum altitude is 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean. Hovering, loitering, and/or circling is allowed for up to five minutes.
- Coastal Route: Bi-directional route offshore along the edge of the park boundary with a 2,000 ft. lateral distance from shore and at minimum altitude of 2,000 ft. AGL. over the ocean.
- Kahuku Route: Bi-directional route across the south side of the Kahuku Unit following Highway 11 at minimum altitude of 1,500 ft. over land.

Commercial Air Tour Day/Time

Flights would be permitted between the hours of 10:00 AM and 2:00 PM, unless using a quiet technology aircraft. Flights would be permitted on Monday, Tuesday, Thursday, Friday, and Saturday. Air tours would not be allowed on Sundays. Operators that have converted to quiet technology aircraft could request to be allowed to conduct air tours on Wednesdays.

Additional Requirements

Hovering, Loitering, and Circling: Hovering, loitering, and/or circling for up to five minutes would be permitted only on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone. Circling aircraft would have to turn away from the advancing blade as much as possible to minimize noise.

Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of Park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Resource condition monitoring and adaptive management of the ATMP would occur under this alternative to ensure that the terms and conditions of the ATMP would continue to address Park management objectives. The NPS would conduct periodic acoustic monitoring to ensure that the terms and conditions of the ATMP remain consistent with park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.

Interpretive Training and Education: When made available by Park staff, operators/pilots would take at least one training course per year conducted by the NPS. The training would include Park information

that operators could use to further their own understanding of Park priorities and management objectives, as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients. Helicopter pilots would also be required to complete the FAA introduction to Fly Neighborly training.² The Fly Neighborly Noise Abatement Training program, created by the FAA and endorsed by Helicopter Association International, teaches pilots and operators noise abatement procedures and situational awareness tools that can be used to minimize the effects of helicopter noise emissions.

Reporting, Monitoring, and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the draft ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. FAA determination of non-compliance may result in loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of Operations Specifications shall be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.³

Quiet Technology Incentives

The draft ATMP incentivizes the adoption of quiet technology aircraft by commercial air tour operators conducting commercial air tours over the Park. Operators that have converted to quiet technology aircraft would be allowed to conduct commercial air tours from 9:00 AM to 5:00 PM on all days that air tours are authorized. Quiet technology aircraft are permitted to fly on Wednesdays and conduct commercial air tours in additional locations in the Pu'u'ō'ō Quiet Technology Zone.

Summary of Conservation Measures

The proposed action includes the following measures protective of species:

- Reduces the number of air tours over the Park from 11,376 (three-year average) to 1,565, an 86% reduction.
- Permits flights only between the hours of 10:00 AM and 2:00 PM, unless using a quiet technology aircraft then flights would be permitted from 9:00 AM to 5:00 PM for those aircraft. This proposed window of operation would provide additional protection to wildlife during critical dusk/dawn periods that are prime times of day for foraging, mating, and communication.
- Aircraft will not hover or circle while conducting air tours over the Park, unless on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone where this is permitted for up to five minutes. This measure would minimize the time individual animals would be exposed to helicopter noise.
- Sets minimum altitudes of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean, which is an increase of 500 to 1,500 ft. AGL compared to existing operations. This increase in altitude would reduce noise intensity at ground level. When the altitude of an aircraft is increased, the total area of noise exposure from the aircraft may also increase depending on the surrounding terrain. However, because increases in altitude also result in a reduction in maximum sound level of the aircraft in areas nearby the flight track, the beneficial effects of increasing the

² https://www.faasafety.gov/gslac/ALC/course_content.aspx?pf=1&preview=true&cID=500

³ https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1034329

altitude of commercial air tours are anticipated to outweigh the *de minimis* impacts from any increase in the area exposed to the noise.

- Adaptive management of the route, frequency, and timing will be considered, analyzed, and included in the draft ATMP for the protection of bird movement patterns and climate change-induced range shifts impacted by air tours.

Listed Species and Critical Habitat Potentially Occurring within the Action Area

The U.S. Fish and Wildlife Service's (USFWS) Information Planning and Consultation (IPaC) tool and the NPS species list were used to assess the potential for any federally listed species or designated critical habitat that may occur within the action area. Species listed in Table 2 are those that are known to occur within the Park. All listed species including those that do not occur in the Park, but were identified via IPaC, can be found in the IPaC Official Species List (Attachment 3).

Table 2. Listed Species and Critical Habitat Potentially Occurring in the Action Area

Birds - Scientific Name	Birds - Common name	Birds - Status (Federal)	Birds - Critical Habitat in the Action Area (Y/N)	Birds - Proposed Finding
<i>Branta (=Nesochen) sandvicensis</i>	Hawaiian Goose (=nēnē)	Threatened	N	NLAA
<i>Corvus hawaiiensis</i>	'alalā	Endangered	N	NLAA
<i>Drepanis coccinea</i>	'I'iwi	Threatened	Proposed	NLAA
<i>Hemignathus wilsoni</i>	'Akiapōlā'au	Endangered	N	NLAA
<i>Loxops coccineus</i>	Hawai'i 'ākepa	Endangered	N	NLAA
<i>Loxops mana</i>	Hawai'i Creeper	Endangered	N	NLAA
<i>Oceanodroma castro</i>	Band-rumped Storm-Petrel	Endangered	N	NLAA
<i>Pterodroma sandwichensis</i>	Hawaiian Petrel	Endangered	N	NLAA
<i>Puffinus newelli</i>	Newell's Shearwater	Threatened	N	NLAA
Reptiles - Scientific Name	Reptiles - Common name	Reptiles - Status (Federal)	Reptiles - Critical Habitat in the Action Area (Y/N)	Reptiles - Proposed Finding
<i>Caretta caretta</i>	Loggerhead Sea Turtle	Endangered	N	NLAA
<i>Chelonia mydas</i>	Green Sea Turtle	Threatened	N	NLAA
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	Endangered	N	NLAA
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	Endangered	N	NLAA
<i>Lepidochelys olivacea</i>	Olive Ridley Sea Turtle	Threatened	N	NLAA

Mammals - Scientific Name	Mammals-Common name	Mammals - Status (Federal)	Mammals - Critical Habitat in the Action Area (Y/N)	Mammals - Proposed Finding
<i>Lasiurus semotus</i>	Hawaiian Hoary Bat	Endangered	N	NLAA
Insects - Scientific Name	Insects - Common name	Insects - Status (Federal)	Insects - Critical Habitat in the Action Area (Y/N)	Insects - Proposed Finding
<i>Drosophila digressa</i>	Hawaiian Picture-wing Fly	Endangered	N	No Effect
<i>Drosophila mulli</i>	Hawaiian Picture-wing Fly	Threatened	Y	No Effect
<i>Drosophila ochrobasis</i>	Hawaiian Picture-wing Fly	Endangered	Y	No Effect
<i>Megalagrion xanthomelas</i>	Orangeblack Hawaiian Damselfly	Endangered	N	No Effect
<i>Procaris hawaiana</i>	Anchialine Pool Shrimp	Endangered	N	No Effect
Flowers - Scientific Name	Flowers - Common name	Flowers - Status (Federal)	Flowers - Critical Habitat in the Action Area (Y/N)	Flowers - Proposed Finding
<i>Argyroxiphium kauense</i>	Mauna Loa (=ka'u) Silversword	Endangered	Y	No Effect
<i>Clermontia lindseyana</i>	'oha Wai	Endangered	N	No Effect
<i>Clermontia peleana</i>	'oha Wai	Endangered	N	No Effect
<i>Cyanea stictophylla</i>	Haha	Endangered	Y	No Effect
<i>Cyanea tritomantha</i>	'aku	Endangered	N	No Effect
<i>Cyrtandra giffardii</i>	Ha 'iwale	Endangered	Y	No Effect
<i>Cyrtandra tintinnabula</i>	Ha'iwale	Endangered	N	No Effect
<i>Exocarpos menziesii</i>	Heau	Endangered	N	No Effect
<i>Hibiscadelphus giffardianus</i>	Hau Kuahiwi	Endangered	Y	No Effect
<i>Ischaemum byrone</i>	Hilo Ischaemum	Endangered	Y	No Effect
<i>Joinvillea ascendens ascendens</i>	'ohe	Endangered	N	No Effect
<i>Melicope zahlbruckneri</i>	Alani	Endangered	N	No Effect
<i>Neraudia ovata</i>	No Common Name	Endangered	N	No Effect
<i>Nothoestrum breviflorum</i>	'aiea	Endangered	N	No Effect
<i>Ochrosia haleakalae</i>	Holei	Endangered	N	No Effect
<i>Ochrosia kilaueaensis</i>	Holei	Endangered	N	No Effect
<i>Phyllostegia floribunda</i>	No Common Name	Endangered	N	No Effect

<i>Phyllostegia stachyoides</i>	No Common Name	Endangered	N	No Effect
<i>Phyllostegia velutina</i>	No Common Name	Endangered	Y	No Effect
<i>Pittosporum hawaiiense</i>	Hoawa	Endangered	N	No Effect
<i>Plantago hawaiiensis</i>	Kuahiwi Laukahi	Endangered	Y	No Effect
<i>Pleomele hawaiiensis</i>	Hala Pepe	Endangered	Y	No Effect
<i>Portulaca sclerocarpa</i>	Po 'e	Endangered	Y	No Effect
<i>Portulaca villosa</i>	Ihi	Endangered	N	No Effect
<i>Pritchardia lanigera</i>	Loulu	Endangered	N	No Effect
<i>Pritchardia maideniana</i>	Loulu	Endangered	N	No Effect
<i>Ranunculus hawaiiensis</i>	Makou	Endangered	N	No Effect
<i>Sanicula sandwicensis</i>	No Common Name	Endangered	N	No Effect
<i>Schiedea diffusa</i> subsp. <i>diffusa</i>	No Common Name	Endangered	N	No Effect
<i>Sesbania tomentosa</i>	Ohai	Endangered	Y	No Effect
<i>Sicyos albus</i>	'anunu	Endangered	Y	No Effect
<i>Sicyos macrophyllus</i>	'anunu	Endangered	N	No Effect
<i>Silene hawaiiensis</i>	No Common Name	Threatened	Y	No Effect
<i>Solanum incompletum</i>	Popolo Ku Mai	Endangered	N	No Effect
<i>Spermolepis hawaiiensis</i>	No Common Name	Endangered	N	No Effect
<i>Stenogyne angustifolia</i> var. <i>angustifolia</i>	No Common Name	Endangered	N	No Effect
<i>Zanthoxylum hawaiiense</i>	A'e	Endangered	N	No Effect
Ferns and Allies - Scientific Name	Ferns and Allies - Common Name	Ferns and Allies - Status (Federal)	Ferns and Allies - Critical Habitat in the Action Area (Y/N)	Ferns and Allies - Proposed Finding
<i>Adenophorus periens</i>	Pendant Kihi Fern	Endangered	Y	No Effect
<i>Asplenium peruvianum</i> var. <i>insulare</i>	No Common Name	Endangered	Y	No Effect

Other Protected Native Birds

Within the action area, there are several bird species that are not listed under the ESA but are protected under the Migratory Bird Treaty Act (MBTA). See Table 3.

Hawai'i 'amakihi (*Chlorodrepanis virens*) is a common, widely distributed omnivorous forest bird most abundant in upland mesic forest and subalpine woodland. The breeding season for Hawai'i 'amakihi occurs from November to May. The Island of Hawai'i hosts a population of over 800,000 birds (Gorresen et al., 2009; Kendall et al., 2022). Based on population trend studies, this species appears to have mixed trends across the Park (Judge et al., 2017).

‘Apapane (*Himatione sanguinea*), a species in the Hawaiian honeycreeper family, is the most abundant native forest bird in the Park, occurring in relatively high numbers in Kahuku, Kīlauea, and Mauna Loa Road. ‘Apapane occupy habitats predominated by ‘ōhi‘a and koa and often travel in flocks to different flowering vegetation. Breeding occurs from January to July with nests throughout ‘ōhi‘a canopy or in other vegetation. The response of ‘apapane vocalizations has been specifically studied in relation to helicopter noise on the Island of Hawai‘i, which actively changed the amount of time they vocalized in relation to loud and frequent helicopter noise, suggesting the presence of vocal plasticity in this species (Gallardo Cruz et al., 2021). Based on population studies, the trends of ‘apapane are mixed within the Park (Judge et al., 2017; NPS unpublished report).

The Hawaiian hawk (*Buteo solitarius*), known as ‘io, is a small broad-winged hawk with light and dark plumage. Its habitat includes most native and non-native forests (including papaya, guava, and macadamia orchards), grasslands, and cane fields (Clarkson and Laniawe, 2020). This species prefers open savanna or denser rainforests and will avoid dry scrub areas. Nesting occurs March through September where this species constructs their nests in the branches of high trees. Found only on the Island of Hawai‘i, ‘io can be found at elevations from sea level to 8,500 ft. ‘Io was formerly listed as federally endangered, then listed as threatened under the ESA, and was recently removed in 2020, as range-wide population estimates have been stable for over 30 years and are not expected to decline. It is listed endangered by the State of Hawai‘i. Threats to this species include destruction or disturbance of nesting habitat, predation, avian diseases, and extensive modification and reduction of native forest habitat. Although no incidences of ‘io and helicopter collisions have been documented in the State of Hawai‘i, in the continental U.S. from 1990 – 2019, there were 420 collisions documented between a closely related species (red tailed hawks - also genus *Buteo*) and civilian aircraft resulting in eight fatalities and nearly \$43 million USD in damages (Dolbeer et al., 2021).

‘Ōma‘o (*Myadestes obscurus*) is a predominantly fruit-eating Hawaiian thrush with variable populations in wet and mesic environments of the Park. Populations of ‘ōma‘o increased in Kahuku and along the ‘Ōla‘a tract, and experienced a sharp decline in the East Rift Zone (Judge et al., 2017). Declining population trends of ‘ōma‘o occurred in the Northwest Kahuku and Pāpā tracts, and densities were stable in the Mauna Loa south flank and Mauna Loa Strip tracts (Judge et al., 2017). This species is most abundant along the Kīlauea caldera and flanks, the wet-mesic forests of Kahuku that extend broadly into the Ka‘ū Forest Reserve, and along Mauna Loa Road in mesic forest through subalpine shrublands. ‘Ōma‘o forage primarily for fleshy fruits in both canopy and understory but also feed on seeds and arthropods, even on the forest floor. Nests have been found in a variety of habitats including tree cavities, tree ferns, rock cracks, and lava tube openings. Their breeding season is not well defined but believed to occur in the spring and summer. ‘Ōma‘o is only found on the Island of Hawai‘i, and consists of three populations (Hawai‘i Department of Land and Natural Resources, 2023).

The pueo (*Asio flammeus sandwichensis*), or Hawaiian short-eared owl, are found on all the main Hawaiian Islands at elevations ranging from sea level to 8,000 ft. Pueo occupy a variety of habitats, including agricultural lands, grasslands, wetlands, shrublands, and native forests. Ground nests are well concealed and lined with grasses and feather down (Price and Cotín, 2018). Threats to this species include loss and degradation of habitat, predation by invasive mammals, vehicle and wind turbine collisions, and other human interaction (The Pueo Project, 2019).

Other birds that are year-round residents in the Park include the noio or Hawaiian black noddie (*Anous minutus melanogenys*) which nests on the coasts; and koa‘e kea or white-tailed tropicbird (*Phaethon*

lepturus), which are known to nest on the walls of craters such as Kīlauea caldera and other nearby craters.

Migrant or transiting birds that occur in the action area include the kōlea or Pacific golden plover (*Pluvialis fulva*), an overwintering migrant shorebird that have been observed in disturbed grasslands in the Park during the winter months.

Other native birds protected under the MBTA that may occur within the action area are listed in Table 3 and could be affected by air tour noise or direct strikes. The three designated routes under the proposed action limit the number of air tours flying directly over sensitive habitats for the Park's wildlife which reduces the likelihood of impacts to those species including noise that could alter wildlife behavior. The authorized altitudes under the proposed action (minimum 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean) also limit the potential for direct strikes to wildlife within the action area.

Table 2. Other Protected Species Potentially within the Action Area

Scientific Name	Common Names
<i>Alauda arvensis</i>	Eurasian Skylark, Skylark
<i>Anous minutus melanogenys</i>	Black Noddy, 'Eki'eki, Hawaiian Noddy, Noio
<i>Ardenna pacifica</i>	'Ua'u Kani, Wedge-tailed Shearwater
<i>Arenaria interpres</i>	'Akekeke, Ruddy Turnstone
<i>Asio flammeus sandwichensis</i>	Pueo, Hawaiian Short-eared Owl
<i>Bubulcus ibis</i>	Cattle Egret, Western Cattle Egret
<i>Calidris alba</i>	Sanderling, Hunakai
<i>Cardinalis cardinalis</i>	Northern Cardinal
<i>Chlorodrepanis virens</i>	Hawai'i 'Amakihi
<i>Chroicocephalus philadelphia</i>	Bonaparte's Gull
<i>Falco peregrinus</i>	Peregrine Falcon
<i>Fregata minor palmerstoni</i>	'Iwa , Great Frigatebird
<i>Gygis alba rothschildi</i>	Manu-o-ku, White Tern
<i>Haemorhous mexicanus</i>	House finch
<i>Mimus polyglottos</i>	Northern Mockingbird
<i>Myadestes obscurus</i>	'Ōma'o, Hawai'i Thrush
<i>Numenius tahitiensis</i>	Kioea, Bristle-thighed Curlew
<i>Nycticorax nycticorax hoactli</i>	'Auku'u, Black-crowned Night Heron
<i>Onychoprion fuscatus</i>	'Ewa'ewa, Sooty Tern
<i>Phaethon lepturus</i>	White-tailed Tropicbird
<i>Phaethon rubricauda</i>	Koa'e 'ula, Red-tailed Tropicbird
<i>Pluvialis fulva</i>	Pacific Golden Plover
<i>Tringa incana</i>	'Ūlili, Wandering Tattler
<i>Tyto alba</i>	Barn Owl, Western Barn Owl

Environmental Baseline

The environmental baseline for this consultation includes the three-year average of the air tours currently flown under existing law including applicable regulations that govern aviation safety (14 CFR

Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai'i (formerly Special Federal Aviation Regulation 71)) and any FAA exceptions issued to individual operators as outlined by the HI Common Procedures Manual.

The NPS and partner organizations conduct aviation over the Park for administrative and research purposes. The NPS and its partners' aircraft activity has been evaluated and impacts addressed through Section 7 consultation previously (see Mission Critical Administrative Aviation Plan and Environmental Assessment, 2015).

Potential Stressors Associated with the Proposed Action

The agencies evaluated the proposed action to identify potential stressors that may affect listed species or critical habitat, if exposed. The proposed action does not include ground-based activities. Therefore, potential stressors would be limited to noise and direct strikes. Potential effects of low-level flights including commercial air tours on biological resources is largely inferential, as literature specific to these types of effects on individual species is generally unavailable. Discussion of potential effects is based on related species and similar actions.

Overview of Noise Associated with the Proposed Action

The draft ATMP includes several provisions to minimize potential noise impacts, as outlined above in the *Description of Proposed Action* section. As a result, the intensity of potential noise exposures would be limited under the proposed action. The draft ATMP would ensure that noise would not be constant and that there would be substantial time intervals between noise events from air tours by limiting the number of flights per year, which will reduce the potential number of flights each day. The draft ATMP also ensures that large segments of the Park would not be exposed to air tour noise by establishing designated air tour routes.

The agencies conducted noise modeling to estimate noise produced by commercial air tours under the proposed action for a standard day and a quiet technology only day (Attachment 2, *Noise Technical Analysis*). In summary, the noise modeling for a standard day predicts that the maximum sound pressure level ($L_{\max}$) generated by commercial air tours in the Park would be 63.7 dBA and would occur at 'Āpuā Point Camp. The $L_{\max}$ noise metric is event based and does not provide any context of frequency, duration, or timing of exposure. The time above (TA) noise metric specifies the amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period. $TA_{35\text{dBA}}$ and $TA_{52\text{dBA}}$ were modeled for the proposed action. Based on the modeling, the maximum time that noise from air tours would be above 35 dBA is between 30 and 45 minutes a day, representing 1% of the action area; 29% of the action area would experience noise above 35 dBA for at least 0.1 minutes a day. The maximum time above 52 dBA experienced across all points modeled would be 5.8 minutes, and 87% of points modeled would experience time above 52 dBA for 0.0 to 0.8 minutes (see Attachment 2, *Noise Technical Analysis*).

For a quiet technology only day, noise modeling predicts that the value for $L_{\max}$ generated by commercial air tours in the Park would be 61.5 dBA and would occur at Pu'u'ō'ō. The maximum time that noise from air tours would be above 35 dBA is between 45 and 60 minutes a day, representing less than 1% of the ATMP planning area; 21% of the ATMP planning area would experience noise above 35 dBA for at least 0.1 minutes a day on a quiet technology only day. The maximum time above 52 dBA

experienced across all points modeled would be 9.7 minutes; 85% of points modeled would not experience time above 52 dBA at all (see Attachment 2, *Noise Technical Analysis*).

The FAA has established a significance threshold for noise that uses the day-night average sound level (DNL) metric (see FAA Order 1050.1F, Exhibit 4-1). The resultant DNL due to the ATMP is well below the FAA's threshold within the action area. As described in the *Noise Technical Analysis* (Attachment 2), contours for equivalent continuous sound level (L_{Aeq}) for both a standard day and a quiet technology only day show the maximum values for L_{Aeq} were below 45 dBA for the proposed action modeled at the Park; DNL will be arithmetically three dBA lower than $L_{Aeq, 12hr}$ as there are no nighttime events at the Park.

Figure 2. Compares common outdoor and indoor sound levels for context.

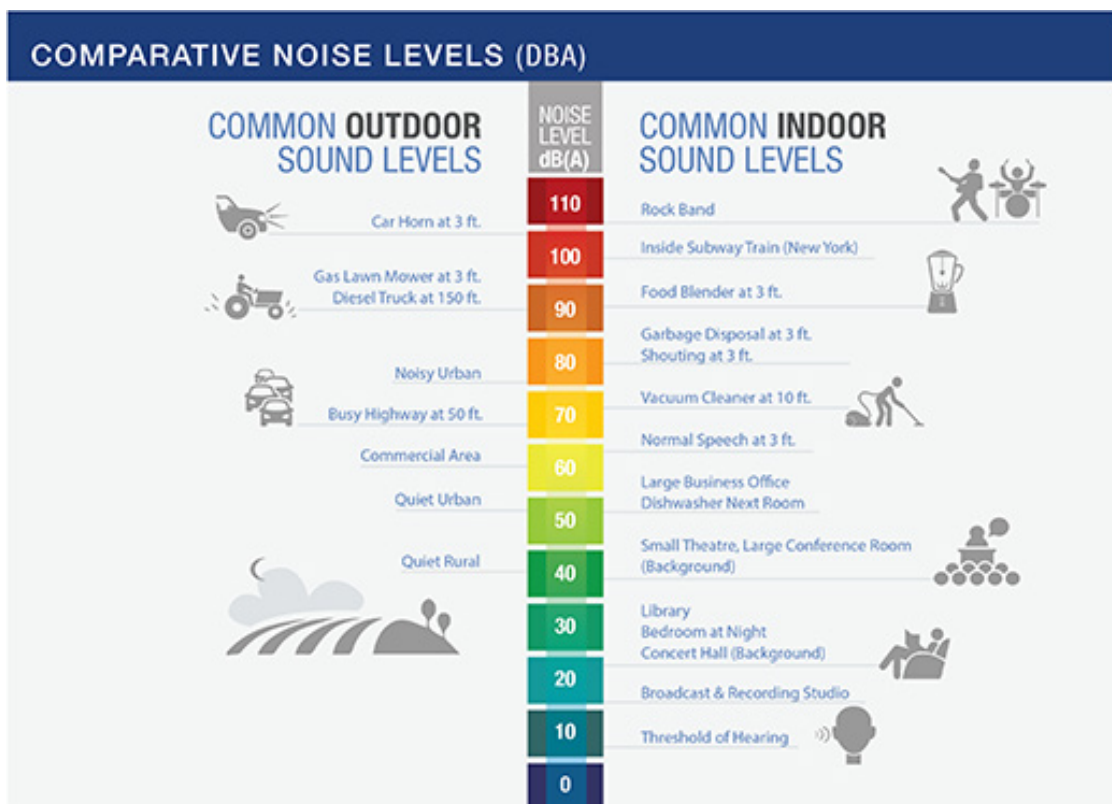


Figure 2. Comparative Noise Levels (Source: FAA 2020)

Listed Species Evaluated for Effects

The effects of the proposed action include the direct and indirect effects of the air tours that will now occur under NPATMA authorization, including the conservation measures identified. All other aspects of the environmental baseline are expected to continue at approximately the same levels.

Table 2 includes the Section 7 determination for each listed species and associated critical habitat. The proposed action does not involve ground-disturbing activities or other activities with the potential to

modify aquatic or terrestrial habitat. In addition, while the proposed action overlaps critical habitat for plant and insect species listed in Table 2, no impacts to the physical or biological features that are essential to the conservation of these species would occur. Therefore, the agencies determined the proposed action will have no effect on insects, plants, and ferns and allies and critical habitats.

Hawaiian Hoary Bat ('Ōpe'ape'a)

The Hawaiian hoary bat (*Lasiurus semotus*), or 'ōpe'ape'a, is the only fully terrestrial native mammal in the Hawaiian Islands and is federally listed as endangered. 'Ōpe'ape'a are found from sea level to 11,800 ft., with most observations occurring in native rain forests up to at least 6,000 ft. (Bonaccorso et al., 2015). Data indicates that 'ōpe'ape'a commonly traverse and forage throughout the action area and are likely to be roosting within this area. Detections were reported from within the Park or the vicinity of the action area, and activity peaked 40 to 60 minutes after sunset (Fraser et al., 2007). Females give birth to twin pups from June to August, and juveniles are typically volant by mid-September.

'Ōpe'ape'a are known to roost solitarily in tree foliage in a variety of tree species and in an assortment of habitats and elevations (native and non-native habitats). Roost trees are usually larger than surrounding trees (Montoya-Aiona, 2020). 'Ōpe'ape'a is vulnerable to roost disturbance during pupping and pup care (June to September). Noise exposure to bat species during daytime roosting and while rearing young can lead to abandonment of their roosts and young (California Department of Transportation, 2016). Noise from a variety of sources, including commercial air tours, occur over 'ōpe'ape'a habitat during these sensitive months.

'Ōpe'ape'a is an insectivore, and prey include a variety of night-flying insects, primarily moths and beetles (Whitaker and Tomich, 1983; Pinzari et al., 2019). Acoustic detection studies show seasonal patterns of habitat occupancy with increased activity in the higher elevations (higher than 3,300 ft.) during the non-breeding season (November to April), and increased activity in the low elevations during the breeding season (Bonaccorso et al., 2015).

Due to its solitary and cryptic roosting behavior (Bonaccorso et al., 2015), robust estimates of the population size and trend of the 'ōpe'ape'a are currently unavailable. 'Ōpe'ape'a can be injured and killed from collisions with man-made structures including barbed wire fences, wind turbines, and communication towers; however, limiting factors are poorly understood. There is one documented rotor strike of 'ōpe'ape'a on the Island of Hawai'i (Yuen, 2012). Other threats to this species include the elimination of roosting sites, habitat destruction, pesticides, and introduced species such as non-native insects or disease.

Effect Determination

Direct strikes and noise impacts are potential impacts to 'ōpe'ape'a. The possibility of direct strikes is considered discountable because 'ōpe'ape'a are nocturnal and commercial air tours will occur during daylight hours only (between 10:00 AM and 2:00 PM, or between 9:00 AM to 5:00 PM if using quiet technology aircraft), so 'ōpe'ape'a would be roosting in trees during the time of day at which air tours occur, and therefore the risk of a helicopter striking a bat would be unlikely to occur. Therefore, due to the time of day restrictions, the likelihood of a direct strike is extremely low and the effects are considered discountable.

‘Ōpe‘ape‘a could be intermittently exposed to commercial air tour noise while roosting in trees during the daytime and during the pupping season. Air tours would be limited during the hours of 10:00 AM to 2:00 PM unless the operators have converted to a quiet technology aircraft, which would allow for tours to occur from 9:00 AM to 5:00 PM.

Anthropogenic noise has been found to reduce foraging success of bats (Siemers and Schaub, 2011; Luo et al., 2015). When exposed to played-back traffic and gas compressor station noise at 58-76 dBA and low-level amplified noise at 35 dBA, foraging pallid bats (*Antrozous pallidus*) experienced increases in the amount of time it took to locate prey-generated sounds (Bunkley and Barber, 2015). The greater mouse-eared bat (*Myotis myotis*) had showed decreased foraging efficiency when exposed to broadband computer-generated noise at a sound pressure level of 80 dB (which corresponds to sounds occurring 10 – 15 meters (33 – 49 ft.) away; bats will avoid foraging areas with these conditions in favor for quieter foraging areas (Schaub et al., 2008). Based on noise modeling, the value for L_{max} generated by commercial air tours in the Park would be 63.7 dBA and would occur at ‘Āpua Point Camp. The maximum time above 52 dBA experienced across all points modeled would be 5.8 minutes, and 87% of points modeled would experience time above 52 dBA for 0.0 to 0.8 minutes. Based on the values for noise used in Bunkley and Barber (2015) and Schaub et al. (2008), conditions for commercial air tours under the proposed action are unlikely to inhibit foraging success in bats. Additionally, restrictions on flight altitudes would prevent flights from occurring below 1,500 ft. AGL within the action area, which is greater than the 10 – 15 meters (33 – 49 ft.) that elicited a negative foraging response in bats as described in Bunkley and Barber (2015). Noise modeling outputs for a quiet technology only day are less noisy than commercial air tour conditions under the other parameters of the proposed action. Noise associated with commercial air tours would be short in duration and could cause bats within the action area to shift their foraging areas to less noisy areas; however, even on shorter days of the year when sunset is closer to 5:00 PM, there would not be overlap between the time that commercial air tours could be conducted and the time at which bats begin to forage around dusk.

The minimum flight altitude would be 1,500 ft. AGL over land under the proposed action, which would limit the intensity of noise exposure. Given the relatively low magnitude and slow onset rate of noise from air tours, it appears unlikely that ‘Ōpe‘ape‘a would abandon a roost site unless noise was accompanied by visual or tactical cues that may cause a bat to perceive the noise as a threat. Based on the minimum flight altitude of 1,500 ft. AGL, helicopter downwash, air deflected downwards by an aircraft blade in motion, is not expected to be an issue.

Based on implementation of the measures described above, any potential impact resulting from direct strikes would be discountable⁴ and impacts from noise would be insignificant⁵. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** the ‘Ōpe‘ape‘a.

Forest Birds

‘Akiapōlā‘au (*Hemignathus wilsoni*), an endangered honeycreeper species, is extremely rare in the action area and only found along the northeast boundary of Kahuku, close to Ka‘ū Forest Reserve, in mixed ‘ōhi‘a-koa mesic to wet forest above 4,300 ft. elevation. This species has previously been

⁴ Discountable effects are those extremely unlikely to occur.

⁵ Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated.

observed on the eastern side of Mauna Loa, but there is currently no resident population in this region of the Park. ‘Akiapōlā‘au nest almost exclusively in the tops of ‘ōhi‘a trees. ‘Akiapōlā‘au breeds and fledges young throughout the year, although more predictably from March to July. This species had an estimated population size of 1,500 individuals in the late 1970s, and surveys conducted between 1990 and 1995 estimated that the population size decreased to around 1,110 individuals (State of Hawai‘i, 2015), and then conservation actions resulted in increasing trends to the most recent estimate of 1,900 birds (Kendall et al., 2022).

Populations of the endangered Hawai‘i creeper (*Loxops mana*), also known as ‘alawī, are concentrated in a small area in mesic to wet forest in the Kahuku Unit above 4,300 ft. elevation. ‘Alawī tend to build their nests at mid-canopy. This species was first listed as endangered in 1970, and its first recovery plan was created in 1983. Population estimates for ‘alawī remained stable at around 12,500 individuals until 2010, when a 5-year status review was conducted indicating that their populations across the Island of Hawai‘i increased to approximately 14,000 birds (USFWS, 2020). There are four distinct populations on the Island of Hawai‘i. Within the Park’s Kahuku Unit, the densities of this species are increasing (Judge et al., 2017).

The Hawai‘i ‘ākepa (*Loxops coccineus*), which are more abundant and widely distributed throughout Kahuku than ‘akiapōlā‘au and ‘alawī, forage almost exclusively on buds and new flush of ‘ōhi‘a foliage in single trees or small stands within subalpine shrublands and adjacent old growth forest of Kahuku. Their breeding season occurs from March to late May. The Hawai‘i ‘ākepa was first listed as endangered in 1970, and had recovery plans created and revised in 1983 and 2006, respectively. The total population estimate of the Hawai‘i ‘ākepa population is greater than 16,000 birds, with the population in the Park and the Ka‘ū Forest Reserve being the second largest on the Island of Hawai‘i. They are listed as endangered under the ESA. Their population at Kahuku was estimated to be 3,663 individuals (Judge et al., 2018).

The ‘i‘iwi (*Drepanis coccinea*), federally listed as threatened, is a honeycreeper historically widespread and occurring at all elevations, but now persists only in the high-elevation forests primarily on the Islands of Hawai‘i, Maui, and Kaua‘i (Scott et al., 1986; Fancy and Ralph, 2020; USFWS, 2016). At the Park, ‘i‘iwi is generally restricted to elevations above 4,900 ft. where the disease vector mosquito for avian malaria is absent. The population on the Island of Hawai‘i was estimated to be greater than 543,000 birds (Paxton et al., 2013; Kendall et al., 2022). ‘i‘iwi population trends are variable within the Park. Populations in the Kahuku Unit and on the eastern side of Mauna Loa are both declining; populations within northwest Kahuku and Ōla‘a are considered to be stable; populations in Pāpā are increasing (Judge et al., 2017). Breeding may occur all year, but the peak of breeding occurs from February through June (Fancy and Ralph, 2020). The ‘i‘iwi is a strong flier capable of high, long flights to locate nectar sources (Guillaumet et al., 2017; Fancy and Ralph, 2020). USFWS has proposed critical habitat for the species (USFWS, 2022), which includes portions of the action area.

Another endangered forest bird species, ‘alalā or Hawaiian crow (*Corvus hawaiiensis*), was once common throughout their range on the Island of Hawai‘i. The last ‘alalā in its native habitat was thought to have been confined to higher elevations in South Kona. ‘Alalā became extinct in their native habitat. The last observation of ‘alalā in the wild was in 2002 (USFWS, 2009). It remains in a captive breeding population at Keauhou Bird Conservation Center where propagation efforts have been successful. Release of ‘alalā is being considered for several areas across the State of Hawai‘i and may include areas within the action area; a trial for release in areas adjacent to the Park occurred previously but was

unsuccessful. Other species may be reintroduced or translocated in the future, but there are no current planned reintroductions.

Today, most Hawaiian forest birds persist only in high-elevation forests where the risk of malaria transmission is lower due in part to cooler temperatures (van Riper et al., 1986; Scott et al., 1986; Atkinson and LaPointe, 2009; Atkinson et al., 2014). Even though much of the high elevation threatened and endangered bird habitat in the action area is largely protected from feral ungulates and direct human-caused habitat loss, there is evidence of continuing range contraction and population declines, especially from lower-elevation portions of their ranges since 1980 (Baker and Baker, 2000; Camp et al., 2009; Vetter et al., 2012).

Effect Determination

Forest birds could be impacted by direct strikes and noise from air tours. Most Hawaiian forest birds occupy high-elevation forests where cooler temperatures cause the risk of avian malaria transmission to be lower than at lower altitudes. Although forest birds may occur at altitudes high enough where they could collide with aircrafts, this event is unlikely, as the birds are relatively small (ranging from 4 - 8 inches in size). 'Akiapōlā'au, 'alawī, Hawai'i 'ākepa, and 'i'iwi are not listed in the FAA Wildlife Strike Database, so it can be inferred that there are no reported strikes of these species on the Island of Hawai'i (FAA, 2022).

Anthropogenic noise has the potential to affect woodlands structure through seed removal, seed predation, and seedling recruitment (Francis et al., 2012), and areas closer to anthropogenic noise have lower bird species richness than areas further away from noise, but nesting success was higher in noisier areas due to noise intolerance of predatory birds (Francis et al., 2009). The costs of chronic noise exposure include impacts to reproduction and habitat selection. Communication networks allow birds to simultaneously assess potential mates and rivals. Acoustic masking, the process by which the threshold of detection for a sound is increased by other sounds, reduces the number of individuals that participate in these communication networks and can impact reproductive processes (Barber et al., 2010). Moreover, nocturnally migrating songbirds have been observed to listen across species' boundaries for other vocalizations to assess habitat, and reduced listening area hindered by anthropogenic sound can affect this acoustical eavesdropping (Barber et al., 2010). Noise from commercial air tours would not be chronic due to restrictions on the total number of flights per year, the requirement of designated routes, and time of day restrictions.

Gallardo Cruz et al. (2021) assessed the impacts of helicopter noise from air tours on forest bird species in the Park. They found that helicopter noise affects the vocalizing behavior of birds but does not always significantly impact the total vocalization time before, during, or after helicopter noise, and that exposure to high amplitude helicopter noise was not severe enough to mask bird song in some locations (Gallardo Cruz et al., 2021). Bird response to helicopter noise was the strongest in areas with very loud and frequent helicopter traffic, which would be mitigated under the proposed action by limiting the number of air tours that could occur each year and designated flight routes that require operators to fly in specific locations within the action area. The effect of helicopter noise on the vocalizing behavior of birds decreases when helicopters fly at high altitudes with low frequency (Gallardo Cruz et al., 2021). While altering vocalizations may not result in death of impacted birds, this change in behavior is likely to be indicative of other effects (e.g., stress response) seen in numerous bird species in response to noise

disturbance (Francis et al., 2009; Barber et al., 2010; Shannon et al., 2016; Buxton et al., 2017). Stress is well known to reduce survival and reproductive success in birds (Delaney et al., 1999; Kleist et al. 2018).

The routes included in the draft ATMP would avoid most forest bird habitat that is present within the action area. Specifically, the Kahuku Route and Coastal Route would not fly over forested areas that provide habitat for these species which would limit the maximum sound levels that would occur from commercial air tours in forested areas near these routes. While the Pu'u'ō'ō Route overlaps with some forested areas in the East Rift Zone, the route avoids the most forested areas in this region that would provide the best quality habitat protection to support forest bird populations. Other parameters included in the draft ATMP including the annual limit on the number of flights and limits on hovering, loitering and/or circling will reduce the frequency and duration of noise exposure to forest birds. Across the entire action area, the noise modeling shows that on a standard day, the maximum time that noise from air tours would be above 35 dBA is between 30 and 45 minutes a day, representing 1% of the action area; 29% of the action area would experience noise above 35 dBA for at least 0.1 minutes a day. Under both types of operational days (standard and quiet technology only), most areas of the action area that provide forest bird habitat (particularly in the Kahuku Unit) would not experience noise above 35 dBA from commercial air tours. Collectively, these operational parameters represent an improvement to the protection of forest bird habitat as compared to existing conditions because forest birds will be exposed to less noise throughout the action area.

Proposed critical habitat for 'i'iwi is located within the action area but would not be impacted and is outside of the proposed routes.

Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** forest birds including the 'akiapōlā'au, 'alawī, Hawai'i 'ākepa, 'alalā, and 'i'iwi, and proposed critical habitat for 'i'iwi .

Seabirds

There are three federally listed seabirds confirmed or potentially breeding in the study area, traveling outside of the action area during the day to feed and return to the nest at night. 'Akē'akē or Band-rumped Storm-petrel (*Oceanodroma castro*), is a small black pelagic seabird that breeds on steep, remote cliffs and high-elevation volcanic terrain above 6,900 ft. (Slotter-back 2002; Antaky et al., 2019). This species was listed as endangered in 2016 after the first active nests were discovered in the Hawaiian Islands.

Once widespread in the main Hawaiian Islands, the 'a'o, or Newell's shearwater (*Puffinus newelli*), is federally listed as threatened. 'A'o breed on the ground in excavated burrows often surrounded with dense vegetation, including native 'ōhi'a (*Metrosideros polymorpha*) and uluhe ferns (*Dicranopteris linearis*), at elevations ranging from 500 to 4,000 ft. on steep slopes and near-vertical volcanic crater walls (Ainley et al., 2019). Populations are historically known to occupy areas of the lower East Rift Zone outside the Park and nest in other areas of rainforest with an uluhe fern understory; however, much of the area was covered in lava in 2018 during the lower Puna eruption, including Pu'ulena Crater where surveyors in 1993 confirmed a breeding colony (Reynolds and Ritchotte, 1997). Before the 2018 eruption, potential colonies were suspected to be under the threat of predation by barn owls (*Tyto alba*), which have devastated seabird colonies in areas (Byrd and Telfer, 1980) and were recorded frequently in known breeding locations (Reynolds et al., 1994). In the early 1970s there was a carcass

and bird calls recorded at Makaopuhi Crater within the Park (Banko, 1980) and there were incidental reports of calls near the Kalapana Trailhead (Banko, 1980; Swift and Burt-Toland, 2009), but there were no detections of Newell's Shearwaters during radar and auditory/visual surveys conducted between 2001 and 2005 (Swift and Burt-Toland, 2009). It is assumed that some birds may still be nesting in areas of the East Rift Zone within the Park. No focused monitoring has occurred since the early 2000s (Swift and Burt-Toland, 2009).

The Hawaiian Petrel (*Pterodroma sandwichensis*), known as 'ua'u, is an endangered seabird that forages widely across the Pacific and nests only in the Hawaiian Islands, which is the only time they utilize land. Their nesting habitat is variable, ranging from heavily vegetated, forested slopes on the Islands of Lāna'i and Kaua'i to subalpine and alpine environments on the Islands of Maui and Hawai'i. They have been observed nesting in shallow pits, cracks, and lava tubes within sparsely vegetated, weathered pāhoehoe lava flows on Mauna Loa, in addition to underground burrows at high elevations (above 5,500 ft.) in sparsely vegetated terrain on the western slope of Kahuku and in upper subalpine and alpine habitat on the eastern side of Mauna Loa above 8,000 ft. elevation. Adult petrels and fledglings are believed to enter and exit their underground nests at dusk and dawn. This species was first listed as endangered under the ESA in 1978, and a recovery plan was created in 1983 by the USFWS. A 5-year status review was conducted in 2011, where 'ua'u populations statewide had increased from the low thousands to around 19,000 individuals, allowing some of their delisting criteria to be partially fulfilled due to conservation efforts such as predator management (USFWS, 2022a). Another 5-year status review began in 2022. Data from this review and fulfillment of delisting criteria are still being analyzed, but populations of 'ua'u on the Island of Hawai'i are expected to increase due to predator management actions such as installing predator-proof fencing. However, nests outside of protective fences remain extremely vulnerable to predation. 'Ua'u populations on the Island of Hawai'i number in the low hundreds and within the Park there are approximately 55 to 75 known active nests.

Climate change affects seabirds' breeding success with increasing variability in the distribution and availability of at-sea prey, which is being affected by rising ocean temperatures; however, little is known about the potential effects of climate-driven changes in the prey available for 'akē'akē, 'a'o, and 'ua'u. Expanding invasive species are also associated with climate change scenarios, which could potentially degrade the breeding habitat of the 'akē'akē, 'a'o, and 'ua'u. (Ainley et al., 2019). Current threats to seabirds include habitat loss, trampling of nests by feral ungulates, predation, light pollution, and collision with vehicles and man-made objects/structures.

Effect Determination

Direct strikes and noise are potential impacts to high elevation seabirds. There are no recorded strikes of 'akē'akē or 'a'o on the Island of Hawai'i and there is one recorded strike of 'ua'u that occurred in 2020 (FAA, 2022). Many seabirds are nocturnal, underground burrow nesters that travel to and from nest sites during the night. Direct strikes could occur if flights are conducted near dusk or dawn. However, under the draft ATMP, non-quiet technology flights may only occur from 10:00 AM and 2:00 PM, while flights using quiet technology aircraft may occur from 9:00 AM and 5:00 PM, so the likelihood of an aircraft striking a seabird is extremely low and the effects are considered discountable.

High and mid-elevation seabirds would experience greater protection from noise associated with commercial air tours as compared to existing level of flights because of the placement of the routes included in the draft ATMP. Specifically, routes would avoid high and mid-elevation seabird habitat in all

areas of the action area, except for those near Pu'u'ō'ō, and limits the number of commercial air tours to no more than 1,565 tours per year. Noise above 35 dBA could occur for up to 30 to 45 minutes a day on a standard day and up to 45 to 60 minutes on a quiet technology-only day, depending on the location being utilized. Most areas within 'a'o habitat would experience noise levels above 35 dBA for less than 15 minutes a day. This would result in beneficial improvements for the habitat conditions for this species compared to current conditions. Attachment 2 (*Noise Technical Analysis*) shows that commercial air tour noise above 35 dBA would not occur within the high-elevation seabird habitat under the draft ATMP.

Designated air tour routes, annual flight limits, and time of day restrictions would limit the nesting habitat that is flown over and minimize impacts to seabirds during the nesting season. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** seabirds including 'akē'akē, 'a'o, and 'ua'u.

Hawaiian Goose (Nēnē)

The Hawaiian Goose (*Branta sandvicensis*), known as nēnē, occur in the Park and the greater Hawaiian Islands, often flying between roosting and foraging sites multiple times throughout the day. They are listed as threatened under the ESA. Nēnē use diverse habitats including sub-alpine grasslands, open native shrubland and grasslands as well as mid- and low-elevation pasture and managed grasslands, to forage on leaves of grass, berries, seeds, and flowers; some make elevational movements for breeding, foraging, and molting (Banko et al., 2020; Leopold and Hess, 2014).

Nēnē were extirpated from all islands except the Island of Hawai'i by the early 1900s. In 1967, this species was listed as federally endangered under the ESA. In 2019, the nēnē were down listed from endangered to threatened. Currently, the population size of nēnē within the Park is estimated to be fewer than 200 individuals; nēnē have multiple breeding areas in the Park, which is nearly 20% of the population of nēnē on the Island of Hawai'i. Their population continues to decline despite conservation efforts such as habitat management, predator control, and restrictions on areas where nēnē are present. Threats to nēnē include vehicle collisions, wind farm turbine collisions, human or vehicle-related injuries and trauma, predation by small mammals, toxoplasmosis (a pathogen carried by feral cats), and mosquito-borne avian pox virus (Banko et al., 2020; Work et al., 2015).

Effect Determination

Direct strikes and noise impacts are potential impacts to the nēnē from commercial air tours, as this species has habitat throughout the action area. Observational evidence by the NPS indicates temporary response to low-level helicopter flights by nēnē (NPS, 2014). Although direct collisions with aircrafts are possible, the probability is low. Bird strikes most often occur during the approach and landing of airplanes (International Civil Aviation Organization, 2020). No take off or landings will occur within the Park. According to the FAA Wildlife Strike Database, there have been six reported nēnē strikes at airports across the Hawaiian Islands since 2014, two of which occurred on the Island of Hawai'i (FAA, 2022). Noise can also impact nēnē during molting, flocking periods, and during their nesting season from October to April. Potential effects from noise on these areas are minimized by the minimum altitude requirement of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean.

Several studies have documented that noise from helicopters and fixed-wing aircraft can elicit behavioral responses including flushing and reduced foraging to various waterbird species at close elevations (Ward et al., 1999; Komenda-Zehnder et al., 2003; Williams, 2007). Results of an experimental procedure for one species, the crested tern (*Sterna bergii*), indicate that the maximum responses observed, preparing to fly or flying off, were restricted to exposures at sound levels greater than 85 dBA (Brown, 1990). This study also showed scanning behavior involving head-turning was the minimum response at lower noise levels, and this, or a more intense response, was observed in nearly all birds at all levels of exposure (Brown, 1990).

Under the proposed action, nēnē would be exposed intermittently to audible air tour noise. As discussed above, the minimum flight altitude of 1,500 ft. over land and 2,000 ft. AGL over the ocean, in addition to other provisions of the draft ATMP such as designated routes and time of day restrictions, would limit exposure to air tour noise. Based on the relatively low magnitude and frequency of exposure, noise is not expected to affect the fitness of individual birds and any effects would be limited. The amount of habitat that is flown over by commercial air tours is limited by the designated routes, minimum altitude requirements, and time of day restrictions. Therefore, any potential impact resulting from direct strikes would be discountable and impacts from noise would be insignificant. Therefore, the agencies have determined the proposed action **may affect, not likely to adversely affect** nēnē.

Reptiles

Several species of listed sea turtles occur within the action area including green sea turtle (*Chelonia mydas*) or honu, hawksbill sea turtle (*Eretmochelys imbricata*) or honu 'ea, leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*). Threats to sea turtles include interactions with fisheries, poaching, and nesting habitat degradation due to coastal development.

Honu are listed as threatened under the ESA. The Central North Pacific population, which includes the State of Hawai'i, has approximately 3,710 breeding females (Seminhoff et al., 2015). More than 96% of nesting occurs at one site in the Northwestern Hawaiian Islands; the highly concentrated nesting population makes honu vulnerable to stochastic events and threats from climate change that impact their low-level nesting habitat (Seminhoff et al., 2015). However, monitoring over the past 40 years has indicated that overall nesting is increasing in the State of Hawai'i. One female honu was observed false nesting at Kamehame and Halapē beaches in and outside of the action area, before successfully nesting at Pōhue Bay (which is located within the action area) in 2011 (Seitz, 2012). Honu are also regularly observed basking on beaches in the action area (Seitz, 2012). Critical habitat for this species is designated outside of the action area.

Honu'ea forage nearshore in the Park and are listed as endangered under the ESA. There are several beaches along the south coast of the Park within the action area that are protected for nesting females. Less than 20 females per year nest in the Park, which makes it one of the smallest nesting populations in the world but the largest in the Central North Pacific Ocean (NOAA, 2022). Honu'ea exhibit high site fidelity, and regularly return to Āpua Point, Halapē, and Pōhue/Kahuku Beach to lay eggs from late July to mid-September (Fung Associates and SWCA Environmental Consultants, 2019). Although a large proportion of the known nesting sites in the Pacific are found in the State of Hawai'i, abundance for the species is quite low (NOAA, 2013). These turtles feed in similar habitat to that of the more abundant

honu. Honu'ea utilize the beaches in the daytime for basking, and on rare occasions for nesting (Seitz, 2012; Kurpita and Ransom, 2013). Honu'ea have critical habitat that is designated outside of the action area.

Leatherback sea turtles are the largest turtle in the world and highly migratory. Leatherback sea turtles are listed as endangered under the ESA. In the Pacific Ocean, nesting is common in Mexico, Nicaragua, and Indonesia, but rare across the State of Hawai'i. Leatherback sea turtles have not been observed on the beaches of the Park. Abundance estimates for leatherback sea turtles are less than 1,000 nesting females for the East Pacific population, and have been declining (NMFS and USFWS, 2020). Critical habitat is designated outside of the action area.

The loggerhead sea turtle is the most abundant sea turtle that nests in the United States and has nine distinct populations. This species is listed as endangered under the ESA. The North Pacific population that spans the action area mates on the coasts of Japan and forages in the western Pacific. However, loggerhead sea turtles have not been observed on the beaches of the Park. The number of nesting females was estimated to be 8,733 individuals and are overall increasing, but population trends are an estimate and can vary by location (NMFS and USFWS, 2020a). The largest threat to loggerhead sea turtles is fisheries bycatch, followed by coastal development that reduces nesting habitat. Critical habitat is designated outside of the action area.

Olive ridley sea turtles are one of the smallest sea turtles and are listed as threatened under the ESA. They are found worldwide, notably in Pacific subtropical waters from California to Peru. An olive ridley nest was documented in 2020 at a beach neighboring Park lands outside of the action area. Population estimates of this species vary by nesting location but are believed to be declining overall due to threats such as habitat loss, coastal development, and pollution (NMFS and USFWS, 2014). In the Pacific, large nesting populations are present in Mexico and Costa Rica.

The agencies are consulting on these species due to the presence of sea turtles nesting and basking on beaches within the action area. The agencies are also consulting with the National Marine Fisheries Service (NMFS) separately for impacts to sea turtles in the marine environment.

Effect Determination

Studies that examine the impacts of noise on sea turtles that are on land for basking or nesting are largely unavailable. Underwater noise thresholds in the loggerhead sea turtle were measured by Martin et al. (2012) that indicated potential behavioral thresholds observed at about 100 dB at 100 hertz, much higher than the maximum sound levels of 65 dB associated with the proposed action. Sea turtle ears are adapted to hearing underwater, and they are more sensitive to underwater sounds than sounds above water.⁶ Therefore, while sea turtles hauled out on shore could be exposed to noise, it is unknown what level of noise would elicit a response for individual turtles.

Adverse effects have been noted as occurring to sea turtles when flight altitudes over water are 600 ft. or lower, and flight altitudes up to 2,000 ft. have been determined to not likely to adversely affect sea

⁶ <https://www.fisheries.noaa.gov/feature-story/sea-turtles-sea-sound#:~:text=Sea%20turtle%20ears%20are%20adapted,than%20sounds%20above%20water%20sounds.>

turtle species (NMFS, 2022). Due to the poor sound transference from air to water, noise would be unlikely to elicit a response for individual turtles underwater.

The minimum altitude of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean under the proposed action is above the threshold of adverse effects found in prior Section 7 consultations. In addition, the noise levels of the proposed action are well below those found to show a behavioral response. Therefore, the agencies determined any noise impacts would be discountable resulting in **may affect, not likely to adversely affect** honu, honu'ea, leatherback sea turtle, loggerhead sea turtle, and olive ridley sea turtle.

Cumulative Effects of the Action

Cumulative effects of the action include the effects of future State, Native Hawaiian, local, or private actions that are reasonably certain to occur in the action area. Currently there are no known planned Federal or Native Hawaiian actions that would affect the species described above. Similarly, the agencies are not aware of any proposed non-Federal action that may affect species or critical habitats considered in this consultation. The impacts of ongoing Federal actions unrelated to the proposed action are considered part of the baseline condition since they are covered under separate consultation pursuant to Section 7 of the ESA. Therefore, there are no cumulative effects associated with the proposed action.

Conclusion

As indicated above, the proposed action implements designated routes, required minimum altitudes, establishes time of day restrictions, and limits the number of air tours annually. The measures enumerated above incorporated into the ATMP will serve to avoid and minimize possible effects to listed species and their critical habitat. Therefore, based on the analysis that all effects of the proposed action will be insignificant or discountable, the agencies have determined that the proposed project **may affect, not likely to adversely affect** 'ōpe'ape'a; forest birds including 'akiapōlā'au, 'alawī, Hawai'i 'ākepa, 'alalā, 'i'iwi, and 'i'iwi proposed critical habitat; seabirds including 'akē'akē, 'a'o, and 'ua'u; nēnē; and sea turtles including honu,, honu'ea, leatherback sea turtle, loggerhead sea turtle, and olive ridley sea turtle. Thank you very much for your help and support. If you have questions or need more information, please contact Michelle Carter, Michelle_Carter@nps.gov, at the NPS who is helping coordinate overall Section 7 consultations for ATMPs on behalf of the agencies.

Sincerely,

**RHONDA
LOH**

Rhonda Loh, Superintendent for Hawai'i Volcanoes National Park

**KEVIN W.
WELSH**

Kevin Welsh, Executive Director, Office of Environment and Energy, Federal Aviation Administration

Digitally signed by
RHONDA LOH
Date: 2023.04.19
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Date: 2023.04.21
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Attachments

- Attachment 1 Draft Air Tour Management Plan
- Attachment 2 Noise Technical Analysis
- Attachment 3 U.S. Fish and Wildlife Service's Information Planning and Consultation tool Official Species List

List of Acronyms and Abbreviations

The agencies	The National Park Service and Federal Aviation Administration
ATMP	Air Tour Management Plan
Action area	The area within which an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL.
AGL	Above ground level
dB	Decibels
dBA	Decibels (A-weighted scale)
DNL	Day-night Average Sound Level (denoted by the symbol L_{dn})
ESA	Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
HI Common Procedures Manual	2008 FAA Hawai'i Air Tour Common Procedures Manual
IPaC	U.S. Fish and Wildlife Service Information Planning and Consultation tool
IOA	Interim Operating Authority
L_{Aeq}	Equivalent continuous sound level
L_{max}	Maximum sound pressure level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NPS	National Park Service
NPATMA	National Parks Air Tour Management Act of 2000
The Park	Hawai'i Volcanoes National Park
TA_{35dBA} and TA_{52dBA}	The amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period (35 minutes and 52 minutes)
USFWS	United States Fish and Wildlife Service

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Natural Resource Stewardship & Science
Natural Sounds and Night Skies Division



U.S. Department
of Transportation
**Federal Aviation
Administration**

United States Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Office of Policy, International Affairs & Environment
Office of Environment and Energy

NATIONAL PARKS AIR TOUR MANAGEMENT PROGRAM

April 13, 2023

Ann Garrett, Assistant Regional Administrator
NOAA/IRC/NMFS/PIRO
Protected Resources Division
1845 Wasp Blvd, Bld 176
Honolulu, HI 96818

Re: Informal Section 7 Consultation for Hawai'i Volcanoes National Park Air Tour Management Plan

Dear Ms. Garrett,

The Federal Aviation Administration (FAA), in cooperation with the National Park Service (NPS) (collectively, the agencies), is developing an Air Tour Management Plan (ATMP) for Hawai'i Volcanoes National Park (the Park). The agencies are preparing documentation for the draft ATMP in accordance with the National Parks Air Tour Management Act of 2000 (NPATMA) and other applicable laws. This letter is a request for informal consultation with your office by the agencies pursuant to Section 7 of the Endangered Species Act (the ESA). We are seeking your concurrence that the proposed actions in the draft ATMP will not adversely affect threatened and endangered species occurring within the study area.

Project Background and Purpose of the Action

NPATMA directs the agencies to develop ATMPs or voluntary agreements for National Park System units over which more than 50 commercial air tours occur annually, 49 U.S.C. § 40128. A commercial air tour operation is defined as "a flight conducted for compensation or hire in a powered aircraft where the purpose of the flight is sightseeing over a national park, within ½ mile outside the boundary of a national park...during which the aircraft flies below an altitude of 5,000 feet (ft.) above ground level (AGL) or less than 1 mile laterally from any geographic feature within the Park (unless more than ½ mile outside the boundary)." When NPATMA was passed in 2000 it required the FAA to grant Interim Operating Authority (IOA) to existing air tour operators who were permitted to continue air tour operations over parks until an ATMP was completed. IOA includes only an annual cap on the number of commercial air tours that may be conducted by an operator but does not represent the actual number of air tours conducted and does not designate the route(s), time-of-day, or altitude(s) of such tours. In 2012, NPATMA was amended to require operators to report the number of commercial air tours conducted each year.

On February 14, 2019, Public Employees for Environmental Responsibility and the Hawai'i Coalition Malama Pono filed a petition for writ of mandamus seeking to have the agencies complete air tour

management plans or voluntary agreements at seven specified parks, *In re Public Employees for Environmental Responsibility, et al.*, Case No. 19-1044 (D.C. Cir.). On May 1, 2020, the United States Court of Appeals for the District of Columbia Circuit granted the petition and ordered the agencies to file a proposed schedule for bringing twenty-three eligible parks, including Hawai'i Volcanoes National Park, into compliance with NPATMA within two years. The D.C. Circuit subsequently entered an order requiring the agencies to propose firm completion dates to bring all parks into compliance with NPATMA. The completion date set for the Park is December 31, 2023.

Past and Current Commercial Air Tour Activity

Table 1 describes the current commercial air tour activity over the Park along with the average number of flights typically flown over the Park, based on data reported to the NPS and FAA. Based on reported data from 2017-2019, the average annual number of commercial air tours over the Park is 11,376. The flights currently conducted over the Park are flown at altitudes ranging from 500 ft. to 1,500 ft. AGL depending on location over the Park. Details regarding the proposed action, which is implementation of an ATMP for the Park, are described in the following sections.

Table 1. Current Commercial Air Tour Activity

Park Unit	IOA	Current AGL	Average Total Annual Flights (2017-2019)
Hawai'i Volcanoes National Park	26,664	500 ft. – 1,500 ft.	11,376

Action Area

The action area is the area that includes all direct and indirect effects. The action area includes the Park and the land within a ½-mile of the Park's boundary, depicted in Figure 1, and is referred to as the ATMP planning area. The ATMP applies to all commercial air tours within the action area. A commercial air tour subject to the ATMP is any flight, conducted for compensation or hire in a powered aircraft where a purpose of the flight is sightseeing over the Park, during which the aircraft flies:

- (1) Below 5,000 ft. above ground level (except solely for the purposes of takeoff or landing, or necessary for safe operation of an aircraft as determined under the rules and regulations of the FAA requiring the pilot-in-command to take action to ensure the safe operation of the aircraft); or
- (2) Less than one mile laterally from any geographic feature within the Park (unless more than ½-mile outside the Park boundary).

As air tours outside of the ATMP planning area are outside the jurisdiction of the ATMP and not subject to NPATMA, there would be no limitations on the annual number of air tours that could occur, and no designated routes could be set outside the ATMP planning area.

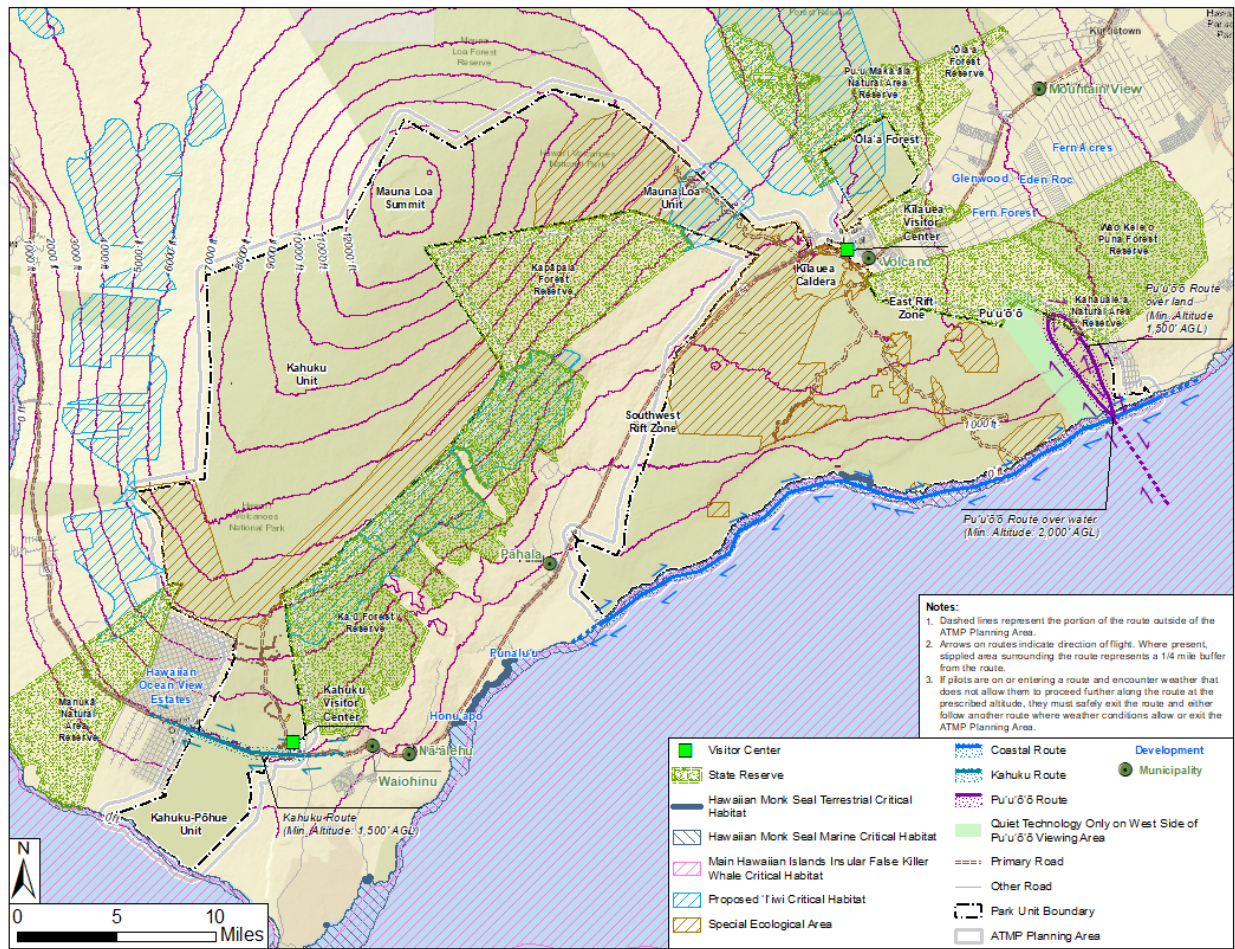


Figure 1. Commercial Air Tour Routes at Hawai'i Volcanoes National Park Under the Proposed Action¹

Description of Proposed Action

The proposed action is implementation of an ATMP for the Park which establishes conditions for the management of commercial air tour operations. The ATMP will remain in effect until amended, at which time the agencies would reinstate consultation pursuant to 50 CFR 402.16. A summary of relevant operating parameters of the draft ATMP are discussed in detail below. See Attachment 1 for the draft ATMP.

Commercial Air Tours Per Year

The draft ATMP authorizes 1,565 commercial air tours over the Park each year — 14% of the existing number of flights.

¹ Figure 1 includes designated and proposed critical habitat under the jurisdiction of both the National Marine Fisheries Service and U.S. Fish and Wildlife Service.

Commercial Air Tour Routes and Altitudes

The draft ATMP requires aircraft operators to follow three designated flight paths with a minimum altitude of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean. Flights more than ½-mile outside the Park boundary are outside of the action area and are subject to the altitude restrictions of the 2008 FAA Hawai'i Air Tour Common Procedures Manual (HI Common Procedures Manual).

There are three designated routes that operators must follow:

- Pu'u'ō'ō Route: Travels on the east rift of Kīlauea in the Pu'u'ō'ō area with a single entry and exit point over the ocean. Operators that have converted to quiet technology aircraft may request to be allowed to conduct air tours in an expanded fly zone directly west of this route near Pu'u'ō'ō (the Pu'u'ō'ō Quiet Technology Zone). The minimum altitude is 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean. Hovering, loitering, and/or circling is allowed for up to five minutes.
- Coastal Route: Bi-directional route offshore along the edge of the park boundary with a 2,000 ft. lateral distance from shore and at minimum altitude of 2,000 ft. AGL over the ocean.
- Kahuku Route: Bi-directional route across the south side of the Kahuku Unit following Highway 11 at minimum altitude of 1,500 ft. AGL over land.

Commercial Air Tour Day/Time

Flights would be permitted between the hours of 10:00 AM and 2:00 PM, unless using a quiet technology aircraft. Flights would be permitted on Monday, Tuesday, Thursday, Friday, and Saturday. Air tours would not be allowed on Sundays. Operators that have converted to quiet technology aircraft could request to be allowed to conduct air tours on Wednesdays.

Additional Requirements

Hovering, Loitering, and Circling: Hovering, loitering, and/or circling for up to five minutes would be permitted only on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone. Circling aircraft would have to turn away from the advancing blade as much as possible to minimize noise.

Adaptive Management: Adaptive management is a systematic approach for improving resource management and ensuring the continued effectiveness of the ATMP over time through the monitoring of Park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as if the breeding habitat of a sensitive species moves to a new area. Resource condition monitoring and adaptive management of the ATMP would occur under this alternative to ensure that the terms and conditions of the ATMP would continue to address park management objectives. The NPS would conduct periodic acoustic monitoring to ensure that the terms and conditions of the ATMP remain consistent with park management objectives. The FAA and the NPS will provide additional information for interested parties about the notice and process for adaptive management changes.

Interpretive Training and Education: When made available by Park staff, operators/pilots would take at least one training course per year conducted by the NPS. The training would include Park information

that operators could use to further their own understanding of Park priorities and management objectives as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients. Helicopter pilots would also be required to complete the FAA Introduction to Fly Neighborly training.² The Fly Neighborly Noise Abatement Training program, created by the FAA and endorsed by Helicopter Association International, teaches pilots and operators noise abatement procedures and situational awareness tools that can be used to minimize the effects of helicopter noise emissions.

Reporting, Monitoring, and Enforcement: Operators would be required to equip all aircraft used for air tours with flight monitoring technology, to use flight monitoring technology during all air tours under the draft ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. FAA determination of noncompliance may result in loss of authorization to conduct commercial air tours authorized by the ATMP. Any violation of Operations Specifications shall be treated in accordance with FAA Order 2150.3, *FAA Compliance and Enforcement Program*.³

Quiet Technology Incentives

The draft ATMP incentivizes the adoption of quiet technology aircraft by commercial air tour operators conducting commercial air tours over the Park. Operators that have converted to quiet technology aircraft would be allowed to conduct commercial air tours from 9:00 AM to 5:00 PM on all days on which flights are allowed. Quiet technology aircraft are permitted to fly on Wednesdays and conduct commercial air tours in additional locations in the Pu'u'ō'ō Quiet Technology Zone.

Summary of Conservation Measures

The proposed action includes the following measures protective of species:

- Reduces the number of air tours over the Park from 11,376 (three-year average) to 1,565, an 86% reduction.
- Permits flights only between the hours of 10:00 AM and 2:00 PM, unless using a quiet technology aircraft then flights would be permitted from 9:00 AM to 5:00 PM for those aircraft. This proposed window of operation would provide additional protection to wildlife during critical dusk/dawn periods that are prime times of day for foraging, mating, and communication.
- Aircraft will not hover or circle while conducting air tours over the Park, unless on the Pu'u'ō'ō Route and in the Pu'u'ō'ō Quiet Technology Zone where this is permitted for up to five minutes. This measure would minimize the time individual animals would be exposed to aircraft noise.
- Sets minimum altitudes of 1,500 ft. AGL over land and 2,000 ft. AGL over the ocean, which is an increase of 500 to 1,500 ft. compared to existing operations. This increase in altitude would reduce noise intensity at ground level. When the altitude of an aircraft is increased, the total area of noise exposure from the aircraft may also increase depending on the surrounding terrain. However, because increases in altitude also result in a reduction in maximum sound level of the aircraft in areas nearby the flight track, the beneficial effects of increasing the altitude of commercial air tours are anticipated to outweigh the *de minimis* impacts from any increase in the area exposed to the noise.

² https://www.faa.gov/gslac/ALC/course_content.aspx?pf=1&preview=true&cID=500

³ https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1034329

Listed Species and Critical Habitat Potentially Occurring within the Action Area

The National Marine Fisheries Service's (NMFS) online Species Directory was used to assess the potential for any federally listed species or designated critical habitat that may occur within the action area. Based on this review of species protected under the ESA administered by NMFS, the agencies identified the following species and/or critical habitat that may occur within the action area (see Table 2).

Table 2. Listed Species and Critical Habitat Potentially Occurring in the Action Area

Reptiles - Scientific Name	Reptiles - Common Name	Reptiles - Status (Federal)	Reptiles - Critical Habitat in the Action Area (Y/N)	Reptiles - Proposed Finding
<i>Caretta caretta</i>	Loggerhead Sea Turtle	Endangered	N	No Effect
<i>Chelonia mydas</i>	Green Sea Turtle	Threatened	N	No Effect
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	Endangered	N	No Effect
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	Endangered	N	No Effect
<i>Lepidochelys olivacea</i>	Olive Ridley Sea Turtle	Threatened	N	No Effect
Mammals - Scientific Name	Mammals - Common Name	Mammals - Status (Federal)	Mammals - Critical Habitat in the Action Area (Y/N)	Mammals - Proposed Finding
<i>Balaenoptera borealis</i>	Sei Whale	Endangered	N	No Effect
<i>Balaenoptera musculus</i>	Blue Whale	Endangered	N	No Effect
<i>Balaenoptera physalus</i>	Fin Whale	Endangered	N	No Effect
<i>Eubalaena japonica</i>	North Pacific Right Whale	Endangered	N	No Effect
<i>Neomonachus schauinslandi</i>	Hawaiian Monk Seal	Endangered	Y	NLAA
<i>Physeter macrocephalus</i>	Sperm Whale	Endangered	N	No Effect
<i>Pseudorca crassidens</i>	Main Hawaiian Island Insular False Killer Whale	Endangered	Y	No Effect

Environmental Baseline

The environmental baseline for this consultation includes the three-year average of the air tours currently flown under existing law including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A, Special Operating Rules for Air Tour Operators in the State of Hawai'i (formerly Special Federal Aviation Regulation 71)) and any FAA exceptions issued to individual operators as outlined by the HI Common Procedures Manual.

The NPS and partner organizations conduct aviation over the Park for administrative and research purposes. The NPS and its partners' aircraft activity has been evaluated and impacts addressed through Section 7 consultation previously (see Mission Critical Administrative Aviation Plan and Environmental Assessment, 2015).

Potential Stressors Associated with the Proposed Action

The agencies evaluated the proposed action to identify potential stressors that may affect listed species or critical habitat, if exposed. The proposed action does not include in-water activities. Therefore, potential stressors would be associated with overflights, limited to noise and visual disturbance. An increase in altitude to 2,000 ft. AGL over the ocean would limit visual disturbance and reduce noise intensity. Potential effects of low-level flights including commercial air tours on biological resources is largely inferential, as literature specific to these types of effects on individual species is generally unavailable. Discussion of potential effects is based on related species and similar actions.

Overview of Noise Associated with the Proposed Action

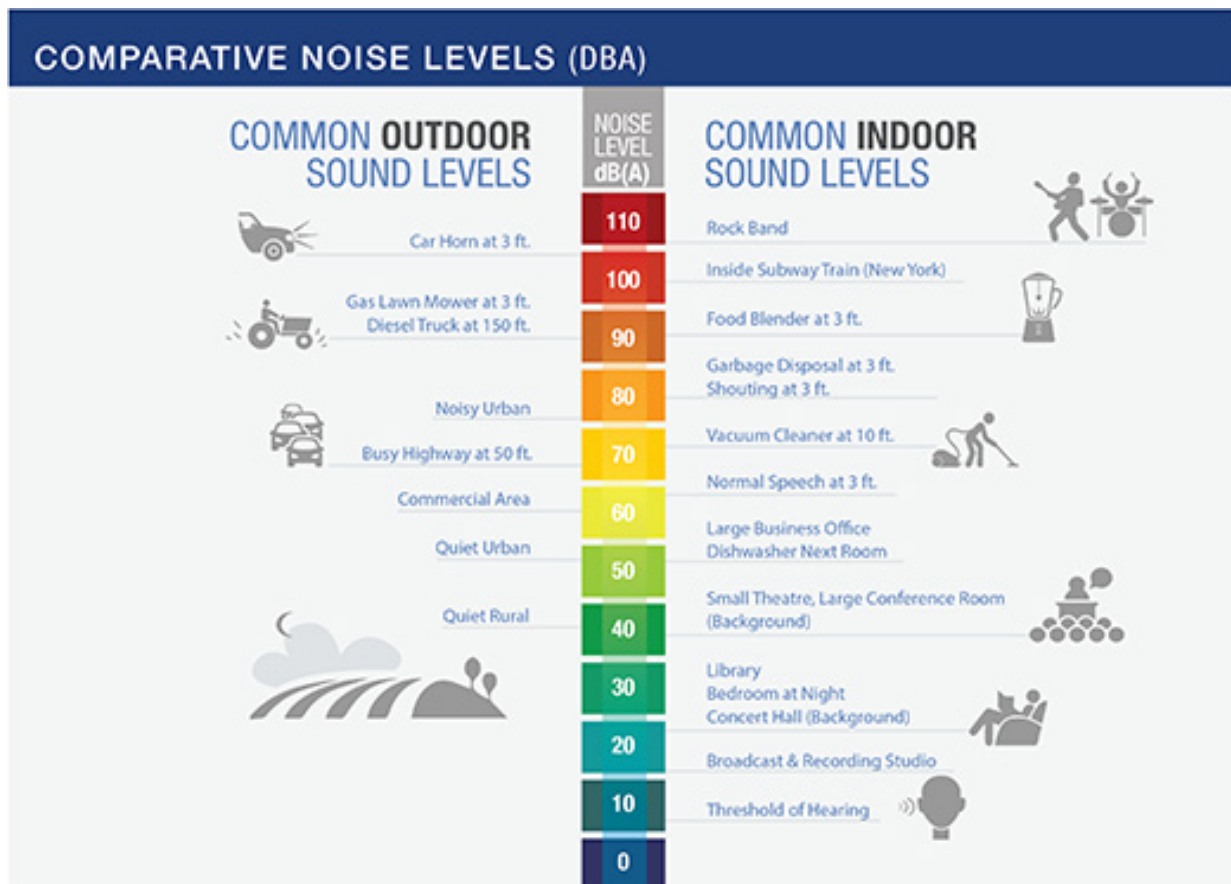
The draft ATMP includes several provisions to minimize potential noise impacts, as outlined above in the *Description of Proposed Action* section. As a result, the intensity of potential noise exposures would be limited under the proposed action. The draft ATMP would ensure that noise would not be constant and that there would be substantial time intervals between noise events from air tours by limiting the number of flights per year, which will reduce the potential number of flights each day. The draft ATMP also ensures that large segments of the Park and areas directly offshore would not be exposed to air tour noise by establishing designated air tour routes.

The agencies conducted noise modeling to estimate noise produced by commercial air tours under the proposed action for a standard day and a quiet technology only day (Attachment 2, *Noise Technical Analysis*). In summary, the noise modeling for a standard day predicts that the maximum sound pressure level ($L_{\max}$) generated by commercial air tours in the Park would be 63.7 dBA and would occur at 'Āpua Point Camp. The $L_{\max}$ noise metric is event based and does not provide any context of frequency, duration, or timing of exposure. The time above (TA) noise metric specifies the amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period. $TA_{35\text{dBA}}$ and $TA_{52\text{dBA}}$ were modeled for the proposed action. Based on the modeling, the maximum time that noise from air tours would be above 35 dBA is between 30 and 45 minutes a day, representing 1% of the action area; 29% of the action area would experience noise above 35 dBA for at least 0.1 minutes a day. The maximum time above 52 dBA experienced across all points modeled would be 5.8 minutes, and 87% of points modeled would experience time above 52 dBA for 0.0 to 0.8 minutes (see Attachment 2, *Noise Technical Analysis*).

For a quiet technology only day, noise modeling predicts that the value for $L_{\max}$ generated by commercial air tours in the Park would be 61.5 dBA and would occur at Pu'u'ō'ō. The maximum time that noise from air tours would be above 35 dBA is between 45 and 60 minutes a day, representing less than 1% of the ATMP planning area; 21% of the ATMP planning area would experience noise above 35 dBA for at least 0.1 minutes a day on a quiet technology only day. The maximum time above 52 dBA experienced across all points modeled would be 9.7 minutes; 85% of points modeled would not experience time above 52 dBA at all (see Attachment 2, *Noise Technical Analysis*).

The FAA has established a significance threshold for noise that uses the day-night average sound level (DNL) metric (see FAA Order 1050.1F, Exhibit 4-1). The resultant DNL due to the ATMP is well below the FAA's threshold within the action area. As described in the *Noise Technical Analysis* (Attachment 2), contours for equivalent continuous sound level (L_{Aeq}) for both a standard day and a quiet technology only day show the maximum values for L_{Aeq} were below 45 dBA for the proposed action modeled at the Park; DNL will be arithmetically three dBA lower than $L_{Aeq, 12hr}$ as there are no nighttime events at the Park.

Figure 2. Compares common outdoor and indoor sound levels for context.



Listed Species Evaluated for Effects

The effects of the proposed action include the direct and indirect effects of the air tours that will now occur under NPATMA authorization, including the conservation measures identified. All other aspects of the environmental baseline are expected to continue at approximately the same levels. Table 2 includes the Section 7 determination for each listed species and associated critical habitat.

Reptiles

Several species of listed sea turtles occur within the action area including the green sea turtle (*Chelonia mydas*) or honu, the hawksbill sea turtle (*Eretmochelys imbricata*) or honu'ea, leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*). Threats to sea turtles include interactions with fisheries, poaching, and nesting habitat degradation due to coastal development.

Due to the poor sound transference from air to water, noise would be unlikely to illicit a response for individual turtles underwater. Adverse effects have been noted as occurring to sea turtles when flight altitudes are 600 ft. MSL or lower, and flight altitudes up to 2,000 ft. AGL have been determined to not likely adversely affect sea turtle species (NMFS, 2022).

Conservation measures included in the proposed action, notably the altitude requirement of 2,000 ft. AGL over the ocean and three designated air tour routes, along with prohibition of hovering and circling over the ocean, ensure that the intensity of the noise associated with commercial air tours is limited. Therefore, the agencies have determined the proposed action would have **no effect** on honu, honu'ea, leatherback sea turtle, loggerhead sea turtle, and olive ridley sea turtle.

Mammals

Several cetaceans occur within the action area including the blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), Main Hawaiian Islands Insular false killer whale (*Pseudorca crassidens*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). Critical habitat for the Main Hawaiian Islands Insular false killer whale is located within the action area.

Richter et al. (2006) evaluated aircraft effects on blow duration, vocalization patterns, and surface time for sperm whales and found that there was little change in blow duration when exposed to aircraft used for aerial whale watching. When aircraft were flown at 150 meters (492 ft.), surface time differed between resident and transient whale populations, where resident whales had a slightly longer surface duration when exposed to aircraft, while transient whales had a shorter surface duration when exposed to aircraft (Richter et al., 2006). Sperm whales did not alter the frequency of their vocalization patterns, but did take longer to make their first click sound after a tail fluke-up dive when aircraft were present.

Noise from air tours may impact marine species in a number of ways: altered vocal behavior, changes in behavior such as retreating underwater and surface times, and pod formation, among others (Kunc et al., 2016; Kunc and Schmidt, 2019; Gomez et al., 2016; Richardson et al., 1995). Visually, aircraft can be difficult for cetaceans to locate since they are not in the water and move rapidly (Richter et al., 2006). Aircraft that fly below 500 meters (about 1,640 ft.) have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Patenaude et al., 2002).

Commercial air tours have the potential to generate noise that could be audible to whales. However, these noise events are not expected to be stressors on these species as they are infrequent and of short duration (likely limited to no more than a few minutes of exposure). Noise underwater is the loudest

when aircraft are directly overhead, and generally decrease as altitude increases. The altitudes under the proposed action would be consistent with marine mammal viewing guidelines. A specific regulation, issued pursuant to the ESA and published at 50 CFR 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. No such stand off zone has been established for other whale species within the action area. However, the agencies believe the 2,000 ft. AGL minimum flight altitude over the ocean is protective of whale species.

Conservation measures included in the proposed action, notably the altitude requirement of 2,000 ft. AGL over the ocean and three designated air tour routes, along with prohibition of hovering and circling over the ocean, ensure that the intensity of the noise associated with commercial air tours is limited. Therefore, the agencies have determined the proposed action would have **no effect** on blue whale, fin whale, Main Hawaiian Islands Insular false killer whale, North Pacific right whale, sei whale, and sperm whale; and would have **no effect** on the critical habitat of Main Hawaiian Islands Insular false killer whale, including the essential element of its critical habitat and the four features associated with it.

Hawaiian Monk Seal

The endangered Hawaiian monk seal (*Neomonachus schauinslandi*), or 'ilio holo i ka uaua, is silvery gray to brownish in color with yellowish-brown ventral pelage, reaching an average length of approximately seven feet by adulthood (NMFS and NOAA, 2007). Hawaiian monk seals inhabit the remote beaches of the Park, notably Halapē, Keauhou, 'Āpua, and Pōhue, where they rest and bask along the shore for several days throughout the year. They also use these beaches for hauling out, pupping, and nursing, and utilize the vegetation further inland on the beaches for protection from weather elements. Monk seal births are most common between February and August, peaking in March and April (NMFS and NOAA, 2007). Federally designated critical habitat for the Hawaiian monk seal, both terrestrial and marine, is located within the action area along the coast within the action area (see Figure 1). Critical habitat for this species has three essential features: 1) Terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred by monk seals for pupping and nursing; 2) Marine areas from 0 to 200 meters in depth that support adequate prey quality and quantity for juvenile and adult monk seal foraging; and 3) Significant areas used by monk seals for hauling out, resting, or molting.

Compared to related species, Hawaiian monk seals have reduced sensitivity to airborne sounds and a reduction in terrestrial hearing ability (Ruscher et al., 2021). Although this species has a broad range of hearing while in water, they are not sensitive to noise that is less than 73 dB while in water (Sills et al., 2021). Under the proposed action, noise over critical habitat and beach areas used by Hawaiian monk seals for hauling out or pupping is not expected to exceed 75 dBA. The value for L_{max} generated by commercial air tours in the Park on a standard day would be 63.7 dBA and would occur at 'Āpua Point Camp, which is located near marine critical habitat for the Hawaiian monk seal; however, the L_{max} noise metric is event based and does not provide any context of frequency, duration, or timing of exposure. At this location, time above 52 dBA would occur for 2.1 minutes on a standard day and 2.5 minutes on a quiet technology only day (see Attachment 2, *Noise Technical Analysis*).

A study of ringed seal responses to fixed-wing airplanes and helicopters in Greenland found that 6% of the seals showed escape behavior in response to low altitude fixed-wing aircraft overflights at 500 ft. and responded at an average distance of 1,214 ft. in front of the aircraft (Born et al., 1999). Maximum escape response was 1,970 ft. In contrast, 50% of seals showed escape behavior in response to

helicopters flying at this same altitude at 1,640 ft. in front of the helicopter and showed a maximum escape distance of 4,760 ft. (Born et al., 1999). Although the aircraft and helicopter surveys were conducted at different locations, the magnitude of these differences indicates that seals show a heightened response to helicopters versus fixed-wing aircraft (NMFS, 2015). Pinnipeds pupping or molting on land were the most responsive to aircraft noise and responded by retreating to the water (Richardson et al., 1995).

Effect Determination

A specific regulation, issued pursuant to the ESA and published at 50 CFR § 224.103 (a), created a protective zone around humpback whales requiring vessels not to approach humpback whales, within 100 yards by vessel or 1,000 ft. by aircraft, when these whales are within 200 nautical miles of the Hawaiian Islands. In addition, when aircraft fly below certain altitudes (about 500 meters [1,640.4 ft.]), they have caused cetaceans to exhibit behavioral responses that might constitute a significant disruption of their normal behavioral patterns (Patenaude et al., 2002). Although effects vary between cetaceans and pinnipeds and no such standoff zone has been established for Hawaiian monk seals, the 2,000 ft. AGL altitude requirement in the draft ATMP exceeds altitudes that have been shown to cause effects.

While Hawaiian monk seals will be exposed to noise, these noise events are not expected to be stressors on these species. Commercial air tours will not inhibit foraging, feeding, breeding or nesting of these species because they are infrequent and of short duration (likely limited to no more than a few minutes of exposure). Coastal beaches along the Coastal Route utilized by Hawaiian monk seals would have noise above 52 dBA between 0.8 and 1.2 minutes on a standard day, and 0.4 to 2.5 minutes on a quiet technology only day (see Attachment 2, *Noise Technical Analysis*).

In addition, conservation measures included in the proposed action such as the requirement to fly on three designated routes and the establishment of required minimum altitudes reduce noise impacts, which will ensure that the intensity of the noise associated with commercial air tours is limited. Therefore, any potential impact resulting from noise would be insignificant⁴ due to the minimum altitude of 2,000 ft. AGL over the ocean which exceeds the altitudes that have been shown to cause adverse impacts to pinnipeds. Based on the analysis presented above, the agencies have determined that the proposed action **may affect, not likely to adversely affect** Hawaiian monk seal and its critical habitat.

Cumulative Effects of the Action

Cumulative effects of the action include the effects of future State, Native Hawaiian, local, or private actions that are reasonably certain to occur in the action area. Currently there are no known planned Federal or Native Hawaiian actions that would affect the species described above. Similarly, the agencies are not aware of any proposed non-Federal action that may affect species or critical habitats considered in this consultation. The impacts of ongoing Federal actions unrelated to the proposed action are considered part of the baseline condition since they are covered under separate consultation

⁴ Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated.

pursuant to Section 7 of the ESA. Therefore, there are no cumulative effects associated with the proposed action.

Conclusion

As indicated above, the proposed action implements designated flight paths, requires minimum altitudes, and limits the number of air tours that may be conducted within the action area each year. The measures incorporated into the draft ATMP will serve to avoid and minimize possible effects to listed species and their critical habitat. Therefore, based on the analysis that all effects of the proposed action will be insignificant and/or discountable, the agencies have determined that the proposed action ***may affect, not likely to adversely affect*** Hawaiian monk seal and its critical habitat.

Thank you very much for your help and support. If you have questions or need more information, please contact Michelle Carter, Michelle_Carter@nps.gov at NPS who is helping coordinate overall Section 7 consultations for ATMPs on behalf of the agencies.

Sincerely,

**RHONDA
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Rhonda Loh, Superintendent for Hawai'i Volcanoes National Park

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Kevin Welsh, Executive Director, Office of Environment and Energy, Federal Aviation Administration

Attachments

- Attachment 1 Draft Air Tour Management Plan
- Attachment 2 Noise Technical Analysis

List of Acronyms and Abbreviations

The agencies	National Park Service and Federal Aviation Administration
ATMP	Air Tour Management Plan
Action area	The area within which an ATMP regulates commercial air tours over a national park or within ½-mile outside the park's boundary during which the aircraft flies below 5,000 ft. AGL.
AGL	Above ground level
dB	Decibels
dBA	Decibels (A-weighted scale)
DNL	Day-night Average Sound Level (denoted by the symbol L_{dn})
ESA	The Endangered Species Act
FAA	Federal Aviation Administration
ft.	Feet
HI Common Procedures Manual	2008 FAA Hawai'i Air Tour Common Procedures Manual
IOA	Interim Operating Authority
L_{Aeq}	Equivalent continuous sound level
L_{max}	Maximum sound pressure level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NPS	National Park Service
NPATMA	National Parks Air Tour Management Act of 2000
The Park	Hawai'i Volcanoes National Park
TA_{35dBA} and TA_{52dBA}	The amount of time (in minutes) aircraft sound levels would be above a given noise level during a 24-hour period (35 minutes and 52 minutes)
USFWS	United States Fish and Wildlife Service

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APPENDIX I

Section 4(f) Analysis

Section 4(f) Analysis

Section 4(f) Parks and Recreational Areas

Table 1 lists Section 4(f) parks and recreational areas identified in the Section 4(f) study area. All data sources were accessed the week of December 5, 2022.

Table 1. Section 4(f) parks, recreational resources, and wildlife/waterfowl refuges in the Section 4(f) study area

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size (acres)
Hawai'i Volcanoes National Park	National Park Service (NPS) Park Unit	National Park	Hawai'i Volcanoes National Park encompasses the summits of two of the world's most active volcanoes, Kīlauea and Mauna Loa.	388,788 ac (entirely within Section 4(f) study area)
Hakalau Forest National Wildlife Refuge	U.S. Fish and Wildlife Service	Wildlife Refuge	Refuge was established in 1985 to protect, conserve, and manage threatened or endangered Hawaiian species and their rain forest habitat. The refuge includes Kahuku Lots 2 and 3 archaeological sites.	15,494 ac (1,206 ac within Section 4(f) study area)
Keahou Cooperative Nēnē Sanctuary	State Department of Land and Natural Resources (DLNR)	State Reserve	Nēnē sanctuary.	3,901 ac (1,580 ac within Section 4(f) study area)
'Ola'a Forest Reserve	State DLNR	State Forest Reserve	Parcel of relatively undisturbed rain forest, with deep ash soils, abundant rainfall, and native plants.	4,320 ac (890 ac within Section 4(f) study area)
Ka'ū Forest Reserve	State DLNR	State Forest Reserve	Established to protect forest and maintain water supply. Public use includes hunting, recreational opportunities, cultural uses, personal gathering, and educational programs and activities. Public access is allowed in the Reserve for recreational and cultural uses, including	61,538 ac (7,077 ac within Section 4(f) study area)

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size (acres)
			hunting, hiking and gathering of plant material.	
Kapāpala Forest Reserve	State DLNR	State Forest Reserve	Activities include birdwatching, hiking, and hunting.	37,211 ac (6,442 ac within Section 4(f) study area)
Mauna Loa Forest Reserve (and game management area)	State DLNR	State Forest Reserve	Activities include hunting and hiking.	54,851 ac (4,745 ac within Section 4(f) study area)
Kapāpala Cooperative Game Management Area	State DLNR	State Reserve	Located adjacent to the park; location of the 'Āinapō Trail; active ranch to manage cattle and nēnē.	28,372 ac (3,475 ac within Section 4(f) study area)
Kahaualeʻa Natural Area Reserve	State DLNR	State Reserve	Kahaualeʻa includes representatives of pioneer vegetation on lava flows, lowland rain forest and mesic forest in the Puna District.	22,678 ac (4,415 ac within Section 4(f) study area)
Kipāhoehoe Natural Area Reserve	State DLNR	State Reserve	Narrow piece of land running down the southwest slopes of Mauna Loa in the district of South Kona. Recent volcanic flows run through the Reserve.	5,891 ac (365 ac within Section 4(f) study area)
Manukā Natural Area Reserve	State DLNR	State Reserve	Activities include hiking, camping. Recent lava flows add a variety of pioneer vegetation types, as well as uncharacterized and unsurveyed lava tubes.	25,700 ac (544 ac within Section 4(f) study area)
Puʻu Makaʻala Natural Area Reserve	State DLNR	State Reserve	This reserve was established to protect wet native forest and unique geologic features.	18,645 ac (3,307 ac within Section 4(f) study area)
Kipuka ʻAinahou Nēnē Sanctuary	State DLNR	State Reserve	Designated Public Hunting Area; DLNR nēnē sanctuary.	24,048 ac (121 ac within Section 4(f) study area)

Property Name	Official(s) with Jurisdiction	Property Type	Description	Approximate Size (acres)
Kīlauea State Recreation Area	State DLNR	State Park	State recreation area. Kīlauea is the youngest and most active volcano on the Island of Hawai‘i.	7 ac (entirely within Section 4(f) study area)
Papa/Honomalino Conservation Easements (Nature Conservancy of Hawai‘i Kona Hema Preserve)	State DLNR/The Nature Conservancy (TNC)	State Forest Reserve	These conservation easements are part of the Nature Conservancy of Hawai‘i Kona Hema Preserve, a diverse mosaic of mid-elevation koa-‘ōhi‘a forest stands.	6,299 ac (900 ac within Section 4(f) study area)
Keaoi Islet Seabird Sanctuary	State DLNR		Keaoi Islet Seabird Sanctuary is a 2-acre islet located off the Kau Coast along Hawai‘i Volcanoes National Park.	2 ac (entirely within Section 4(f) study area)
State Resource Management Area (SRMA)	State DLNR	SRMA	SRMA on the Island of Hawai‘i.	3,132 ac within Section 4(f) study area

Noise Effects Analysis on Section 4(f) Resources

Noise modeling for the Park included two types of analyses: contour analysis and representative location point analysis. A noise contour presents a graphical illustration or “footprint” of the area potentially affected by the noise. Contours were developed for the following metrics: 12-Hour Equivalent Sound Level, Time Audible for Natural Ambient, and Time Above 35 decibels, A-weighted (dBA). Location point results present the metric results at specific points of interest. The NPS provided a list of 44 location points, geographically located across the entire park, where noise levels were to be evaluated. Location point analysis was conducted for the same set of metrics, as well as Time Above 52 dBA and the Maximum Sound Level. Refer to Appendix F, *Noise Technical Analysis*.

To assess Time above 52 dBA at Section 4(f) resources under the Preferred Alternative, location points within 1.5 miles of each Section 4(f) resource were identified. These location points are listed in Table 3 for each Section 4(f) resource and the corresponding Time Above 52 dBA. The Time Above 52 dBA at each location point and the range of Time Above 52 dBA at Section 4(f) resources based on nearby location points were then calculated and reported as high and low values. This range is reported in Table 2 for each Section 4(f) property. See Figure 1 for a map of location points and Section 4(f) resources at the Park.

Section 4(f) Study Area and Properties for ATMP at Hawai'i Volcanoes National Park

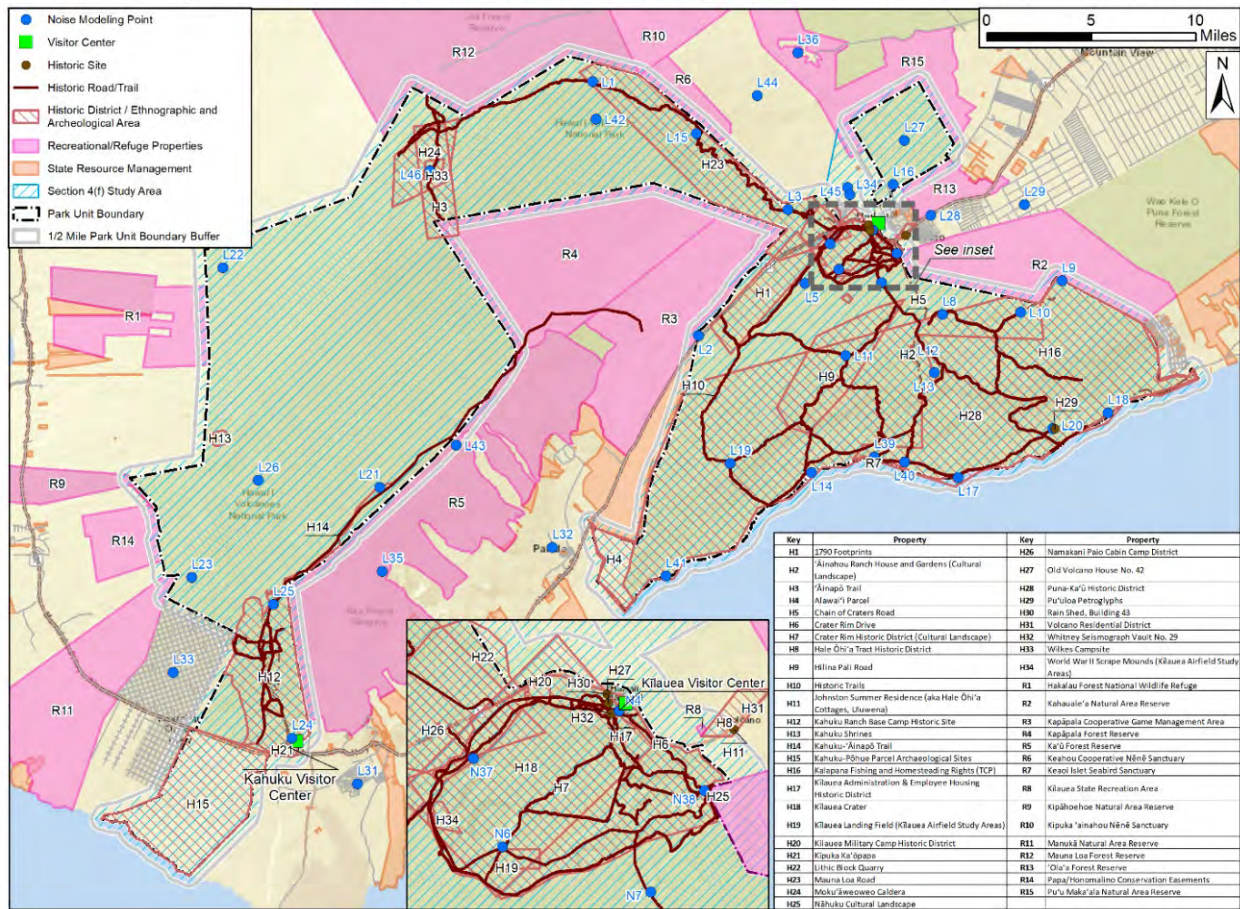


Figure 1. Section 4(f) resources and location points in the Section 4(f) study area

Table 2 shows the low and high modelled Time above 52 dBA values under the preferred alternative at each Section 4(f) resource. Table 3 shows the distance between each Section 4(f) resource and nearby location point and the Time Above 52 dBA at the corresponding location point. A distance of 0.00 miles indicates that the location point falls within the Section 4(f) property. The longest Time Above 52 dB in the Section 4(f) study area is 5.8 minutes on standard days and 9.7 minutes on quiet technology (QT)-only days.

Table 2. Low and high modelled values for Time Above 52 dB under the Preferred Alternative for Section 4(f) resources. Noise modeling results are shown for a standard day and quiet technology-only day.

Section 4(f) Resource	Time Above 52 dBA – Low, Standard Day (minutes)	Time Above 52 dBA – High, Standard Day (minutes)	Time Above 52 dBA – Low, QT Day (minutes)	Time Above 52 dBA – High, QT Day (minutes)
1790 Footprints	0.0	0.0	0.0	0.0
'Āinapō Trail	0.0	0.0	0.0	0.0

Section 4(f) Resource	Time Above 52 dBA – Low, Standard Day (minutes)	Time Above 52 dBA – High, Standard Day (minutes)	Time Above 52 dBA – Low, QT Day (minutes)	Time Above 52 dBA – High, QT Day (minutes)
'Āinahou Ranch House and Gardens (Cultural Landscape)	0.0	0.0	0.0	0.0
Chain of Craters Road	0.0	1.5	0.0	1.4
Crater Rim Drive	0.0	0.0	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	0.0	0.0	0.0	0.0
Hakalau Forest National Wildlife Refuge	0.0	0.0	0.0	0.0
Hale Ōhi'a Tract Historic District	0.0	0.0	0.0	0.0
Hilina Pali Road	0.0	0.0	0.0	0.0
Historic Trails	0.0	2.1	0.0	2.5
Johnston Summer Residence (aka Hale Ōhi'a Cottages, Uluwena)	0.0	0.0	0.0	0.0
Kahauale'a Natural Area Reserve	0.0	5.8	0.0	9.7
Kahuku Ranch Cultural Landscape	0.0	0.7	0.0	0.0
Kahuku-Pōhue Parcel Archaeological Sites	0.0	0.7	0.0	0.0
Kahuku-'Āinapō Trail	0.0	0.7	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	0.0	5.8	0.0	9.7
Kapāpala Cooperative Game Management Area	0.0	0.0	0.0	0.0
Ka'ū Forest Reserve	0.0	0.7	0.0	0.0
Keahou Cooperative Nēnē Sanctuary	0.0	0.0	0.0	0.0
Keaoi Islet Seabird Sanctuary	0.8	1.2	0.4	1.2
Kilauea Military Camp Historic District	0.0	0.0	0.0	0.0
Kīlauea Administration & Employee Housing Historic District	0.0	0.0	0.0	0.0
Kīlauea Crater	0.0	0.0	0.0	0.0
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	0.0	0.0	0.0	0.0
Kīlauea State Recreation Area	0.0	0.0	0.0	0.0
Kīpuka Ka'ōpapa	0.0	0.7	0.0	0.0

Section 4(f) Resource	Time Above 52 dBA – Low, Standard Day (minutes)	Time Above 52 dBA – High, Standard Day (minutes)	Time Above 52 dBA – Low, QT Day (minutes)	Time Above 52 dBA – High, QT Day (minutes)
Lithic Block Quarry	0.0	0.0	0.0	0.0
Manukā Natural Area Reserve	0.0	0.0	0.0	0.0
Mauna Loa Forest Reserve	0.0	0.0	0.0	0.0
Mauna Loa Road	0.0	0.0	0.0	0.0
Moku'āweoweo Caldera	0.0	0.0	0.0	0.0
Namakani Paio Cabin Camp District	0.0	0.0	0.0	0.0
Nāhuku (Thurston Lava Tube) Cultural Landscape	0.0	0.0	0.0	0.0
'Ola'a Forest Reserve	0.0	0.0	0.0	0.0
Old Volcano House No. 42	0.0	0.0	0.0	0.0
Puna-Ka'ū Historic District	0.0	5.8	0.0	9.7
Pu'uloa Petroglyphs	0.0	0.0	0.0	0.0
Pu'u Maka'ala Natural Area Reserve	0.0	0.0	0.0	0.0
Rain Shed, Building 43	0.0	0.0	0.0	0.0
State Resource Management Area	0.0	0.7	0.0	0.0
Volcano Residential District	0.0	0.0	0.0	0.0
Whitney Seismograph Vault No. 29	0.0	0.0	0.0	0.0
Wilkes Campsite	0.0	0.0	0.0	0.0
World War II Scrape Mounds (Kīlauea Airfield Study Areas)	0.0	0.0	0.0	0.0

Table 3. Section 4(f) resources and corresponding location point data for air tours under the Preferred Alternative. Noise modeling results are shown for a standard day and quiet technology (QT)-only day.

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
1790 Footprints	2	Vicinity of Halfway House	0.71	0.0	0.0
1790 Footprints	3	Kipuka Puauulu	1.12	0.0	0.0
1790 Footprints	5	Cone Peak, Nene Area	0.45	0.0	0.0
1790 Footprints	6	Halemaumau Crater	1.25	0.0	0.0
1790 Footprints	37	Nahuku (Thurston Lava Tube)	0.90	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Chain of Craters Road	7	Puhimau Hot Spot	0.02	0.0	0.0
Chain of Craters Road	8	Pu' u Huluhulu View Pt.	1.18	0.0	0.0
Chain of Craters Road	12	Ainahou Ranch	0.76	0.0	0.0
Chain of Craters Road	13	Kipuka Kahalii	0.52	0.0	0.0
Chain of Craters Road	18	End of Road / Visitor Use	1.19	1.5	1.4
Chain of Craters Road	20	Pu' u Loa Petroglpyhs	0.48	0.0	0.0
Chain of Craters Road	38	Jaggar/HVO	1.09	0.0	0.0
Crater Rim Drive	4	Park HQ Developed Area	0.03	0.0	0.0
Crater Rim Drive	5	Cone Peak, Nene Area	1.03	0.0	0.0
Crater Rim Drive	6	Halemaumau Crater	0.04	0.0	0.0
Crater Rim Drive	7	Puhimau Hot Spot	0.86	0.0	0.0
Crater Rim Drive	37	Nahuku (Thurston Lava Tube)	0.12	0.0	0.0
Crater Rim Drive	38	Jaggar/HVO	0.0	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	4	Park HQ Developed Area	0.0	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	5	Cone Peak, Nene Area	0.97	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	6	Halemaumau Crater	0.0	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	7	Puhimau Hot Spot	0.65	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	37	Nahuku (Thurston Lava Tube)	0.0	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Crater Rim Historic District (Cultural Landscape)	38	Jaggar/HVO	0.0	0.0	0.0
Crater Rim Historic District (Cultural Landscape)	45	Keauhou Bird Conservation Center	1.21	0.0	0.0
Hakalau Forest National Wildlife Refuge	22	Northwest Kahuku	1.18	0.0	0.0
Hale Ōhi'a Tract Historic District	4	Park HQ Developed Area	1.43	0.0	0.0
Hale Ōhi'a Tract Historic District	38	Jaggar/HVO	0.95	0.0	0.0
Hilina Pali Road	7	Puhimau Hot Spot	1.07	0.0	0.0
Hilina Pali Road	11	Kulanaokuaiki Camp	0.0	0.0	0.0
Historic Trails	1	Red Hill	0.0	0.0	0.0
Historic Trails	2	Vicinity of Halfway House	1.24	0.0	0.0
Historic Trails	3	Kipuka Puaulu	0.95	0.0	0.0
Historic Trails	4	Park HQ Developed Area	0.08	0.0	0.0
Historic Trails	5	Cone Peak, Nene Area	0.35	0.0	0.0
Historic Trails	6	Halemaumau Crater	0.01	0.0	0.0
Historic Trails	7	Puhimau Hot Spot	0.64	0.0	0.0
Historic Trails	8	Pu' u Huluhulu View Pt.	0.03	0.0	0.0
Historic Trails	10	Napau Wilderness Camp	0.0	0.0	0.0
Historic Trails	11	Kulanaokuaiki Camp	0.04	0.0	0.0
Historic Trails	13	Kipuka Kahalii	0.36	0.0	0.0
Historic Trails	14	Kaaha Wilderness Camp	0.27	1.4	1.6
Historic Trails	15	Top of Strip Road	0.16	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Historic Trails	17	Apua Pt. Camp	0.11	2.1	2.5
Historic Trails	19	Kipuka Pepeiao Wilderness Camp	0.03	0.0	0.0
Historic Trails	20	Pu' u Loa Petroglpyhs	0.01	0.0	0.0
Historic Trails	24	Upper Reservoir Kahuku	1.17	0.7	0.0
Historic Trails	25	Frontcountry Kahuku	1.23	0.0	0.0
Historic Trails	37	Nahuku (Thurston Lava Tube)	0.06	0.0	0.0
Historic Trails	38	Jaggar/HVO	0.0	0.0	0.0
Historic Trails	39	Halape Wilderness Camp	0.0	1.2	1.2
Historic Trails	40	Keauhou Camp	0.02	0.8	0.4
Historic Trails	46	Mauna Loa Wilderness Camp	0.02	0.0	0.0
Johnston Summer Residence (aka Hale Ōhi'a Cottages, Uluwena)	38	Jaggar/HVO	0.94	0.0	0.0
Kahauale'a Natural Area Reserve	7	Puhimau Hot Spot	1.33	0.0	0.0
Kahauale'a Natural Area Reserve	8	Pu' u Huluhulu View Pt.	1.45	0.0	0.0
Kahauale'a Natural Area Reserve	9	Pu' u Oo	0.05	5.8	9.7
Kahauale'a Natural Area Reserve	10	Napau Wilderness Camp	0.60	0.0	0.0
Kahauale'a Natural Area Reserve	28	Volcano Village	1.26	0.0	0.0
Kahauale'a Natural Area Reserve	29	Fern Forest	0.60	0.0	0.0
Kahauale'a Natural Area Reserve	38	Jaggar/HVO	0.05	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Kahuku Ranch Cultural Landscape	21	Nene Cabin Kahuku	0.03	0.0	0.0
Kahuku Ranch Cultural Landscape	24	Upper Reservoir Kahuku	0.0	0.7	0.0
Kahuku Ranch Cultural Landscape	25	Frontcountry Kahuku	0.0	0.0	0.0
Kahuku-Pōhue Parcel Archaeological Sites	24	Upper Reservoir Kahuku	1.29	0.7	0.0
Kahuku-'Āinapō Trail	21	Nene Cabin Kahuku	0.25	0.0	0.0
Kahuku-'Āinapō Trail	24	Upper Reservoir Kahuku	1.40	0.7	0.0
Kahuku-'Āinapō Trail	25	Frontcountry Kahuku	0.01	0.0	0.0
Kahuku-'Āinapō Trail	43	Endangered Forest Bird Habitat 1	0.47	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	8	Pu' u Huluhulu View Pt.	1.01	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	9	Pu' u Oo	0.0	5.8	9.7
Kalapana Fishing and Homesteading Rights (TCP)	10	Napau Wilderness Camp	0.96	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	12	Ainahou Ranch	0.77	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	13	Kipuka Kahalii	0.0	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	17	Apua Pt. Camp	0.0	2.1	2.5
Kalapana Fishing and Homesteading Rights (TCP)	18	End of Road / Visitor Use	0.0	1.5	1.4

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Kalapana Fishing and Homesteading Rights (TCP)	20	Pu' u Loa Petroglpyhs	0.0	0.0	0.0
Kalapana Fishing and Homesteading Rights (TCP)	39	Halape Wilderness Camp	0.0	1.2	1.2
Kalapana Fishing and Homesteading Rights (TCP)	40	Keauhou Camp	0.0	0.8	0.4
Kapāpala Cooperative Game Management Area	2	Vicinity of Halfway House	0.04	0.0	0.0
Kapāpala Cooperative Game Management Area	3	Kipuka Puaulu	0.89	0.0	0.0
Ka'ū Forest Reserve	21	Nene Cabin Kahuku	0.71	0.0	0.0
Ka'ū Forest Reserve	24	Upper Reservoir Kahuku	1.10	0.7	0.0
Ka'ū Forest Reserve	25	Frontcountry Kahuku	0.74	0.0	0.0
Ka'ū Forest Reserve	35	Kau Forest Reserve	0.0	0.0	0.0
Ka'ū Forest Reserve	43	Endangered Forest Bird Habitat 1	0.0	0.0	0.0
Keahou Cooperative Nēnē Sanctuary	15	Top of Strip Road	0.44	0.0	0.0
Keaoi Islet Seabird Sanctuary	39	Halape Wilderness Camp	0.27	1.2	1.2
Keaoi Islet Seabird Sanctuary	40	Keauhou Camp	1.47	0.8	0.4
Kilauea Military Camp Historic District	4	Park HQ Developed Area	0.98	0.0	0.0
Kilauea Military Camp Historic District	37	Nahuku (Thurston Lava Tube)	1.12	0.0	0.0
Kilauea Military Camp Historic District	45	Keauhou Bird Conservation Center	1.19	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Kīlauea Administration & Employee Housing Historic District	4	Park HQ Developed Area	0.0	0.0	0.0
Kīlauea Administration & Employee Housing Historic District	38	Jaggar/HVO	1.26	0.0	0.0
Kīlauea Crater	4	Park HQ Developed Area	0.0	0.0	0.0
Kīlauea Crater	5	Cone Peak, Nene Area	1.10	0.0	0.0
Kīlauea Crater	6	Halemaumau Crater	0.0	0.0	0.0
Kīlauea Crater	7	Puhimau Hot Spot	1.44	0.0	0.0
Kīlauea Crater	34	Volcano Golf Course Community	1.04	0.0	0.0
Kīlauea Crater	37	Nahuku (Thurston Lava Tube)	0.0	0.0	0.0
Kīlauea Crater	38	Jaggar/HVO	0.94	0.0	0.0
Kīlauea Crater	45	Keauhou Bird Conservation Center	0.68	0.0	0.0
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	6	Halemaumau Crater	0.03	0.0	0.0
Kīlauea Landing Field (Kīlauea Airfield Study Areas)	37	Nahuku (Thurston Lava Tube)	1.30	0.0	0.0
Kīlauea State Recreation Area	4	Park HQ Developed Area	1.09	0.0	0.0
Kīlauea State Recreation Area	38	Jaggar/HVO	0.77	0.0	0.0
Kīpuka Ka'ōpapa	24	Upper Reservoir Kahuku	0.56	0.7	0.0
Lithic Block Quarry	3	Kipuka Puauulu	1.07	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Lithic Block Quarry	4	Park HQ Developed Area	1.26	0.0	0.0
Lithic Block Quarry	6	Halemaumau Crater	1.20	0.0	0.0
Lithic Block Quarry	34	Volcano Golf Course Community	1.11	0.0	0.0
Lithic Block Quarry	37	Nahuku (Thurston Lava Tube)	0.0	0.0	0.0
Lithic Block Quarry	45	Keauhou Bird Conservation Center	0.92	0.0	0.0
Manukā Natural Area Reserve	23	Pu'u Ohohia	0.65	0.0	0.0
Manukā Natural Area Reserve	33	Ocean View Community	1.45	0.0	0.0
Mauna Loa Forest Reserve	1	Red Hill	0.89	0.0	0.0
Mauna Loa Road	1	Red Hill	0.0	0.0	0.0
Mauna Loa Road	3	Kipuka Puaulu	0.0	0.0	0.0
Mauna Loa Road	4	Park HQ Developed Area	1.07	0.0	0.0
Mauna Loa Road	5	Cone Peak, Nene Area	1.44	0.0	0.0
Mauna Loa Road	6	Halemaumau Crater	1.32	0.0	0.0
Mauna Loa Road	15	Top of Strip Road	0.0	0.0	0.0
Mauna Loa Road	37	Nahuku (Thurston Lava Tube)	0.03	0.0	0.0
Mauna Loa Road	42	Petrel Breeding Area	1.05	0.0	0.0
Mauna Loa Road	45	Keauhou Bird Conservation Center	1.35	0.0	0.0
Moku'āweoweo Caldera	46	Mauna Loa Wilderness Camp	0.0	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Namakani Paio Cabin Camp District	37	Nahuku (Thurston Lava Tube)	0.61	0.0	0.0
Nāhuku (Thurston Lava Tube) Cultural Landscape	38	Jaggar/HVO	0.0	0.0	0.0
Old Volcano House No. 42	4	Park HQ Developed Area	0.17	0.0	0.0
Puna-Ka'ū Historic District	8	Pu' u Huluhulu View Pt.	0.0	0.0	0.0
Puna-Ka'ū Historic District	9	Pu' u Oo	0.0	5.8	9.7
Puna-Ka'ū Historic District	10	Napau Wilderness Camp	0.0	0.0	0.0
Puna-Ka'ū Historic District	11	Kulanaokuaiki Camp	0.0	0.0	0.0
Puna-Ka'ū Historic District	12	Ainahou Ranch	0.0	0.0	0.0
Puna-Ka'ū Historic District	13	Kipuka Kahalii	0.0	0.0	0.0
Puna-Ka'ū Historic District	14	Kaaha Wilderness Camp	0.0	1.4	1.6
Puna-Ka'ū Historic District	17	Apua Pt. Camp	0.0	2.1	2.5
Puna-Ka'ū Historic District	18	End of Road / Visitor Use	0.0	1.5	1.4
Puna-Ka'ū Historic District	19	Kipuka Pepeiao Wilderness Camp	0.0	0.0	0.0
Puna-Ka'ū Historic District	20	Pu' u Loa Petroglpyhs	0.0	0.0	0.0
Puna-Ka'ū Historic District	39	Halape Wilderness Camp	0.0	1.2	1.2
Puna-Ka'ū Historic District	40	Keauhou Camp	0.0	0.8	0.4
Puna-Ka'ū Historic District	41	Great Crack Coastal Fishing Camp	0.0	2	2.3

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
Pu'uloa Petroglpyhs	20	Pu' u Loa Petroglpyhs	0.11	0.0	0.0
Pu'u Maka'ala Natural Area Reserve	34	Volcano Golf Course Community	1.45	0.0	0.0
Pu'u Maka'ala Natural Area Reserve	36	Olaa Kilauea Forest Partnership	0.0	0.0	0.0
Rain Shed, Building 43	4	Park HQ Developed Area	0.29	0.0	0.0
Volcano Residential District	4	Park HQ Developed Area	1.19	0.0	0.0
Volcano Residential District	28	Volcano Village	0.82	0.0	0.0
Volcano Residential District	38	Jaggar/HVO	0.75	0.0	0.0
Whitney Seismograph Vault No. 29	4	Park HQ Developed Area	0.11	0.0	0.0
Wilkes Campsite	46	Mauna Loa Wilderness Camp	0.0	0.0	0.0
World War II Scrape Mounds (Kilauea Airfield Study Areas)	4	Park HQ Developed Area	1.40	0.0	0.0
World War II Scrape Mounds (Kilauea Airfield Study Areas)	5	Cone Peak, Nene Area	1.16	0.0	0.0
World War II Scrape Mounds (Kilauea Airfield Study Areas)	6	Halemaumau Crater	0.60	0.0	0.0
World War II Scrape Mounds (Kilauea Airfield Study Areas)	37	Nahuku (Thurston Lava Tube)	0.53	0.0	0.0
'Ola'a Forest Reserve	16	Ola'a Transect 19	0.37	0.0	0.0
'Ola'a Forest Reserve	28	Volcano Village	0.03	0.0	0.0

Section 4(f) Resource	Location Point ID	Location Point Name	Distance to Location Point (Miles)	Time Above 52 dBA, Standard Day (Minutes)	Time Above 52 dBA, QT Day (Minutes)
'Ola'a Forest Reserve	29	Fern Forest	1.33	0.0	0.0
'Āinapō Trail	46	Mauna Loa Wilderness Camp	0.0	0.0	0.0
'Āinahou Ranch House and Gardens (Cultural Landscape)	12	'Ainahou Ranch	0.0	0.0	0.0
'Āinahou Ranch House and Gardens (Cultural Landscape)	13	Kipuka Kahalii	1.48	0.0	0.0
State Resource Management Area	2	Vicinity of Halfway House	0.32	0.0	0.0
State Resource Management Area	4	Park HQ Developed Area	1.00	0.0	0.0
State Resource Management Area	16	Ola'a Transect 19	1.20	0.0	0.0
State Resource Management Area	24	Upper Reservoir Kahuku	0.77	0.7	0.0
State Resource Management Area	28	Volcano Village	0.03	0.0	0.0
State Resource Management Area	29	Fern Forest	1.47	0.0	0.0
State Resource Management Area	30	Kalapana	1.12	0.0	0.0
State Resource Management Area	31	Discovery Harbor, Naalehu	0.79	0.0	0.0
State Resource Management Area	32	Pahala	0.50	0.0	0.0
State Resource Management Area	34	Volcano Golf Course Community	0.97	0.0	0.0
State Resource Management Area	38	Jaggar/HVO	0.62	0.0	0.0

Table 4. Distribution to Officials with Jurisdiction for Section 4(f) Resources

Entity	Address
U.S. Fish and Wildlife Service	60 Nowelo Street, Suite 100 Hilo, HI 96720-2788
Department of Land and Natural Resources	1151 Punchbowl St. Honolulu, HI 96813
NPS	P.O. Box 52 Hawaii National Park, HI 96718

APPENDIX J

Public Scoping Newsletter and Comment Summary Report



Hawai‘i Volcanoes National Park

FEB 2022
Newsletter



Air Tour Management Plan
Potential Alternatives for Public Comment

The Federal Aviation Administration (FAA) and the National Park Service (NPS) are working together to present potential alternatives for an Air Tour Management Plan for Hawai‘i Volcanoes National Park. Public and stakeholder feedback during this phase is critical. This document will explain:

- Commercial air tour operations
- Requirements for a plan at the Park
- Potential alternatives being considered for the plan
- How the public and stakeholders can provide feedback

Project Introduction

This document presents potential alternatives for the Hawai‘i Volcanoes National Park Air Tour Management Plan (ATMP) Environmental Assessment (EA) for public and stakeholder input. As applied to Hawai‘i Volcanoes National Park (Park), the term commercial air tour operation is defined as any flight conducted for compensation or hire in a powered aircraft, where a purpose of the flight is sightseeing over the Park or within ½-mile outside the Park’s boundary during which the aircraft flies below 5,000 feet above ground level.

The National Parks Air Tour Management Act (the Act) of 2000 requires the FAA, in cooperation with the NPS, to develop an ATMP for parks and tribal lands where operators have applied to conduct commercial air tours. The objective of this ATMP, under the Act, is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts of commercial air tour operations on the Park’s natural and cultural resources, Native Hawaiian sacred sites and ceremonial areas, wilderness character, and visitor experience.

As part of the public scoping process pursuant to the National Environmental Policy Act (NEPA), the FAA and the NPS invite public input on potential alternatives. Many of you have commented on the FAA and the NPS’s past efforts to complete an ATMP for Hawai‘i Volcanoes National Park which have been considered in the development of these potential alternatives. Public and stakeholder input will be used to further refine or dismiss alternatives and potentially to consider new alternatives. Public input will also be used to inform the environmental analysis. Alternatives that are carried forward and analyzed in the EA are expected to be available for public review and comment later this year.

Hōlei Cliffs



Purpose and Need for the Project

Under NEPA, alternatives must meet the Purpose (i.e., objective) and Need for the project.

Purpose

To comply with the *National Parks Air Tour Management Act of 2000 (the Act)* and other applicable laws, consistent with the *Plan and Schedule for Completion of Air Tour Management Plans at Twenty-Three Parks* approved by the U.S. Court of Appeals for the District of Columbia Circuit on November 20, 2020, in Case No. 19-1044, *In Re Public Employees for Environmental Responsibility and Hawai'i Coalition Malama Pono*.

Need

The Act requires an ATMP or voluntary agreement for the Park. Air tours have the potential to impact natural and cultural resources, wilderness character, and visitor experience. The Act requires that the FAA and the NPS develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on natural and cultural resources, wilderness character, visitor experience, and Native Hawaiian Traditional Cultural Properties including Native Hawaiian sacred sites and ceremonial areas. In order to address potential impacts from commercial air tours the agencies have decided to prepare an ATMP for the Park.

Resources for Consideration in the EA

The agencies propose to analyze the potential impacts of each alternative on the following resources:

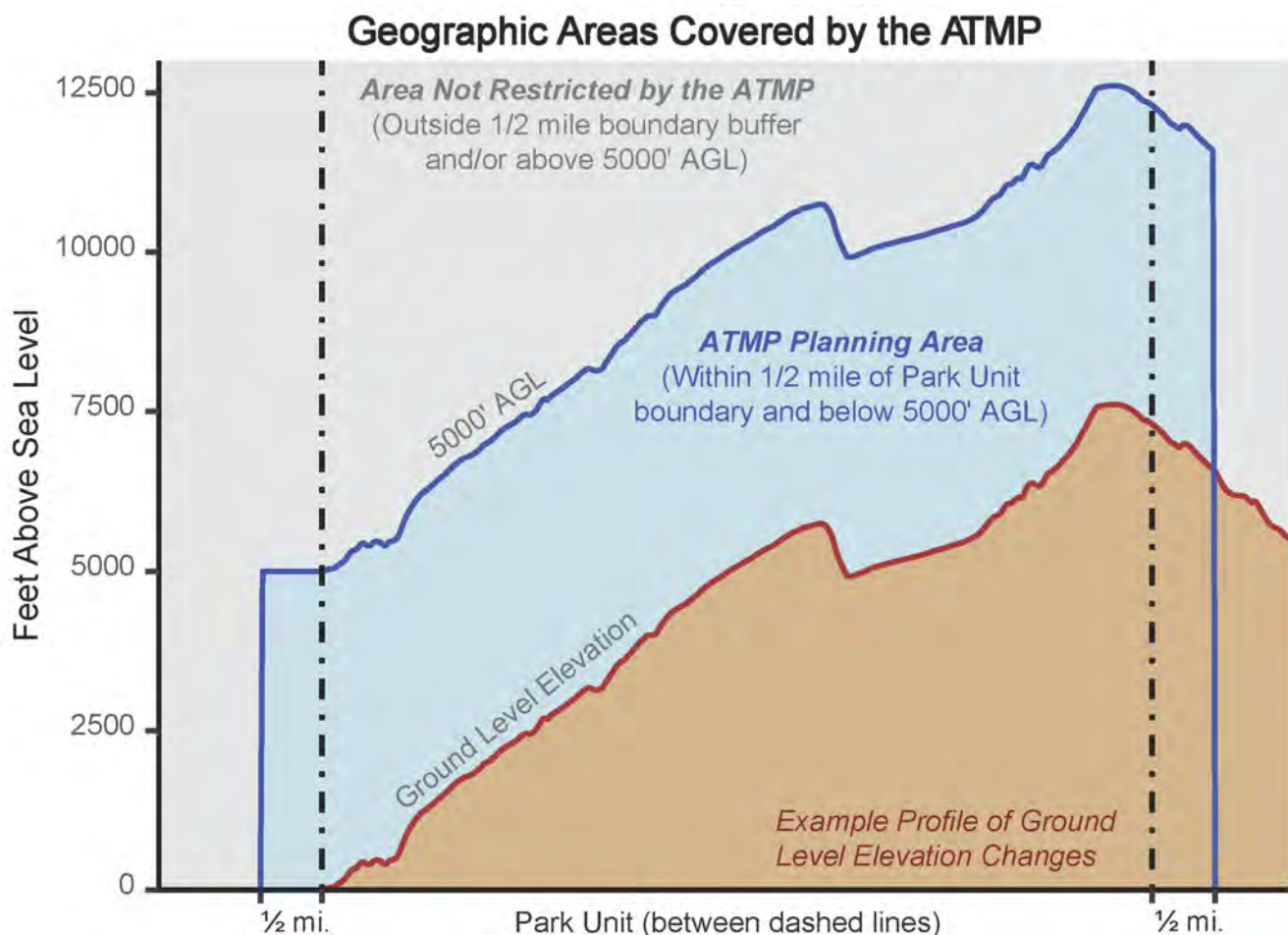
- Air quality
- Biological resources (wildlife including special status species)
- Climate (climate change and greenhouse gas emissions)
- Coastal resources
- Cultural resources (historic buildings, historic districts, archeological resources, sacred sites, Traditional Cultural Properties, cultural landscapes, ethnographic resources)
- Department of Transportation Act, Section 4(f)
- Noise and compatible land use (acoustic environment and Park soundscape)
- Park visitors and visitor uses
- Socioeconomics, Children's Environmental Health and Safety Risk, and Environmental Justice (children's environmental health and safety risks, environmental justice and resident communities, socioeconomics)
- Visual effects (visual resources and visual character)
- Water resources
- Wilderness

Elements Common to All Alternatives for the Hawai‘i Volcanoes National Park ATMP

All alternatives being considered for the Hawai‘i Volcanoes National Park ATMP will incorporate the following:

ATMP Planning Area

According to the Act, an ATMP shall regulate commercial air tours over a national park or within ½-mile outside the park’s boundary during which the aircraft flies below 5,000 feet above ground level (AGL). This is referred to as the ATMP planning area. Air tours outside of the ATMP planning area are not subject to the Act and are therefore not regulated under the ATMP. As air tours outside the boundaries of the ATMP planning area are outside the jurisdiction of the ATMP, there would be no limitations on the annual number of air tours or routes that could occur outside the ATMP planning area under any alternative. Refer to the figure below for a geographic depiction of the ATMP planning area. Although they may occur within the ATMP planning area, general aviation flights, overflights by commercial airlines, and military flights would not be regulated by the ATMP because they are not commercial air tours subject to regulation under the Act.



Monitoring and Enforcement

All air tour operators are required to report to the FAA and the NPS, on a semi-annual basis, the number of commercial air tour operations they have conducted within the ATMP planning area. The operators must provide the date and time each tour occurred, the make/model of aircraft used, and the route on which the tour was conducted.



Aircraft monitoring and enforcement would occur to ensure that commercial air tour operators are complying with the terms and conditions of the ATMP. The NPS and the FAA are both responsible for the monitoring and oversight of the ATMP. If the NPS identifies instances of non-compliance, the NPS will report such findings to the FAA's Honolulu Flight Standards District Office (FSDO). The FSDO will investigate all substantiated reports of noncompliance. The public may also report allegations of non-compliance with the ATMP to the FSDO, which may result in an FAA investigation.

Minimum Altitudes

The range of altitudes examined in the alternatives will be from 1,500 to 5,000 feet AGL. On two-way routes, aircraft will utilize vertical separation to allow aircraft to maintain a safe distance from each other. Vertical separation of aircraft only applies to aircraft traveling in opposite directions, and vertical stacking of aircraft going the same direction along a route would be prohibited.



Flight Routes and In-flight Deviations

The maps included in the potential alternatives show flight routes where air tours could occur within the ATMP planning area. Flight routes within the ATMP planning area are represented by a line with a buffer on either side of the route that indicates the acceptable range of deviation that would not trigger enforcement action. The flight lines will be used for noise modeling purposes in the impact analysis. If pilots are entering a route in the ATMP planning area but weather conditions do not allow them to follow that route at the prescribed altitude they may not proceed further on the route. They would either be required to follow another ATMP route where weather conditions allow or to leave the ATMP planning area boundary. If pilots are on a route and encounter weather that does not allow them to proceed further along the route at prescribed altitude, they must safely exit the route and either follow another ATMP route where weather conditions allow or leave the ATMP planning area boundary.



FAA Airspace Authority

The FAA has authority for all airspace matters, including any enforcement actions for violations under the ATMP, which the agency would process in accordance with existing FAA procedures and regulations.



Fee Collection

Under the Omnibus Budget Reconciliation Act of 1993 (54 U.S.C. § 100904), commercial air tour operators currently conducting air tours over the Park are required to pay a fee (currently \$25 for each aircraft with 25 passengers or less) for each air tour conducted. This requirement will remain in force when this ATMP becomes effective. Fee collection will not be considered in the decision-making process for analyzing and selecting a potential alternative. The decisions will be based solely on the environmental impact analysis and public input.



Initial Allocation and Competitive Bidding

The Act states whenever an ATMP limits the number of commercial air tour operations during a specified time frame, a competitive bidding process must occur pursuant to the criteria set forth in 49 U.S.C. § 40128(a)(2)(B) and other



criteria developed by the agencies. Since the number of flights would be limited for Alternatives 3 and 4, competitive bidding would be required. In the time period between the finalization of an ATMP and the completion of the competitive bidding process, commercial air tour operators would be allocated a certain number of commercial air tours over the Park, referred to as the initial allocation.

Competitive bidding may also be appropriate to address: a new entrant application; a request by an existing operator for additional operating authority; consideration by the agencies of Park-specific resources, impacts, or safety concerns; or for other reasons. The Act directs the agencies to consider various factors during the comp bidding process including known resource issues, reporting, and compliance concerns.

Potential Alternatives

The agencies have considered a range of reasonable alternatives that are technically and economically feasible, meet the purpose and need for the project, and the goals of the agencies.

Alternatives Considered and Dismissed

The agencies considered but dismissed alternatives that would allow air tour operations at or above existing numbers. These alternatives were dismissed from further consideration because the NPS determined they would result in unacceptable impacts to Park natural and cultural resources, wilderness character, and visitor enjoyment under the NPS Management Policies 2006 1.4.7.1. and do not meet the purpose and need for the plan.

The NPS determined the current level of air tours is inconsistent with the Park's purpose and values. The Park's purpose includes perpetuating the traditional Hawaiian cultural connections to the Park's landscapes (see Foundation Document). Noise from the current level of air tours inhibits the Park's ability to meet this purpose. Noise from air tours negatively impacts existing sacred sites within the Park associated with Native Hawaiian people. The NPS is required to avoid such impacts to sacred sites to the extent possible (NPS Management Policies 2006 5.3.5.3.2). Native Hawaiians have consistently noted that persistent air tours over the Park unreasonably interfere with Native Hawaiian connections to the Park's sacred areas.

Additionally, existing air tour operations result in frequent and loud noise disruptions in many areas of the Park. Current air tours over the Park impede the NPS's ability to fully meet the Park's purpose of perpetuating

endemic Hawaiian ecosystems and does not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the park (see Foundation Document). A recent Park study documents that loud, frequent helicopter noise results in changes in avian vocalization (Gallardo Cruz et al 2021). Helicopter noise could detrimentally affect physiology, pairing and breeding success, and territory size of birds by limiting communication between individuals (Habib et al. 2007; Nemeth and Brumm 2010; Halfwerk et al. 2011; Kleist et al. 2018). These effects could have a greater impact on Hawaiian endemics, which already face a number of stressors (Atkinson and Lapointe 2009; Pratt et al. 2009; LaPointe et al. 2010), than on introduced species.

Current air tours over the Park also directly interfere with resource management activities (such as the execution of acoustic based bird surveys), which impedes the NPS's ability to fully meet the Park's purpose of perpetuating endemic Hawaiian ecosystems and does not support the perpetuation of biological diversity and ecological integrity which are fundamental resources and values of the Park (see Foundation Document).



The current level of air tours diminishes visitor opportunities to learn about and be inspired by Park resources and values and unreasonably interferes with the atmosphere of peace and tranquility and the natural soundscapes in wilderness. Existing air tours repeatedly interrupt and unreasonably interfere with interpretive programs and visitor activities at many sites, including Uēkahuna Bluff, Kīlauea Overlook, Steam Vents, Volcano House, Kīlauea Visitor Center, Kūpina‘i Pali, Kīlauea Iki, Devastation, Pu‘upua‘i, Keanakāko‘i, Maunaulu, Puhimau, Kīpukapua‘ulu, and Maunaloa (lookout and trail). Regular visitor complaints and staff observations indicate that noise from air tours impedes visitors from enjoying and learning about existing Park resources in these and other areas of the Park.

Existing air tour operations also unreasonably interfere with the natural soundscape maintained within the Hawai‘i Volcanoes National Park’s four designated Wilderness areas, Maunaloa, ‘Ōla‘a, East Rift, and Ka‘ū Desert, as well as the eligible (Upper Kahuku) and potential (Great Crack) Wilderness areas (see NPS Management Policies 1.4.7.1). Persistent noise within Wilderness interferes with the opportunity for solitude and detracts from the natural quality of Wilderness.

Therefore, authorizing commercial air tours at or above the existing level of operations would not meet the objective of an ATMP under the Act. The NPS has determined that the current level of air tours cannot be mitigated to avoid or prevent unacceptable impacts and therefore any alternative that would maintain or increase the current number of air tours over the Park does not meet the purpose and need for the plan. For all of these reasons, the agencies have considered but dismissed alternatives that would continue air tours at or above existing air tour numbers.



Lava lake

Alternative 1 (No Action)

Objective

A no action alternative is required by the Council on Environmental Quality and NEPA regulations.

The no action alternative provides a basis for comparison but is not a selectable alternative because it does not meet the purpose and need for the ATMP and is not in compliance with the Act. The agencies have decided to comply with the Act by developing an ATMP for the Park.

Description

The no action alternative is what happens if the agencies do not adopt an ATMP. The no action alternative would allow a continuation of air tours under Interim Operating Authority (IOA) without implementation of an ATMP or voluntary agreement. Under the no action alternative, air tour numbers would be expected to vary from year to year, likely consistent with reported numbers over the past three to five years. Air tour numbers from 2017 to 2019 are listed below. Under the no action alternative operators could fly up to IOA, 26,664 air tours per year. Air tour operators may fly where they choose. Currently, altitudes are flown in accordance with the Hawai'i Air Tour Common Procedures Manual (HI Manual). Minimum altitudes range from 500-1,500 ft. AGL, weather dependent, depending on location on the island.

Number of Flights Each Year

Alternative 1 represents a continuation of what is currently flown and allowed under existing law including each company's IOA as granted by the FAA (70 Federal Register 36456 (June 23, 2005)), applicable regulations that govern aviation safety (Title 14 Code of Federal Regulations Part 136, Appendix A (formerly Special Federal Aviation Regulation 71)), and any FAA exceptions issued to individual operators as outlined by the HI Manual. Ten commercial air tour operators currently hold IOA to fly up to a combined total of 26,664 annual commercial air tours over the Park (see table on page 11).

Since reporting began in 2013, the total number of annual commercial air tours reported over the Park ranges from 8,333 (reported in 2018) to 16,520 (reported in 2017). Under the no action alternative, operators could fly up to IOA. The operators may not exceed their respective IOA limitation in any given year. Under the no action alternative, air tours numbers would be expected to vary from year to year, likely consistent with reported numbers over the past three to five years.

Alternative 1 (No Action)

The average annual number of commercial air tours conducted over the Park from 2017-2019 for all operators is 11,376. The agencies consider the 2017-2019, three-year average, the existing baseline for the purposes of understanding the existing number of commercial air tour flights over the Park. The requirement for commercial air tour operators to report actual commercial air tours to the FAA and the NPS was implemented in 2013. Reporting data from 2013 and 2014 are considered incomplete as reporting protocols were not fully in place at that time and likely do not reflect actual flights. Flight numbers from a single year were not chosen as the existing baseline because the three-year average accounts for both variation across years and takes into account the most recent pre-pandemic years. Reporting data from 2020 was not used because the 2020 COVID-19 pandemic resulted in lower than normal commercial air tour operations due to travel restrictions and closures in the State of Hawai‘i, which does not represent the conditions in a typical year.

Routes and Altitudes

There are no designated flight routes or no-fly zones under the no action alternative. The figure for this alternative depicts both general route information provided by current commercial air tour operators and Automatic Dependent Surveillance-Broadcast (ADS-B) flight tracking data of actual commercial air tour operations over and adjacent to the Park. Actual commercial air tour operations are dispersed around the generalized routes provided by operators depicted on the figure. The ADS-B tracking data is more reflective of existing operations for various reasons including deviations that may occur due to weather.

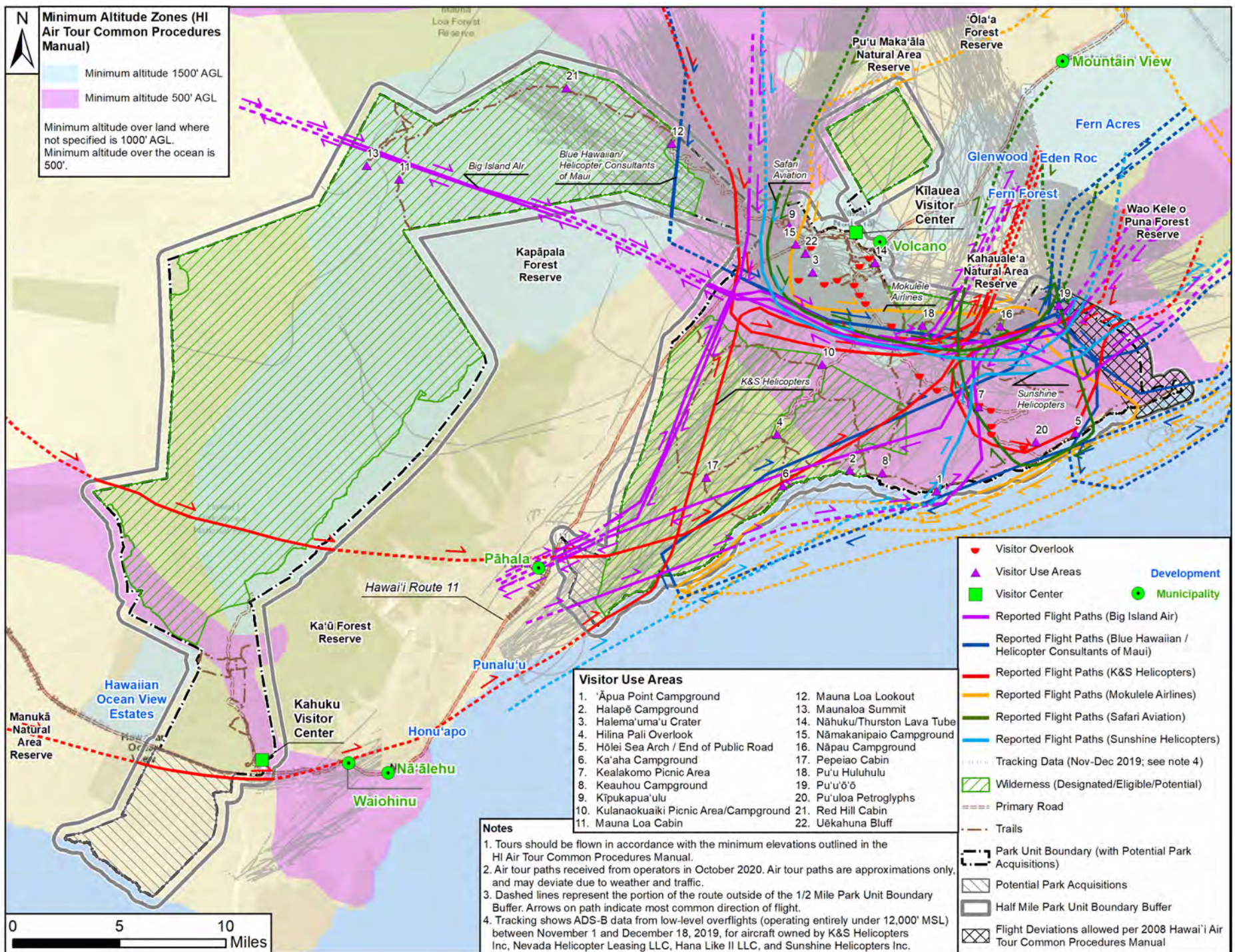
Minimum altitudes for commercial air tours within the ATMP planning area are flown in accordance with the HI Manual, from 500-1,500 ft. AGL, weather dependent and contingent on location on the island. In addition, operators holding a B048 Operations Specification are authorized to conduct commercial air tour operations at altitudes less than 1,500 feet above the surface, within the state of Hawai‘i, in accordance with the provisions and limitations of the HI Manual. See the figure for this alternative for details.

Operators, Aircraft Types, Interim Operating Authority

Seven of the ten operators that hold IOA for the Park reported flying commercial air tours over the Park between 2013 and 2019. Five operators fly helicopters, and two operators fly fixed-wing aircraft. The following table summarizes each operator’s aircraft type, IOA for the Park, and average number of reported air tours over the Park from 2017-2019:

Alternative 1 (No Action)

Operator	Aircraft Type	2017 Reported Tours	2018 Reported Tours	2019 Reported Tours	3-year Reported Average No. of Air Tours (2017-2019)	Interim Operating Authority (IOA)
Above it All Inc. (Sporty's Academy Hawai'i, Hawai'i Island Hoppers, Hawai'i Airventures, Benchmark Flight Center)	no data	0	0	0	0	3,878
Big Island Air Inc.	fixed wing	102	7	0	36	1,643
Hawai'i Helicopters Inc. (Helicopter Consultants of Maui, Inc.)	helicopter	139	50	67	85	141
Helicopter Consultants of Maui Inc. (Hawai'i Helicopter, Blue Hawaiian Helicopters)	helicopter	12,300	6,059	7,325	8561	12,413
K&S Helicopters (Paradise Helicopters)	helicopter	877	552	248	559	1,684
Manuiwa Airways Inc. (Volcano Helicopters, Volcano Heli-Tours)	no data	0	0	0	0	800
Mokulele Flight Service Inc. (Mokulele Airlines)	fixed wing	0	15	0	5	60
Safari Aviation Inc. (Safari Helicopter Tours)	helicopter	1,977	1,050	995	1341	3,920
Schuman Aviation Company, Ltd. (Makani Kai Helicopters)	no data	0	0	0	0	25
Sunshine Helicopters Inc.	helicopter	1,125	600	641	789	2,100
		16,520	8,333	9,276	11,376	26,664



Alternative 2

Objective

Alternative 2 seeks the greatest protection for the purposes, resources, and values of the Park. These include the summits of Kīlauea and Maunaloa which hold spiritual and cultural significance to Native Hawaiians; threatened and endangered species and other wildlife sensitive to noise; Congressionally designated wilderness and visitor opportunities for solitude; ground-based visitor experience; Native Hawaiian traditional cultural practices; scenic qualities, and natural sounds.

Description

Alternative 2 would prohibit air tours within the ATMP planning area. The ATMP planning area includes areas below 5,000 feet AGL and within ½-mile of the Park boundary. The Park itself would be designated as an area to remain free of commercial air tours under 5,000 feet AGL regardless of future eruptions or lava flows. Air tours outside of the ATMP planning area (i.e., above 5,000 feet AGL or more than ½-mile outside the Park boundary) are not subject to the Act and are therefore not regulated under the ATMP. Thus, there would be no limitations on the number of air tours that could occur outside the ATMP planning area.

Routes and Altitudes

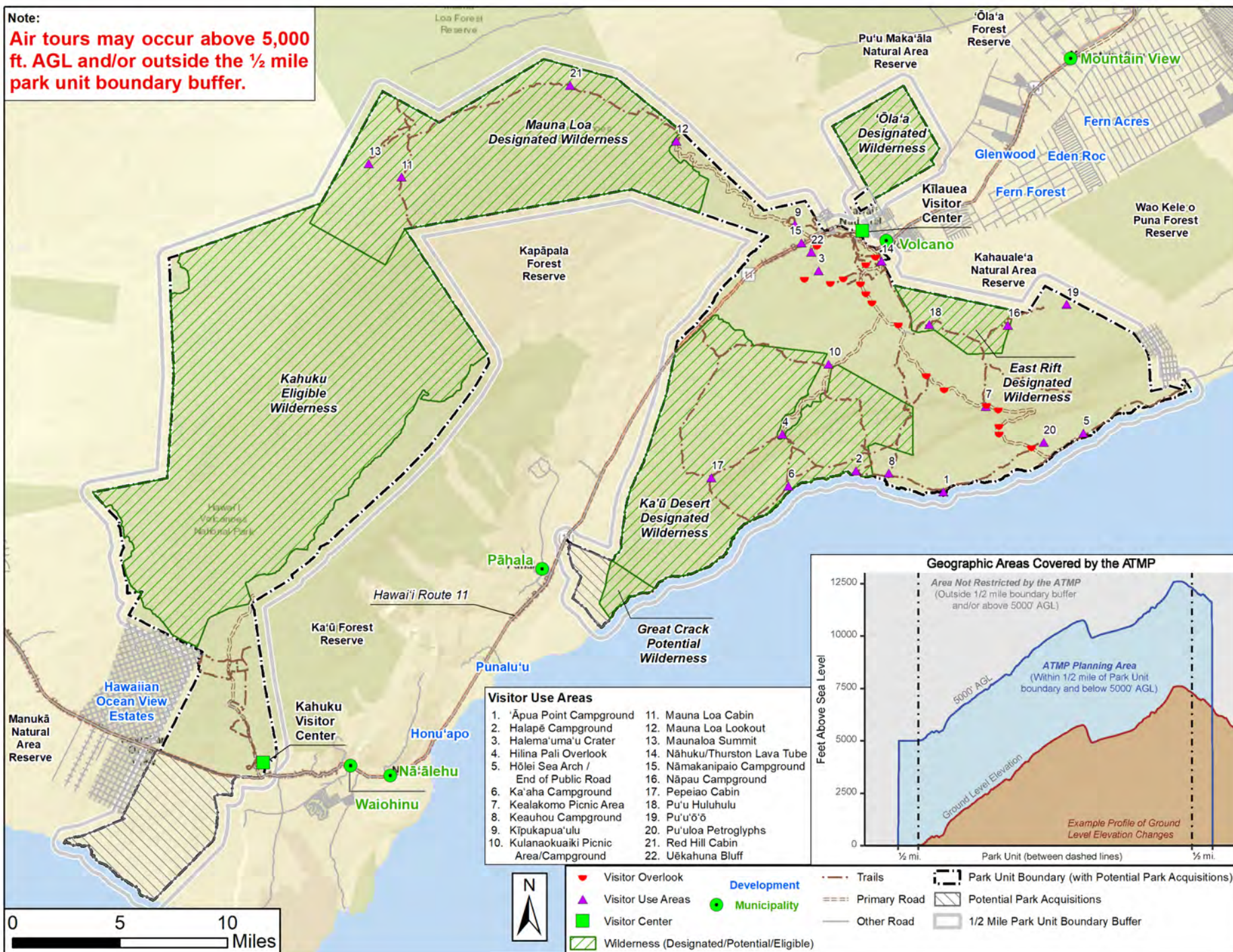
Air tours could be conducted only outside the ATMP planning area. Based on current air tour activity, routes outside of the ATMP planning area would be expected to be similar to existing routes. An unknown number of air tours originating on Hawai‘i Island from Hilo, Kailua-Kona, Hāpuna and Waikoloa, and airports on Maui and O‘ahu would still continue to fly more than ½-mile outside of the Park’s boundary at or below 1,500 feet AGL in accordance with the HI Manual. The actual flight path of air tours outside the ATMP planning area would vary due to operator preference, volcanic activity, and weather conditions at the time of the air tour.



Rainforest trail

Note:

Air tours may occur above 5,000 ft. AGL and/or outside the ½ mile park unit boundary buffer.



Alternative 3

Objective

The NPS developed Alternative 3 to provide multiple air tour routes for access to historically active volcanic areas of the Park with mitigations to avoid or minimize unacceptable impacts to soundscapes based on Park management zones. The FAA reviewed the alternative to ensure it meets safety parameters.

Description

Commercial air tour operations would only fly along two main routes, one fly zone, and one adaptive management route providing access to active volcanic areas, coastal areas, and other volcanic landscapes.

Caps on Numbers of Flights Allowed Annually and Daily

Soundscape modeling for Alternative 3 will consider and evaluate various numbers of annual commercial air tours over the Park, ranging between 1 flight per year to below current condition (the average number of commercial air tours conducted over the Park each year from 2017-2019, in this case 11,376). The number of flights allowed over the Park on an annual basis will be selected to avoid or minimize unacceptable impacts to soundscapes based on Park management zones. This alternative would not consider a daily cap on the number of commercial air tours that each operator could fly.

Routes and Altitudes

Alternative 3 includes two main routes, one fly zone, and one adaptive management route where commercial air tour operators could fly. Refer to the figure for this Alternative for a depiction of each:

- Northern Route: Commercial air tour operations would fly along Highway 11 for viewing of Kīlauea and Halema‘uma‘u Craters. The northern route would be flown at minimum 1,500 ft. AGL altitude, and minimum 2,000 ft. AGL altitude over wilderness areas and sensitive sites.
- Coastal Route: Commercial air tour operators would fly offshore along the edge of the Park boundary, but within ½-mile of the Park boundary. The route runs offshore along the edge of the ATMP planning area boundary in order to protect wilderness areas and backcountry campgrounds within the Park. This route would be flown at minimum 2,000 ft. AGL. The coastal route would be available for use only if commercial air tour operators could safely adhere to the required altitudes and distances to the shore. If an operator is not able to safely fly offshore in accordance with the prescribed altitude and distance requirements, the operator shall not utilize that route.

Alternative 3

- Pu‘u‘ō‘ō Viewing Area: The Pu‘u‘ō‘ō viewing area is a fly zone along the east rift of Kīlauea to the Pu‘u‘ō‘ō area. Commercial air tour access would be permitted to the east rift of Kīlauea within the Pu‘u‘ō‘ō viewing area. Quiet Technology (QT) aircraft would be permitted to use an expanded fly zone in the western portion of this area near Pu‘u‘ō‘ō. Commercial air tours conducted within this area would be flown at minimum 1,500 ft. AGL.
- Southwest Rift Zone Route: The Kīlauea Southwest Rift Zone would be viewable from the Southwest Rift Zone route outside the Park boundary but within ½-mile of the boundary under adaptive management only (e.g., if lava emerges, the adaptive management process would be implemented to determine if/when the route is approved for use). The offset from the Park boundary would provide protection to wilderness areas. This route would be flown at minimum 2,000 ft. AGL.

Other than the routes described above, under Alternative 3, no air tours could occur below 5,000 feet AGL within the rest of the Park or within ½-mile of the Park boundary. Refer to the map for this alternative for a depiction of flight corridors and altitudes.

Loitering/Circling

This alternative would prohibit loitering or circling because it could negatively impact visitors, cultural, and natural resources, including sensitive sites.

Time of Day/Day of Week

Flights would be permitted between the hours of 10:00 a.m. – 2:00 p.m. Flights would be permitted on all days of the week except Wednesday and Sunday. Exceptions to these parameters for QT aircraft are noted below, which allows QT aircraft to fly over the Park on Wednesdays. One no-fly day provides opportunities for visitor enjoyment, particularly bird watching. Sunday was selected as a no-fly day for consistency with the Park’s Mission Critical Administrative Aviation Plan and Environmental Assessment and allows for one weekend flight-free day at the Park.

Quiet Technology (QT) Incentives

The Act requires that the ATMP include incentives for the adoption of QT by commercial air tour operators. Alternative 3 includes the following incentives for operators conducting commercial air tours using QT aircraft:

- Relax the day of week restriction to allow flights on Wednesdays for QT aircraft
- Relax the time-of-day restrictions to allow QT aircraft to fly from 10:00 a.m. - 4:00 p.m.
- Allow QT aircraft to conduct commercial air tours in additional locations in the Pu‘u‘ō‘ō viewing area (see map for a depiction of these areas).

In order to qualify for QT incentives, operators will be required to follow a process to be defined by the agencies.

Alternative 3

Restrictions for Special Events

This alternative would include a mandatory 5-mile standoff for special events that could be impacted by commercial air tours, limited to the day of the event. Special events could include Native Hawaiian events or other natural and cultural resource programs. Two months' notice would be provided to commercial air tour operators prior to the event. The standoff would not extend outside the ATMP planning area.

Adaptive Management

Adaptive management is a systematic approach for improving resource management and ensuring that the continued effectiveness of the ATMP over time through the monitoring of park conditions and by learning from management actions or choices. Adaptive management is also used to address changed conditions such as a new lava flow occurs in the Park or if the breeding habitat of a sensitive species moves to a new area. This alternative will analyze an adaptive management route, the Southwest Rift Zone route, for use during an eruptive event along the Southwest Rift Zone of Kīlauea. See "Routes and Altitudes" section for a description of this route.

Interpretive Training and Education

The NPS would provide mandatory training for air tour pilots regarding Park resources. The training would include the Park information that operators could use to further their own understanding of Park priorities, cultural and natural resources protection and management objectives as well as enhance the interpretive narrative for air tour clients and increase

understanding of the Park by air tour clients.

Operators would also be required to complete the FAA Fly Neighborly training for their aircraft type. Fly Neighborly is a noise reduction program that seeks to create better relationships between communities and helicopter operators by establishing noise mitigation techniques and increasing effective communication.

Annual Meeting

An annual meeting between the agencies and commercial air tour operators would occur under this alternative. The ATMP will describe the details of the annual meeting.

Operators, Initial Allocation of Air Tours, and Aircraft Types

Upon finalization of the ATMP, the number of flights authorized to occur each year would be proportionally allocated to each of the seven operators that have reported operations over the Park in the period from 2017-2019. Each operator's initial allocation will reflect the proportion of its average number of reported flights from 2017-2019 as compared to all operators that have reported flying over the Park during this period. Each operator's aircraft types would reflect those reported in the period from 2017-2019. The initial allocation would be used until a competitive bidding process could occur. Under the Act, IOA terminates 180 days after the date of establishment of the ATMP, however, if the FAA updates an operator's Operations Specifications before that time, IOA will be terminated when the Operations Specifications are updated.

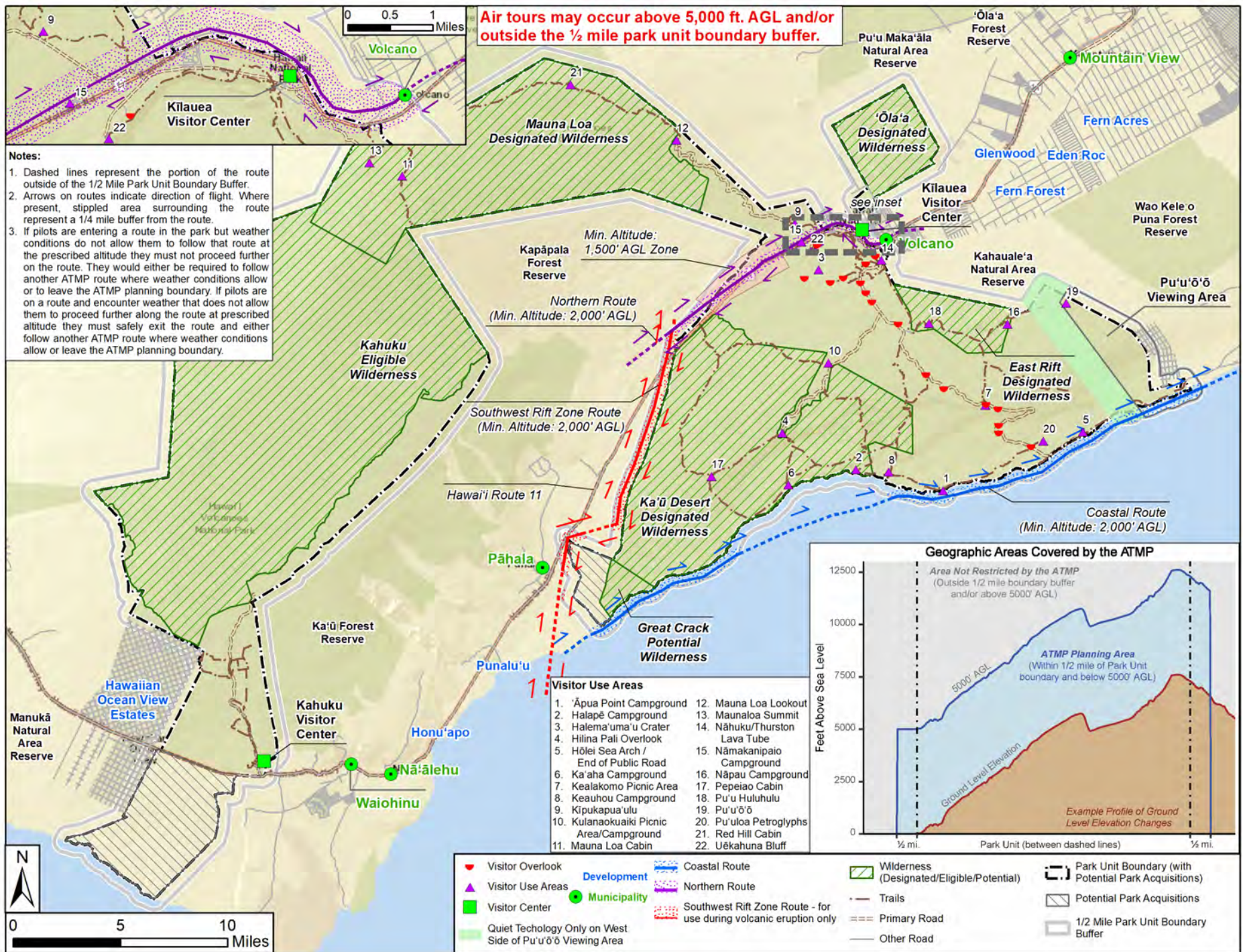
Alternative 3

Monitoring and Enforcement

Upon finalization of the ATMP, the operators would be required to equip all aircraft used for air tours with flight monitoring technology, use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. Soundscape monitoring would also occur to ensure that the terms and conditions of the ATMP are consistent with Park management objectives.



Maunaulu



Alternative 4

Objective

The NPS developed Alternative 4 to provide an air tour route for access to the historically active east rift zone of Kīlauea, an additional route for air tour transit across the lower southern edge of Kahuku, and an offshore coastal flight corridor that would protect wilderness areas and backcountry campgrounds. The heart of the Park, including designated wilderness areas and key cultural and visitor use areas, would be free of commercial air tours. This alternative would avoid or minimize unacceptable impacts to Park soundscapes based on Park management zones. The FAA reviewed the alternative to ensure it meets safety parameters.

Description

This alternative includes three flight corridors for commercial air tours within the ATMP planning area and does not consider any adaptive management routes.

Caps on Numbers of Flights Allowed Annually and Daily

Soundscape modeling for Alternative 4 will consider and evaluate various numbers of annual commercial air tours over the Park, ranging between 1 flight per year to below current condition (the average number of annual commercial air tours conducted over the Park from 2017-2019, in this case 11,376). The number of flights allowed over the Park on an annual basis will be selected

to avoid or minimize unacceptable impacts to soundscapes based on Park management zones. This alternative would consider the use of daily caps by operator due to the historical frequency of air tours that have occurred during eruptive events at the Park.

Routes and Altitudes

This alternative includes three flight corridors where commercial air tour operators would be permitted to fly:

- Pu‘u‘ō‘ō Route: The Pu‘u‘ō‘ō route consists of a route on the east rift of Kīlauea in the Pu‘u‘ō‘ō area with a single entry and exit over the ocean. Only QT aircraft would be permitted to use an expanded fly zone directly west of this route near Pu‘u‘ō‘ō. The flight path on the west side would avoid the designated wilderness boundary at Nāpau, and an impact analysis would be used to determine the boundary line of the west side flight zone. Commercial air tours conducted within this area would be flown at minimum 1,500 ft. AGL.
- Coastal Route: Commercial air tour operators would fly offshore along the edge of the Park boundary, but within ½-mile of the boundary. The route runs offshore along the edge of the ATMP planning area boundary in order to protect wilderness areas and backcountry campgrounds within the Park. This route would be flown at minimum 2,000 ft. AGL. The coastal route would be

Alternative 4

available for use only if commercial air tour operators could safely adhere to the required altitudes and distances to the shore. If an operator is not able to safely fly offshore in accordance with the prescribed altitude and distance requirements, the operator shall not utilize that route.

- **Kahuku Route:** This route provides access for Kailua-Kona flights and circle island tours across the lower southern edge of Kahuku along Highway 11 to provide views of the southwest rift of Maunaloa and many past eruptions. This route would be flown at minimum 1,500 ft. AGL.

Other than the routes described above, under Alternative 4, no air tours could occur below 5,000 feet AGL over the rest of the Park or within ½-mile of its boundary. Refer to the map for this alternative for a depiction of flight corridors and altitudes.

Loitering/Circling

This alternative would allow loitering and circling along the Pu‘u‘ō‘ō route and viewing area. Impact analyses would be used to set mandatory time limits for loitering within the Pu‘u‘ō‘ō viewing area. Circling aircraft must turn away from the advancing blade as much as possible in order to minimize noise.

Time of Day/Day of Week

Flights would be permitted between the hours of 9:00 a.m. – 5:00 p.m. Flights would be permitted on all days of the week except Sunday. Exceptions to these parameters for QT aircraft are noted below. One no-fly day provides opportunities for visitor enjoyment, particularly bird watching. Sunday was

selected as a no-fly day for consistency with the Park’s Mission Critical Administrative Aviation Plan and Environmental Assessment and allows for one weekend flight-free day at the Park.

Quiet Technology (QT) Incentives

The Act requires that the ATMP include incentives for the adoption of QT by commercial air tour operators. Alternative 4 includes the following incentives for operators conducting commercial air tours using QT aircraft:

- Relax the time-of-day restrictions to allow QT aircraft to fly from 8:00 a.m. - 5:00 p.m.
- Allow QT aircraft to conduct commercial air tours in additional locations in the Pu‘u‘ō‘ō viewing area (see map for a depiction of these areas).

In order to qualify for QT incentives, operators will be required to follow a process to be defined by the agencies.

Restrictions for Special Events

This alternative would include a voluntary 3-mile standoff for special events that could be impacted by overflights, limited to the day of the event. Special events could include Native Hawaiian events or other natural and cultural resource programs. Two months’ notice would be provided to commercial air tour operators prior to the event. The standoff would not extend outside the boundary of the ATMP planning area.

Alternative 4

Interpretive Training and Education

NPS would provide voluntary training for air tour pilots regarding Park resources. The training would include the Park information that operators could use to further their own understanding of Park priorities and management objectives as well as enhance the interpretive narrative for air tour clients and increase understanding of the Park by air tour clients.

Operators would also be required to complete the FAA Fly Neighborly training for their aircraft type. Fly Neighborly is a noise reduction program that seeks to create better relationships between communities and helicopter operators by establishing noise mitigation techniques and increasing effective communication.

Annual Meeting

An annual meeting between the agencies and commercial air tour operators would occur under this alternative. The ATMP will describe the details of the annual meeting.

Operators, Initial Allocation of Air Tours, and Aircraft Types

Upon finalization of the ATMP, the number of flights authorized to occur each year would be proportionally allocated to each of the seven operators that have reported operations over the Park in the period from 2017-2019. Each operator's initial allocation will reflect the proportion of their average number of reported flights from 2017-2019 as compared to all operators that have reported flying over the Park during this period. Each operator's aircraft types would reflect those reported in the period from 2017-2019. The initial allocation would be used until a competitive bidding process could occur. Under the Act, IOA terminates 180 days after the date of establishment of the ATMP. However, if FAA updates an operator's Operations Specifications before that time, the IOA will be terminated when the Operations Specifications are updated.

Monitoring and Enforcement

Operators would be required to equip all aircraft used for air tours with flight monitoring technology, use flight monitoring technology during all air tours under the ATMP, and to report flight monitoring data as an attachment to the operator's semi-annual reports. Soundscape monitoring would also occur to ensure that the terms and conditions of the ATMP are consistent with Park management objectives.

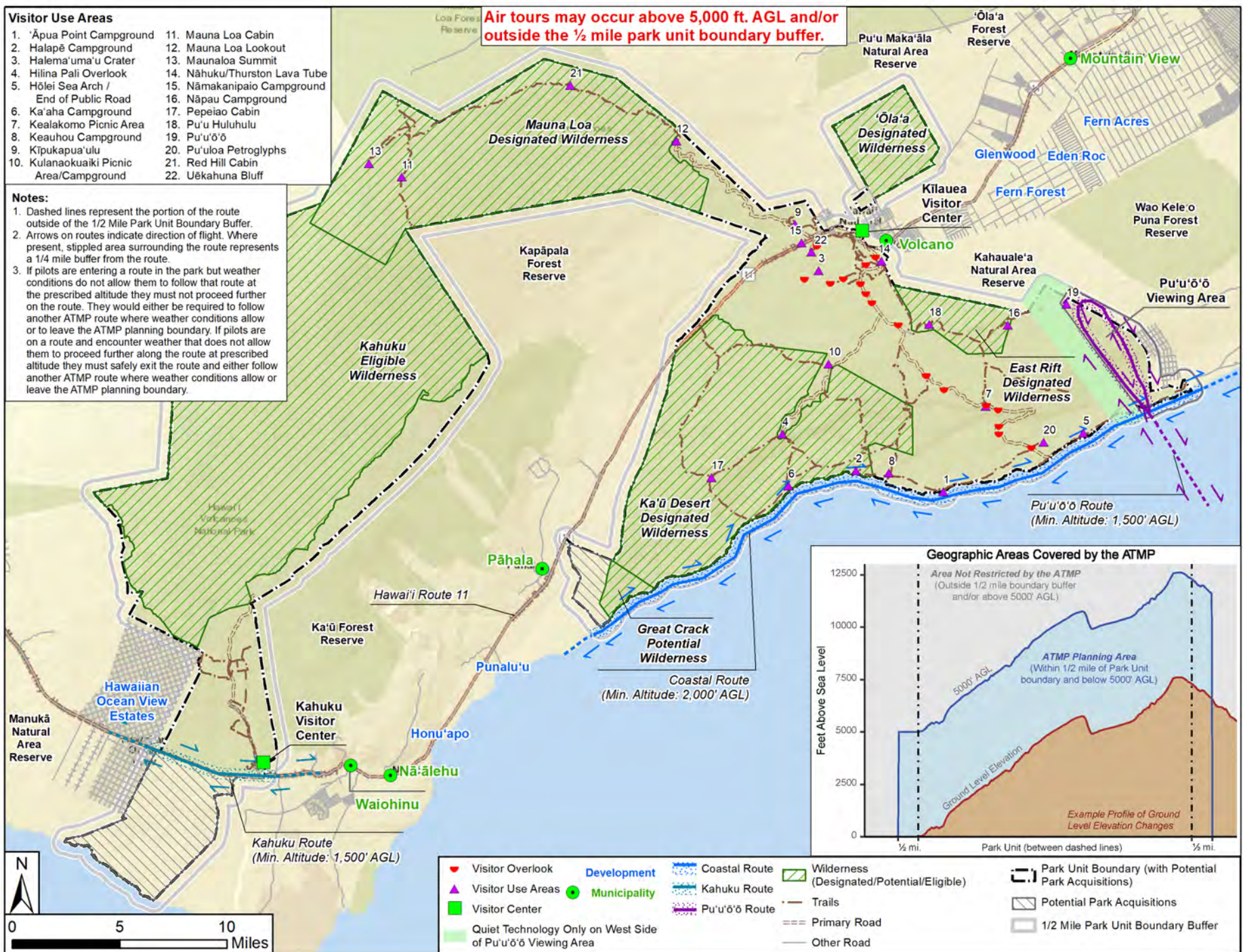
Visitor Use Areas

1. Āpua Point Campground
2. Halapē Campground
3. Halema'uma'u Crater
4. Hilina Pali Overlook
5. Hōlei Sea Arch / End of Public Road
6. Ka'aha Campground
7. Kealakomo Picnic Area
8. Keauhou Campground
9. Kīpukapua'ulu
10. Kulanaokuaiki Picnic Area/Campground
11. Mauna Loa Cabin
12. Mauna Loa Lookout
13. Maunaloa Summit
14. Nāhuku/Thurston Lava Tube
15. Nāmanipāio Campground
16. Nāpau Campground
17. Pelelao Cabin
18. Pu'u Huluhulu
19. Pu'u'ō'ō
20. Pu'uolua Petroglyphs
21. Red Hill Cabin
22. Uēkahuna Bluff

Notes:

1. Dashed lines represent the portion of the route outside of the 1/2 Mile Park Unit Boundary Buffer.
2. Arrows on routes indicate direction of flight. Where present, stippled area surrounding the route represents a 1/4 mile buffer from the route.
3. If pilots are entering a route in the park but weather conditions do not allow them to follow that route at the prescribed altitude they must not proceed further on the route. They would either be required to follow another ATMP route where weather conditions allow or to leave the ATMP planning boundary. If pilots are on a route and encounter weather that does not allow them to proceed further along the route at prescribed altitude they must safely exit the route and either follow another ATMP route where weather conditions allow or leave the ATMP planning boundary.

Air tours may occur above 5,000 ft. AGL and/or outside the 1/2 mile park unit boundary buffer.



Summary of Alternative Elements

Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
General Description and Objectives	What happens if the agencies do not adopt an ATMP. Allows a continuation of air tours under IOA without implementation of an ATMP or voluntary agreement. Does not comply with the Act.	Prohibits air tours within the ATMP planning area to maximize Park resource protection. Air tours could still continue to fly outside the ATMP planning area (i.e., above 5,000 feet AGL or more than ½-mile outside of the Park's boundary).	Two main air tour routes, one fly zone, and one adaptive management route provide access to historically active volcanic areas of the Park with soundscape mitigations.	Three routes provide air tour access over the Park with soundscape mitigations, while keeping the heart of the Park free of air tours.
Annual/Daily Number of Flights	Leaves IOA in place, allowing the potential for up to 26,664 commercial air tours each year. Actual number of tours has historically ranged from 8,333 to 16,520 flights per year, or an average of 11,376 flights (based on 2017-2019 reporting).	None in ATMP planning area.	Above 1 and below 11,376 flights per year, dependent on modeling. No daily caps.	Above 1 and below 11,376 flights per year, dependent on modeling. Daily caps will be considered.
Routes	No mandatory routes or no-fly zones. See map for depiction of reported routes and actual operations.	None in ATMP planning area.	Two main routes (coastal route and northern route) and one fly zone (Pu'u'ō'ō viewing area). Also includes an adaptive management route (Southwest Rift Zone route) for use during a volcanic eruption only.	Three routes (Kahuku route, coastal route, Pu'u'ō'ō route). Does not include adaptive management routes.
Minimum Altitudes	Flown in accordance with the HI Manual, generally between 500-1,500 ft. AGL.	No minimum altitude would be set. However, flights over the Park that are above 5,000 feet AGL could occur as they are outside the ATMP planning area. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and are subject to the altitude restrictions of the HI Manual.	Minimum 1,500 ft. AGL; minimum 2,000 ft. AGL over wilderness areas and sensitive sites. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and are subject to the altitude restrictions of the HI Manual.	Minimum 1,500 ft. AGL; minimum 2,000 ft. AGL over wilderness areas and sensitive sites. Flights more than ½-mile outside the Park boundary are similarly outside the ATMP planning area and are subject to the altitude restrictions of the HI Manual.
Time of Day	No Restrictions.	N/A	10 AM – 2 PM for non-QT flights. 10 AM – 4 PM for QT flights.	9 AM – 5 PM for non-QT flights. 8 AM – 5 PM for QT flights.

Continuation of Alternative Attributes	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Day of Week	No Restrictions.	N/A	No-fly day on Sunday Only QT flights may fly on Wednesday.	No-fly day on Sunday.
Loitering/ Circling	None.	N/A	Not permitted.	Permits loitering/circling from the Pu'u'ō'ō route.
Quiet Technology (QT) Incentives	None.	N/A	QT flights may fly 10AM - 4PM QT flights may fly on Wednesdays Additional fly locations in the Pu'u'ō'ō viewing area for QT flights.	QT flights may fly 8AM - 5PM Additional fly locations in the Pu'u'ō'ō viewing area for QT flights.
Interpretative Training and Education	None.	N/A	Mandatory.	Voluntary.
Annual Meeting	None.	N/A	Included.	Included.
Restrictions for Particular Events	None.	N/A	Mandatory 5-mile standoff distance. Two months' notice provided to operators.	Voluntary 3-mile standoff distance. Two months' notice provided to operators.
Adaptive Management	None.	N/A	Includes adaptive management route for new eruption along Southwest Rift Zone.	None.
Operators, Initial Allocation of Air Tours, and Aircraft Types	Reflects IOA (26,664 IOA issued to ten operators (five helicopter operators, two fixed-wing operators, and three with unknown aircraft).	N/A	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the seven operators that have reported operating in the period from 2017-2019. Then it would move to competitive bidding.	The initial allocation would reflect the proportional number of air tours reported over the Park and the existing aircraft types of each of the seven operators that have reported operating in the period from 2017-2019. Then it would move to competitive bidding.

Glossary

The Act	National Parks Air Tour Management Act of 2000
ADS-B	Automatic Dependent Surveillance-Broadcast
AGL	Above Ground Level
ATMP	Air Tour Management Plan
EA	Environmental Assessment
FAA	Federal Aviation Administration
FSDO	Flight Standards District Office
HI Manual	Hawai‘i Air Tour Common Procedures Manual
IOA	Interim Operating Authority
NEPA	National Environmental Policy Act
NPS	National Park Service
Park	Hawai‘i Volcanoes National Park
PEPC	Planning, Environment & Public Comment System
QT	Quiet Technology



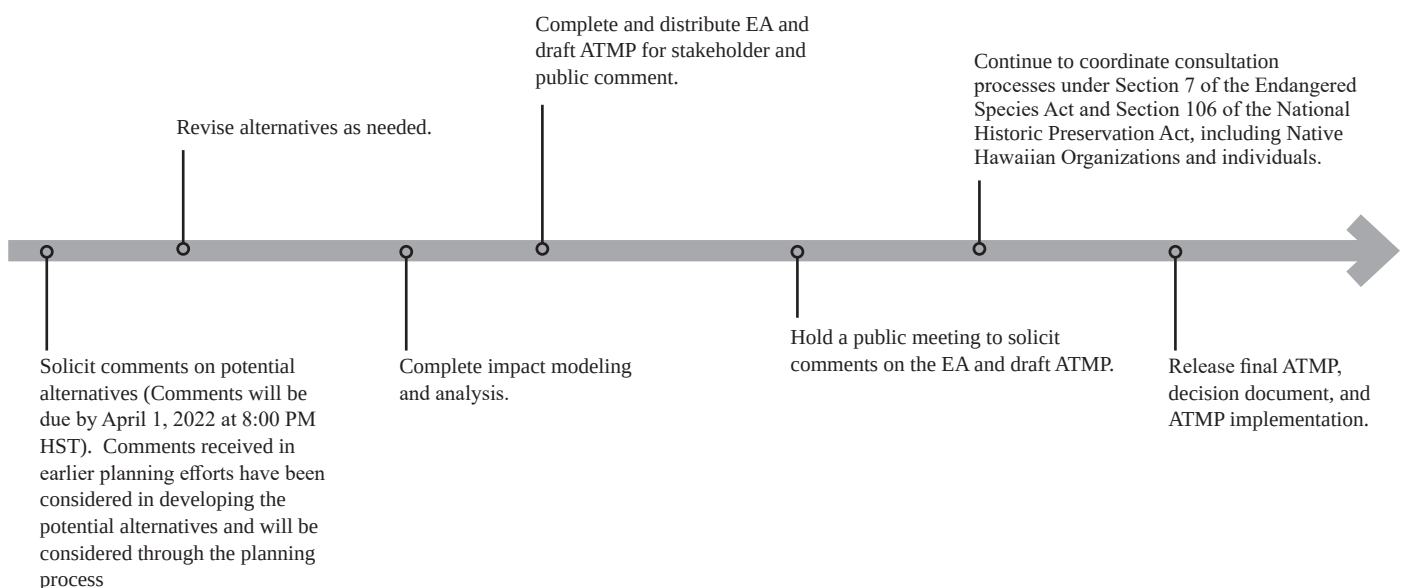
Next Steps

This public scoping period represents the first opportunity to be involved in the current planning process. During this scoping period, the project planning team would like to receive comments on the potential alternatives. After this public scoping process has concluded, the agencies will prepare an EA to comply with NEPA and a draft ATMP. Important steps in the planning process are in the graphic below.

The FAA and the NPS are also identifying resources that are listed in or eligible for listing in the National Register of Historic Places that could be affected by air tours operating under the proposed ATMP. This includes any historic districts, sites, buildings, structures, objects or landscapes, including traditional cultural properties. If members of the public have any information on historic properties that they believe would be helpful in this effort, including properties outside of the Park, we welcome that assistance.

The FAA and the NPS are also seeking to identify additional individuals or organizations that may be interested in participating in Section 106 consultations for the ATMP as consulting parties. We want to ensure that we include anyone that may have information or expertise to share.

Should you have information you wish to provide regarding historic properties or are interested in participating in the Section 106 review process as a consulting party, please contact Cathy Nadals at 240-446-5086 or Catherine.L.Nadals@FAA.gov and copy the ATMP Team at ATMPTeam@dot.gov. Please note that this contact information is only for correspondence related to the Section 106 process and comments not related to the Section 106 process will not be accepted or relayed via email. Instructions for general public comment on the potential alternatives described in this newsletter are provided below.



Instructions for Public Comment

Please comment on any alternative and/or alternative element described above. The agencies are seeking substantive comments that describe why something will or will not work, provide new ideas or factual information to correct or adjust assumptions made, or present reasonable alternatives other than those described. Comments that merely support or oppose the proposals are not considered substantive. Commenters may wish to consider the following questions:

- What elements of the alternatives do you think are most important? Why?
- What other information should the planning team consider when analyzing the alternatives?
- Are there other elements or ideas that should be considered and analyzed that are not already presented? What is missing, and why should it be considered?
- Are there other resources or impact topics that should be considered in the analysis?
- What other comments and suggestions do you have?

Comment submission using the Planning, Environment & Public Comment (PEPC) system is preferred, although written comments sent via postal mail will also be accepted. If you do not have access to a computer, use the attached comment form, following directions on the form. Comments will not be accepted via email.

Comments may be submitted using the [PEPC system](https://parkplanning.nps.gov/HawaiiVolcanoesATMP) (<https://parkplanning.nps.gov/HawaiiVolcanoesATMP>) by **April 1, 2022 at 8:00 PM HST**.

Written comments may be sent via postal mail to the following address:

Volpe National Transportation Systems Center
Kaitlyn Rimol, V-326
Attn: Hawai'i Volcanoes National Park ATMP
55 Broadway
Cambridge, MA 02142

Send Us Your Comments!

PLEASE SUBMIT YOUR COMMENTS BY APRIL 1, 2022 AT 8:00 PM HST.

Please submit comments electronically by visiting: <https://parkplanning.nps.gov/HawaiiVolcanoesATMP>. Once on the website, select “Open for Comment” to provide your thoughts on these preliminary alternatives. If you do not have access to a computer, you can send us your comments on this comment form.

Do you wish to remain on the mailing list for the Air Tour Management Plan ? YES___ NO___

Please print your name and address in the space provided. If the mailing label we used is incorrect, please indicate any corrections in the space below. To keep our mailing list accurate, please check the boxes below that apply.

- ☐ Change my address.
- ☐ Add my name to the mailing list.
- ☐ Remove my name from the mailing list.
- ☐ Send me information by e-mail.

Name: _____

Organization, if any: _____

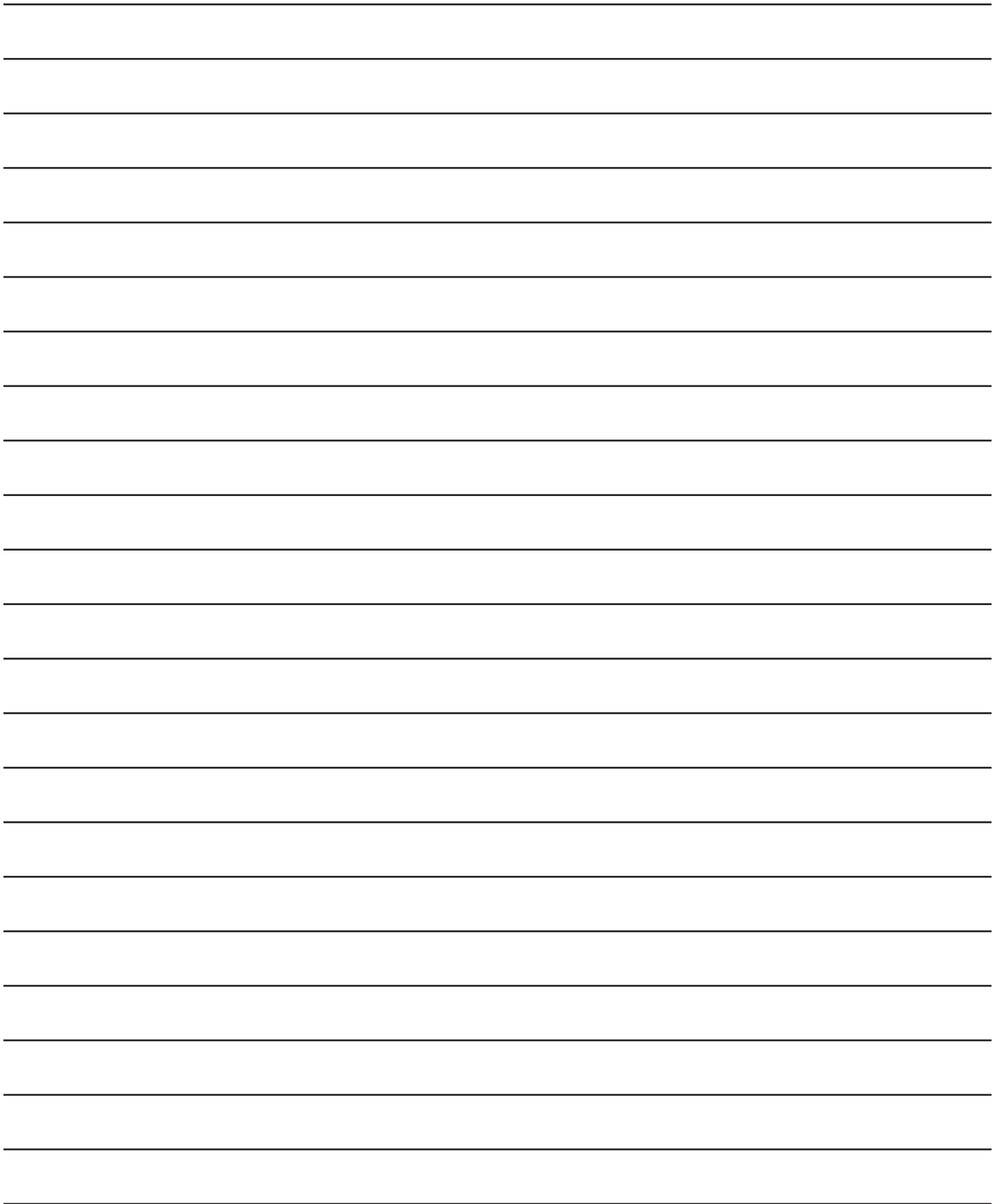
Mailing Address: _____

City/State/Zip: _____

Email: _____

Below, please write any comments or feedback related to information provided in this newsletter. Please include additional sheets of paper as necessary. When complete, please fold this form in half, showing the preprinted address on the outside, tape it closed (no staples please), add postage, and drop in the mail.

Comments will not be accepted by fax, e-mail, or any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.



Name: _____

Address: _____

ADD
POSTAGE
HERE

Volpe National Transportation Systems Center
Kaitlyn Rimol, V-326
Attn: Hawai'i Volcanoes National Park ATMP
55 Broadway
Cambridge, MA 02142

**US Department of Transportation
Federal Aviation Administration**



**US Department of the Interior
National Park Service**



Hawai'i Volcanoes National Park

Air Tour Management Plan

Summary of Comments Received During Scoping for the Environmental Assessment

November 2022

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INTRODUCTION

An Air Tour Management Plan (ATMP) would provide the terms and conditions for commercial air tours conducted over Hawai‘i Volcanoes National Park (Park) pursuant to the National Parks Air Tour Management Act (Act) of 2000. The Act requires that the Federal Aviation Administration (FAA) in cooperation with the National Park Service (NPS) (collectively, the agencies) establish an ATMP or voluntary agreement for each National Park System unit for which one or more applications to conduct commercial air tours has been submitted, unless that unit is exempt from this requirement because 50 or fewer commercial air tour operations are conducted over the Park on an annual basis. 49 U.S.C. § 40128(a)(5).

The objective of establishing an ATMP for the Park is to develop acceptable and effective measures to mitigate or prevent the significant adverse impacts, if any, of commercial air tours on natural and cultural resources, Native Hawaiian sacred sites and ceremonial areas, wilderness character, and visitor experience.

The agencies invited the public to comment on potential alternatives for an ATMP for the Park as part of the National Environmental Policy Act (NEPA) public scoping process. The Park notified the public of the scoping period by issuing a press release, posting notice on the Park’s website and social media, and sending emails and hard copy mailings to the Park’s civic engagement stakeholder list and congressional officials. In addition, Park staff responded to media inquiries and requests for interviews. The agencies accepted comments from February 28 through April 1, 2022. The NPS published a newsletter describing the potential alternatives on the NPS Planning, Environment, and Public Comment (PEPC) website at the start of the scoping period and included the newsletter in the Park’s emails and hard copy mailing notifications. The newsletter on potential alternatives provided a project introduction, the purpose and need for the project, resources for consideration in the Environmental Assessment (EA), elements common to all the alternatives, and an overview of four potential alternatives including routes, altitudes, time-of-day restrictions, restrictions for particular events, maximum numbers of flights, and other provisions. The potential draft alternatives also include a justification for the provisions and conditions designed to protect Park resources and visitor experience.

Any comments entered into PEPC by members of the general public, as well as any written comments mailed to the NPS, were considered and included in the project file. The agencies will use public and stakeholder input to further refine or dismiss alternatives and potentially to consider new alternatives. The agencies will also use public input to inform the environmental analysis. Alternatives that are carried forward and analyzed in the EA will be available for public review and comment as part of the public comment period on the EA. This *Public Comment Summary Report* provides a summary of the substantive comments submitted during the public scoping period.

COMMENT ANALYSIS METHODOLOGY

Comment analysis is a process used to compile and correlate similar comments into a usable format for the agencies’ decision-makers and the program team. Comment analysis assists the agencies in organizing, clarifying, and addressing information and aids in identifying the topics and issues to be evaluated and considered throughout the ATMP planning process.

The process includes five main components:

- developing a coding structure;
- employing a comment database for comment management;
- reviewing and coding of comments;

- interpreting and analyzing the comments to identify issues and themes; and
- preparing a comment summary.

A coding structure was developed to help sort comments into logical groups by topic and issue. The coding structure was designed to capture the content of the comments rather than to restrict or exclude any ideas.

The NPS PEPC database was used to manage the public comments received. The database stores the full text of all correspondence and allows each comment to be coded by topic and category. The agencies read and analyzed all comments

Under each code, all comments were grouped by similar themes, and those groups were summarized with concern statements.

COMMENT ANALYSIS

In total, 957 correspondences were received, of which 22 were duplicates. Therefore, the agencies received a total of 935 unique correspondences, which included 1,449 discrete comments. The term “correspondence,” as used in this report, refers to each submission offered by a commenter. The term “comment,” as used in this report, refers to an individual issue or concern raised by a commenter that was coded by topic and category. A single commenter may have raised multiple comments within a correspondence. Similarly, multiple commenters raised many of the same comments. Of the correspondences received, eight were identified as form letters. These form letters opposed the ATMP for various reasons all captured in the comment summaries below. The eight form letters were signed by a combined total of 465 signatories. There were other correspondences that were excerpts or shorter versions of the eight form letters, but the comment management software did not capture them as form letters.

SUMMARY OF COMMENTS

The following section summarizes the comments received during the scoping period and is organized by code. The summarized text is formatted into concern statements to identify the thematic issues or concerns represented by comments within the code. The agencies only coded comments with substantive content. Substantive comments raise, debate, or question a point of fact or elements of the potential alternatives. Comments that merely support or oppose the potential alternatives are not considered substantive. There were 518 non-substantive comments received during the scoping period.

ADV100 Adverse Impacts: Soundscape Impacts

1. Commenters stated that air tour noise adversely affects opportunities to experience quiet, peace, solitude, tranquility, and opportunities to hear natural sounds; adversely affects visitors that come to the Park to experience natural soundscapes or visit the backcountry and Kīlauea summit; adversely affects residents’ health and triggers post-traumatic stress disorder (PTSD) for military personnel and veterans; and that air tours are incompatible with wilderness. Commenters also stated that air tours interfere with park visitor experience and park interpretive programs.
2. Commenters noted that many helicopters are heard at the same time or very frequently throughout the day at the Park, and increasing the altitude of aircrafts would disperse sound further.
3. Commenters stated that air tours interfere with acoustic-based bird surveys, avian studies, and interrupt recordings of bird species such as the ōma‘o and the ‘apapane. One commenter noted the noise over Highway 11 negatively impacts the education and safety at nearby schools.

ADV200 Adverse Impacts: Wildlife/Biological Impacts

1. Commenters expressed concern about the negative impacts air tours would have on wildlife, specifically noting increases in heart rate, injury, stress, and predation, in addition to decreased hatching success and interferences with communication and breeding.
2. Commenters also noted that noise from air tours would adversely affect native species such as honey creepers, nēnē, Hawaiian hawks, ‘apapane, ‘i‘iwi, and pueo.

ADV300 Adverse Impacts: Endangered Species Impacts

1. Commenters noted effects from air tourism, such as noise and wind turbulence, would have a negative impact on endangered species such as nēnē, Hawaiian hoary bat, ‘i‘iwi, ‘akiapōlā‘au, and ‘io, and their critical habitat. Concern was also expressed about impacts to the nearby Keauhou Bird Conservation Center.
2. Commenters stated that limiting air tours could result in more ground-based visitors which would have an impact on endangered species.

ADV400 Adverse Impacts: Wilderness Character Impacts

1. Commenters opposed flights over wilderness and backcountry areas such as Mauna Loa and Nāpau, noting that air tours are incompatible with wilderness character and impact visitor experience.
2. Commenters suggested restrictions on flights within 0.5 miles of wilderness, and increasing the minimum altitudes above wilderness.

ADV500 Adverse Impacts: Cultural Resource Impacts

1. Commenters noted the importance of the Park to Native Hawaiians and that the Park contains culturally significant resources, sites, temples, and burial grounds. Commenters noted air tours disrupt traditional and customary practices and activities of spiritual and cultural significance. Commenters noted the presence of Tutu Pele and importance of sites such as Kaluapele and Wahinekapu.
2. A commenter noted that the park is eligible for listing as a Traditional Cultural Property due to the importance to Native Hawaiians and their culture.

ADV600 Adverse Impacts: Visual Impacts

1. Commenters noted air tours cause visual impacts that impede enjoyment of scenic qualities such as night skies, wilderness, and scenic vistas.

ADV700 Adverse Impacts: Equity

1. Commenters noted that banning air tours limits the elderly and those with disabilities from viewing the Park.
2. Commenters noted that air tours do not meet Americans with Disabilities Act (ADA) requirements.
3. Commenters stated that a disproportionately small number of people who can afford or who can physically fit on the aircraft for air tours cause adverse impacts for most visitors and island residents.

ADV800 Adverse Impacts: Climate Change, Greenhouse Gasses, and Air Quality

1. Commenters stated that air tours contribute to air pollution, increased carbon footprint, and greenhouse gas emissions, which contribute to hazardous health conditions and harmful effects on ecosystems like the 'ōhi'a forest. Commenters also noted that ultra-fine particles have been associated with cardiovascular and neurological effects to humans, and are likely to affect the health of insects and other animals under the path of air tours.

ADV900 Adverse Impacts: Other

1. Commenters noted the restrictive measures in the ATMP would effectively eliminate air tours over the Park or introduce potentially unsafe policies for pilots. These commenters also stated Hawai'i air tours are the most regulated in the country and the proposals target an important part of the economy for the Island of Hawai'i.
2. Commenters voiced concern about accidents, unnecessary increased risk of danger due to accidents caused by weather and winds affecting air traffic safety, and concern for the potential for fires after an accident which would harm flora, fauna, and humans.

ALT100 Alternatives: Substantive Support for Alternative 1 – No Action

1. Commenters expressed support for Alternative 1 because it would allow these operations to continue to contribute to the overall economy of the State.

ALT150 Alternatives: Substantive Opposition for Alternative 1 – No Action

1. Commenters expressed opposition to Alternative 1 as it does not improve the current conditions and continues to cause impacts to noise, natural and cultural resources, wilderness character, and ground-based user experience.
2. Commenters suggested limiting flights but opposed Alternative 1 noting that the continuation of Interim Operating Authority (IOA) is significantly higher than the actual annual overflights since reporting began in 2013. Commenters also noted that one operator is flying 75% of the current flights and all operators combined are flying less than half of the IOA.

ALT200 Alternatives: Substantive Support for Alternative 2 – No Air Tours in Planning Area

1. Commenters expressed support for Alternative 2 as it provides the greatest protection from pollution, noise, and others adverse impacts from air tours. Commenters noted Alternative 2 would protect Native Hawaiian cultural practices, educational experiences, mental health, biological resources, endangered species, wilderness character, and ground-based visitor experience.

ALT250 Alternatives: Substantive Opposition for Alternative 2 – No Air Tours in Planning Area

1. Commenters opposed Alternative 2 for reasons such as interfering with accessibility of the Park and for the potential of causing a concentration of aircraft over communities near the ½-mile buffer, and as aircraft maneuver for position, loiter, and circle at altitudes above 5,000 feet (ft.) above ground level (AGL).

ALT300 Alternatives: Substantive Support for Alternative 3 – Mitigation Measures

1. Commenters supported Alternative 3 on the basis that it restricts the visual and auditory impacts to Park visitors, provides quiet technology incentives, and includes restrictions such as limited operating hours, establishing no fly days on Sundays, and restricting circling or loitering.
2. Commenters suggested reducing the number of flights on Saturday and proposed a lower Kahuku route from Alternative 4, and altering the Pu‘u‘ō‘ō route to fixed entry and exit at the ocean.

ALT350 Alternatives: Substantive Opposition for Alternative 3 – Mitigation Measures

1. Commenters expressed opposition to certain elements of Alternative 3 noting that the compressed tour hours would result in increased noise during a short time span and a concentration of aircraft in areas such as the remote coastline, Route 11, Pāhala, Pu‘u‘ō‘ō, Nāmakaniipao Campground, Kīlauea Military Camp, Volcano Golf Course and residential area, Steam Vents, Sulphur Banks, Kīlauea Visitor Center, Volcano School of Arts and Sciences, and Volcano Village.
2. Commenters stated that Alternative 3 would still result in aircraft noise and produce the same issues within the Park to a lesser degree such as impacts to park users’ enjoyment and serenity, wildlife, ecosystems, wilderness character, and cultural resources and practices.

ALT400 Alternatives: Substantive Support for Alternative 4 – East Rift Zone

1. Commenters expressed support for elements of Alternative 4 including the limitations on the number of flights and days on which flights can occur in addition to the flight routes that are restricted to the East Rift Zone and further away from Kīpukapuauulu, an important bird watching trail, and populated areas of the Park.

ALT450 Alternatives: Substantive Opposition for Alternative 4 – East Rift Zone

1. Commenters opposed Alternative 4 because it would lead to an increased concentration of aircraft along the Pu‘u‘ō‘ō route, the coastal zone, and the East Rift Zone. Commenters also noted that Alternative 4 would impact the Park’s natural and cultural resources, wilderness character, and the visitor experience. Commenters also noted opposition to Alternative 4 because it would only provide one no-fly day per week.

CUL100: Native Hawaiian Organizations (NHO)/Kūpuna Concerns

1. Commenters expressed opposition to air tours, stating Native Hawaiians and Kūpuna believe the Kīlauea caldera is sacred, and suggested alternatives such as increasing the no-fly zone higher than the planning area.

ELE100 ATMP Elements: Annual Number of Air Tours

1. Commenters suggested general limits to the annual number of flights and suggested various options including no fly days and caps on the number of tours per day.

ELE200 ATMP Elements: Routes and Altitudes

1. Commenters suggested revisions to proposed routes and altitudes such as moving routes to fly offshore, increasing buffers, and changing the altitudes to 1,500 ft., 3,000 ft., 4,000 ft., or 5,000 ft. AGL as these measures would avoid highly populated areas and reduce impacts to wildlife, ecosystems, and cultural resources.

ELE400 ATMP Elements: Day/Time

1. Commenters expressed support of the proposed time and day restrictions to protect sacred places and sensitive habitats and to reduce noise impacts but also suggested permitting flights only one day a week and other flight times such as 10AM-3PM, 1PM-5PM, and 7PM-9PM.
2. Commenters noted that proposed flight times can interfere with cultural practices that occur at sunrise and sunset.

ELE500 ATMP Elements: Other

1. Commenters called for increased and measurable ways to enforce restrictions as well as flight monitoring and systems to track complaints and violations.
2. Commenters requested consultation regarding applicability with the Federal Coastal Zone Management Act (CZMA) as well as consultations with Hawai'i residents.
3. Commenters expressed concern regarding the 2-month notice requirement for cultural practices and recommended that qualifying events be clearly outlined.
4. Commenters stated that loitering and circling should not be permitted along any route and that quiet technology should be required for all helicopters without any special hours or days.
5. Commenters expressed concern that the alternatives are too restrictive and may cause safety concerns for the pilots.
6. Commenters suggested aircraft include clear identification numbers on the bottom of the aircraft so individuals can identify them and file a report if necessary. Commenters also noted frustration in reporting violations and requested instructions.

FAV100: Benefits of Air Tours

1. Commenters identified benefits of air tours such as increased revenue for the State; reductions in the number of visitors in wilderness or over-crowded areas; the ability to share the culture and history of Hawai'i; accessibility of the Park to handicapped, disabled, and elderly; ability to provide a unique vantage point of the Park; and that air tours do not require Park infrastructure or personnel.

PRO100 Process Comments: Impact Analysis

1. Several commenters suggested that Federal agencies validate data provided by operators to ensure accuracy.
2. Commenters requested disclosure of the impacts of air tourism on the economy, sacred sites, Park infrastructure, climate change, air quality, noise pollution, noise resulting from the use of quiet technology, wilderness, safety, wildlife, endangered birds and nēnē, ADA accessibility, environmental justice, and local residents. One commenter stated indirect impacts must be thoroughly analyzed and presented in the overall analysis.
3. Many commenters requested that the impacts to nearby residences and communities be analyzed including outside the planning area.

PRO200 Process Comments: Public Review

1. Commenters stated concern that the agencies have not coordinated with or requested input from Native Hawaiian communities and individuals, stakeholders, residents, or air tour operators.
2. Commenters noted the difficulty in finding and commenting on the document and commenters voiced concern on the request for substantive comments rather than voting on a preferred alternative.

PRO300 Process Comments: Alternatives Considered

1. Commenters suggested a blend of the elements from Alternatives 3 and 4, such as keeping the flight paths from Alternative 4 but with the mandatory interpretive training and education as well as quiet technology incentives of only allowing quiet technology flights on Wednesdays; limited time of day restrictions from Alternative 3 with the more limited routes in Alternative 4; no loitering/circling per Alternative 3; daily flight caps from Alternative 4; making the Southwest Rift Zone a regular route in Alternative 3; adding a Kahuku route as in Alternative 4; setting minimum altitudes at 2,000 ft. AGL on all routes; mandatory interpretive training; and 3-mile event restrictions.
2. Commenters proposed another alternative that restricts air tours in all areas of the Park and for a greater distance outside the Park.

PRO400 Process Comments: Other

1. Commenters requested more information on ATMP timelines as well as practical, measurable resource protection objectives along the lines of desired future conditions, which when combined with systematic monitoring can be used as the basis for future evaluation of the effectiveness of the plan in accomplishing its resource protection goals.

PRO500 Process Comments: NEPA

1. Commenters noted the Park has conducted a proper planning process in accordance with Council of Environmental Quality NEPA implementing regulations and the NPS NEPA Handbook 2015.

APPENDIX K

CZMA Compliance



www.hawaii.gov/dbedt/czm

APPLICATION FOR CZM FEDERAL CONSISTENCY REVIEW

Project/Activity Title or Description: Air Tour Management Plan for Hawai'i Volcanoes National Park

Location: Hawai'i Volcanoes National Park and within ½-mile of its boundary, airspace below 5,000 ft. AGL

Island: Hawai'i

Tax Map Key: _____

Applicant or Agency

Federal Aviation Administration, Attn: Eric Elmore

Name of Applicant or Agency

800 Independence Ave SW, Suite 900W

Mailing Address

Washington, DC 20591

City / State / Zip Code

202-267-8335

Phone

eric.elmore@faa.gov

E-mail Address

Agent or Representative for Applicant

Agent or Representative for Applicant

Mailing Address

City / State / Zip Code

Phone

E-mail Address

CZM Consistency Determination or Certification

✓ Check the applicable type of federal action below and sign.



Federal Agency Activity

CZM Consistency Determination: "The proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawaii Coastal Zone Management Program."

Signature **ERIC M ELMORE** Digitally signed by ERIC M ELMORE
Date: 2023.04.24 15:01:24 -04'00'

Date _____



Federal Permit or License

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____

Date _____



Federal Grants and Assistance

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____

Date _____

Submit Application By: Email - Debra.L.Mendes@hawaii.gov

USPS Mail - Office of Planning & Sustainable Development, P.O. Box 2359, Honolulu, Hawaii 96804

For Questions or Help Contact: Debra Mendes | Email: Debra.L.Mendes@hawaii.gov | Phone: (808) 587-2840



HAWAII CZM PROGRAM FEDERAL CONSISTENCY ASSESSMENT FORM

Federal regulations (15 CFR Part 930) require that an evaluation of consistency with the relevant enforceable policies of the Hawaii CZM Program be provided. This assessment form is organized according to the Hawaii CZM objectives and their supporting policies (Hawaii Revised Statutes § 205A-2) to help the Hawaii CZM Program evaluate the consistency of the proposed action. An independent evaluation would need to be submitted in lieu of using this form for a consistency review.

For Help Contact: Debra Mendes | Email: Debra.L.Mendes@hawaii.gov | Phone: (808) 587-2840

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public. Policies:

- 1) Improve coordination and funding of coastal recreational planning and management.
- 2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas.
 - b) Requiring restoration of coastal resources that have significant recreational and ecosystem value, including but not limited to coral reefs, surfing sites, fishponds, sand beaches, and coastal dunes, when these resources will be unavoidably damaged by development; or requiring monetary compensation to the State for recreation when restoration is not feasible or desirable.
 - c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value.
 - d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation.
 - e) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources.
 - f) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters.
 - g) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing.
 - h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting that dedication against the requirements of Hawaii Revised Statutes, section 46-6.

RECREATIONAL RESOURCES (continued)

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action occur in or adjacent to a dedicated public right-of-way? E.g., public beach access, inland or coastal hiking trail, shared-use path	☐	☒
2. Will the proposed action affect public access to or along the shoreline?	☐	☒
3. Is the project parcel adjacent to the shoreline?	☒	☐
4. Is the project site on or adjacent to a sandy beach?	☒	☐
5. Is the project site in or adjacent to a state or county park?	☒	☐
6. Is the project site in or adjacent to a water body such as a stream, river, pond, lake, or ocean?	☒	☐
7. Will the proposed action occur in or affect an ocean or coastal recreation area, swimming area, surf site, fishing or gathering area, or boating area?	☐	☒

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

The action is to implement an air tour management plan (ATMP) for Hawai'i Volcanoes National Park (the Park) pursuant to the National Parks Air Tour Management Act (NPATMA), 49 U.S.C. § 40128. Commercial air tours have been operating over the Park since before NPATMA was enacted in 2000. The ATMP applies to commercial air tours over the Park or within ½-mile outside the Park's boundary during which aircraft fly below 5,000 feet (ft.) above ground level (AGL). This is referred to as the ATMP planning area. Prior to NPATMA, commercial air tours within the ATMP planning area were subject only to FAA's general safety regulations. At that time there were no limits on the number of air tours that could be conducted per year and no designated routes or altitudes for flights.

NPATMA required the FAA to grant interim operating authority (IOA) to existing commercial air tour operators that applied for it. 49 U.S.C. § 40128(c)(1). Specifically, the FAA was required to grant IOA that authorized the greater of the number of commercial air tour flights over the Park during the 12-month period prior to the enactment of NPATMA, or the average number of commercial air tour flights within the 36-month period prior to the enactment of NPATMA. Id. § 40128(c)(2). Since 2005, commercial air tours over the Park have been conducted pursuant to IOA issued by the FAA in accordance with NPATMA. IOA does not itself include any operating parameters (e.g., routes, altitudes, time of day, etc.) for commercial air tours other than an upper limit of the total number of air tours operators may conduct each year.

Currently, ten commercial air tour operators currently hold IOA to fly up to a combined total of 26,664 commercial air tours per year over the Park. The three-year average number of commercial air tours conducted over the Park from 2017-2019 across all operators is 11,376, which the FAA and the National Park Service (NPS) consider to be the existing condition of commercial air tours within the ATMP planning area. There are currently no designated flight routes for commercial air tours or no-fly zones within the ATMP planning area. The environmental assessment (EA) includes a depiction of available information regarding likely commercial air tour operations over and adjacent to the Park in Figure 2 in Section 2.4. Minimum altitudes for commercial air tours within the ATMP planning area are flown in accordance with the HI Common Procedures Manual, from 500-1,500 ft. AGL, weather dependent and contingent on location over the island. In most locations over the Park, the HI Common Procedures Manual requires helicopters to fly at a minimum 500 ft. AGL. Those areas are also depicted in Figure 2. There currently

HISTORIC RESOURCES

Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- 1) Identify and analyze significant archaeological resources.
- 2) Maximize information retention through preservation of remains and artifacts or salvage operations.
- 3) Support state goals for protection, restoration, interpretation, and display of historic resources.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Is the project site within a designated historic or cultural district?	☒	☐
2. Is the project site listed on or nominated to the Hawaii or National Register of Historic Places?	☒	☐
3. Has the project site been surveyed for historic or archaeological resources?	☐	☒
4. Has the State Historic Preservation Division been consulted?	☒	☐
5. Does the project parcel include undeveloped land which has not been surveyed by an archaeologist?	☒	☐
6. Is the project site within or adjacent to a Hawaiian fishpond or historic settlement area?	☐	☒

HISTORIC RESOURCES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the "yes" responses to questions 1, 2, 4, and 5 above, portions of the ATMP planning area are within a designated cultural or historic district, listed on or nominated to the Hawai'i or National Register of Historic Places, and include undeveloped land which has not been surveyed by an archeologist, and the State Historic Preservation Division (SHPD) has been consulted per the agencies' responsibilities in accordance with Section 106 of the National Historic Preservation Act. It should be noted that the project is regulating commercial air tour use of the airspace, and does not involve land use within the ATMP planning area. Implementation of the ATMP would not result in ground-disturbing activities or development that would result in physical effects to historic or prehistoric resources.

Because the ATMP manages air tours that are currently occurring, it is consistent with the CZM policy supporting state goals for protection, restoration, interpretation, and display of historic resources. The objective of the ATMP is, in part, to develop acceptable and effective measures to mitigate or prevent significant adverse impacts, if any, of commercial air tour operations on the Park's cultural landscapes and resources, and areas of historic and spiritual significance to Native Hawaiians. Information retention through preservation of remains and artifacts or salvage operations would continue after implementation of the ATMP.

Significant archeological resources and other cultural resources (as indicated by those eligible or listed on the National Register of Historic Places) were identified during the Section 106 process. The ATMP is protective of historic resources because it includes measures designed to protect these resources, such as a designated route, minimum altitudes, and annual and daily air tour limits that do not exist under the existing condition. Refer to Section 3.4.2 of the EA for a discussion of the environmental consequences associated with cultural resources and historic properties within the area of potential effects. Refer to Appendix G, Cultural Resources Consultation and Summary, for information on the Section 106 process, including historic properties identified during this process, consultation with Section 106 consulting parties, and the agencies' finding of effects analysis describing the ATMP's effect on historic properties. To this end, the agencies have identified and analyzed significant archeological resources as part of this effects analysis, and have concluded that the ATMP would have No Adverse Effect on historic properties.

The agencies have evaluated the ATMP and have found that implementation of the ATMP would not interfere with the Hawai'i coastal zone management objective for historic resources, which is to protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture. The ATMP will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program with respect to historic resources.

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

- 1) Identify valued scenic resources in the coastal zone management area.
- 2) Ensure that new developments are compatible with their visual environment by designing and locating those developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.
- 3) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources.
- 4) Encourage those developments that are not coastal dependent to locate in inland areas.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action alter any natural landforms or existing public views to and along the shoreline?	☐	☒
2. Does the proposed action involve the construction of a multi-story structure?	☐	☒
3. Is the project site located on or adjacent to an undeveloped parcel, including a beach or oceanfront land?	☒	☐
4. Does the proposed action involve the construction of a structure visible between the nearest coastal roadway and the shoreline?	☐	☒
5. Will the proposed action involve constructing or placing a structure in waters seaward of the shoreline?	☐	☒

SCENIC AND OPEN SPACE RESOURCES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the “yes” response to question 3 above, portions of the ATMP planning area located on or adjacent to an undeveloped parcel, including a beach or oceanfront land. The project site includes airspace above areas of undeveloped open space, including undeveloped coastal areas, which are a part of the Park. The project is regulating commercial air tour use of the airspace, and does not involve land use within the ATMP planning area. Implementation of the ATMP would not result in ground-disturbing activities or development, and commercial air tours would not take off or land within the ATMP planning area. To this end, because the project does not include new development which is typically associated with land use or other ground disturbing activities, the ATMP is fully consistent with the CZM policy to ensure that new developments are compatible with their visual environment by designing and locating those developments to minimize the alteration of natural landforms and existing public views to and along the shoreline. For the same reasons, it is also fully consistent with the policy to encourage those developments that are not coastal dependent to locate in inland areas.

The agencies have identified valued scenic resources in the coastal zone management area in the EA (refer to Section 3.8.1, Affected Environment for Visual Effects). Because the ATMP would manage air tours that are currently occurring, it is consistent with the CZM policy of preserving, maintaining, and, where desirable, improving and restoring shoreline open space and scenic resources. Access to scenic and open space resources, including natural landforms and shoreline open space, would not be affected by the ATMP. Natural landforms and existing public views to and along the shoreline would not be altered by the ATMP.

The ATMP is protective of scenic and open space resources because it includes measures designed to protect these resources, such as a designated route, minimum altitudes, and annual and daily air tour limits that do not exist under the existing condition. Refer to Section 3.8.2 of the EA for a discussion of the environmental consequences associated with visual effects including scenic resources. Refer to Section 3.10.2 of the EA for a discussion of the environmental consequences associated with publicly-owned open space resources.

The agencies have evaluated the ATMP and have found that implementation of the ATMP would not interfere with the Hawai‘i coastal zone management objective for scenic and open space resources, which is to protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources. The ATMP will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai‘i CZM Program with respect to scenic and open space resources.

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- 1) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources.
- 2) Improve the technical basis for natural resource management.
- 3) Preserve valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes.
- 4) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs.
- 5) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve dredge or fill activities?	☐	☒
2. Is the project site within the Special Management Area (SMA) or the Shoreline Setback Area?	☒	☐
3. Is the project site within the State Conservation District?	☒	☐
4. Will the proposed action involve some form of discharge or placement of material into a body of water or wetland?	☐	☒
5. Will the proposed action require earthwork, grading, clearing, grubbing, or stockpiling?	☐	☒
6. Will the proposed action include the construction of waste treatment facilities, such as injection wells, discharge pipes, or septic systems?	☐	☒
7. Will the proposed action involve the construction or installation of a stormwater discharge or conveyance system?	☐	☒
8. Is an intermittent or perennial stream located on or adjacent to the project parcel?	☐	☒

COASTAL ECOSYSTEMS (continued)

	<u>Yes</u>	<u>No</u>
9. Does the project site provide habitat for endangered species of plants, birds, or mammals?	☒	☐
10. Is any such habitat located near the project site?	☒	☐
11. Is a wetland located on the project site or parcel?	☒	☐
12. Is the project site situated in or abutting a Natural Area Reserve, Marine Life Conservation District, Marine Fisheries Management Area, or an estuary?	☐	☒
13. Will the proposed action occur on or near a coral reef or coral colonies?	☐	☒

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the "yes" responses to questions 2, 3, and 9-11 above, portions of the ATMP planning area are within the SMA or Shoreline Setback Area, the State Conservation District, overlap habitat for endangered species of plants, birds, and mammals, and a wetland. However, it should be noted that the project is regulating commercial air tour use of the airspace above these areas, and does not involve land use within the ATMP planning area. Implementation of the ATMP would not result in ground-disturbing activities or development. Commercial air tours would not take off or land within the ATMP planning area. To this end, because the project does not involve land use or ground disturbance, the ATMP would not have the potential to affect water resources or water quality, so the ATMP is fully consistent with CZM policies to minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs; and to promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

As to the individual enforceable policies related to coastal ecosystems, they do not appear to directly apply to management of airspace above a national park through an ATMP. Commercial air tours are not evaluated for their effects on coastal ecosystems elsewhere in the state where NPATMA does not require their regulation. Because the ATMP manages air tours that are currently occurring, it is consistent with the CZM policies of exercising an overall conservation ethic, and practicing stewardship in the protection, use, and development of marine and coastal resources; preserving valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes; and improving the technical basis for natural resource management.

The ATMP is protective of coastal ecosystems because it includes measures designed to protect these ecosystems and their features, such as a designated route, minimum altitudes, and annual and daily air tour limits that do not exist under the existing condition. Physical features of suitable habitat and designated critical habitat for threatened and endangered species would not be altered by the ATMP. Refer to Section 3.3 of the EA for a discussion of biological resources within the project area and potential effects. Refer to Appendix H, Section 7 Consultation, for additional information on the consultation process with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service under Section 7 of the Endangered Species Act.

The agencies have evaluated the ATMP and have found that implementation would not interfere with the Hawai'i coastal zone management objective for coastal ecosystems, which is to protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems. The ATMP will be undertaken in a manner consistent to the maximum extent

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- 1) Concentrate coastal development in appropriate areas.
- 2) Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area.
- 3) Direct the location and expansion of coastal development to areas designated and used for that development and permit reasonable long-term growth at those areas, and permit coastal development outside of designated areas when:
 - a) Use of designated locations is not feasible;
 - b) Adverse environmental effects and risks from coastal hazards are minimized; and
 - c) The development is important to the State's economy.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve a harbor or port?	☐	☒
2. Is the proposed action a visitor industry facility or a visitor industry related activity?	☒	☐
3. Does the project site include agricultural lands or lands designated for such use?	☐	☒
4. Does the proposed action relate to commercial fishing or seafood production?	☐	☒
5. Is the proposed action related to energy production or transmission?	☐	☒

ECONOMIC USES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the "yes" response to question 2 above, air tours are a recreational resource for those who want to view the Park from an aerial vantage point. It should be noted that the project is regulating commercial air tour use of the airspace, and does not involve land use within the ATMP planning area. Implementation of the ATMP would not result in ground-disturbing activities or development. Commercial air tours would not take off or land within the ATMP planning area. To this end, because the ATMP does not involve development and would not preclude coastal development from occurring, it is fully consistent with all of the enforceable policies for economic uses in the coastal zone, all of which relate to coastal development.

The ATMP would allow 1,565 air tours per year to be conducted within the ATMP planning area. The air tour industry contributes to the state's economy and this would continue to occur as a result of the ATMP. Refer to Section 3.7 of the EA for a discussion of the socioeconomic conditions associated with the implementation of the ATMP.

The agencies have evaluated the ATMP and have found that its implementation would not interfere with the Hawai'i coastal zone management objective for economic uses, which is to provide public or private facilities and improvements important to the State's economy in suitable locations. The ATMP will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program with respect to economic uses.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from coastal hazards.

Policies:

- 1) Develop and communicate adequate information about the risks of coastal hazards.
- 2) Control development, including planning and zoning control, in areas subject to coastal hazards.
- 3) Ensure that developments comply with requirements of the National Flood Insurance Program.
- 4) Prevent coastal flooding from inland projects.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Is the project site on or adjacent to a sandy beach?	☒	☐
2. If "Yes" to question no. 1, has the project parcel or adjoining shoreline areas experienced erosion?	☐	☒
3. Is the project site within a potential tsunami inundation area? Refer to tsunami evacuation maps at: https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/	☒	☐
4. Is the project site within a flood hazard area according to a FEMA Flood Insurance Rate Map? Refer to FEMA maps at: https://msc.fema.gov/portal/home	☒	☐
5. Is the project site susceptible to or has it experienced ocean related impacts? E.g., sea water inundation, high tides, wave runup, sea level rise, storm surge, ground water intrusion, or subsidence.	☐	☒
6. Is the project site susceptible to or has it experienced either stormwater or groundwater impacts?	☐	☒

COASTAL HAZARDS (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the "yes" responses to questions 1, 3, and 4 above, portions of the ATMP planning area are adjacent to and/or within a sandy beach, a potential tsunami inundation area according to tsunami evacuation maps, and a flood hazard area according to a FEMA Flood Insurance Rate Map. However, it should be noted that the project is regulating commercial air tour use of the airspace, and does not involve land use within the ATMP planning area. Implementation of the ATMP would not result in ground-disturbing activities or development. Commercial air tours would not take off or land within the ATMP planning area. The ATMP would have no impacts to coastal development in areas subject to coastal hazards or coastal flooding from inland projects within or adjacent to the Park because it does not involve ground disturbance that could result in physical effects to these areas, or change or increase the potential for coastal hazards. The ATMP does not involve land use or development that could be used as a tsunami evacuation area or be subject to coastal flooding, coastal hazards, or the requirements of the National Flood Insurance Program, so the ATMP is fully consistent with the enforceable CZM policies related to coastal hazards.

The agencies have evaluated the ATMP and have found that implementation would not interfere with the Hawai'i coastal zone management objective for coastal hazards, which is to reduce hazard to life and property from coastal hazards. The ATMP will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program with respect to coastal hazards.

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- 1) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development.
- 2) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements.
- 3) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. List the permits or approvals required for the proposed action and provide the status of each in the Discussion section below.	☐	☒
2. Does the proposed action conform with state and county land use designations for the site?	☒	☐
3. Has an environmental impact statement or environmental assessment been prepared for the proposed action?	☒	☐
4. Has the public, applicable neighborhood board, or community groups been notified of the proposed action?	☒	☐

MANAGING DEVELOPMENT (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the "yes" responses to questions 2-4 above, the ATMP conforms with state and county land use for designations for the site; necessitated the preparation of an environmental assessment; and ensured that the public, applicable neighborhood board, and/or community groups have been notified of the ATMP.

As to the individual enforceable policies related to managing development, they do not appear to directly apply to management of airspace above a national park through an ATMP. Implementation of the ATMP would not result in ground-disturbing activities or development. Commercial air tours would not take off or land within the ATMP planning area. Because the ATMP does not involve land use or other activities related to development, it is consistent with the policies to use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development; and to facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements.

The ATMP would manage air tours that are currently occurring. The agencies have prepared an EA pursuant to the National Environmental Policy Act (NEPA) for the ATMP, and will release the EA for public comment and hold a public meeting on the draft ATMP and environmental documentation, which is consistent with the CZM policy of communicating the potential short and long-term impacts of the project and in terms understandable to the public to facilitate public participation in the planning and review process. Refer to Appendix D, Distribution List, for the distribution list of the agencies and parties that were provided copies of the EA and draft ATMP documents for participation in the NEPA process.

The agencies have evaluated the ATMP and have found that implementation of the ATMP would not interfere with the Hawai'i coastal zone management objective for managing development, which is to improve the development review process, communication, and public participation in the management of coastal resources and hazards. The ATMP will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai'i CZM Program with respect to managing development.

PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- 1) Promote public involvement in coastal zone management processes.
- 2) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities.
- 3) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Has information about the proposed action been disseminated to the public, applicable neighborhood board, or community groups?	☒	☐
2. Has the public been provided an opportunity to comment on the proposed action?	☒	☐
3. Has or will a public hearing or public informational meeting be held?	☒	☐

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

As indicated by the “yes” responses to questions 1-3 above, information about the ATMP has been disseminated to the public, applicable neighborhood board, or community groups; the public has been provided an opportunity to comment on the ATMP; and a public hearing or public informational will be held.

As to the individual enforceable policies related to public participation, they do not appear to directly apply to management of airspace above a national park through an ATMP. However, the agencies have complied with the Council on Environmental Quality’s NEPA regulations by preparing an EA disclosing the potential for environmental impacts associated with the ATMP, and are acting in a manner consistent with the CZM policies of promoting public involvement, disseminating information, and organizing policy dialogues in response to concerns by initiating a public scoping period and releasing the EA for public review and comment. On February 28, 2022, the agencies initiated a 30-day NEPA public scoping process and put forth three potential ATMP alternatives for public and stakeholder review and comment. The comments received were used to further refine or dismiss alternatives as described in the EA and were also used to inform the environmental analysis. Refer to Appendix J, Public Scoping Newsletter and Comment Summary Report, for more information. As stated above, the agencies will release the EA for public comment and hold a public meeting on the draft ATMP and environmental documentation. Refer to Appendix D, Distribution List, for a list of agencies and parties that have been notified of the publication of the EA and draft ATMP.

The agencies have evaluated the ATMP and have found that its implementation would not interfere with the Hawai’i coastal zone management objective for public participation, which is to stimulate public awareness, education, and participation in coastal management. The ATMP will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawai’i CZM Program with respect to public participation.

BEACH AND COASTAL DUNE PROTECTION

Objective:

- (A) Protect beaches and coastal dunes for:
 - (i) Public use and recreation;
 - (ii) The benefit of coastal ecosystems; and
 - (iii) Use as natural buffers against coastal hazards; and
- (B) Coordinate and fund beach management and protection.

Policies:

- 1) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion.
- 2) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities.
- 3) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities.
- 4) Minimize grading of and damage to coastal dunes.
- 5) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor.
- 6) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action occur on a shoreline parcel?	☐	☒
2. Will the proposed action occur in an area or parcel that is adjacent to a shoreline parcel?	☐	☒
3. Is the proposed action located within the shoreline setback area?	☐	☒
4. Will the proposed action affect natural shoreline processes?	☐	☒
5. Will the proposed action affect recreational activities?	☐	☒
6. Will the proposed action affect public access to or along the shoreline?	☐	☒



BEACH AND COASTAL DUNE PROTECTION (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

N/A

MARINE AND COASTAL RESOURCES

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

- 1) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial.
- 2) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency.
- 3) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone.
- 4) Promote research, study, and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources.
- 5) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Check either Yes or No for each of the following questions, and provide an explanation or information for Yes responses in the Discussion section that follows:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action involve the use or development of marine or coastal resources?	☐	☒
2. Will the proposed action affect the use or development of marine or coastal resources?	☐	☒
3. Does the proposed action involve research of ocean processes or resources?	☐	☒
4. Will the proposed action occur in or abutting a Natural Area Reserve, Marine Life Conservation District, Marine Fisheries Management Area, or an estuary?	☐	☒



MARINE AND COASTAL RESOURCES (continued)

Discussion: Explain “Yes” responses to the questions above. If more space is needed, attach a separate sheet, or append additional information.

N/A