# Draft Environmental Assessment for an Air Tour Management Plan for

**Bandelier National Monument** 

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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 a draft Environmental Assessment (EA) for Bandelier National Monument (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.<sup>1,2</sup> Currently, there is one commercial air tour operator that conducts air tours over the Park with IOA for 126 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-ofday, 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 landscapes and resources, areas of historic and spiritual significance to Native Americans, 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-

<sup>&</sup>lt;sup>1</sup> 49 U.S.C. § 40128(c)(2)(A)(i-ii)

<sup>&</sup>lt;sup>2</sup> 70 FR 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 (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. On May 1, 2020, the Court granted the petition and ordered the agencies to submit a schedule to bring 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 March 31, 2024, to complete the ATMP for the Park.

On September 3, 2021, the FAA, in cooperation with the NPS, published a Federal Register notice announcing the availability of the draft ATMP for the Park. The draft ATMP proposed to adopt existing conditions with adjustments to mitigate and address impacts to Park soundscapes, visitor experience, Wilderness character, and wildlife. The agencies held a public meeting on September 15, 2021, and accepted comments on the draft ATMP until October 13, 2021.

The FAA, in coordination with the NPS, initiated consultation with Native American Tribes (tribes) under Section 106 of the National Historic Preservation Act (NHPA) on the draft ATMP in March 2021, and subsequently held Section 106 tribal consultation meetings in 2021 and 2022 with Pueblo of Santa Clara, Pueblo de Cochiti, Pueblo of Pojoaque, and Pueblo de San Ildefonso. Based on feedback during tribal consultation and comments received on the September 2021 draft ATMP, the NPS and FAA agreed to prepare a draft EA to evaluate reasonable alternatives for the ATMP.

## 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 <sup>1</sup>/<sub>2</sub>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; and
- 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**

<u>Purpose</u>: 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).

<u>Need</u>: 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, tribal 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 landscapes and resources, Wilderness character, visitor experience, and Native American Traditional Cultural Properties (TCPs) including Native American sacred landscapes, sites, and ceremonial areas.

#### 1.5 Environmental Impact Categories Not Analyzed in Detail

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

- The topics 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, Amphibians, Invertebrates, and Plants)

The ATMP would not result in ground disturbance or in-water activities that could affect fish, amphibians, invertebrates, or plants. The proposed minimum altitude of 2,600 ft. AGL included in the ATMP action alternative under which commercial air tours would be permitted within the ATMP planning area (Alternative 3) would create sufficient separation between commercial air tours and fish, amphibians, and invertebrates 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 Cruz 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 to 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 this experimental design of this study, commercial air tours do not generate continuous noise, and the proposed minimum altitude in the action alternative that would permit air tours in the ATMP planning area (2,600 ft. AGL) provides 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.

Air tours could result in some effects on air quality, such as emissions or the potential for lowflying aircraft to generate dust, which could indirectly affect plants. While air quality is a topic that will be analyzed in detail in the draft EA, the minimum altitude considered by the ATMP action alternative under which commercial air tours would be permitted within the ATMP planning area (2,600 ft. AGL) creates 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 impact topics from further analysis.

#### Geologic Resources

While geologic resources is not an impact category FAA traditionally examines, NPS has agencywide policies (see NPS Management Policies (2006), Chapter 4) for managing geologic resources within the National Park System. Geologic features are the products and physical components of geologic processes, and include rocks, caves, canyons, terraces, rock outcrops and formations, and paleontological resources. Geologic processes are the natural physical and chemical forces that act within natural systems and on human developments across a broad spectrum of space and time, and include erosion, sedimentation, and volcanic activity, among others. Geologic resources in the ATMP planning area include features in the Jemez Mountains and Pajarito Plateau. Many geologic features have cultural significance to associated tribal people and those associations are analyzed under cultural resources. Under the No Action Alternative and Alternative 3, commercial air tours would continue to occur over these features. Commercial air tours currently occur at altitudes between 800 and 1,000 ft. Under Alternative 3, commercial air tours would not occur below 10,000 ft. mean sea level (MSL) which results in altitudes of at least 2,600 ft. AGL. A review for potential vibrational impacts on historic buildings and natural features suggests that the potential for damage resulting from fixed-wing propeller aircraft overflights is minimal, as the fundamental blade passage frequency of the aircraft is well above the resonant natural frequency of these structures (i.e., the natural vibrational tendency associated with a structure). Additionally, the vibration amplitude associated with fixed-wing aircraft overflights is well below recommended limits described to avoid structural damage (Hanson et al., 1991; Volpe, 2014). Therefore, no vibrational impacts to geologic resources within the ATMP planning area would be anticipated under any of the alternatives.

#### 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 topic has not been analyzed in detail in the 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 Part 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 the event of an emergency landing inside the Park (regardless of whether the aircraft intended to fly over the Park), once the aircraft has safely landed and any medical or other

emergency issues have been addressed, the operator should 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 Part 2.17). Prior approval from the Park superintendent or designee is required for any nonemergency landing of aircraft within the Park boundaries, including replacement aircraft deployed to retrieve passengers who are not able to exit via ground transportation (36 CFR Part 2.17).

If an air tour crash occurs, the NPS or a cooperating emergency response agency such as Los Alamos Police or Fire Departments 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 Fire Management Plan (NPS, 2005) 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 topic has not been analyzed in detail in the draft EA.

#### Farmlands

The ATMP planning area, as described in Section 2.3, ATMP Planning Area, does not contain soils that are designated as prime/unique farmland soils and the ATMP would not involve ground disturbance that would have the potential to convert farmland to non-agricultural uses. Therefore, this impact category has not been analyzed in detail in the 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 the 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 from the Park or cause measurable increases in the consumption of energy resources that would exceed available or future supplies of natural or energy resources. Therefore, this topic is not analyzed in detail in the 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 topic has not been analyzed in detail in the draft EA.

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

Due to the absence of Wild and Scenic Rivers, absence of ground disturbing activities, and the proposed altitudes in the alternatives, 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 the draft EA.

#### **Coastal Resources**

The ATMP planning area for the Park does not include coastal areas or areas that are within a designated coastal zone. Therefore, coastal resources have not been analyzed in detail in the draft EA.

#### **Resources of Valles Caldera National Preserve**

A portion of Valles Caldera National Preserve is within the ATMP planning area. However, the EA does not analyze impacts of air tours to Valles Caldera National Preserve's resources since air tours are not authorized over Valles Caldera National Preserve.

## **2** ALTERNATIVES

#### 2.1 Alternatives Development

A draft ATMP for the Park was released for public review in September, 2021. It was developed by the FAA and the NPS and proposed to largely adopt existing conditions with adjustments to mitigate and address impacts to Park soundscapes, visitor experience, Wilderness character, and wildlife. This first draft also removed a route that flew over Valles Caldera National Preserve because there is no authorization to conduct air tours there. As a result of the agencies' consideration of the comments received during the public review period for the 2021 draft ATMP which largely preserved the existing air tour conditions, including input from tribes through the Section 106 process, the agencies decided to prepare an EA to consider alternatives and to respond to public and tribal concerns. An NPS interdisciplinary team comprised of subject matter experts from the NPS's Natural Sounds and Night Skies Division, Environmental Quality Division, Intermountain Regional Office, and the Park developed the alternatives to be considered in the EA, evaluating the noise impacts of existing air tour routes and operations, the Park's cultural and natural resources, the Park's existing and natural acoustic environment, visitor experience, visual resources, and the concerns about the 2021 draft ATMP expressed by tribes and the public, as well as potential protective measures that could be included in an ATMP.

In developing alternatives, the interdisciplinary team also considered Park-specific planning and management documents, as well as the purpose and significance for which the Park was established. The agencies acknowledged the essential and foundational cultural elements that led to the establishment of the Park as they developed and evaluated alternatives. The primary purpose of the Park is to protect and preserve the outstanding features of the Pajarito Plateau, including both natural and cultural resources found there. The Park's archeological sites and natural features remain an integral component of pueblo culture and provide a context for continuing traditional practices of pueblo culture (NPS, 2015). Consistent with this purpose, tribal sacred sites, eligible TCPs, and ancestral sites listed in or eligible for listing in the National Register of Historic Places (National Register) are the most significant cultural and natural resources of the Park. The dense cultural landscape is comprised of over 3,000 ancestral sites, dozens of actively used shrines and sacred sites, and includes diverse ecosystems across an elevation gradient of nearly 5,000 ft. Important tribal sites are distributed throughout the entirety of the Park. Ancestral sites, as well as other tribal sacred sites located on the landscape, are all considered by many tribes to a part of the traditional landscape utilized by the indigenous people from time immemorial. Pueblo people continue to practice traditional ceremonies and make pilgrimages to sacred sites within the Park. These are important to the continuation of pueblo traditional practices in contemporary pueblo communities. Maintaining

these resources and respecting the privacy and sacredness of ceremonies of the pueblo people is considered an essential component of the cultural significance of the Park's purpose.

The alternatives development process also considered the preliminary environmental analysis conducted in support of the preparation of the 2021 draft ATMP using routes, altitudes, reporting data provided by the commercial air tour operator, and other relevant information, to model 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 considered, in addition to acoustic monitoring information, and analyzed by the NPS's interdisciplinary planning team in development of the alternatives considered in the draft EA.

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 addressed any aviation safety concerns. The three alternatives presented in this draft EA, including the No Action Alternative, represent the alternatives advanced for environmental review and incorporate public comments and tribal feedback received to date on the ATMP planning efforts for the Park. Alternatives may be further developed or modified through the NEPA process in response to public, consulting party, and agency comments on the draft EA and draft ATMP.

#### 2.2 Alternatives Considered but Eliminated from Further Study

#### 2.2.1 Air Tours above Existing Levels

The agencies considered but eliminated alternatives that would allow commercial air tours to fly at levels above existing conditions (the three-year average of operator reported flights from 2017-2019). These alternatives were eliminated from further study because the NPS determined they would result in unacceptable impacts to the Park's cultural resources, tribal sacred sites, and ceremonial areas (NPS Management Policies § 1.4.7.1, 2006), and do not meet the purpose and need for the ATMP.

The NPS determined that air tours above existing conditions inhibits the NPS's ability to meet the Park's purpose and values, which are described in its Foundation Document (NPS, 2015). These purposes include continuing to provide a context for traditional practices of pueblo culture (NPS, 2015). Air tours above existing conditions would unacceptably impact existing sacred sites and cultural practices of pueblo culture within the Park and the cultural landscape as a whole. The Pueblo of Pojoaque have 2,000 ancestral sites within the Park, many of which continue to be used today. The Pueblo de San Ildefonso have noted that the documented historic properties within the Park are material evidence of the occupation of the monument by their ancestors, whose spiritual presence continues to reside within this domain and that there are extensive resources within the Park that are not documented and are associated with traditional and ceremonial practices conducted since time immemorial into the present. The Pueblo of Acoma have noted that cultural landscapes, shrines, and gathering places associated with their culture are present in the Park. The Pueblo of Santa Clara has deep ties to the Park and its surrounding cultural landscape. The Pueblo de Cochiti have stated that the Park is an invaluable cultural landscape and a place of retreat and prayer to ensure the strength of their community and continued way of life. All have unequivocally stated that air tours are inappropriate and adversely impact the cultural resources identified above, the cultural landscape and, in some cases, violate their privacy during the ceremonial use of the land (see Appendix G, *Cultural Resources Consultation and Summary*).

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, which includes this Park, and therefore, the NPS is directed to prevent inappropriate noise from unacceptably impacting cultural and historic resource sounds associated with park purposes (NPS Management Policies § 5.3.1.7, 2006). Air tours above existing conditions would impede the NPS's ability to fully meet the Park's purposes of protecting cultural resources and providing for the cultural practices of pueblo culture. For these reasons, the agencies have considered but eliminated alternatives that would increase air tours above existing air tour numbers.

#### 2.2.2 Air Tours on Routes Presented in the 2021 Draft ATMP

The agencies considered but eliminated the alternative that would authorize air tour operations consistent with current operator reported operating parameters as presented in the 2021 draft ATMP. Comments received during the public comment period for the prior draft ATMP (September 3, 2021 – October 13, 2021) and information learned through tribal consultation demonstrate that impacts from the existing number of air tours flown on current operator reported routes would have too great of an impact on Park resources to carry forward and those impacts cannot be further reduced. Specifically, the routes included in the 2021 draft ATMP infringed upon the privacy of the pueblo people and disrupted the traditional use and sacredness of many important sites for the pueblos, including National Register listed or eligible TCPs, ancestral sites, and the cultural landscape; air tours, in general, introduce a conflict with the core components of the Park by allowing an opportunity for those outside of the tribal community to infringe upon the sacredness of these ancestral lands. The elevation of the terrain overflown limits the NPS's ability to reduce these impacts by raising the minimum altitudes flown by commercial air tours on these routes.<sup>3</sup> Based on information learned during consultation and from the comments received from the pueblos (see Appendix G, Cultural Resources Consultation and Summary), air tours on the routes presented would unreasonably

<sup>&</sup>lt;sup>3</sup> Flights above 10,000 ft. MSL for 30 minutes or longer require supplemental oxygen.

interfere with the cultural landscape of the Park and the connections to TCPs and unreasonably detract from the sacred sites and tribal practices of the pueblo people. Because of the comments received on the September 3, 2021 draft ATMP, the NPS has determined that the impacts of this alternative to cultural practices, sacred sites, and the cultural landscape of the Park are too great and inhibit the NPS's ability to provide the pueblos their cultural connection to the landscape which is essential to meeting the purpose of the Park. Thus, this alternative was considered but dismissed from further evaluation.

#### 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. The ATMP planning area for this Park includes the main Park unit and the Tsankawi Unit of the Park, located 12 miles northeast of the main Park unit (see Figure 2), as well as the area within ½-mile of the boundary of both the main park and the Tsankawi Unit.

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.<sup>4</sup> 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.

<sup>&</sup>lt;sup>4</sup> Ground level elevations within the Park extend from the Rio Grande at 5,300 ft. to the summit of Cerro Grande at 10,200 ft. on the caldera rim.



Figure 1. Geographic 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 law including applicable regulations that govern aviation safety (14 CFR Part 136, Appendix A (formerly Special Federal Aviation Regulation 71)). This alternative includes IOA which the FAA was required to grant to existing operators under the Act (70 FR 36,456 (June 23, 2005)).

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

One commercial air tour operator currently holds IOA to fly up to 126 commercial air tours per year over the Park (see Table 1). The yearly average number of commercial air tours conducted over the Park from 2017-2019 by the operator is 101 air tours per year. These tours occurred, on average, over 99 days per year (thus, a single tour occurred on most days, approximately 98% of the time). 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 the commercial air tour operator 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 the 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 COVID-19 pandemic resulted in abnormalities in travel patterns across the U.S., 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 agencies also decided against using the IOA as the baseline because IOA was based on numbers reported by the operator more than 20 years ago and does not represent the most current or reliable operational data. The three-year average of commercial tours from 2017-2019 is 101 tours per year, which is approximately 80% of IOA. Under the No Action Alternative, the operator could fly additional air tours up to their IOA, or they may fly fewer tours. The No Action Alternative represents a continuation of existing conditions and for the purposes of analysis uses the three-year average of flights from 2017-2019. The impacts of IOA are not analyzed nor included as the baseline condition for this alternative, though in any given year the operator could conduct additional tours up to their IOA or they may fly fewer air tours than in the period from 2017-2019.

Under the Act, the FAA was required to grant IOA for commercial air tours over the Park and adjacent pueblo tribal lands that are outside of the Park but within ½-mile of its boundary as a temporary measure until an ATMP could be established. The operations specifications for the one commercial air tour operator who currently holds IOA to fly up to 126 commercial air tours per year over the Park also reflect 43 IOA for pueblo tribal lands adjacent to the Park. The IOA for the adjacent pueblo tribal lands is coextensive with and issued in connection with the IOA issued for the Park. Because the Act provides that an ATMP extends ½-mile outside the boundary of a National Park System unit, the IOA for the adjacent pueblo tribal lands is limited to those portions of the pueblo tribal lands that are outside the Park but within ½-mile of its boundary. IOA for adjacent pueblo tribal lands does not apply to those portions of the pueblo tribal lands does not apply to those portions of the sellon the park are outside the Park and the regulatory status of those lands would be unchanged by the ATMP.

#### 2.4.2 Commercial Air Tour Routes and Altitudes

There are no designated flight routes under the No Action Alternative. The figure for this alternative (Figure 2) depicts general route information provided by the existing commercial air

tour operator. Likely commercial air tour operations are dispersed around the generalized routes provided by the operator depicted in Figure 2. For purposes of defining the No Action Alternative, the route information in Figure 2 is considered in this draft EA. Northeast of the Park and within the ATMP planning area there is restricted airspace over Los Alamos National Laboratory. No commercial air tour operators have the authority to fly within restricted airspace nor do they have authority to fly less than 5,000 ft. AGL over Valles Caldera National Preserve, a separate unit of the National Park System located to the northwest of the Park's boundary.

Under the No Action Alternative, commercial air tours on routes shown in Figure 2 would likely continue to be conducted at operator-reported altitudes of 800 or 1,000 ft. AGL, depending on the route, 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. The altitudes of 800 and 1,000 ft. AGL result in the MSL altitude callouts shown in Figure 2.<sup>5</sup>

The air tour operator is 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.<sup>6</sup> The operator 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 Operator and Aircraft Types

The one operator that holds IOA for the Park reported flying commercial air tours over the Park between 2013 and 2020. This operator reported flying fixed-wing aircraft including a Cessna 182 and a Cessna 207 over the Park during this period. Table 1 summarizes this operator's aircraft type, IOA, reported tours, and the 2017-2019 average number of reported tours over the Park.

<sup>&</sup>lt;sup>5</sup> Altitude expressed in units AGL is a measurement of the distance between the ground surface and the aircraft, whereas altitude expressed in MSL refers to the altitude of an aircraft above sea level, regardless of the terrain below it. Aircraft flying at a constant MSL altitude would simultaneously fly at varying AGL altitudes, and vice versa, assuming uneven terrain is present below the aircraft.

<sup>&</sup>lt;sup>6</sup> See Air Tour Reporting Guidance Memo (2020),

https://www.faa.gov/about/office\_org/headquarters\_offices/ara/programs/air\_tour\_management\_plan/program\_ \_\_information\_

Operator	Aircraft Type	2013	2014	2015	2016	2017	2018	2019	2020 <sup>7</sup>	2017- 2019 Avg.	ΙΟΑ
Southwest Safaris	Cessna 182 and T207A	132	125	127	105	101	76	125	91	101	126

 Table 1. Commercial Air Tour Operator, Aircraft Type, Reported Tours, and IOA.

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 (Preferred Alternative)

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, which

<sup>&</sup>lt;sup>7</sup> Based on unpublished reporting data.

includes the Tsankawi Unit of the Park and the area within ½-mile of its boundary. Alternative 2 would eliminate air tour presence over the sacred sites, National Register listed or eligible TCPs, ancestral sites, and cultural landscapes within the ATMP planning area; maintain confidentiality of sacred sites (Executive Order (EO) 13007, Indian Sacred Sites, dated May 24, 1996); respect the spiritual significance of the Park to tribal people and maintain cultural connections to the Park pursuant to the Park's Foundation Document (NPS, 2015); and prioritize the voices and values of Tribal nations in accordance with the Park's Strategic Action Plan (NPS, 2022). Alternative 2 respects the privacy of the tribal people actively conducting ceremonial practices by eliminating the opportunity for interruptions from air tours to the sacredness of the land. The Presidential Proclamation issued on February 11, 1916, for the Park was solely focused on protecting aboriginal ruins by "reserving these relics of a vanished people" (NPS, 2015). The Park's Foundation Document (NPS, 2015) identifies cultural significance as interwoven throughout the Park's resources. The Park's significance statements that express the Park's resources and values that merit designation as part of the National Park System emphasize that the archeological and natural features must remain as an integral component of pueblo culture and provide a context for continuing traditional practices (NPS, 2015). Alternative 2 is the most protective of Park resources in preserving traditional tribal practices and most closely aligns with the core components, purpose, and significance for which the Park was established.

Alternative 2 would prohibit commercial air tours within the ATMP planning area (i.e., below 5,000 ft. AGL over the Park and outside the Park but within ½-mile of its boundary). 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, or unless otherwise authorized for a specified purpose, commercial air tours would not be allowed to enter the ATMP planning area. Refer to Figure 3 for a depiction of this alternative.

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. 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 the commercial air tour operator is complying with the terms and conditions of the ATMP by not conducting 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 and adjacent pueblo tribal lands 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 (see Section 2.1, Alternatives Development).

#### 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 elsewhere in the region may continue to fly more than ½-mile outside of the Park's boundary, or over the ATMP planning area at or above 5,000 ft. AGL. The operator is unlikely to continue to conduct tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. The operator may fly along the perimeter of the ATMP planning area in order to conduct air tours of destinations other than the Park, as they currently fly multiple tours over different parks and New Mexico lands. Most destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Since the operator cannot fly on the north and northeast sides of the Park because of restricted air space associated with the Los Alamos National Laboratory, nor does the operator have authority to fly over Valles Caldera National Preserve located to the northwest of the Park, it is unlikely there would be new or different impacts in these areas. Due to the flight restrictions to the north and east of the Park, and to reach other regional destinations, the operator may divert flights over the adjacent Pueblo de Cochiti, and public lands more than ½-mile outside Park boundary.

The operator could also choose to move their air tours just above the ATMP planning area. If the operator chose to fly above the ATMP planning area, they would be required to maintain altitudes at or above 5,000 ft. AGL while over that area. The operator 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. However, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. The actual flight path of air tours outside the ATMP planning area would vary due to operator preference and weather conditions at the time of the air tour. The preciseness of routes and altitudes for tours flown on alternative routes are generally subject to

Visual Flight Rules (VFR)<sup>8</sup>, 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 the commercial air tour operator is complying with the terms and conditions of the ATMP. The NPS would conduct Automatic Dependent Surveillance-Broadcast (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 Albuquerque FSDO office. 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.

<sup>&</sup>lt;sup>8</sup> FAA Advisory Circular 91-36D Visual Flight Rules Flight Near Noise-Sensitive Areas



Figure 3. Alternative 2.

#### 2.6 Alternative 3

The NPS developed Alternative 3 to provide opportunities for air tours within the ATMP planning area, while reducing impacts to tribal and cultural resources, wildlife, Wilderness values, and visitor experience. Compared to existing conditions, Alternative 3 would reduce the number of routes from seven to two eastbound routes that directly cross over the Park and avoid looping over Wilderness and following Park canyons. It would also establish a minimum altitude of 10,000 ft. MSL<sup>9</sup> which results in altitudes of at least 2,600 ft. AGL as compared to minimum altitudes of 800 and 1,000 ft. AGL under existing conditions. Refer to Figure 4 for a depiction of this alternative. The FAA reviewed the alternative to ensure it is safe (see Section 2.1, Alternatives Development).

<sup>&</sup>lt;sup>9</sup> Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89. 135.157).

#### 2.6.1 Commercial Air Tours per Year

Alternative 3 would authorize 101 commercial air tours per year within the ATMP planning area, which is consistent with the average number of flights reported on an annual basis from 2017-2019.

On the effective date of the ATMP, the number of flights authorized each year would be allocated to the operator that reported operations over the Park in the period from 2017-2019. The initial allocation would remain in place unless, for example, a competitive bidding process becomes necessary to address a new entrant application.

All IOA for the Park and abutting Pueblo tribal lands 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 the operator could not 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

The two eastbound routes included in Alternative 3, (the ER-N route ("red route") and the ER-S route ("orange route") as depicted in Figure 4), both enter the western boundary of the ATMP planning area and exit along the eastern boundary. The ER-N red route and the ER-S orange route are revised versions of the ER-N red and ER-S orange routes displayed in the No Action Alternative; portions of the ER-N red route were moved for Alternative 3 to avoid sensitive resource areas and the altitude for the entirety of both routes was raised to 10,000 ft. MSL.<sup>10</sup> Refer to Figure 4 for a depiction of the routes and altitudes. The operator could split the total air tours authorized between the two routes or may choose to fly solely either the red or orange route if the total air tours flown per year does not exceed 101. The operator currently does not fly the red or orange route in a westbound direction within the ATMP planning area and under this alternative may not fly over the Park in a westbound direction. The operator may not deviate from the designated routes and altitude 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 at the designated altitude described above. 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. An unknown number of air tours originating elsewhere in the region may continue to fly more than ½-mile outside of the Park's boundary,

<sup>&</sup>lt;sup>10</sup> Supplemental oxygen use is required in unpressurized aircraft flying at altitudes over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89. 135.157).

or over the ATMP planning area at or above 5,000 ft. AGL. The operator is unlikely to continue to conduct tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. The operator may fly along the perimeter of the ATMP planning area in order to conduct air tours of destinations other than the Park, as they currently fly multiple tours over different parks and New Mexico lands. Most destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Since the operator cannot fly on the north and northeast sides of the Park because of restricted air space associated with the Los Alamos National Laboratory, nor does the operator have authority to fly over Valles Caldera National Preserve located to the northwest of the Park, it is unlikely there would be new or different impacts in these areas. Due to the flight restrictions to the north and east of the Park, and to reach other regional destinations, the operator may divert flights over the adjacent Pueblo de Cochiti, and public lands more than ½-mile outside Park boundary.

The operator could also choose to move their air tours just above the ATMP planning area. If the operator chose to fly above the ATMP planning area, they would be required to maintain altitudes at or above 5,000 ft. AGL while over that area. The operator 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. However, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. The actual flight path of air tours outside the ATMP planning area would vary due to operator preference and weather conditions at the time of the air tour. The preciseness of routes and altitudes for tours flown on alternative routes are generally subject to VFR<sup>11</sup>, which is based on the principle of "see and avoid," and therefore may vary greatly.

#### 2.6.3 Commercial Air Tour Aircraft Type

The operator's aircraft types would reflect those reported in the period from 2017-2019 (see Table 1). Any new or replacement aircraft must not exceed the noise level produced by the aircraft being replaced. The operator 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 Restrictions

Air tours would be permitted two hours after sunrise until two hours before sunset, as defined by the National Oceanic and Atmospheric Administration (NOAA). Exceptions to these

<sup>&</sup>lt;sup>11</sup> FAA Advisory Circular 91-36D Visual Flight Rules Flight Near Noise-Sensitive Areas

parameters for quiet technology aircraft are noted in Section 2.6.7, Quiet Technology Incentives. Sunrise and sunset data are available from the NOAA Solar Calculator.<sup>12</sup> Air tours could occur any day of the week.

#### 2.6.5 Restrictions for Particular Events

In addition to the time-of-day restrictions described above, the NPS could establish temporary no-fly periods that apply to air tours for special events or planned Park management. Absent exigent circumstances or emergency operations, the NPS would provide a minimum of 15 days written notice to the operator for any restrictions that temporarily restrict certain areas or certain times of day, or 60 days written notice to the operator for any full-day restrictions in advance of the no-fly period. Events may include tribal ceremonies or other similar events.

#### 2.6.6 Additional Requirements

- <u>Adaptive Management</u>: 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. Adaptive management of the routes, frequency, and timing will be considered, analyzed, and included in this alternative for the protection of cultural and historical resources, including tribal use; biological resources, including raptor protection, threatened and endangered, and migratory birds and other avian species; qualities of Wilderness character; and visitor experiences on the ground. The NPS would conduct monitoring to ensure that this ATMP remains consistent with Park management objectives. The FAA and the NPS will publish additional information for interested parties about the notice and process for adaptive management changes.
- Interpretive Training and Education: When made available by Park staff, the
  operator/pilots would take at least one training course per year conducted by the NPS.
  The training would include Park information that the operator can 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.
- <u>Annual Meeting</u>: The Park staff, the local FAA FSDO, and the operator would be required to meet once per year at the request of either of the agencies to discuss the implementation of the ATMP and any amendments or other changes to the ATMP.
- <u>Reporting, Monitoring, and Enforcement:</u> The operator 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

<sup>&</sup>lt;sup>12</sup> <u>https://www.esrl.noaa.gov/gmd/grad/solcalc/</u>

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.

<u>Emergency Landings</u>: 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 would be required to immediately notify the NPS through Park dispatch or emergency contacts 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 Park visitors and resources (36 CFR Part 2.17). Prior approval from the Park superintendent or designee would be 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.

#### 2.6.7 Quiet Technology Incentives

The Act requires that the ATMP include incentives for the adoption of quiet technology by the commercial air tour operator. This alternative would incentivize the use of quiet technology aircraft by relaxing time-of-day restrictions to allow quiet technology aircraft to conduct air tours beginning one hour after sunrise until one hour before sunset, as defined by NOAA, on all days that flights are authorized. In order to qualify for quiet technology incentives, the operator 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). However, since there is only one operator with an initial allocation, a competitive bidding process would not occur unless, for example, it becomes necessary to address a new entrant application. In the time period between the finalization of an ATMP and the completion of a competitive bidding process, if necessary, the commercial air tour operator would be allocated a certain number of commercial air tours over the Park, referred to as the initial allocation as described in Section 2.6.1, Commercial Air Tours per Year. The initial allocation would authorize Southwest Safaris to conduct 101 air tours per year within the ATMP planning area.

If, in the future, two or more operators were to hold authority to conduct commercial air tours, competitive bidding may also be appropriate to address, for example, an additional 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.



Figure 4. Alternative 3.

### 2.7 Summary Comparison of the ATMP Alternatives

Table 2. Summary Comparison of the ATMP Alternatives.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3
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 protection of the Park's natural and cultural resources, including privacy of tribal practices within the Park. Most closely aligns with the purpose and significance for which the Park was established. Air tours could continue to fly in unrestricted airspace outside the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).	Authorizes up to 101 air tours per year to be conducted on two routes within the ATMP planning area. Air tours could also fly in unrestricted airspace outside the ATMP planning area (i.e., at or above 5,000 ft. AGL or more than ½-mile outside of the Park's boundary).
Annual/Daily Number of Flights	Considers the three-year average of 101 flights per year (based on 2017-2019 reporting data) as the existing condition, though up to 126 air tours per year could be conducted under IOA.	None in ATMP planning area.	Authorizes 101 flights per year.
Routes	No mandatory routes or no-fly zones. See map for depiction of reported routes.	None in ATMP planning area.	Two routes (ER-N, ER-S) that run west-to-east across the ATMP planning area, that reflect routes currently flown by the operator.
Minimum Altitudes	No mandatory minimum altitudes See map for depiction of reported operations. Existing operations range from 800 to 1,000 ft. AGL.	N/A. Operators may fly above the ATMP planning area (at or above 5,000 ft. AGL).	Minimum 10,000 ft. MSL, which results in a minimum of 2,600 ft. AGL. The operator may continue to fly outside of the ATMP planning area where they already fly or fly routes over or around the ATMP planning area similar to existing flight paths but outside of the ATMP planning area.
Time of Day	No restrictions.	N/A	Two hours after sunrise until two hours before sunset for non-quiet technology flights.

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3
Quiet Technology Incentives	None.	N/A	Quiet technology flights may fly one hour after sunrise until one hour before sunset.
Interpretative Training and Education	None.	N/A	When made available by NPS, the NPS would provide yearly mandatory training for air tour pilots regarding Park resources.
Annual Meeting	None.	N/A	The Park staff, the local FAA FSDO, and the operator would be required to meet once per year.
Restrictions for Particular Events	None.	N/A	The NPS can establish no-fly periods and must provide minimum of 15 days written notice to the operator for any restrictions that temporarily restrict certain areas or certain times of day, or 60 days written notice to the operator for any full- day restrictions in advance of the no-fly period for special events or planned Park management. Events may include tribal ceremonies or other similar events.
Monitoring and Enforcement	The operator reports 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 may conduct ADS-B aircraft monitoring and work with the FAA to respond to instances of noncompliance. The FAA FSDO would investigate and respond to all written reports consistent with applicable FAA guidance. 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.
Adaptive Management	None.	N/A	Adaptive management of the route, frequency, and timing would be considered/analyzed. NPS would conduct monitoring to ensure that this ATMP remains consistent with Park management objectives
Initial Allocation of Air Tours and Aircraft Types	Reflects existing conditions of one operator with reported data from 2017-2019.	N/A	The initial allocation would reflect the number of air tours reported over the Park and the existing

Alternative Attributes	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3
			aircraft types of the one operator
			that has reported operating in the
			period from 2017-2019.
			Competitive bidding may result in
			a change to the initial allocation if
			there is a new entrant application.
			Any new or replacement aircraft
			must not exceed the noise level
			produced by the aircraft being
			replaced.

## **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, *Environmental Impact Analysis Methodology*.

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, including Pueblo tribal lands within that area. Environmental impact categories 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 and Socioeconomics; Visual Effects; and Department of Transportation (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 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, Cultural Resources, parks and Section 4(f) resources discussed in Section 3.9, Department of Transportation (DOT) Act Section 4(f) Resources, 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 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, tribal 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, frogs, mountain lions, and bighorn sheep to define territories or aid in attracting mates;
- Sounds produced by bats to locate prey or navigate;
- Sounds received by mice or deer to detect and avoid predators or other danger;
- Sounds produced by physical processes, such as wind in the trees, claps of thunder, or falling water (NPS Management Policies, § 4.9, 2006).

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, 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. Human-generated noise within the Park is concentrated in areas of high visitor use, such as the Visitor Center and Burro Trail, but is also present in less visited areas of the Park, including the trail to Cerro Grande peak. The Park is described as a "very quiet place" with low existing sound levels (White, 2014; NPS, 2015).

To characterize the natural and existing ambient (both with and without air tours), sound level measurements were conducted at four locations across the Park in 2012 (White, 2014). For more explanation for how sound is described, see the *Noise Technical Analysis* (Appendix F, Table 1). The median or L<sub>50</sub> sound level (in decibels, dBA) is the sound level exceeded 50 percent of the day. The median daytime natural ambient (L<sub>nat</sub>) was between 20.1 and 30.6 dBA during the summer months, and between 18.5 and 32.0 dBA during the winter months. The median daytime existing ambient (L<sub>50</sub>) was between 23.2 and 34.9 dBA during the summer months, and between 20.4 and 34.4 dBA during the winter months.

#### 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 uses 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<sub>dn</sub>) 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<sub>Aeq</sub>), 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<sub>max</sub>). These metrics are discussed further in Table 3; a comparison of the sound levels noted in Table 3 to values for a range of everyday sounds can be found in Figure 1 of the *Noise Technical Analysis* (Appendix F). Note that time audible natural ambient was not computed for this Park, as the detailed data required to compute this metric was not available.

Metric	Relevance and Citation
Equivalent	The logarithmic average of commercial air tour sound levels, in dBA, over a
Continuous	12-hour day. The selected 12-hour period is 7 AM to 7 PM to represent typical daytime commercial air tour operating hours.

Table 3. Primary Metrics Used for the Noise Analysis.
Metric	Relevance and Citation
Sound Level, L <sub>Aeq, 12 hr</sub>	
Day-night Average Sound Level, L <sub>dn</sub> (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 decibel (dB) penalty on noise events occurring between 10 PM and 7 AM local time.
	Note: Both L <sub>Aeq, 12hr</sub> and DNL characterize:
	<ul> <li>Increases in both the loudness and duration of noise events;</li> <li>The number of noise events during specific time period (12 hours for LAeq, 12hr and 24-hours for DNL).</li> </ul>
	If there are no nighttime events, then L <sub>Aeq, 12hr</sub> 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	The total time (in minutes) that aircraft noise levels are audible to an attentive listener with normal hearing under natural ambient conditions.
Ambient (not computed for the Park)	The natural ambient is the sound level exceeded 50 percent of the time $L_{50}$ , determined from the natural sound conditions found in a ATMP planning 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	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

Metric	Relevance and Citation
	(Haralabidis et al., 2008); maximum background noise level inside
	classrooms (ANSI/Acoustical Society of America S12.60/Part 1-2010).
Time Above	The amount of time (in minutes) that aircraft sound levels are above a given
52 dBA	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 (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	The loudest sound level, in dBA, generated by the loudest event; it is event-
Sound Level,	based and is independent of the number of operations. $L_{max}$ does not
L <sub>max</sub>	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. 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, though they may be less than the three-year average or increase up to IOA, noise conditions are likely to be similar to existing conditions. For purposes of the *Noise Technical Analysis* (see Appendix F), the No Action Alternative was modeled based on a peak month, average day of commercial air tour activity for the three-year average from 2017-2019 identified as one operation.

Additionally, air tour noise would vary depending on the aircraft and route used for the tour. The existing commercial air tour operator provided route information (depicted in Figure 2) for seven general route options and has reported flying two types of fixed-wing aircraft: a Cessna 182 and a Cessna 207. This results in fourteen potential aircraft/route combinations for analysis. Because the peak month, average day is identified as one operation, for purposes of the *Noise Technical Analysis* (see Appendix F), the No Action Alternative modeled the orange route (ER-S) using a Cessna 182 aircraft. This route and aircraft combination was chosen as a representation of existing activity based on the best available information. Refer to Section 2.4, Alternative 1 (No Action Alternative), and the *Noise Technical Analysis* in Appendix F for additional details on the No Action Alternative and associated noise modeling. Modeling results for the No Action Alternative are presented in Table 4 below. This analysis is based on the three-year average of flights between 2017-2019.

Metric	No Action Alternative	
12-hour Equivalent Sound	Would not exceed 35 dBA.	
Level		
Day-night Average Sound Level	DNL would be 3 dB less than the 12-hour equivalent sound	
	level, and therefore less than 35 dB.	
Time Above 35 dBA	The maximum time that noise from air tours would be	
	above 35 dBA is less than 5 minutes a day*, representing	
	39% of the ATMP planning area. See Figure 5.	
Time Above 52 dBA	The maximum time above 52 dBA experienced across all	
	points modeled would be 0.1 minutes at location point #11	
	(Rio Grande). All other modeled location points would not	
	experience noise above 52 dBA due to air tours.	
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 54.8 dBA at location point #11 (Rio	
	Grande).	

Table 4. Summary of Noise Modeling Metric Results Under the No Action Alternative.

\*In this context, day refers to a 12-hour day, 7 AM to 7 PM, typical air tour operating hours.

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 below 35 dB.



Figure 5. Time Above 35 dBA for Alternative 1 (No Action).

#### 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 air tours within the ATMP planning area, resulting in direct beneficial effects compared to the No Action Alternative and Alternative 3.

#### Alternative 3

Alternative 3 would authorize 101 air tours per year to be conducted within the ATMP planning area. The tours could occur on either of the two designated routes (ER-S orange route and ER-N red route). For the purposes of the *Noise Technical Analysis* (see Appendix F), an average day

under Alternative 3 was modeled based on the average number of operations which may occur in a single day – one operation, using the aircraft and route combination most likely to be utilized under Alternative 3 – a Cessna 182 on the ER-S orange route. In other words, the Cessna 182 - orange route combination was chosen as the most logical representation of an average day of activity based on best available information for existing conditions.

Additionally, noise modeling was performed for the Cessna 207- ER-N red route combination, providing information regarding the potential noise effects of the second authorized aircraft and route under this alternative. Effects under the two scenarios not modeled (Cessna 182 - orange route or Cessna 207 - red route) are anticipated to be similar to the effects predicted by the modeled scenarios.

Table 5 summarizes the modeled noise metric results for the Cessna 182 - orange route, and Table 6 summarizes the modeled noise metrics for the Cessna 207 - red route. Under both scenarios, the 12-hour equivalent sound level would be below 35 dBA within the ATMP planning area, therefore noise contour results are not presented. Similarly, time above 35 dBA is zero minutes within the ATMP planning area under the Cessna 182 - orange route scenario and a contour map is not presented.

Metric	Alternative 3 (Cessna 182 – ER-S Orange Route)
12-hour Equivalent Sound Level	Would not exceed 35 dBA.
Day-night Average Sound Level	DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 35 dB.
Time Above 35 dBA	Sound levels would not exceed 35 dBA within the ATMP planning area.
Time Above 52 dBA	Sound levels would not exceed 52 dBA within the ATMP planning area.
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 28.2 dBA at location point #6 (Turkey Springs).

Table 5. Summary of Noise Modeling Metrics for Alternative 3 (Cessna 182 - Orange Route).

Table 6. Summary of Noise Modeling Metrics for Alternative 3 (Cessna 207 - Red Route).

Metric	Alternative 3 (Cessna 207 – ER-N Red Route)
12-hour Equivalent Sound Level	Would not exceed 35 dBA.

Metric	Alternative 3 (Cessna 207 – ER-N Red Route)
Day-night Average Sound Level	DNL would be 3 dB less than the 12-hour equivalent sound level, and therefore less than 35 dB.
Time Above 35 dBA	The maximum time that noise from air tours would be above 35 dBA is less than 5 minutes a day, representing 53% of the ATMP planning area (see Figure 6).
Time Above 52 dBA	The maximum time above 52 dBA experienced across all points modeled would be 0.5 minutes at location point #10 (Capulin Canyon).
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 57.7 dBA at location point #10 (Capulin Canyon).

Under either scenario modeled, as well as the two scenarios not modeled, 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.



Figure 6. Time Above 35 dBA for Alternative 3 (Cessna 207 - Red Route).

A comparison of impacts to noise and noise-compatible land use between Alternative 3 (Cessna 182 - ER-S orange route scenario) and the No Action Alternative is provided below. This scenario provides the most direct comparison between alternatives, including the effects of the altitude requirement that would be authorized for this route. A comparison between the No Action Alternative and the Cessna 207 - ER-N red route scenario is not provided as the peak month, average day air tour activity under the No Action alternative does not include nor reflect the effects of this aircraft type nor this route; any comparison would be misleading. Because the noise impacts of Alternative 2 cannot be modeled, Alternative 2 was not included in this analysis. Compared to current conditions, Alternative 3, the Cessna 182 - ER-S orange route combination would result in less noise within the ATMP planning area compared to the No Action Alternative.

• 12-hour Equivalent Sound Level (Appendix F, Table 9):

- Compared to the No Action Alternative, the average sound levels for Alternative 3, Cessna 182 ER-S orange route combination are, on average, lower. Under either alternative, the 12-hour equivalent sound level does not exceed 35 dBA; "noise footprint" contours are not produced.
- *Time Above 35 dBA* (Appendix F, Table 8 and Table 10):
  - Compared to the No Action Alternative, the time above 35 dBA for Alternative 3, Cessna 182 - ER-S orange route combination is lower. At location points #5 (Alamo Mesa), #6 (Turkey Springs), #7 (Lower Yapashi) and #11 (Rio Grande) it is reduced from 0.6 minutes to zero minutes. At location point #3 (Frijoles Rim) it is reduced from 0.3 minutes to 0 minutes. At all other locations, time above 35 dBA is zero minutes under both alternatives.
- *Time Above 52 dBA* (Appendix F, Table 11):
  - Time above 52 dBA is reduced from 0.1 minute to zero minutes at location point #11 (Rio Grande). Time above 52 dBA is zero minutes at all other locations under both alternatives.
- Maximum Sound Level (Appendix F, Table 12):
  - Compared to the No Action Alternative, the average sound levels for Alternative
     3, Cessna 182 ER-S orange route combination are on average 13 dBA lower
     across all modeled location points.

# 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, although air tour numbers could increase slightly up to IOA, thus there would be no change in the acoustic environment and natural soundscape of the ATMP planning area and no indirect impacts would be expected to occur under this alternative.

Because Alternative 2 would prohibit air tours within the ATMP planning area and Alternative 3 would reduce the number of routes on which air tours may be conducted within the ATMP planning area, it is reasonably foreseeable that the current air tour operator could seek to make up lost revenue resulting from the implementation of those alternatives in other ways. One of the ways that the operator 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 the air tour operator shifting routes or altitudes to just outside the ATMP planning area. This could result in impacts to acoustic resources and natural soundscapes of 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 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 VFR, which is based on the principle of "see and avoid" and may vary greatly. It is reasonably foreseeable that the operator would continue to fly to points of interest outside of the ATMP planning area. The operator would be unlikely to continue to conduct tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area, but the operator may fly along the perimeter of the ATMP planning area in order to conduct air tours of destinations other than the Park. The operator currently flies multiple tours over other parks and lands across six states (Southwest Safaris, 2022) and could fly these tours more frequently. The majority of destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. The northwest corner of the Park borders Valles Caldera National Preserve, another National Park System unit for which there is currently no authority to conduct air tours, and the northern and eastern sides of the Park border restricted airspace over Los Alamos National Laboratory. Due to flight restrictions to the north and east of the Park, it is unlikely that displaced air tours would result in new or different impacts in these areas. Due to these flight restrictions, there may be a slight increase in flights to the west and south of the ATMP planning area if air tours were displaced outside of the ATMP planning area.

It is highly unlikely that the operator would choose to fly above the ATMP planning area. As they would be required to maintain altitudes at or above 5,000 ft. AGL while over the ATMP planning area, the high elevation of the terrain would require the operator to fly above 10,000 ft. MSL. It is unlikely air tours would fly higher for extended periods of time as supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157). Additionally, flights at or above 5,000 ft. AGL or higher would provide limited value to a sightseeing operation.

The exactness of routes and altitudes for displaced air tours flown outside the perimeter of the ATMP planning area at altitudes below 5,000 ft. AGL flying VFR could vary depending on safety, 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 with enough specificity 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 the operator 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 Part 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.

Although highly unlikely, displaced air tours above the ATMP planning area (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 quite 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.

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 outside the ATMP planning areas as the commercial air tours operating within the ATMP planning area under the No Action Alternative are well below this threshold - less than 35 dBA L<sub>Aeg, 12hr</sub>, equivalent to DNL 32 dBA.

**Cumulative Effects**: As part of the cumulative effects assessment, the FAA and the NPS considered other ongoing and planned actions. The NPS will begin a construction project in the summer of 2023 that will expand an existing parking lot at the Frey Trailhead within the developed area adjacent to Juniper Campground. Construction sounds will include those made by large, earth-moving equipment and machinery to lay asphalt. In the spring of 2024, the NPS will begin construction for a utility replacement project that will rehabilitate and replace most underground utilities at the Park. The project area will include the mesa-top developed area (including NPS housing and Juniper Campground), the Entrance Road, and the main visitor use area in Frijoles Canyon. Construction is expected to last up to one year, including all ground rehabilitation activities. The noise from this operation will include those made by large, earth-moving equipment and small-scale directional drilling activities.

During the spring and early summer months each year (typically April – June) the NPS and the Santa Fe National Forest station a wildland fire Type 3 helicopter at the Interagency Fire Center. The Interagency Fire Center is located at TA-49 on Los Alamos National Laboratory lands adjacent to State Highway 4. This helicopter is deployed as needed to scout fire reports on Park

and other federal lands in the immediate area and is made available for wildland fire initial attack on federal lands nearby. Additionally, the Los Alamos Police Department occasionally responds to search and rescue incidents within the Park using helicopter flights for scouting purposes.

Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. Under any of the alternatives, the NPS would continue current management actions and respond to future Park needs and conditions without major changes in the present course. Alternative 2 could result in some cumulative beneficial effect on the overall acoustic environment of the Park from 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 minimize areas where noise from air tours would be noticeable by reducing the number of routes, which would have a cumulative beneficial effect on the acoustic environment in the ATMP planning area. However, when compared to Alternative 2, Alternative 3 could contribute more cumulative noise than Alternative 2 as some air tours would still be authorized in the ATMP planning area.

# 3.2 Air Quality and Climate Change

# 3.2.1 Affected Environment

# Air Quality

The Clean Air Act divides federal lands into different classifications based on acreage. The Park is classified as a Class I airshed, which means that it is afforded special air quality and visibility protection (NPS, 2020).

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.

Although the Park's air quality is in attainment for all NAAQS, the Park's air quality does not meet the NPS Air Resources Division's recommended benchmarks for visibility, ozone, and nitrogen deposition. Given pollutant exposure, an assessment of air quality indicators, and resources sensitive to air pollution, air quality conditions warrant moderate concern (NPS, 2020a). A potential source of particulates that affect visibility arise from wildfires, as smoke from wildfires could not only affect visibility, but also potentially cause exceedances of the particulate matter (PM<sub>10</sub>) standard for NAAQS under certain wind conditions. The NPS has taken measures to mitigate this risk, such as creating a fire management program for the Park (NPS, 2005). The NPS currently participates in two air quality monitoring programs- the Interagency Monitoring of Protected Visual Environments program and the National Atmospheric Deposition Program. The NPS conducts on-site sampling for these programs (Jacobs et al., 2015).

## Greenhouse Gases

The Intergovernmental Panel on Climate Change estimates that aviation accounted for 4.1% of global transportation greenhouse gas (GHG) emissions (FAA, 2020). GHGs are gases that trap heat in the earth's atmosphere. Naturally occurring and anthropogenic (human-made) GHGs include carbon dioxide ( $CO_2$ ), water vapor ( $H_2O$ ), methane ( $CH_4$ ), nitrous oxide ( $N_2O$ ), and ozone ( $O_3$ ). EPA data indicates that commercial aviation contributed to 6.6% of  $CO_2$  emissions in 2013 in the U. S. (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, 2015a). As a part of the Park's participation in this program, the NPS developed a long-term Climate Action Plan that involved analyzing the anthropogenic carbon footprint of the Park using the EPA's Greenhouse Gas Equivalencies Calculators. Data used to perform the calculations included the amount of electricity purchased, waste sent to the landfill, and fuels consumed.

Initial findings by the NPS show that transportation (which does not include commercial air tours but does include both administrative and visitor activities) was the largest contributor to total GHG emissions for the Park (41.6% of emissions). Energy was the second largest contributor, with 38.9% of emissions; solid waste and other emission sources (such as refrigeration and air conditioning) also contributed to overall Park emissions (NPS and EPA, 2008). These findings provide an initial overview of the carbon footprint of the Park. Further monitoring and analysis will track progress in reducing the Park's carbon footprint into the future.

#### 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 7 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 engineand fuel-specific. The results in Table 7 describe baseline emissions under existing conditions. A range is provided for carbon monoxide because reporting information provided by the commercial air tour operator was not detailed enough to be able to assign a specific number of operations to specific routes; thus, baseline emissions were modeled as all 101 flights on both the WR-S black route and the ER-N (original) red route to account for any possible combination of flights the operator may have flown throughout the year. Other criteria pollutants were less than 0.001 tons per year (TPY) regardless of route analyzed so a range is not provided. Emissions under alternatives can be compared to baseline emissions to indicate potential impacts on air quality within the ATMP planning area.

Criteria Pollutant	Total Annual Emissions (TPY)
Carbon monoxide (CO)	0.205-0.499
Lead (Pb)	<0.001
Nitrogen dioxide (NO <sub>2</sub> )	<0.001
Particulate matter: aerodynamic diameter	<0.001
≤ 2.5 μm (PM <sub>2.5</sub> )	
Particulate matter: aerodynamic diameter	<0.001
≤ 10 μm (PM <sub>10</sub> )	
Sulfur dioxide (SO <sub>2</sub> )	<0.001

Table 7. Summary of Criterial Pollutant Annual Emissions in Tons per Year (TPY) Under the No Action Alternative.

The range of total annual GHG emissions for all sources of commercial air tour aircraft emissions under the No Action Alternative is modeled to be 0.46-1.13 metric tons (MT) of CO<sub>2</sub>. The No Action Alternative would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed. This analysis is based on the three-year average of flights between 2017-2019.

# Alternative 2

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area which would eliminate direct emissions from air tours 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 7) 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 7; 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, tours would be restricted to just two routes (ER-S orange and ER-N red) flown at the operator's discretion with an annual air tour limit (from both routes combined) equal to the annual number of air tours in the No Action Alternative – 101 operations. Because there would be no route-specific air tour limits under Alternative 3, similar to the analysis for the No Action Alternative, both routes were modeled (i.e., all air tours on the ER-S orange route, and all air tours on the ER-N (revised) red route) to estimate the range of emissions changes. Modeling results for Alternative 3 show that there would be negligible change in annual TPY 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 flight miles and routes for each aircraft type and the emission rates used in modeling are aircraft engine-and fuel-specific. The results in Table 8 show that emissions from air tours for all criteria pollutants would result in minimal to no benefit or impact.

Criteria Pollutant	Change in TPY as Compared to the No Action
	Alternative
Carbon monoxide (CO)	-0.228-0.130
Lead (Pb)	<±0.001
Nitrogen dioxide (NO <sub>2</sub> )	<±0.001
Particulate matter: aerodynamic diameter	<±0.001
≤ 2.5 μm (PM <sub>2.5</sub> )	
Particulate matter: aerodynamic diameter	<±0.001
≤ 10 μm (PM <sub>10</sub> )	
Sulfur dioxide (SO <sub>2</sub> )	<±0.001

Table 8. Summary of Change in Criterial Pollutant Annual Emissions in TPY Under Alternative 3 as Compared to the No Action Alternative.

The range of change in annual GHG emissions for the Alternative 3, as compared to the No Action Alternative, would be -0.53 to 0.28 MT CO<sub>2</sub>. 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 no or negligible benefit/impact to air quality within the ATMP planning area.

#### 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. Although operations could increase up to IOA no indirect impacts to air quality and GHG emissions would be expected to occur under this alternative.

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 3 may shift where emissions occur, but the total annual emissions are not likely to change substantially.

Because Alternative 2 would prohibit air tours within the ATMP planning area and Alternative 3 would reduce the number of routes on which air tours may be conducted within the ATMP planning area, it is reasonably foreseeable that the operator could potentially generate revenue by offering air tours in unrestricted airspace 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 VFR and may vary greatly.

Air tours occurring outside the ATMP planning area, if any, would not result in direct emissionsrelated effects 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 (unrestricted airspace outside the ATMP planning area) may be exposed to emissions in these scenarios thus affecting the air quality in these areas.

Because of both the number of air tours and the likely dispersal of air tours in unrestricted airspace 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 a measurable difference in air quality impacts 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**: Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. Under any of the action alternatives, the NPS would continue work

related to the Climate Action Plan, and the NPS would continue to utilize equipment associated with Park maintenance and construction activities, and aircraft used for Park maintenance, firefighting, and emergency response (NPS, 2021). 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 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 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 Endangered Species Act (ESA) is the primary federal statute regulating federally listed threatened and endangered species and critical habitat. The U. S. 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). NPS Management Policies (2006) 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 as the habitat needed to support recovery of listed species.

# 3.3.1 Affected Environment

The Park is home to over 700 native plant species, 60 species of mammals, 170 species of birds, 27 species of reptiles, and a diverse community of insects that includes over 200 species of

butterfly (Cedarbaum, 2016). 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 fish, amphibians, invertebrates, and plant species would be affected by air tours, therefore they are not considered for further analysis in this draft EA. See Figure 7 for a depiction of the affected environment for biological resources.

#### Birds

Bird community monitoring in the northwest region of the Park was conducted in 2012. Over 1,924 individuals across 46 species were observed in mixed conifer habitat, the most common of which were the yellow-rumped warbler (Setophaga coronada) and the warbling vireo (Vireo gilvus), which made up nearly 25% of all birds observed (Holmes and Johnson, 2014). Warblers, woodpeckers, flycatchers, and nuthatches were other common birds observed. This monitoring was the third year of sampling in mixed conifer habitat, which allowed researchers to observe bird abundances in the breeding seasons before and after the Las Conchas Fire in 2011. Of the 20 most commonly detected species, nine species had increased abundance, nine species' abundances decreased, and two species did not exhibit changes in relative abundance (Holmes and Johnson, 2014). Federally listed threatened and endangered birds known to occur in the Park include the yellow-billed cuckoo, Mexican spotted owl, and southwestern willow flycatcher, and are discussed below. Additionally, the broad-billed hummingbird, bald eagle, and peregrine falcon are state listed species whose presence has also been confirmed in the Park. The NPS's resource management goals for birds include increasing understanding of bird population dynamics, range, and distribution through bird banding and monitoring programs (NPS, 2020b).

#### Mammals

The Park was surveyed for small, terrestrial mammals in 2004, and bat surveys and monitoring are conducted periodically. The terrestrial mammal survey documented bats, insectivores, lagomorphs (e.g., hares, rabbits, pikas), rodents, and artiodactyls (e.g., sheep, goats, cattle, pigs) (Bogan et al., 2007). The federally endangered New Mexican meadow jumping mouse can be found in the Park and is discussed further below. The spotted bat is a state threatened species known to occur in the Park, along with many other species of bats. Mule deer *(Odocoileus hemionis)* and Abert's squirrels *(Sciurus aberti)* are among the most encountered mammals in the Park. Mammals are commonly observed along the Pueblo Loop Trail, Alamo Boundary, Cerro Grande Trail, and Ski Trails (NPS, 2022a).

#### Federally Listed Species

A list of threatened and endangered species that may occur within the ATMP planning area was obtained through the USFWS Information Planning and Consultation tool. As discussed in

Section 1.5, Environmental Impact Categories Not Analyzed in Detail, Biological Resources (Fish, Amphibians, Invertebrates and Plants), the agencies determined that air tours would not result in ground disturbances that have the potential to directly or indirectly impact fish species to include the endangered Rio Grande silvery minnow (*Hybognathus amarus*), the candidate fish species the Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*), the endangered amphibian the Jemez Mountains salamander (*Zapus hudsonius luteus*), or the candidate insect species the monarch butterfly (*Danaus plexippus*). Additionally, the endangered Mexican spotted wolf (*Canis lupus baileyi*) is not found in the Park, nor does the Park contain adequate habitat for this species, and therefore is not included in this draft EA discussion. For more information on these species, see the *Section 7 No Effect Memo* in Appendix H.

The federally protected species described below are known to occur within the ATMP planning area and could be potentially affected by the Proposed Action.

## <u>Mammals</u>

#### New Mexico Meadow Jumping Mouse

The New Mexico meadow jumping mouse (*Zapus hudsonius luteus*) (jumping mouse) is a subspecies of the meadow jumping mouse that is listed as endangered under the ESA. It is dark yellow to brown in color with elongated feet and a long, bicolored tail. This subspecies lives in densely vegetated riparian areas from southern Colorado and central New Mexico to eastern Arizona. Suitable habitat for the jumping mouse includes tall sedges and forbs in wetland vegetation that has reached full growth potential associated with seasonally available, flowing water (USFWS, 2020). While the ATMP planning area does not contain designated critical habitat, it does contain suitable habitat for the New Mexico meadow jumping mouse in the canyon areas. The jumping mouse is active from late May to early October in high elevation areas and mid-May to late October in low elevation areas along the Rio Grande. They nest in dry soils and have been observed in the Park along the stream in the upper regions of Frijoles Canyon (Bogan et al., 2007). Surveys for this species began in 2022.

#### <u>Birds</u>

#### Mexican Spotted Owl

The Mexican spotted owl *(Strix occidentalis lucida)* (MSO) is listed as threatened under the ESA and is one of three subspecies of spotted owl and are distinguished by their chestnut brown color and white and brown spots. MSO hunt at night and are considered a "perch and pounce" predator that use elevated perches to locate prey by sight and sound. MSO are an indicator species for old growth habitat, as they consistently avoid managed forests (NPS, 2014). Most of the suitable habitat for MSO in the ATMP planning area is located in the Bandelier Wilderness. Nesting-roosting zones cover about 20% of the Park and have steep slopes (Jacobs et al., 2015).

Preferred habitat for breeding includes mixed-conifer forest habitat associated with relatively steep-walled canyons, and the Douglas fir (*Pseudotsuga menziesii*) is the most common tree used for nesting (NPS, 2014). Nesting pairs have been documented in the Upper Alamo Canyon and mid Frijoles Canyon, and surveys for this species within the Park are ongoing.

The entire Park is designated critical habitat for the MSO and there are protected activity centers (PACs) located within the Park. The PACs are areas that encompass a minimum of 600 acres surrounding known MSO nest and roost sites (see Figure 7).

#### Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) (flycatcher) is one of four subspecies of willow flycatcher. Flycatchers are small insectivores that winter in Central America and southern Mexico. Habitat for this species includes riparian corridors with trees that have complex branching patterns that can support flycatcher nests (NPS, 2014). Although there is no active NPS survey of this species, flycatchers have been observed in the Park along the Rio Grande, one of the most populous breeding sites for this species (USFWS, 2013). There is no designated critical habitat for the flycatcher within the ATMP planning area.

#### Yellow-billed Cuckoo

The yellow-billed cuckoo (*Coccyzus americanus*) is a large insectivore whose yellow bill is almost as long as its head that is listed as threatened under ESA. Riparian habitat is important for the survival of this species, as yellow-billed cuckoos nest in riparian areas and use river corridors as travel routes during migration. Within the ATMP planning area, suitable habitat for this species is located in riparian areas along the Rio Grande. Three individuals have been documented in the Park, however after multiple surveys, no nesting pairs have been observed. There is no designated critical habitat located inside the ATMP planning area.



Figure 7. 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, and impacts on individual fitness and the structure of ecological communities (Shannon et al., 2016; Kunc and Schmidt, 2019). 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 impact analysis below examines the time above 35 dBA. Refer to the *Noise Technical Analysis* in Appendix F for more information.

#### Alternative 1: No Action

Under the No Action Alternative, current effects to biological resources would continue as commercial air tours within the ATMP planning area would continue to fly at low altitudes

(ranging from 800 to 1,000 ft. AGL) and there would be no limit to the time-of-day flights commercial air tours could occur, although flights do not occur at night. Raptor species within the ATMP planning area, including MSO, bald eagles, and peregrine falcons, are especially sensitive to low flying aircraft. In consideration of the effects of aircraft on bald eagles, perched and incubating eagles rarely responded to fixed-wing aircraft at close approaches ranging from 50 to 150 meters from the nest (164 to 492 ft.) (Watson, 1993). While some studies show flushing impacts can occur from helicopters flown at lower altitudes (Stalmaster and Kaiser, 1997), these types of impacts are not expected as only fixed-wing aircraft are used in the No Action Alternative and noise impacts are lower for fixed-wing aircraft. Scientific and national level guidance recommends a minimum aircraft standoff of 1,000 ft. for bald eagles (USFWS, 2007) and 2,600 ft. for peregrine falcons to prevent both collisions as well as noise impacts (Colorado Parks and Wildlife, 2020). Because air tours occur between 800 and 1,000 ft. AGL under the No Action Alternative using fixed-wing aircraft, they do not meet the standoff distances for bald eagles or peregrine falcons.

The USFWS seasonal buffer zone recommendation for MSO is ½-mile from March 1 through August 31 to reduce potential impacts to MSO from disturbance including, but not limited to, fixed-wing overflights. The entire Park is considered critical habitat for MSO and PACs are also present in the Park. The No Action Alternative includes two routes (WR-N, and ER-N) that currently fly at altitudes ranging from 800 to 1,000 ft. AGL directly above two identified PACs in the Park. Existing air tours occurring between 800 and 1,000 ft. AGL under the No Action Alternative using fixed-wing aircraft do not currently fly in accordance with the ½-mile recommended buffer zone (above 2,640 ft. AGL) for MSO.

Noise from commercial air tours also has the potential to disturb the Park's wildlife and could result in changes in wildlife behavior such as vocal behavior, breeding relocation, avoiding an area, and changes in foraging behavior. The analysis in Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use, shows that 39% of the ATMP planning area would experience noise above 35 dBA for less than five minutes on days when air tours occur (see the *Noise Technical Analysis*, Appendix F, Table 8). The maximum sound level identified in the noise modeling (i.e., the loudest sound level generated by the loudest event independent of the number of operations) would be 54.8 dBA. This sound level corresponds to that of noise level expected in a quiet urban daytime setting or the noise coming from a dishwasher in an adjacent room. These noise intrusions would be short in duration and the maximum sound level is relatively low.

In conclusion, on the days when air tours occur, the short-term noise impacts (noise above 35 dBA for less than five minutes) have the potential to cause temporary disturbances in the behavior of bird foraging, mating, or nesting. However, these noise impacts are so infrequent and short in duration, they are not anticipated to cause adverse effects to any of the federally

listed species, including southwestern willow flycatcher, yellow-billed cuckoo, MSO, New Mexican meadow jumping mouse, or any other wildlife species.

## 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 ATMP planning area as well as low-flying aircraft that are not currently in compliance with recommended buffer zones for MSO, bald eagles, and peregrine falcons. Therefore, there would be a direct beneficial effect on biological resources since the intensity and likely presence of noise and aircraft from commercial air tours would be less than under the No Action Alternative. While the impacts described above under the No Action Alternative are minimal, they would be even less likely to occur or would not occur at all as a result of air tours since air tours would no longer be conducted within the ATMP planning area.

The FAA and the NPS are currently conducting analysis for those federally listed species described in Section 3.3.1, Affected Environment for Biological Resources, in accordance with 50 CFR Part 402.02. As of the time of this draft EA publication, the agencies believe the preferred alternative would have *no effect* on federally listed threatened or endangered species. See Appendix H, *Section 7 No Effect Memo* for additional analysis.

#### Alternative 3

As described in Section 2.6.2, Commercial Air Tour Routes and Altitudes, Alternative 3 would authorize air tours to be conducted on two flight paths as shown in Figure 8, avoiding some habitat areas for sensitive species. Furthermore, Alternative 3 would require air tours to be conducted at a minimum altitude of 10,000 ft. MSL, which would result in altitudes greater than 2,600 ft. AGL within the ATMP planning area. This represents an increase in altitude between 1,600 – 1,800 ft., depending on the location within the ATMP planning area, when compared to existing conditions. As a result of the specific flight paths and altitude requirements, the likelihood of impacts to biological resources that could alter wildlife behavior would be reduced compared to current conditions, as described in the No Action Alternative.

While several routes are currently flown directly over PACs below the suggested ½-mile recommended buffer for the MSO (Romin and Muck, 2002), a day on which the ER-S orange route is utilized for Alternative 3 would completely avoid flying over all PACs within the Park. While a portion of the ER-N red route for Alternative 3 is located over the southern part of the PAC located within the Alamo Canyon and crosses one of the MSO recovery zones, the altitudes required by Alternative 3 would meet the recommended buffer distance (½-mile).

To capture how noise may affect biological resources for Alternative 3, the resource impacts analysis examines the time that noise above 35 dBA would occur for both routes. For the purposes of the *Noise Technical Analysis* in Appendix F and Section 3.1.2, Environmental

Consequences for Noise and Noise-Compatible Land Use, an average day under Alternative 3 was modeled based on the average number of operations which may occur in a single day – one operation, using the aircraft and route combination most likely to be utilized under Alternative 3 – a Cessna 182 on the ER-S orange route. The Cessna 182 - ER-S orange route combination was chosen as the most logical representation of an average day of activity based on best available information for existing conditions, similar to the No Action Alternative, and can be used for comparison purposes. Based on this analysis for Alternative 3, on days when air tours occur where the operator uses the ER-S orange route (using a Cessna 182), there would be no noise above 35 dBA and therefore, no noise impacts would be expected to occur that would have the potential to alter wildlife behavior. As compared to existing conditions, Alternative 3 would result in less potential for noise impacts to biological resources when air tours are conducted using the ER-S orange route.

Additionally, noise modeling was performed for the Cessna 207 - ER-N red route combination, providing information regarding the potential noise effects of the second authorized aircraft and route. On days where air tours are conducted on the ER-N red route when the Cessna 207 is flown, no similar comparison is available for existing conditions (refer to Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use). Based on the modeling results identified for the ER-N red route, noise above 35 dBA would occur for less than five minutes in most areas (53%) within the ATMP planning area.

Additionally, the time-of-day restrictions, which would allow the operator to conduct air tours beginning two hours after sunrise until two hours before sunset, may reduce the likelihood of impacts to nocturnal species. In the event that operators request and are authorized to use the quiet technology incentive, those tours would result in the possibility of noise during the sunrise/sunset time periods. The impacts from these flights would be less than the noise modeled in the *Noise Technical Analysis* (see Appendix F) but could be more than when there are no flights during this time of day.

In conclusion, while wildlife would continue to be exposed to noise, direct effects would not be widespread throughout the ATMP planning area. Any disturbances would likely be temporary in nature and infrequent on both a daily and annual basis. Noise from commercial air tours would be experienced only by those wildlife that are present under or near the designated routes, leaving most wildlife in the ATMP planning area unaffected. The level of noise exposure would be similar or decrease compared to current conditions because the number of authorized flights under the ATMP will be the same as the average number of flights from 2017-2019 but flown on fewer routes and greater altitudes.



Figure 8. 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. Under the No Action Alternative, commercial air tour operations within the ATMP planning area would remain consistent with existing conditions, although air tour numbers could increase slightly (up to IOA), thus there would be no change to biological resources within the ATMP planning area and no indirect impacts would be expected to occur under this alternative.

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 would limit the number of air tours per year and/or the number of routes on which those air tours would be authorized within the ATMP planning area as compared to existing conditions, so some air tour displacement could occur. In the ATMP planning area, this would have beneficial effects to biological resources compared to current conditions by

reducing the extent of noise-related disturbances described for the No Action Alternative. The operator 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 in the ATMP planning area as compared to existing conditions. Furthermore, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time.

The operator would be unlikely to continue to conduct air tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. The operator may fly along the perimeter of the ATMP planning area in order to conduct air tours of destinations other than the Park. Since the operator cannot fly on the north side of the Park because of restricted airspace, it is unlikely there would be new or different impacts in that area. The operator may expand the number of air tours offered over other sites in the area. The operator currently flies multiple tours over different parks and lands in New Mexico (Southwest Safaris, 2022) and could fly these tours more frequently. The majority of destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Due to the flight restrictions to the north and east of the Park, there may be a slight increase in flights to the west and south of the ATMP planning area if air tours were displaced outside of the ATMP planning area. These displaced flights would increase the noise-related disturbances to biological resources described in the No Action Alternative along other routes the operator may choose to use outside the ATMP planning area.

Alternative 2 prohibits flights within the ATMP planning area and would likely result in the greatest number of displaced air tours along other routes the operator might choose to use, followed by Alternative 3. Alternative 3 would authorize existing condition of air tours on an annual basis, but it limits the air tours to two routes in the ATMP planning area, in addition to other operating parameters as specified in Section 2.6, Alternative 3, and thus could result in some air tour displacement, though likely less than Alternative 2. In conclusion, any indirect effects to wildlife caused by dispersed air tours under any of the alternatives would not likely be widespread and would be temporary in nature and infrequent on both a daily and annual basis.

**Cumulative Effects:** Under all alternatives, the NPS would continue current management actions and respond to future needs and conditions for biological resources without major changes in the present course. Aircraft are used during the spring and early summer months each year to scout fire reports, suppress fires and respond to search and rescue incidents. The associated noise levels from these annual activities and resultant wildlife disturbance risks

within the ATMP planning area would likely continue at current levels. Mechanized equipment and ground teams would also generate noise during normal Park maintenance activities occurring on the ground.

In addition to current management and maintenance activities that cause changes in wildlife behaviors, the Park will begin a construction project in the summer of 2023 that will expand an existing parking lot at the Frey Trailhead within the developed area adjacent to Juniper Campground. In the spring of 2024, the Park will also begin construction for a utility replacement project that will rehabilitate and replace most underground utilities. The project area for utility replacement will include the mesa-top developed area (including NPS housing and Juniper Campground), the Entrance Road, and the main visitor use area in Frijoles Canyon. Both of these construction projects are expected to last up to one year and the resulting equipment and ground disturbing activities could result in both direct and indirect effects to wildlife.

Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. Alternative 2 could result in some cumulative beneficial effect on wildlife from not authorizing air tours within the ATMP planning area as this source of noise and resultant wildlife disturbances would be eliminated within the ATMP planning area. The same is true when the ER-S orange route is flown under Alternative 3. Due to the increased altitudes, noise from air tours would be reduced compared to current conditions, and the potential cumulative impacts to wildlife would also be reduced. Ongoing present and future Park management actions by the NPS would continue to occur under any of the alternatives and the impacts to wildlife resulting from planned construction activities would remain the same for all alternatives.

# 3.4 Cultural Resources

The National Historic Preservation Act (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 Part 800.16(I)(1) as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. This term includes artifacts, records, and remains that are related to and located within such properties. It also includes properties of traditional religious and cultural importance to an Indian tribe and those 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, *Environmental Impact Analysis Methodology*, as well as the Section 106 documentation in Appendix G, *Cultural Resources Consultation and Summary*, 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 parkland. NPS policies and directives also apply to park cultural and ethnographic resources and provide direction for their management including the NPS Management Policies (2006), Chapter 5, Director's Order 28: Cultural Resource Management, and EO 13007 which provide direction regarding Indian Sacred Sites, and NPS Policy Memorandum 22-03 which sets forth guidance on how the NPS will implement Secretary's Order No. 3403, Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters. NPS Management Policies (2006) § 5.3.1.7, Cultural Soundscape Management, 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 New Mexico State Historic Preservation Office (SHPO) was initiated via formal letter dated March 29, 2021. On April 28, 2021, May 4, 2021, and May 6, 2021, the agencies held initial Section 106 consultation webinars to provide basic 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. The agencies initiated consultation with consulting parties in five 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 a list of consulting parties). These letters were dated March 26, 2021, April 15, 2021, May 6, 2021, June 1, 2021, and July 30, 2021.

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. An APE as defined at 36 CFR Part 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 undertaking does not require land acquisition, construction, or ground disturbance, and the agencies anticipate 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 Park and areas outside the Park but within ½-mile of its boundary, including Pueblo tribal lands, but excluding the Tsankawi Unit of the Park and areas within ½-mile of its boundary which are currently not overflown by commercial air tours. Refer to Figure 9 for a depiction of the APE.

When the Park was reserved from the public domain in 1916 pursuant to the Antiquities Act of 1906, it was described in the proclamation by President Wilson as featuring "certain prehistoric aboriginal ruins...of unusual, ethnologic, scientific, and educational interest..."<sup>13</sup> It is from these features that the Park's significance as a national monument is rooted. Six main statements of significance for the Park were identified in the Park's Foundation Document (NPS, 2015). "Cultural Connections" is one of these six statements. The Park's Foundation Document explains that "Archeological sites and natural features of Bandelier National Monument remain an integral component of pueblo culture and provide a context for continuing traditional practices" and further goes on to state that the Park "plays an important role for the traditionally associated pueblos, providing a direct cultural connection to resources, stories, and oral histories."

"Continuing Cultural Connections" is also identified as a fundamental resource and value for the operation of the Park in its Foundation Document (NPS, 2015), which explains that "Affiliated pueblo Indian groups still have strong traditional associations and ties to Bandelier National Monument's landscape. Their cultures, lifestyles, religious beliefs, and traditions continue to be shaped by their ties to the natural and cultural resources of the monument."

The Park's Foundation Document (NPS, 2015) makes very clear that the Park has identified cultural landscapes associated with tribal partners as a significant cultural resource that should be protected from any diminishment. National Park Service Director's Order 28: Cultural Resource Management Guideline (1998) provides the guidance for ensuring that these significant sites are not diminished. In particular, NPS Director's Order 28 provides the following direction:

When used by their associated ethnic groups, these types of resources help underpin entire cultural systems. Resource management sensitive to the rights and interests of

<sup>&</sup>lt;sup>13</sup> Proclamation No. 1322, Bandelier National Monument, N. Mex., 39 Stat. 1764 (Feb. 11, 1916).

these groups, especially Native Americans, can help perpetuate if not strengthen traditional activities such as subsistence, language use, religious practice, and aesthetic expression. In this context, cultural resource management extends beyond concern with tangible resources to recognition and accommodation of cultural processes.

NPS Policy Memorandum 22-03 sets forth guidance on how the NPS will implement Secretary's Order No. 3403, Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters. This policy states that the NPS will give due consideration to tribal recommendations and Indigenous knowledge in the planning and management of Federal lands and waters. Per Executive Order 13007, the NPS will, to the greatest extent practicable, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical and spiritual integrity of such sacred sites; collaborate with Indian and other traditionally associated peoples who have identified sacred sites within units of the National Park System to prepare mutually agreeable strategies for providing access; and enhance the likelihood of privacy during religious ceremonies.

Several tribes have reiterated the importance of their continuing cultural connections to the Park during consultation. The agencies consulted with the New Mexico SHPO, tribes, the operator, and other consulting parties prior to finalizing the APE. The agencies sent a letter dated August 27, 2021, to the New Mexico SHPO, tribes, and consulting parties defining the undertaking, proposing an APE, providing a preliminary identification of historic properties, and asking for input on identifying additional historic properties. Tribal consultation meetings were held under EO 13175 (*Consultation and Coordination with Indian Tribal Governments,* dated November 9, 2000) and Section 106 with Pueblo of Santa Clara on November 22, 2021, with Pueblo de San Ildefonso on March 9, 2022, 2022, with Pueblo of Pojoaque on April 11, 2022, and with Pueblo de Cochiti on June 27, 2022.

#### 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 operator-reported routes, the heaviest concentrations of commercial air tours fly over the southern portion of the Bandelier Civilian Conservation Corps (CCC) National Historic Landmark, as well as the Bandelier National Monument Traditional Cultural Properties (see Figure 9).

Throughout the Section 106 process, the agencies requested consulting parties' input to help identify historic properties within the APE. The agencies provided an initial historic property identification list to consulting parties in an August 2021 letter requesting further input on the

identification of historic properties within the proposed APE. A letter dated January 26, 2023, was sent to the New Mexico SHPO, tribes, and consulting parties with an updated historic property list. Consulting parties provided comments during meetings as well as written comments regarding the identification of historic properties, which the agencies took into consideration. A final historic properties list was provided in the April 20, 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 Executive Order 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 impacts under Section 106 and NEPA (FAA, 2020).

Several tribes communicated the cultural importance of the entire Park as a cultural landscape as well as undocumented resources that are associated with traditional and ceremonial practices. Therefore, the agencies are treating the entire Park as a TCP, and acknowledge that there are hundreds, if not thousands, of TCPs within the APE that are not individually identified in this analysis and are referred to collectively as the Bandelier National Monument Traditional Cultural Properties. During consultation, the tribes voiced the importance of preservation, maintaining traditions, and cultural identity throughout the Park. Tribes have occupied and stewarded areas of the natural and cultural landscape prior to colonization and before the Park was established, including areas encompassed by the Park. Tribes maintain a cultural connection with the landscape through story, song, prayer, ceremony, and pilgrimage such that the landscape is in continuous use by multiple tribes. Many tribal members consider the Park to lie within the ancestral domain of their tribe and believe that the landscape is tied to the spiritual presence of their ancestors. Shrines and sacred sites are located throughout the Park. Many shrines and sacred sites within the Park have expansive views of the Park's landscape as well as views of archeological sites that contribute to the Park's history.

Through consultation, the agencies have heard from several tribes that they consider the natural resources within the APE to be cultural resources, with particular emphasis on plants, animals, and the sky. The preservation of natural resources and the natural setting of the Park

are important to maintaining the integrity of ethnographic resources, including TCPs. Many of these natural resources are contributing features to the cultural resources detailed throughout this draft EA.

#### Archeological Resources

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. The Park was surveyed for archeological resources several times throughout the early to late-1900s. Archeological features and sites within the APE include pueblo structures, tools, and artifact scatters, among others. These resources encompass a range of sites from Paleoindian times (approximately 12,000 years ago) to the post-World War II era.

Archeological resources include artifacts and features that are located in a concentrated area, otherwise known as sites, as well as isolated occurrences of cultural material located outside of site boundaries. Artifact scatters located at archeological sites can represent locations where stone tools were manufactured, places where historic visitors camped, individual feature remains, and Ancestral Puebloan villages.

The Bandelier National Monument Archeological and Historic District contains 2,974 contributing archeological sites which are evenly distributed throughout the Park and are listed on the National Register. Many of the archeological sites in the Park are in good condition and retain a high level of integrity, but there are a series of natural and cultural disturbances that have affected them. The pre-Hispanic sites are associated with habitation of the area by Ancestral Pueblo peoples. The area saw limited occupation in historic times by historic pueblo groups, nomadic Athabascan groups, Hispanos, and Euro-Americans. NPS does not disclose the exact locations of sensitive resources.

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

A cultural landscape reflects 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. Key contributing elements important for the preservation of cultural landscapes include dramatic dissected topography of canyons and mesas, 360-degree views of the Pajarito Plateau, the Jemez Mountains, the Rio Grande Valley, native vegetation, masonry pueblos, cavates (human-

made caves), petroglyphs, and other rock features, and the sense of timelessness in the area, among others (NPS, 2014a).

The Bandelier CCC National Historic Landmark District and cultural landscape (NHL) is listed on the National Register and is associated with the CCC's contribution to national parks between 1933 and 1942 as well as the New Deal Era of construction and the NPS Rustic style. This historic landmark contains the largest intact group of CCC structures in the national park system that has not been altered by the addition of new structures (NPS, 2020b). The NHL contains 31 buildings of Pueblo Revival design that serve as office space, employee housing, courtyards, and roadways, among others, that embody the distinct NPS Rustic style and the craftsmanship of the CCC (NPS, 2015b). As a result of the application of rustic design principles, the cultural landscape today blends with its natural setting and conveys a strong sense of place. The rustic Pueblo Revival architecture, natural canyon setting, experience of archeological sites, and the riparian corridor all contribute to the unique feeling that the district conveys.

The Park's staff and public-use village on Frijoles Mesa is a Mission 66 Historic District comprised of a Park employee housing area (four buildings) and the Juniper Family Campground and associated roads and interpretive service structures. The Mission 66 Historic District is significant for its association with the unique Frijoles Mesa land swap between the NPS and the Atomic Energy Commission, through a 1961 executive order. The Mission 66 designers carefully sited the Bandelier Mission 66 Village for minimum disturbance of natural Frijoles Mesa vegetation, resulting in desirable privacy for campsites, and screening of the amphitheater and the residential area from campers and automobiles.

The Bandelier National Monument Archeological and Historic District encompasses the entire Park and is significant for its association with the history of the Pajarito Plateau. Notably, use in the Pajarito Plateau includes Archaic use, Ancestral Pueblo occupation, early historic use, early scientific investigations, the development of archeology, early Native Arts revival efforts, land management, and the CCC era (NPS, 2014a). The Bandelier National Monument Archeological and Historic District contains 32 contributing buildings, 90 contributing structures, and 2,974 contributing archeological sites.

Other cultural landscapes that are part of listed or eligible cultural resources within the APE include the Ancestral landscape and Frijoles Canyon. The Ancestral landscape consists of the entirety of Ancestral Pueblo resources, including those located in Frijoles Canyon, that receive the most visitation. The Frijoles Canyon landscape covers the history of human occupation within Frijoles Canyon.

#### **Cultural Resources List**

There are four identified cultural resources within the APE, listed in Table 9 and depicted in Figure 9. Descriptions of each can be found in Appendix G, *Cultural Resources Consultation and Summary*.

Table 9. National Register Listed, Eligible, and Potentially Eligible Properties within the APE and Section 4(f) Resources.

Property Name	Property Type (cultural landscape, district, site, structure, TCP)	Eligibility Status	
Bandelier CCC National	National Historic Landmark	Listod	
Historic Landmark District	and Historic District	Listed	
Bandelier National			
Monument Archeological and	Historic District	Listed	
Historic District			
Mission 66 Historic District	Historic District	Eligible	
Bandelier National			
Monument Traditional	TCPs	Eligible	
Cultural Properties			

Sources: NPS Cultural Resource Managers, New Mexico State Historic Preservation Office staff, tribes.



Figure 9. 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 that contribute to the significance of a cultural resource 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 tribal sacred sites on federal lands. Sacred ceremonies or other tribal activities which occur without notice to the NPS may be interrupted by noise or the visual presence of air tours, however, commercial air tours have

no effect on tribal access. Additionally, the proposed action would not involve any ground disturbance or other activities that would adversely affect the physical integrity of sacred sites.

The agencies requested and received consulting party input on the potential effects of the alternatives on historic properties throughout the Section 106 process, including at the November 22, 2021, March 9, 2022, April 11, 2022, and June 27, 2022, Section 106 tribal meetings. Consulting parties provided comments during the meetings, and the agencies took into consideration the input from the consulting parties in evaluating the effects of the preferred alternative on historic properties.

#### 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 effects would impact the feeling and setting of those resources. Air tours would also continue to impart an invasion of privacy on tribal users of the Park which would be inconsistent with the Park's purpose and values as described below.

Under the No Action Alternative, some noise and visual effects from commercial air tours would continue to be present in the APE which could impact the feeling and setting of cultural resources. Reporting data from 2017-2019 indicates that air tours fly over the APE approximately 101 times per year and on days when air tours occur, an average of one tour is flown, creating some potential for audible and visual intrusions of the TCPs, tribal ceremonies, and cultural practices. Based on the Noise Technical Analysis (see Appendix F, Section 6), which uses an average of one flight per day (based on a peak month, average day of commercial air tour activity for the three-year average from 2017-2019), air tour noise above 35 dBA occurs for less than five minutes across the APE. At the modeled location points, air tour noise above 35 dBA would occur for less than one minute a day. For example, the time above 35 dBA under the No Action Alternative would be 0 minutes at the Visitor Center (location point #2), which is near the NHL and the Mission 66 District. The 12-hour equivalent sound level at this location is 0 dBA. Across the modeled location points, the highest 12-hour equivalent sound level would be 19.3 dBA at the Rio Grande (location point #11), which is south of the NHL and the Mission 66 District. While some noise and visual intrusions would continue to be present which could have the potential to interrupt tribal cultural practices, ceremonies, and connections to pueblos, those intrusions would be infrequent and limited to a few minutes per day and 101 instances per year.

Noise and visual effects from air tours within the APE could also impact the Park's historical, architectural, and archeological resources, including cultural landscapes and historic structures, when air tour noise detracts from the feeling and setting of those resources. Under existing conditions, the cultural resource that experiences the most air tours flying directly over or near

it is the Archeological District (refer to Figure 9). The Visitor Center, which is located near the NHL and the Mission 66 District, would experience a maximum sound level of 36.4 dBA. Other cultural resources in the APE that are located throughout other areas of the Park could continue to have their feeling and/or setting impacted by the noise and visual intrusions of air tours under the No Action Alternative. Collectively, this analysis of impacts to cultural resources based on the three-year average number of air tours flown from 2017-2019 represents the impacts of the No Action Alternative, (see Section 2.4.1, Commercial Air Tours per Year). In summary, the noise associated with existing commercial air tours over the Park is minimal, as the noise is short in duration and maximum sound levels are low, which would result in infrequent detractions from the feeling and setting of the Park's historical, architectural, and archeological resources, including cultural landscapes and historic structures that are located closest to the existing air tour routes. These effects would continue to occur under the No Action Alternative.

As described in Section 2.2.1, Air Tours above Existing Levels, the presence of existing lowaltitude overflights over the Park, including commercial air tours, unreasonably interferes with tribal connections to the sacred landscape of the Park primarily due to tribal concerns about privacy. Air tours over the Park interfere with the privacy of the pueblo people as they carry out ceremonies and sacred practices, the protection of which is a primary purpose of the Park. Tribal dances are religious ceremonies which may be practiced on tribal land or in the Park are not public performances. It is a privilege to witness a ceremony. Silence is mandatory during all dances and pueblo ceremonies. Commercial air tours may interrupt these cultural and religious practices with noise, but primarily interrupt these practices by their physical presence and invasion of privacy which denigrates the sacred space that the Park protects. Like any village, the pueblos are home to those who live there and should be respected as such. Pueblo villages, including kivas, ceremonial rooms, and cemeteries, are sacred places and restricted for use by pueblo members only. Air tour patrons' observations of pueblo people carrying out traditional uses and ceremonies in these sacred lands intrudes on the cultural practices the Park is required to protect.

Tribes have stated that overflights, including commercial air tours, are disruptive and limit their ability to engage freely in religious and cultural activities in the Park. Tribes have stated that disclosing the time and location of their sacred practices would violate their privacy. Tribes consider the entire landscape of the Pajarito Plateau to be sacred and believe air tours are inappropriate and constitute an adverse effect to the cultural landscape, wildlife, and plants. Tribes stated that overflights, including commercial air tours, have disturbed gatherings and traditional religious practices at sacred sites, impacted viewsheds to sacred peaks, are inappropriate to the sacred landscape, and disrupt the tranquility of accessing the lands for reflection or cultural purposes. Tribes and tribal members have emphasized that overflights,
including commercial air tours, have negative impacts on the cultural heritage of pueblos, dances, traditional events, and hunting, among other events and activities.

Air tours over the Park and their encroachment on tribal privacy, religious, and cultural activities interrupt and diminish both the tangible and intangible associations tribes experience during use of their traditional cultural properties, the protection of which is a significant Park purpose. Because continuing cultural connections to the Park is a fundamental resource value of the Park and is significant to the Park's purpose, air tours and their resultant interference with tribal connections to the land under the No Action Alternative would be inconsistent with the Park's purpose and values for which it was established.

### Alternative 2

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area. The elimination of commercial air tours from the ATMP planning area would reduce the noise and visual intrusions of air tours from impacting the feeling and setting of cultural resources within the APE and would result in direct beneficial impacts to cultural resources, including ethnographic resources and sacred sites, TCPs, archeological resources, cultural landscapes, historic districts, and prehistoric and historic buildings and structures compared to existing conditions. Alternative 2 would be most consistent with the Park's purpose and values for which it was established, as the elimination of air tours within the APE would improve privacy conditions for the tribes during traditional uses and ceremonies in the Park.

The agencies continued consultation under Section 106 with an evaluation of the effects of Alternative 2, as the preferred alternative, on historic properties. A letter was sent on April 20, 2023, to the New Mexico SHPO 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.

#### Alternative 3

The two flight routes under Alternative 3 would avoid some of the Park's sacred sites, ethnographic resources, and cultural landscapes and historic districts. The resultant noise and visual effects of Alternative 3 and their effect on the feeling and setting of cultural resources within the APE would be similar or experience a slight improvement compared to current conditions. However, air tours would continue to disturb religious ceremonies and privacy of tribes while within the Park which would be inconsistent with the Park's purpose and values.

The modified ER-S orange route for Alternative 3 would overall reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE. For the

purposes of the Noise Technical Analysis in Appendix F and Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use, an average day under Alternative 3 was modeled based on the average number of operations which may occur in a single day – one operation, using the aircraft and route combination that may be utilized under Alternative 3 – a Cessna 182 on the ER-S orange route. The Cessna 182 ER-S orange route combination was chosen as a representation of an average day of activity based on best available information for existing conditions, similar to the No Action Alternative and can be used for comparison purposes. Under the ER-S orange route for Alternative 3, the Noise Technical Analysis (Appendix F, Table 7) indicates that on days when air tours occur, noise in the APE would not exceed 35 dBA. Compared to the No Action Alternative, the time above 35 dBA would be reduced by up to five minutes a day across the APE. Portions of the APE along the flight path of the ER-S orange route would experience 12-hour equivalent sound levels less than 3 dBA (see the Noise Technical Analysis, Appendix F, Table 7). Commercial air tours would not be conducted over the NHL or the Mission 66 District. The maximum sound level for Alternative 3 on days where the ER-S orange route is flown would not reach 30 dBA at the modeled location points (see the Noise Technical Analysis, Appendix F, Table 7). Compared to the No Action Alternative, the sound levels for the Alternative 3 ER-S orange route are, on average, lower.

On days where air tours are conducted on the ER-N red route and the Cessna 207 is flown, no similar comparison is available to existing conditions. As discussed in Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use, the ER-N red route in Alternative 3 was modeled using the ER-N red route combination, providing information regarding the potential noise effects of the second authorized aircraft. Based on this analysis for Alternative 3, on days when air tours occur where the operator uses the ER-N red route, noise would exceed 35 dBA for up to five minutes a day (see the *Noise Technical Analysis,* Appendix F, Figure 5). Based on the modeled location points, noise above 35 dBA would not exceed 2.5 minutes a day (see the *Noise Technical Analysis,* Appendix F, Table 6). Locations along the flight path of the ER-N red route for Alternative 3 would experience 12-hour equivalent sound levels up to 25.2 dBA. Commercial air tours would be conducted close to the southern portion of the NHL and TCPs. The maximum sound level for Alternative 3 on the ER-N red route ered route would remain under 60 dBA at the modeled location points.

Alternative 3 would not introduce new audible elements into the APE because air tours are currently occurring in this area. Alternative 3 would limit the routes that the operator could utilize to conduct commercial air tours, which would avoid some noise sensitive cultural resources of the Park. The time-of-day restrictions, quiet technology incentives, no-fly periods, and reductions in the number of routes could reduce some noise or visual effects from air tours. However, Alternative 3 still remains similar to current conditions and would not eliminate all the impacts to tribal privacy and cultural connections for which the Park was established because the alternative does not eliminate air tours from the ATMP planning area.

In summary, the noise and visual effects associated with commercial air tours over the Park would be minimal under Alternative 3, as the noise would be short in duration and maximum sound levels are low, which would result in infrequent detractions from the feeling and setting of the Park's historical, architectural, and archeological resources, including cultural landscapes and historic structures. These effects under Alternative 3 would be similar to or result in a slight improvement compared to current conditions.

Similar to the No Action Alternative, air tours over the Park under Alternative 3 and their encroachment on tribal privacy, religious, and cultural activities would interrupt and diminish both the tangible and intangible associations tribal partners experience during use of their traditional cultural properties, the protection of which is a significant Park purpose. Because continuing cultural connections is a fundamental resource value of the Park and is significant to the Park's purpose, air tours and their resultant interference with tribal connections to the land under the No Action Alternative would be inconsistent with the Park's purpose and values for which it was established.

While Alternative 3 would authorize air tours to be conducted on fewer routes over the APE than the No Action Alternative, because National Register listed or eligible tribal sacred sites, cultural landscapes, and ancestral sites occur throughout the Park, which is considered a traditional cultural property in its entirety, Alternative 3 is unable to reduce impacts to tribes, tribal resources, and tribal privacy by routing air tours to avoid sensitive locations because sensitive locations are densely distributed throughout the Park. Since the locations, timing, and identification of participants involved in traditional use of sacred sites is sensitive and culturally guarded information, pre-emptively disclosing information to reduce air tour effects is not possible, so provisions in the ATMP such as time-of-day restrictions or no-fly periods would be unlikely to be effective in avoiding all impacts to these resources. For these reasons, air tours authorized over the Park under Alternative 3 would be inconsistent with the Park's purpose and values including perpetuating traditional pueblo cultural connections to the Park's landscapes.



Figure 10. 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 impacts caused by air tours flying outside of the ATMP planning area. Indirect effects to tribal privacy, religious, and cultural activities that are fundamental to the Park's purpose and values could occur from air tours displaced to outside the ATMP planning area to the extent that those effects were experienced by tribal users of the Park.

Under the No Action Alternative, commercial air tour operations within the APE would remain consistent with existing conditions, although air tour numbers could increase slightly up to IOA, thus there would be no change to cultural resources within the APE and no indirect impacts would be expected to occur under this alternative. As noted in Section 3.1.2, Environmental Consequences 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. Alternative 2 would prohibit commercial air tours within the ATMP planning area and Alternative 3 would limit the number of commercial air tour routes compared to existing conditions, which would therefore have the potential to result in some displacement of air tours outside of the ATMP planning area. Air tours occurring outside of the ATMP planning area may result in noise that could affect cultural resources. Air tour operators could conduct operations along existing flight paths at or above 5,000 ft. AGL. However, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources as compared to current conditions because the noise would be spread over a larger geographical area. Noise from air tours conducted at or above 5,000 ft. AGL would be audible for a longer period, but at lower intensity. Similarly, aircraft are transitory elements in a scene and visual impacts tend to be relatively short, especially at higher altitudes. Some of these air tours could still encroach upon tribal privacy, religious, and cultural activities that are fundamental to the Park's purpose and values, but these impacts would be less likely to occur when air tours were flown at higher altitudes.

It is unlikely that the operator would continue to conduct commercial air tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. The operator may fly along the perimeter of the ATMP planning area in order to conduct air tours of destinations other than the Park. Since the operator cannot fly on the northwestern, northern, and northeastern sides of the Park due to restricted air space and lack of authorization to conduct air tours over Valles Caldera National Preserve, it is unlikely there would be any impacts from air tour operators in that area. The operator currently flies multiple tours over different parks and lands in New Mexico (Southwest Safaris, 2022), and they could fly these tours more frequently. The majority of destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Due to the flight restrictions to the north and east of the Park, there may be a slight increase in flights to the south and west of the ATMP planning area if air tours were displaced outside of the ATMP planning area. Some of these air tours could still encroach upon tribal privacy, religious, and cultural activities that are fundamental to the Park's purpose and values to the extent that they were experienced by tribal users inside the Park.

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 under Alternatives 2 and 3. Because Alternative 2 would prohibit commercial air tours from being conducted within the ATMP planning area and Alternative 3 would limit the number of routes on which air tours would be

conducted, Alternative 2 has the most potential to result in the displacement of air tours and could result in more flights over cultural resources that extend beyond the ATMP planning area. While these alternatives could result in some indirect noise and visual impacts to cultural resources within the APE for flights along the perimeter but outside or above the ATMP planning area, these impacts are not anticipated to result in adverse effects to cultural resources as they would be low in intensity and frequency. Indirect effects under Alternative 2 were assessed in the finding of effects letter for Section 106. See Appendix G, *Cultural Resources Consultation and Summary*, for more information. Displaced air tours occurring outside the ATMP planning area could still impact tribal privacy, religious, and cultural activities that are fundamental to the Park's purpose and values to the extent that they were experienced by tribal users of the Park.

**Cumulative Effects:** Under all alternatives, other ongoing sources of noise within the APE including Park maintenance and management actions such as administrative flights or the use of mechanized equipment for maintenance (see Section 3.1.1, Affected Environment for Noise and Noise-Compatible Land Use for more information on the existing ambient for current conditions) would continue. Ongoing visual impacts within the APE include a wildland fire Type 3 helicopter used by the Park and the Santa Fe National Forest, which is deployed as needed to scout fire reports on Park and federal lands and made available for wildland fire initial attack, and helicopter flights conducted by the Los Alamos Police Department in response to search and rescue incidents within the Park. Ongoing visual impacts within the APE include general aviation flights such as high-altitude jet overflights, which would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours.

Additionally, the Park will begin a construction project in the summer of 2023 that will expand an existing parking lot at the Frey Trailhead within the developed area adjacent to Juniper Campground. Construction sounds will include those made by large, earth-moving equipment and machinery to lay asphalt. In the spring of 2024, the Park will begin construction for a utility replacement project that will rehabilitate and replace most underground utilities at the Park. The project area will include the mesa-top developed area (including NPS housing and Juniper Campground), the Entrance Road, and the main visitor use area in Frijoles Canyon. Construction is expected to last up to one year, including all ground rehabilitation activities. These flights and construction activities would likely continue in the same frequency and manner under any of the alternatives, as they occur independently of air tours.

Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. The cumulative effects would be fewer for Alternative 3, which would reduce the number of air tour routes within the ATMP planning area compared to the No Action Alternative, and would be fewest under Alternative 2, which would prohibit air tours within the

ATMP planning area. Ongoing present and future Park management actions and construction activities by the NPS, as well as ongoing general aviation over the Park, would continue to occur under any of the alternatives.

# 3.5 Wilderness

While Wilderness is not an impact category FAA traditionally examines, the NPS has agencywide (see NPS Management Policies (2006), Chapter 6, and Director's Order 41, 2013) and Parkspecific guidelines 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. NPS Management Policies, § 6.1 (2006) 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 U.S. Forest Service (USFS) also manages Wilderness within the ATMP planning area. See Figure 11.

The NPS and USFS manages the Wilderness for the following qualities of Wilderness character:<sup>14</sup>

- **Untrammeled**: Unhindered and free from the actions of modern human control or manipulation.
- **Natural**: Ecological systems are substantially free from the effects of modern 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 a 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 here. Additionally, the authorization of commercial air tours is not an intentional manipulation of the environment, and therefore the untrammeled quality of Wilderness is also not discussed here. Cultural and ethnographic resources within Wilderness

<sup>&</sup>lt;sup>14</sup> <u>https://www.nps.gov/subjects/wilderness/wilderness-character.htm</u>

are discussed in Section 3.4, Cultural Resources. Finally, commercial air tours do not alter or impact the opportunities for primitive and unconfined recreation. Therefore, the analysis below is focused on the opportunity for solitude and natural quality which could be impacted by commercial air tours.

The study area for Wilderness is the designated Wilderness within the ATMP planning area. Refer to Figure 11 for a depiction of the study area for Wilderness.

### 3.5.1 Affected Environment

Congress designated 23,267 acres of the Park as Wilderness in 1976. The Bandelier Wilderness covers 70% of the Park, which leaves views within the Park largely unimpaired and forms the backdrop to the Park's steep-walled canyons, mesas, and archeological sites (NPS, 2020b). Human activity has occurred throughout the Bandelier Wilderness for over 11,000 years, and many archeological sites are located within the Bandelier Wilderness. See Section 3.4.1, Affected Environment for Cultural Resources, for additional information. The Bandelier Wilderness is subject to near-daily thunderstorms during the summer monsoon seasons, which, in addition to wildfires, contribute to the shifting topography (Cedarbaum, 2016).

The Bandelier Wilderness protects much of the Pajarito Plateau, from its high peaks to the Rio Grande, in addition to the Capulin Creek watershed and the Rito de los Frijoles. The Pajarito Plateau is a layer of volcanic ash several hundred feet thick with canyons and mesas that have been carved by runoff (Cedarbaum, 2016). This area of the Bandelier Wilderness rises nearly 4,000 ft. through dense riparian woodlands of canyon floors to low-elevation juniper grasslands, to ponderosa pine, savannas, alpine meadows, and spruce forests in the mountains (Cedarbaum, 2016).

The Capulin Creek watershed is located inside and outside of the Park's boundary. Within the Park, the NPS manages Capulin Creek watershed for recreational use; outside of the Park, the USFS manages the upper area Capulin Creek watershed for recreation and timber harvest (Jacobs et al., 2015).

The Bandelier Wilderness shares boundaries with the Dome Wilderness in Santa Fe National Forest, the Canada de Cochiti land grant, and is located near the Valles Caldera National Preserve and the Los Alamos National Laboratory. It is thus largely surrounded by other protected spaces and scientific infrastructure.

The Dome Wilderness in Santa Fe National Forest was designated in 1980 and spans 5,200 acres. Elevations range from 5,800 ft. in Sanchez Canyon up to 8,200 ft. at the highest peak (USFS, 2022). The USFS manages the Dome Wilderness. The Dome Fire in 1996 and the Las Conchas Fire in 2011 burned a majority of the Dome Wilderness. Similar to the Park, there are many cultural resources located throughout the Dome Wilderness. See Section 3.4.1, Affected

Environment for Cultural Resources, for additional information on cultural resources. Refer to Figure 11 for a depiction of existing air tour conditions and the affected environment for Wilderness at the Park.



Figure 11. Affected Environment for Wilderness.

#### Natural

The Bandelier Wilderness supports a range of ecosystems from riparian zones to savannas and aspen groves that are emblematic of the region and support over 700 different species of wildlife (Cedarbaum, 2016). Flooding following the Las Conchas Fire in 2011 extirpated several populations of native fish species throughout Wilderness areas (Cedarbaum, 2016). In addition to native species, the Bandelier Wilderness also provides habitat for threatened and endangered species such as the MSO and Jemez Mountain salamander, in addition to the peregrine falcon, bald eagle, and other birds protected under the MBTA. Although ungulates and other mammals are not commonly observed in the Bandelier Wilderness, the Capulin Creek and Rito de Frijoles watersheds provide opportunities for birdwatching along riparian areas

(Cedarbaum, 2016). See Section 3.3.1, Affected Environment for Biological Resources, for additional information on wildlife.

In the Dome Wilderness, rugged terrain, wildlife habitat, and diverse vegetation that includes wildflowers and strawberries all make up the natural quality of Wilderness character. The main threat to the natural quality of Wilderness character in the Dome Wilderness is invasive species and air quality (USFS, 2022).

Weather events such as fires and floods impact the natural quality of Wilderness character by altering habitat for listed and non-listed species, watershed morphology, and land topography. Notably, the most recent wildfire that occurred in 2011 swept across approximately 14,000 acres of the Bandelier Wilderness and was followed by severe flooding that impacted vegetation, geologic features, cultural artifacts, and designated trails (Cedarbaum, 2016). The Dome Wilderness was also impacted by multiple wildfires over the past several decades, which had similar effects on natural and cultural resources. Capulin Creek watershed has been in the pathway of two wildfires: in 1996, the Dome Fire burned several thousand acres of the watershed, and in 2011, the Las Conchas Fire burned the upper portions of Capulin Creek watershed as well as 60% of land within the Park (Jacobs et al., 2015). Impacts to areas of the Bandelier Wilderness were augmented by subsequent flooding that altered the understory vegetation and geomorphology of Capulin Creek watershed (Jacobs et al., 2015). The Rito de los Frijoles flows eastward from the Sierra de los Valles of the Jemez Mountains into the Rio Grande, and similar to Capulin Creek, was impacted by wildfires: 15,000 acres of the Rito de los Frijoles were burned in the La Mesa Fire in 1977, and were also impacted by the Las Conchas Fire in 2011 (Jacobs et al., 2015).

Historical land use is one of the primary threats to the natural quality of Wilderness character, as a history of overgrazing and fire suppressions have altered the natural fire regime, plant community, and increased soil erosion. Up until the 1980s, the Park experienced low-severity surface fires that rarely resulted in tree mortality or degradation to wildlife habitat. However, a shift to grazing and active fire suppression led to the accumulation of dead and down heavy fuels that promoted large-scale wildfires throughout the Bandelier Wilderness that have caused irreversible damage to vegetation (Cedarbaum, 2016). These effects were compounded with accelerated soil erosion where soils created during a cooler and wetter age are unlikely to regenerate quickly and therefore reduce habitat and nutrients, contributing to desertification (Cedarbaum, 2016).

The NPS has taken Park management actions in order to preserve the natural quality of the Bandelier Wilderness. From 2007 to 2010, the NPS thinned over 4,000 acres of unnaturally dense piñon-juniper woodland and used the woody material as mulch to promote soil and water retention, which resulted in the successful spread of understory vegetation and decrease in runoff (Cedarbaum, 2016). In the Dome Wilderness, management actions that the USFS

takes to preserve the natural quality of Wilderness character include implementing adaptive management and evaluating the potential for restoration of native species (USFS, 2022). Natural processes such as wildfires and floods are not inherently detrimental to Wilderness and the natural capacity for change is considered when evaluating this quality, but the speed at which change is occurring challenge the resiliency of the Bandelier Wilderness and Dome Wilderness ecology and poses additional challenges for natural resource managers (Cedarbaum, 2016).

### **Opportunities for Solitude**

The ability to experience solitude is an integral quality of Wilderness. In preserving this Wilderness quality, 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 (Cedarbaum, 2016). There are several opportunities for solitude throughout the Bandelier Wilderness.

Visitors can observe cultural sites in an environment where these resources are not managed for display purposes along 50 miles of designated trails throughout the Bandelier Wilderness. Camping and hiking throughout Wilderness areas provides additional opportunities for solitude. Camping trips in Bandelier Wilderness are an average of one to two nights and require permits, while Wilderness day use is estimated to be higher and does not require visitors to obtain a permit beforehand (Jacobs et al., 2015). There are no maintained campsites in Wilderness areas, and there are several restrictions on camping: camping is not allowed within 100 ft. of a trail, water source, or archeological site, campfires and rock climbing are prohibited, group sizes have maximum caps, and several areas along Wilderness canyons are closed for visitor use during the monsoon season in order to protect visitors from the risk of flash floods (Cedarbaum, 2016). These restrictions are in place in order to mitigate fire risk and preserve the opportunity for solitude.

Park staff and one NPS-authorized private company lead guided Wilderness hikes. Park staff also occasionally have work crews working in Wilderness areas, whose temporary camp sites can degrade opportunities for solitude if encountered by visitors (Cedarbaum, 2016). Other detractions from opportunities for solitude within the Bandelier Wilderness include light pollution from Los Alamos, Santa Fe, and Albuquerque that interrupt the night skies; traffic and associated noise from State Highway 4; structures associated with the Los Alamos National Laboratory; and commercial air tours.

The Dome Wilderness also provides opportunities for solitude, specifically several hiking trails including Saint Peter's Dome Trail, the Capulin Trail, and the Turkey Springs Trail. The Saint Peter's Dome Trail is a 6.1-mile trail that begins near the Dome Fire Lookout and provides an access point to the Dome Wilderness, while also allowing visitors to view canyon walls,

sweeping vistas, and Sanchez Creek (USFS, 2022a). The two-mile Capulin Trail also begins in the northern Dome Wilderness and ends at the Park boundary.

The Las Conchas Fire in 2011 led to a change in opportunities for solitude. The southwest corner of the Bandelier Wilderness has been made more difficult to access and caused reduced visitation to Capulin Canyon, Painted Cave, and Frijoles Canyon (Jacobs et al., 2015). Similarly, the Dome Wilderness also sees a low level of visitor use, as multiple fires over the last several decades have reduced opportunities for solitude, specifically impacting vegetation, roads, and trails (USFS, 2022). The NPS has several long-term management goals to support and maintain this quality of Wilderness character within the Bandelier Wilderness. This can be accomplished through updating Wilderness trail signs and establishing policies for Wilderness use limits by collecting information on historic use of Wilderness areas and researching standards within other Wilderness areas (Jacobs et al., 2015). The USFS supports similar management actions to maintain this quality of Wilderness character within the Dome Wilderness. Additionally, the USFS utilizes proactive approaches to visitor use management, but will implement adaptive management and corrective measures if overuse causes damage to resources or loss of opportunities for solitude (USFS, 2022).

## 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 and USFS manage Wilderness to enhance qualities of Wilderness character consistent with the Wilderness Act and generally manages for the natural, untrammeled, undeveloped, solitude and unconfined recreation, and other features of value. Commercial air tours over the Wilderness study area may impact the following qualities of Wilderness character, including the opportunity for solitude or the natural quality of Wilderness character.

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 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)" (Sutter, 2004). 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). 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.

#### Alternative 1: No Action

Based on operator provided information, the heaviest concentrations of commercial air tours currently fly over the central and east areas of the Bandelier Wilderness. There are also two air tour routes, SR-W-1 and ER-S, that fly over the Dome Wilderness (see Figure 11). Under the No Action Alternative, the existing flight routes, altitudes, number of air tours per year, and other parameters described in Section 2.4, Alternative 1 (No Action Alternative), would continue to occur, with the resultant noise and visual effects that could impact the natural quality of Wilderness character and opportunities for solitude discussed below.

The presence of noise and visual intrusion of commercial air tours is a human activity that detracts from the opportunity for solitude in Wilderness. Noise from commercial air tours can disrupt Wilderness visitors seeking an opportunity for solitude in Wilderness areas within the study area and these potential disruptions would continue to occur under the No Action Alternative. The Noise Technical Analysis (see Appendix F, Section 6) provides context for the potential noise effects that would continue to occur under the No Action Alternative and that could detract from the opportunities for solitude and natural quality of Wilderness character. For purposes of the Noise Technical Analysis, an average of 101 flights per year and an average of one flight per day (based on a peak month, average day of commercial air tour activity for the three-year average from 2017-2019) was used. This analysis shows that noise above 35 dBA would occur for less than five minutes across 39% of the ATMP planning area (see the *Noise Technical Analysis,* Appendix F, Table 8). This noise could detract from the opportunity for solitude in Wilderness as it introduces sounds of human activity, but impacts would be minimal given the short duration of noise and limited number of flights per year (101 tours) that have the potential to cause effects to the opportunity for solitude in Wilderness. This analysis is based on the three-year average of flights between 2017-2019, but could slightly increase if air tour numbers up to IOA occurred.

Air tours under the No Action Alternative could also detract from the natural quality of Wilderness character. Specifically, the presence of air tours and associated noise can affect species present within the Bandelier Wilderness. As discussed in Section 3.3.2, Environmental Consequences for Biological Resources, the altitudes at which air tours are flown under the No Action Alternative are not in compliance with recommended standoff distances and buffer zones for the MSO, peregrine falcon, and bald eagle. Impacts to these species could detract from the natural quality of the Bandelier Wilderness.

### Alternative 2

Under Alternative 2, commercial air tour aircraft would not fly within the ATMP planning area, which would offer the greatest protection to NPS managed Wilderness areas within the Wilderness study area. Compared to the No Action Alternative, Alternative 2 would directly benefit and enhance the natural quality of Wilderness character and opportunities for solitude

by eliminating the source of noise and visual effects originating from within the ATMP planning area. There would be direct beneficial impacts to the natural quality of Wilderness character and opportunities for solitude under Alternative 2.

#### Alternative 3

Alternative 3 would authorize 101 commercial air tours per year along two flight paths with a minimum altitude requirement of 10,000 ft. MSL, which result in altitudes of at least 2,600 ft. AGL, within the ATMP planning area. While Alternative 3 would still allow tours to be conducted over areas of the Bandelier Wilderness and Dome Wilderness, these tours would be limited to the two designated routes (ER-N red and ER-S orange), so there would be fewer noise impacts to the natural quality of Wilderness character and opportunities for solitude from air tours in this area (see Figure 12). Additional details regarding effects on Wilderness character for Alternative 3 are described below.

Impacts to the natural quality of Wilderness character would be slightly less than the No Action Alternative because the number of air tour routes over Wilderness areas would be reduced, resulting in fewer opportunities for disturbances to wildlife that contribute to the natural quality of Wilderness character. As a result, there would be direct beneficial impacts to the natural quality of Wilderness character under Alternative 3. The Noise Technical Analysis (Appendix F, Table 7) shows that on days when air tours occur on the ER-S orange route for Alternative 3, time above 35 dBA would be zero minutes at all locations within the ATMP planning area. For the purposes of the Noise Technical Analysis, an average day under Alternative 3 was modeled based on the average number of operations which may occur in a single day – one operation, using the aircraft and route combination most likely to be utilized under Alternative 3 – a Cessna 182 on the ER-S orange route. The Cessna 182-ER-S orange route combination was chosen as the most logical representation of an average day of activity based on best available information for existing conditions, similar to the No Action Alternative. While the noise impacts associated with the No Action Alternative are already minimal, air tours on the ER-S orange route would eliminate all noise above 35 dBA compared to the No Action Alternative, where noise above 35 dBA would occur for less than five minutes a day. These noise reductions also correspond with a reduction in impacts to opportunities for solitude within Wilderness, as ongoing noise from commercial air tours which introduces sounds of human activity would be reduced under Alternative 3. As discussed in Section 3.3.2, Environmental Consequences for Biological Resources, the increased altitudes for air tours under Alternative 3 (minimum 10,000 ft. MSL, which corresponds to altitudes at or above 2,600 ft. AGL) would be in compliance with recommended standoff distances and buffer zones for the MSO, peregrine falcon, and bald eagle, which would provide improved protection to the natural guality of the Bandelier Wilderness as compared to the No Action Alternative.

On days where air tours are conducted on the ER-N red route when the Cessna 207 is flown, no similar comparison is available for existing conditions (refer to Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use. Based on the modeling results identified for the ER-N red route, noise above 35 dBA would occur for less than five minutes in 53% of the ATMP planning area, portions of which overlap the study area for Wilderness. Refer to Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use, for additional information on noise effects of the red route under Alternative 3.



Figure 12. 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 remain consistent with existing conditions, although air tour numbers could increase slightly up to IOA, thus there would be no changes to Wilderness character within the Wilderness study area and no indirect impacts would be expected to occur under this alternative.

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. Alternative 2 would limit the number of flights per year compared to existing conditions, and Alternative 3 would limit the number of commercial air tour routes compared to existing conditions, which would therefore have the potential to result in some displacement of air tours outside of the ATMP planning area. Air tours occurring outside of the ATMP planning area 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. The operator may choose to fly along existing flight paths but at or above 5,000 ft. AGL. However, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources compared to current conditions.

It is unlikely that the operator would continue to conduct commercial air tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. Since the operator cannot fly on the north side of the Park due to restricted air space, it is unlikely there would be new or different impacts in that area (which is closest to the Bandelier Wilderness). The operator currently flies multiple tours over different parks and lands in New Mexico (Southwest Safaris, 2022), and they could fly these tours more frequently. The majority of destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Due to the flight restrictions to the ATMP planning area if air tours were displaced outside of the ATMP planning area. This would be most likely to affect the Dome Wilderness, portions of which are located outside of the ATMP planning area to the west of the Park. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources compared to current conditions.

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 under Alternatives 2 and 3. Because Alternative 2 would prohibit commercial air tours from being conducted within the ATMP planning area while Alternative 3 would limit the number of routes on which air tours would be conducted, Alternative 2 has the most potential to result in the displacement of air tours and could result in more flights over portions of the Dome Wilderness that extend beyond the ATMP planning area. When compared to the No Action Alternative, this could result in

degradation of the natural quality of wilderness character and opportunities for solitude over portions of the Dome Wilderness.

**Cumulative Effects**: Solitude in the Bandelier Wilderness and Dome Wilderness is impacted by a wildland fire Type 3 helicopter used by the NPS and Santa Fe National Forest, which is deployed as needed to scout fire reports on Park and other federal lands and made available for wildland fire initial attack; noise from commercial air tours; and helicopter flights conducted by the Los Alamos Police Department in response to search and rescue incidents within the Park. Additionally, the NPS will begin two construction projects at the Park in 2023 and 2024 which will include the use of large, earth-moving equipment and machinery. Noise from these aircraft and construction equipment audibly and visually detract from the natural quality and opportunity for solitude during the Wilderness experience. These would continue under all alternatives.

Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. Under Alternatives 2 and 3, aircraft used for wildland fire and search and rescue activities as well as planned construction activities that could impact solitude would continue, but impacts from commercial air tours would be less frequent since commercial air tours would be prohibited from flying under 5,000 ft. AGL over the Bandelier Wilderness and portions of the Dome Wilderness that are located within the ATMP planning area under Alternative 2, and would be required to fly along two designated routes under Alternative 3. In summary, the No Action Alternative would result in no cumulative change in the natural quality of Wilderness character or the opportunity to experience solitude. As a result, Alternatives 2 and 3 would likely result in a net beneficial effect to the natural quality of Wilderness character and opportunity for solitude within the ATMP planning area. However, Alternative 3 would offer less overall net benefit to the natural quality of Wilderness character compared to Alternative 2. Ongoing present and future Park management actions and planned construction activities by the NPS would continue to occur under any of the alternatives.

# 3.6 Visitor Use and Experience and Other Recreational Opportunities

While visitor use and experience is not an impact category the FAA traditionally examines, NPS has agency wide (see NPS Management Policies (2006), § 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. Tribes that have ancestral connections to the Park are not considered Park visitors. The impacts to Tribal people connected to Park lands are discussed in Section 3.4, Cultural Resources.

### 3.6.1 Affected Environment

#### Trends in Visitation and Visitor Demographics

Between 2017 and 2019, the Park averaged 202,774 visitors. Visitation was approximately 270,000 in 2021 (NPS, 2021a; NPS, 2022b). Scenery, recreation, and wildlife draw large numbers of visitors to the Park each year. Visitors come to the Park for a variety of activities including guided walks, hiking, camping, cross-country skiing, snowshoeing, bird-watching, picnicking, photography, interpretive programs, and special events.

Within the Park, Frijoles Canyon is the most popular visitor use area, drawing 98% of the Park's overall visitors to the archeological sites, trails, and visitor services within it. There are a number of trails within the Park, many of which are accessed in Frijoles Canyon (NPS, 2014a). The 799-acre Tsankawi Unit is 12 miles from the main Park unit. The Tsankawi Unit is home to more than 150 archeological sites. Visitors are primarily drawn to cavates, masonry pueblos, petroglyphs, the Ancestral Pueblo village of Tsankawi on Pajarito Mesa, and other significant cultural resources (refer to Section 3.4.1, Affected Environment for Cultural Resources for more information). The Tsankawi Mesa Trail, roadside parking area, and visitor arrival area are the only developed areas of the Tsankawi Unit. Remaining areas of the unit are open to visitation and are currently managed as a backcountry area without designated trails (NPS, 2014).

Figure 13 depicts key visitor facilities and points of interest within the ATMP planning area.

#### **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). Most Park visitors come to the Park to visit archeological sites.

Key visitor facilities within the Park include the following:

- Frijoles Canyon Visitor Center, located just inside the northwestern Park entrance. The center has restrooms, public telephone, picnic area, and is open from 9 AM to 5 PM (NPS, 2023).
- Alcove House, formerly known as Ceremonial Cave, is located 140 ft. above the floor of Frijoles Canyon. Once home to approximately 25 Ancestral Pueblo people, the elevated site is now reached by four wooden ladders and a number of stone stairs (NPS, 2022c).
- **Painted Cave**, with its numerous pictographs, is a unique archeological site in the backcountry of the Park (NPS, 2018).
- Juniper Family Campground is located near the entrance of the Park and is available on a first come, first serve basis (NPS, 2022d).

- **Ponderosa Group Campground** is located six miles west of the Park entrance. The campground has high demand and requires reservations (NPS, 2021b).
- **The Park's trail system** is composed of several trails, including the Pueblo Loop Trail, Fall Trail, Burnt Mesa, Cerro Grande, and Upper Frijoles Canyon Overlook skiing trail (NPS, 2022e).
- **Rio Grande via White Rock Canyon** is accessed by private and commercial boaters throughout the year, with heaviest use during the spring runoff season. Access points are located outside the Park but visits can often include day-use along the banks of the Rio Grande on Park lands.

Park staff and volunteers provide a variety of in-person interpretive and educational programs throughout the year, including fall patio talks, guided tours, and night sky programming. These programs may occur at various locations in the Park but are most frequently provided in the vicinity of visitor centers and along nearby Park trails (NPS, 2022f).

Key visitor use areas and existing air tour routes within the ATMP planning area are shown in Figure 13.



Figure 13. Affected Environment for Visitor Use and Experience.

## Other Recreational Opportunities

This category applies to persons recreating within the ATMP planning area through the experience of air tours. An average of 505 air tour customers per year are currently able to experience the Park from another viewpoint.<sup>15</sup> 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. Currently, the air tour operator offers various tours over the Park via fixed-wing aircraft and is authorized to fly up to 126 operations over the Park each year.

### 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

<sup>&</sup>lt;sup>15</sup> The estimated 505 air tour visitors is based on reported air tours from 2017-2019 (101), multiplied by an estimated 5 passenger seats per aircraft. The number of air tours visitors likely overestimates the actual number since it assumes every passenger seat is occupied.

values. Unacceptable impacts are impacts that, individually or cumulatively, would unreasonably interfere with park programs or activities including interpretive programs, the atmosphere of peace and tranquility, 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 and one example is the *Report on the Effects of Aircraft Overflights on the National Park System* (Department of Interior and 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 (McDonald et al., 1995; Haas and Wakefield, 1998; 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; Mace et al., 2013; Rapoza et al., 2015; Ferguson, 2018;).

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 (Anderson et al., 2011; Rapoza et al., 2015).

### Alternative 1: No Action

Under existing conditions, air tours are concentrated near visitor points of interest including Frijoles Canyon and the Rio Grande, which would continue under the No Action Alternative. Table 10 below presents a summary of the locations of the Park's interpretive programs and the corresponding results for noise above 52 dBA (which generally corresponds with noise that would result in speech interference) that would occur under the No Action Alternative based on the best available information for existing air tour conditions.

Location	Nearest Modeled Location Point	Distance between Location Point and Visitor Center	Time Above 52 dBA
Alcove House	#1: Alcove House	0.273 miles	0 minutes
Visitor Center	#2: Visitor Center	0 ft.	0 minutes

Table 10. Time Above 52 dBA for Park Visitor Centers and Corresponding Location Points Under the No Action Alternative.

Location	Nearest Modeled Location Point	Distance between Location Point and Visitor Center	Time Above 52 dBA
Frijoles Canyon	#3: Frijoles Rim #13: Frijoles Canyon Mouth	2.09 miles	0 minutes
Rio Grande Corridor	#11: Rio Grande	3.87 miles	0.1 minutes

This table shows that based on the noise modeling for the No Action Alternative, while speech interference would not be anticipated to occur at the Visitor Center, Alcove House, or Frijoles Canyon, noise from air tours could result in impacts associated with speech interference at the Rio Grande corridor for less than one minute a day. This noise would be expected to have a minimal effect on visitor experience and interpretive programs given the short duration of noise impacts and limited number of occurrences (101 flights per year).

Visitor experience in other areas of the Park, such as along trails, campgrounds, or Wilderness areas, may be impacted by air tour noise since visitors engaging in these activities value natural quiet. The Noise Technical Analysis (Appendix F, Section 6) shows that noise above 35 dBA would occur for less than five minutes a day across 39% of the ATMP planning area under the No Action Alternative. For purposes of the Noise Technical Analysis, an average of 101 flights per year and an average of one flight per day (based on a peak month, average day of commercial air tour activity for the three-year average from 2017-2019) was used. In these areas where visitors could generally expect to hear natural sounds during their visit, noise from commercial air tours under this alternative could impact visitor experience by temporarily affecting their ability to hear natural sounds. However, given the short duration of noise from air tours that would occur under the No Action Alternative, and the limited number of flights per year (101 air tours), effects on visitor experience would be expected to be minimal. See Section 3.4.2, Environmental Consequences for Cultural Resources, and Section 3.5.2, Environmental Consequences for Wilderness, for discussions on how commercial air tours could impact cultural resources and Wilderness areas that are visitor points of interest. This analysis is based on the three-year average of flights between 2017-2019.

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 changes anticipated to the availability of this 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 would offer 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 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 authorize 101 commercial air tours per year along two flight paths with a minimum altitude requirement of 10,000 ft. MSL, which result in altitudes of at least 2,600 ft. AGL, within the ATMP planning area (see Figure 14). The authorized routes avoid flying directly over or close to areas of primary importance for visitor use and experience, including the Visitor Center and Alcove House, which would limit the noise effects of commercial air tours in these visitor use areas.

The results for the time above 52 dBA metric from the *Noise Technical Analysis* (see Appendix F, Table 6) provide context for impacts to interpretive programs that would occur under Alternative 3. These results are summarized in Table 11.

Location	Nearest Modeled Location Point	Distance between Location Point and Visitor Center	Time Above 52 dBA (ER-S Orange Route)	Time Above 52 dBA (ER-N Red Route)
Alcove House	#1: Alcove House	0.273 miles	0 minutes	0 minutes
Visitor Center	#2: Visitor Center	0 ft.	0 minutes	0 minutes
Frijoles Canyon	#3: Frijoles Rim #13: Frijoles Canyon Mouth	2.09 miles	0 minutes	Frijoles Rim: 0.4 minutes; Frijoles Canyon Mouth: 0.3 minutes
Rio Grande	#11: Rio Grande	3.84 miles	0 minutes	0 minutes

Table <b>11</b> .	Time Above 52 dBA for Park Visit	or Centers and Corresponding Location Points Under Alternative 3.
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This analysis shows that under Alternative 3, while speech interference would not be anticipated to occur at the Visitor Center, Alcove House, or the Rio Grande, the ER-N red route would generate noise that would result in speech interference at the Frijoles Canyon corridor for less than one minute a day, which may cause brief interruptions to visitors enjoying and learning about existing Park resources during interpretive programs in this part of the ATMP planning area. Use of the ER-S orange route would not result in noise above 52 dBA, so impacts to interpretive programs would not be expected to occur.

For areas of the Park managed as natural areas, such as trails, canyons, and campgrounds, the time above 35 dBA metric provides context for air tour noise that could impact visitors' ability to hear natural sounds during their visit. The Noise Technical Analysis (Appendix F, Table 7) shows that on days when air tours occur on the ER-S orange route for Alternative 3, time above 35 dBA would be zero minutes at all locations within the ATMP planning area. Under Alternative 3 the total air tours authorized per year may not exceed 101 tours. For the purposes of the Noise Technical Analysis, an average day under Alternative 3 was modeled based on the average number of operations which may occur in a single day – one operation, using the aircraft and route combination most likely to be utilized under Alternative 3 – a Cessna 182 on the ER-S orange route. The Cessna 182 - ER-S orange route combination was chosen as the most logical representation of an average day of activity based on best available information for existing conditions, similar to the No Action alternative. The results indicate a reduction in the time that noise above 35 dBA would occur compared to the No Action Alternative, where the time above 35 dBA would be less than five minutes a day. Therefore, when compared to the No Action Alternative, the ER-S orange route for Alternative 3 would result in an improvement to visitor use and experience within the Park's natural areas.

Noise was also modeled for the Cessna 207 ER-N red route combination, providing information regarding the potential noise effects of the second authorized aircraft and route. On the ER-N red route, noise above 35 dBA would occur for less than five minutes across 53% of the ATMP planning area. No comparison to current conditions exists for the ER-N red route because that route was not modeled as part of the No Action Alternative. See Section 3.5.2, Environmental Consequences for Wilderness, for a discussion of potential impacts to trails and other features within Wilderness.

Alternative 3 would limit the number of routes that the operator could use to conduct commercial air tours, which could impact those visitors on air tours who wish to view certain features in Park that could not be viewed from the designated routes.



Figure 14. 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 remain consistent with existing conditions, although air tour numbers could increase slightly up to IOA, thus there would be no change to the visitor experience within the ATMP planning area and no indirect impacts would be expected to occur under this alternative.

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. Alternative 2 would limit the number of flights per year compared to existing conditions, and Alternatives 2 and 3 would limit the number of commercial air tour routes compared to existing conditions, which would therefore have the potential to result in some displacement of air tours outside of the ATMP planning area. Air tours occurring outside of the ATMP planning area may result in noise that could affect visitor use and experience in areas outside of the Park where those air tours would be occurring. The operator may choose to fly along existing flight paths but at or above 5,000 ft. AGL. However, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time. For air tours conducted at or above 5,000 ft. AGL, the increase in altitude would likely decrease impacts on ground level resources compared to current conditions.

It is unlikely that the operator would continue to conduct commercial air tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. Since the operator cannot fly on the north side of the Park due to restricted air space, it is unlikely there would be new or different impacts in that area. The operator currently flies multiple tours over different parks and lands in New Mexico (Southwest Safaris, 2022), and they could fly these tours more frequently. The majority of destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Due to the flight restrictions to the north and east of the Park, there may be a slight increase in flights to the west and south of the ATMP planning area if air tours were displaced outside of the ATMP planning area. This could temporarily increase noise-related effects to visitors such as speech interference and inability to hear natural sounds when flights pass overhead.

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 under Alternatives 2 and 3. Because Alternative 2 would prohibit commercial air tours from being conducted within the ATMP planning area, this alternative has the most potential to result in the displacement of air tours. Alternative 3 would still allow the same number of flights as current conditions but on fewer routes, so fewer flights would likely be displaced. Thus, Alternative 3 would result in more impacts to visitor use and experience within the ATMP planning area while Alternative 2 could result in greater impacts outside the ATMP planning area from displaced air tours.

**Cumulative Effects**: Visitor use and experience are impacted by a wildland fire Type 3 helicopter used by the Park and Santa Fe National Forest, which is deployed as needed to scout fire reports on Park and other federal lands and made available for wildland fire initial attack; noise from commercial air tours; and helicopter flights conducted by the Los Alamos Police Department in response to search and rescue incidents within the Park. Noise from these aircraft audibly and visually detract from visitor use and experience. However, because these flights generally occur throughout the ATMP planning area (in areas with unrestricted airspace) 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 alternatives.

Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. Under Alternatives 2 and 3, aircraft used for wildland fire and search and rescue activities would continue. Under Alternatives 2 and 3, impacts from commercial air tours would be less frequent since commercial air tours would be prohibited from flying over points of interest such as the Visitor Center or Alcove House under Alternatives 2 and 3 could result in some cumulative beneficial effect to the visitor use and experience in the ATMP planning area by eliminating noise related impacts (Alternative 2) or reducing the area where noise related impacts would occur (Alternative 3). However, Alternative 3 would offer less overall net benefit to visitor use and experience compared to Alternative 3.

In addition to current management and maintenance activities, the NPS has two projects planned that would cause temporary disruptions to visitors. One construction project is anticipated to begin in the summer of 2023 which includes the expansion of an existing parking lot at the Frey Trailhead. The NPS is also anticipating rehabilitating and replacing most underground utilities starting in the spring of 2024, which will include NPS housing, Juniper Campground, the Entrance Road, and the main visitor use area in Frijoles Canyon. These activities will cause disturbances to visitor use and experience as the Park may have temporary closures, limited parking, and would experience increased construction equipment and associated noise during construction. Maintenance and construction activities would occur under any of the alternatives. The impacts of these actions, when combined with disruptions to visitors from commercial air tours under the No Action Alternative and Alternative 3, could create additional disturbances to visitor experience in the locations where these activities occur. While these activities would occur under Alternative 2, the overall disruption to visitor experience may be less since commercial air tours over the Park will not occur.

# 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 (EJ) 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 will use the minority and low-income definitions provided in DOT Order 5610.2c.<sup>16</sup>

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 Parts 1500-1508), direct economic analyses of federal actions that will affect local or regional economics. 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 air tourism industry and ancillary businesses. U.S. Census Bureau data was used to evaluate social and economic factors of the study area.

The combination of all relevant impact categories represents the potential EJ impact 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 this draft EA for a description of the study area limits and Figure 15 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.

## 3.7.1 Affected Environment

## **Environmental Justice**

The most recent minority and low-income information were 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 groups 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 is 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 EJ populations. The following EJ analysis includes selecting a geographic 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

<sup>&</sup>lt;sup>16</sup> See DOT Order 5610.2C Appendix, <u>https://www.transportation.gov/sites/dot.gov/files/Final-for-OST-C-210312-</u> 003-signed.pdf

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 counties (reference community). The average percentage of minority populations at the block group level residing within the counties that include the ATMP planning area is 45.5% (ACS, 2016-2020). Therefore, every census block group with a percentage of minority population greater than the average minority population of approximately 45.5% 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 counties. The average percentage of low-income populations at the block group level residing in the counties that include the ATMP planning area is 9.0% (ACS, 2016-2020). Therefore, every census block group of EJ concern.

Figure 15 depicts locations of EJ concern by block group within the study area. As shown in the figure, most of the study area overlaps with census blocks that contain EJ populations. Table 12 (ACS, 2016-2020) shows the minority and low-income data for the counties and block groups within the study area. Of these three counties, Sandoval County and Santa Fe County contain block groups with populations of EJ concern.

Area	Population	Minority	Low-Income
Los Alamos County	19,330	5,683	715
Sandoval County	151,369	88,854	14,229
Santa Fe County	155,201	87,999	19,090
Block Groups within Study Area	8,243	3,960	693

 Table 12. Minority and Low-Income Population Data within the Study Area.

Source: ACS, 2016-2020



Figure 15. Affected Environment for Environmental Justice.

### Socioeconomics

This section describes the socioeconomic conditions that may be affected by the alternatives. Socioeconomic impacts of ATMP 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 New Mexico, specifically the one commercial air tour operator with IOA for the Park and their employees, and the associated tourism industry. The factors of socioeconomics discussed in this draft EA include industry, employment, and income.

### <u>Industry</u>

Los Alamos County's most common employment sectors are professional, scientific, and technical services. The Los Alamos National Laboratory has provided employment in these sectors since its establishment in 1943. Other significant sectors include educational services, health care and social assistance, and public administration.

The Park plays a major role in the tourism industry of Los Alamos County. In 2021, 270,716 visitors spent a total of approximately \$19 million at the Park and added a value of approximately \$13.5 million to the local economy. The total labor income generated by this spending equaled approximately \$24.8 million (NPS, 2022f). Entrance fees are required to enter the Park, including the Tsankawi Unit, and range from \$15 to \$25; visitors can also purchase a Park-specific annual pass for \$45. The Park provides seasonal, term, permanent full-time, and part-time positions. The Park offers trails, overnight trips, a museum, bookstore, a 14-minute movie, giftshop, and a snack bar.

### Commercial Air Tours

One commercial air tour operator currently holds IOA to conduct a total of 126 commercial air tours per year over the Park. Based on the average of reporting data from 2017-2019, this operator has reported flying an average of 101 air tours per year over the Park.

The price per person for each air tour varies and can range from \$79 to \$499 per person depending on the length of the tour (Southwest Safaris, 2022). The air tour industry employs pilots, mechanics, office administrators, and other types of jobs to conduct business. In addition to people directly employed by the air tour operator, others are indirectly involved with the industry including hotels, tour booking agents, and advertising and marketing professionals. In 2021, the air transportation industry (which includes the air tour industry plus commercial airlines and airport employees), both directly and indirectly, represented 2,140 jobs within the air transportation industry in Los Alamos, Sandoval, and Santa Fe Counties, accounting for less than 1% of Los Alamos, Sandoval, and Santa Fe County's overall employment (ACS, 2016-2020). 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 16, 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.

Consideration of these factors for each alternative are provided below. 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, air tour routes occur throughout the ATMP planning area except for over the Tsankawi Unit (Figure 15). Some block groups within these areas contain populations of EJ concern or EJ populations though others do not contain EJ populations.<sup>17</sup> Reporting data from 2017-2019 indicates that on a peak month average day, one air tour is conducted within the ATMP planning area, and the maximum number of air tours conducted within this time period on a single day was two tours. Because block groups containing EJ populations are present within the study area, 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 of the No Action Alternative (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use) were modeled based on a peak month, average day

<sup>&</sup>lt;sup>17</sup> 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.

of commercial air tour activity for the three-year average from 2017-2019 – identified as one operation. The modeling results indicate that the No Action Alternative would not result in noise impacts that would exceed 65 dB DNL. The DNL is expected to be below 35 dB under the No Action Alternative (refer to the *Noise Technical Analysis*, Appendix F, Section 6).

For air quality impacts, 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 to increase the frequency or severity of any such existing violations (see Section 3.2.2, Environmental Consequences for Air Quality and Climate Change). The range of total annual GHG emissions resulting from commercial air tours in the ATMP planning area is modeled to be 0.46-1.13 MT of CO<sub>2</sub>.

Under the No Action Alternative, impacts to viewsheds would primarily occur at canyon and mesa viewpoints overlooking scenic natural areas (see Section 3.8.2, Environmental Consequences for Visual Effects). Impacts would continue to occur to visual resources under the No Action Alternative as commercial air tours would continue to contrast the scenic vistas and natural areas in the Park, but the visual resources of the Park would still be viewable at times of the day when commercial air tours were not present within the study area (a peak month average day consists of one air tour) (see Section 3.8.2, Environmental Consequences for Visual Effects).

In summary, the modeled impacts of the No Action Alternative would not result in disproportionately high and adverse noise, air quality, or visual effects to EJ populations. This analysis is based on the three-year average of flights between 2017-2019.

Under the No Action Alternative, the number of commercial air tours conducted by the operator would vary from year to year but would likely be consistent with the number of tours reported in the timeframe from 2017-2019, though they could increase up to IOA. Therefore, the amount of income generated for the air tour operator 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 be conducted 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 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use; Section 3.2.2, Environmental Consequences for Air Quality and Climate Change; and Section 3.8.2, Environmental Consequences for Visual Effects). Alternative 2 would result in a

reduction in commercial air tour noise and visual impacts, as well as air emissions compared to those currently occurring under existing conditions; therefore, this alternative would result in a benefit to EJ populations within the ATMP planning area and would not result in disproportionately high and adverse noise, air quality, or visual impacts to EJ populations in the ATMP planning area.

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 the air tour operator and other ancillary businesses could generate from conducting air tours within the ATMP planning area as would occur under the other alternatives. However, as identified above, the air transportation industry represents less than 1% of the total employment in Los Alamos, Sandoval, and Santa Fe Counties, and the prohibition on air tours within the ATMP planning area would not preclude the operator from making up this revenue generation in other ways such as using 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 tax base associated with a loss of industry.

### Alternative 3

Alternative 3 would authorize 101 air tours year within the ATMP planning area and would reduce the number of routes on which those air tours could be conducted within the ATMP planning area (see Figure 16). Compared to the No Action Alternative, Alternative 3 would result in fewer direct noise, air quality, and visual impacts as described for each environmental impact category below.

Specifically, for noise impacts (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use), the DNL analysis indicates that Alternative 3 would not result in noise impacts that would exceed 65 dB DNL. The resultant DNL is expected to be below 35 dB under Alternative 3.

For air quality impacts, Alternative 3 would not cause pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed (Section 3.2.2, Environmental Consequences for Air Quality and Climate Change). The range of change in annual GHG emissions for Alternative 3, as compared to the No Action Alternative, would be –0.53 to 0.28 MT CO<sub>2</sub>. Compared to the No Action Alternative, Alternative 3 would result in no or negligible benefit/impact to air quality within the ATMP planning area, none of which would have disproportionate or high adverse effects on EJ populations.

Under the Alternative 3, visual impacts associated with air tours would decrease because they would be authorized to occur on fewer routes as compared to existing conditions, which would

reduce the area of the Park that a visitor would have the potential to see an air tour. Visual effects under Alternative 3 would primarily be associated with instances where the aircraft contrasted with natural scenery and would occur no more than 101 instances per year (see Section 3.8.2, Environmental Consequences for Visual Effects). Alternative 3 would provide improved protection of 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 (see Section 3.8.2, Environmental Consequences for Visual Effects).

In summary, Alternative 3 would not result in disproportionately high and adverse noise, air quality, or visual effects to EJ populations.

The socioeconomic effects stated under Alternative 2 (some impacts to employment or the amount of income that the air tour operator and other ancillary businesses could generate from conducting air tours within the ATMP planning area) would be fewer under Alternative 3, including the potential for impacts associated with changes to the community 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 the community, cause extensive relocation, or disrupt traffic patterns.



Figure 16. 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, although air tour numbers may increase slightly up to IOA, 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 this alternative, nor would this alternative be expected to result in a change to indirect socioeconomic impacts for ancillary businesses as there would be no change to existing conditions.

The prohibition of air tours within the ATMP planning area under Alternative 2 or the reduction in the number of routes within the ATMP planning area under Alternative 3 could limit the potential future economic growth for the commercial air tour operator and other ancillary businesses. Because of the capital investment the air tour operator has in aircraft, facilities, and equipment, the operator 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. The operator currently flies multiple tours over different parks and lands in New Mexico (Southwest Safaris, 2022), and they could fly these tours more frequently up to IOA. The operator may also choose to retire, surrender their operating certificate, 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. Alternative 3 continues to allow the same number of flights as compared to the No Action Alternative; however due to limitations on the number of authorized routes within the ATMP planning area, air tour displacement outside the ATMP planning area could still occur, which may not be as desirable to those seeking to take an air tour of the Park. This could mean fewer flights and a loss of revenue. Therefore, although Alternatives 2 and 3 would limit the opportunities for the air tour operator and ancillary businesses to generate revenue from tours conducted within the ATMP planning area, these alternatives would not preclude the operator 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.

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. Operations that may occur outside the ATMP planning area as a result of the elimination of air tours within the ATMP planning area under Alternative 2 or the reduction in the number of authorized routes within the ATMP planning area 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, 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, as well as planned construction activities occurring 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 maintenance or search and rescue efforts, which 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 of flights authorized per year.

# 3.8 Visual Effects

Visual resources include buildings, sites, traditional cultural properties, 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 (see Section 3.4, Cultural Resources) or Section 4(f) resources (see Section 3.9, Department of Transportation (DOT) Act Section 4(f) Resources). Additionally, NPS Management Policies (2006) § 1.4.6 provides that scenic views and vistas are park resources that are protected under the NPS Organic Act.

The study area for visual effects is the ATMP planning area, which is also consistent with the cultural resources APE. Refer to Figure 17 for a depiction of the study area used for the visual effects analysis. Acoustic monitoring sites are included on Figure 17 as these sites provide popular locations to view the Park.

# 3.8.1 Affected Environment

The Park is characterized by deep canyons that reach from the edge of Valles Caldera to the Rio Grande, offering visitors distinct experiences of the Park's visual resources. As discussed in Section 3.6.1, Affected Environment for Visitor Use and Experience and Other Recreational Opportunities, a major attraction for visiting the Park is to experience the scenery and landscape of the Park. As 70% of the Park is Congressionally designated Wilderness, the natural areas and features provide an aesthetic and visual character unique to the Park. Within the Park, visual resources include natural landscape features, like canyons, mesas, and cavates (NPS, 2015). The Park's visual resources also include its archeological sites, such as the Pueblo village of Tsankawi and Alcove House (refer to Section 3.4.1, Affected Environment for Cultural Resources, for more information).

The Frijoles Canyon area of the Park is a viewshed offering visitors views of rock formations and stargazing opportunities. The visual quality of the Tsankawi Unit includes more than 150

archeological sites, including cavates, petroglyphs, and the Ancestral Pueblo village of Tsankawi on Pajarito Mesa (NPS, 2015). The Tsankawi Mesa Trail brings visitors up to the mesa top and provides opportunities for viewing cavates, petroglyphs, Tsankawi Pueblo, and the surrounding environment (NPS, 2014). Other structures and sites with aesthetic visual qualities that are tied to cultural resources are discussed in greater detail in Section 3.4.1, Affected Environment for Cultural Resources.



Figure 17. 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).

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 101 times per year. On average, air tours are flown on approximately 99 days out of the year, and the maximum number of tours reported over the Park during this time period was two tours in a single day, though most days on which air tours were flown (approximately 98%) consisted of one tour. The altitudes reported from commercial air tours conducted near viewsheds in the ATMP planning area range from 800 to 1,000 ft. AGL, so the aircraft would likely be visible in these areas. Refer to Figure 17 for a depiction of existing air tour conditions in the context of visual points of interest and viewsheds within the Park.

Under existing conditions, commercial air tours are primarily flown over or near ATMP planning area viewsheds in the central and eastern areas of the Park. In the context of the Park's natural scenery consisting of topography of canyons and mesas, 360-degree views of the Pajarito Plateau, the Jemez Mountains, the Rio Grande Valley, native vegetation, masonry pueblos, and cavates, commercial air tours would contrast with the natural scenery in locations where air tours are visible to Park visitors. The viewpoints where this would be most likely to occur are the highest points in the Park in the visual effects study area near the ridges and mesas where the 360-degree views are available. Existing commercial air tour routes are located near these viewpoints and would be seen by visitors overlooking natural scenic areas, which would continue to occur under the No Action Alternative. Since the Park consists primarily of a natural landscape, the encroachment of commercial air tour aircraft on these viewsheds could temporarily detract from the visitor's opportunity to observe these unique scenic vistas and natural resources on days where air tours are flown. This analysis is based on the three-year average of flights between 2017-2019. See Section 3.4.1, Affected Environment for Cultural Resources, for additional information on visual effects associated with cultural resources.

## Alternative 2

Under Alternative 2, commercial air tours would not be conducted within the ATMP planning area, which would result in fewer effects to visual resources in the visual effects study area. Therefore, commercial air tours within the visual effects study area would no longer have a direct effect on the visual resources within the ATMP planning 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, commercial air tours could be conducted on two routes in the ATMP planning area (the ER-N red route and ER-S orange route), which would reduce impacts to visual resources within the visual effects study area (see Figure 18). Some Park viewsheds could experience temporary impacts when commercial air tours are flying within the ATMP planning area, but those instances would be limited to viewsheds where aircraft could be seen along the designated routes and altitudes. As with the No Action Alternative, visual impacts would primarily be associated with air tour aircraft contrasting natural scenery rather than blocking visitors' views of visual resources.

Although commercial air tours would still be visible from points throughout the Park, Alternative 3 would reduce the number of routes and locations where aircraft would be seen compared to existing conditions. Alternative 3 would require the operator to fly at 10,000 ft. MSL, which results in altitudes of at least 2,600 ft. AGL, which is higher than current conditions (an increase of altitude between 1,600 – 1,800 ft. AGL, depending on the location within the ATMP planning area). Since the number of routes would decrease and altitudes would increase compared to existing conditions, visitors would be less likely to notice aircraft, and impacts to viewsheds within the visual effects study area would decrease as compared to current conditions.



Figure 18. 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 remain consistent with existing conditions, although air tour numbers could increase slightly up to IOA, thus there would be no change to viewsheds within the ATMP planning area and no indirect impacts would be expected to occur under this alternative.

Alternative 2 would prohibit air tours within the ATMP planning area, and Alternative 3 would limit the number of commercial air tour routes compared to existing conditions, which would therefore have the potential to result in some displacement of air tours outside of the ATMP planning area. Air tours occurring outside of the ATMP planning area may result in more indirect effects to visual resources. The operator may choose to fly along existing flight paths but above 5,000 ft. AGL. However, this may be impractical due to the high elevation of the terrain because it would require the operator to fly above 10,000 ft. MSL. Supplemental

oxygen use is required in unpressurized aircraft flying over 10,000 ft. MSL for more than 30 minutes (14 CFR Parts 135.89, 135.157); therefore, it is unlikely air tours would fly higher for extended periods of time.

It is unlikely that the operator would continue to conduct commercial air tours of the Park by flying along the perimeter of the ATMP planning area because it is difficult to see the predominant features of the Park from outside the ATMP planning area. Since the operator cannot fly on the north side of the Park due to restricted air space, it is unlikely there would be new or different impacts in that area. The operator currently flies multiple tours over different parks and lands in New Mexico (Southwest Safaris, 2022), and they could fly these tours more frequently. The majority of destinations and tours offered by the operator are to the west and northwest of the Park, and the airport used for most flights is located to the southeast of the Park. Due to the flight restrictions to the north and east of the Park, there may be a slight increase in flights to the south and west of the ATMP planning area if air tours were displaced outside of the ATMP planning area. This could result in air tours outside the ATMP planning area being visible from viewsheds within the ATMP planning area along the western and southeastern boundaries which include Turkey Springs, Capulin Canyon, Horse Mesa and the Rio Grande.

Therefore, under Alternatives 2 and 3, indirect impacts to viewsheds within and outside the ATMP planning area could occur to the extent that they are present if flights were displaced to outside the ATMP planning area. Since Alternative 2 prohibits flights within the ATMP planning area whereas Alternative 3 limits the number of routes that can be flown in addition to other operating parameters as specified in Section 2.5, Alternative 2 (Preferred Alternative) would likely result in more indirect impacts to viewsheds than Alternative 3.

**Cumulative Effects:** Because the No Action Alternative would not result in any new direct or indirect impacts compared to current conditions, there would be no cumulative effects from the No Action Alternative. Under all alternatives, 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. Additionally, the NPS will begin a construction project in the summer of 2023 that will expand an existing parking lot at the Frey Trailhead within the developed area adjacent to Juniper Campground. In the spring of 2024, the NPS will begin construction for a utility replacement project that will rehabilitate and replace most underground utilities at the Park. The project area will include the mesa-top developed area (including NPS housing and Juniper Campground), the Entrance Road, and the main visitor use area in Frijoles Canyon. Construction is expected to last up to one year,

including all ground rehabilitation activities. Visual impacts resulting from earth-moving equipment and machinery will be similar under any of the alternatives.

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

# 3.9 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 1) there is no feasible and prudent alternative to the use of such land; and 2) 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 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.<sup>18</sup> 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.

<sup>&</sup>lt;sup>18</sup> See 1050.1F Desk Reference, Section 5-3.

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 19 for a depiction of the Section 4(f) study area.

### 3.9.1 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, Section 4(f) Analysis).

Table 13 shows Section 4(f) parks and recreational areas identified in the Section 4(f) study area, and Section 3.4.1, Affected Environment for Cultural Resources, and Appendix G, *Cultural Resources Consultation and Summary*, list historic resources that qualify under Section 4(f). Except in unusual circumstances, Section 4(f) protects only those historic sites that are listed in or eligible for listing in the National Register.<sup>19</sup> There were no wildlife or waterfowl refuges identified in the Section 4(f) study area. Figure 19 shows a map of the Section 4(f) resources analyzed in this chapter, within the Section 4(f) study area.

Property Name	Property Type
Bandelier National Monument	National Monument
Valles Caldera National Preserve	National Preserve
Santa Fe National Forest	National Forest
Jemez National Recreation Area	National Recreation Area
Cochiti Reservoir	Recreation Reservoir

Table 13. Section 4(f) Resources.

Sources: U.S. Geological Survey Protected Areas Database of the U.S.

<sup>&</sup>lt;sup>19</sup> 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 19. Affected Environment for Section 4(f) Properties.

#### 3.9.2 Environmental Consequences

In the context of Section 4(f) resources, the term "use" refers to both physical and 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 tours 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. In accordance with FAA Order 1050.1F, the FAA determined through an initial assessment if the Proposed Action and 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 altered to avoid or prevent unacceptable impacts to the Park's cultural resources. Therefore, the FAA did not advance the No Action Alternative for detailed Section 4(f) analysis as it is not considered a selectable 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. Visual impacts are assessed in accordance with the framework identified in Section 3.8, Visual Effects.

## Alternative 2

Under Alternative 2 commercial air tours would not be conducted within the ATMP planning area which would reduce this source of noise originating from within the ATMP planning area (Figure 20). 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 (see below for a discussion of indirect effects). Thus, data on the resultant DNL for this alternative is not available. Alternative 2 would provide 365 days per year without air tours within the ATMP planning area.

The FAA also considered the potential for vibrational or visual effects on Section 4(f) resources under Alternative 2. However, since Alternative 2 would not authorize commercial air tours to be conducted within the ATMP planning area, vibrational or visual effects to Section 4(f) resources would not occur from air tours within the ATMP planning area.

As a result, FAA concludes there would be no substantial impairment<sup>20</sup> of Section 4(f) resources from noise, visual, or vibrational related effects caused by air tours in the ATMP planning area under Alternative 2. 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 for Alternative 2 (see Section 3.4.2, Environmental Consequences for Cultural Resources).



Figure 20. Section 4(f) Environmental Consequences for Alternative 2.

#### Alternative 3

The FAA evaluated Alternative 3 for potential impacts to Section 4(f) resources. The noise analysis in Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use, indicates that the resultant DNL due to Alternative 3 is expected to be below DNL 35 dB

<sup>&</sup>lt;sup>20</sup> 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.

and would not cause any reportable noise as there would be no expected increase or change in noise as a result of this alternative.

Alternative 3 would authorize 101 air tours per year to be conducted within the ATMP planning area, consistent with existing conditions based on the three-year average of reporting data from 2017-2019. Refer to Figure 21 for a depiction of air tour routes under Alternative 3 in the context of Section 4(f) properties. Because Alternative 3 would authorize the same number of flights per year, evaluation of NPS supplemental metrics show that impacts to Section 4(f) resources would be similar to impacts currently occurring:

- On days when commercial air tours would occur, noise levels above 35 dBA (an indicator used by NPS to assess the potential for degradation of the natural sound environment) would occur for less than five minutes in 53% of the ATMP planning area for air tours conducted on the ER-N red route, and noise would not exceed levels above 35 dBA in the ATMP planning area for air tours conducted on the ER-S orange route (see *Noise Technical Analysis*, Appendix F, Section 6).
- On days when commercial air tours would occur, noise levels above 52 dBA (which is associated with speech interference) are not anticipated to exceed one minute in the ATMP planning area based on an analysis of location point data. Location points (provided by NPS) are specific points of interest geographically located across the entire Park where noise levels were evaluated (see Appendix I, *Section 4(f) Analysis,* for a summary of the reported ranges of time above 52 dBA for location points within 1.5 miles of each Section 4(f) property).



Figure 21. Section 4(f) Environmental Consequences for Alternative 3.

In addition, Alternative 3 would limit the operation of commercial air tours to between two hours after sunrise until two hours before sunsets on any day of the week or extends operations until one hour after sunrise until one hour before sunset if authorized by the agencies for an operator that has converted to quiet technology aircraft. These time restrictions provide times when visitors seeking solitude may experience the Section 4(f) resources without disruptions from commercial air tours. The altitudes required by Alternative 3, which would increase the minimum altitude to 10,000 ft. MSL, which results in a minimum of 2,600 ft. AGL, depending on location within the ATMP planning area as compared to existing conditions, would reduce the maximum noise levels at sites directly below the air tour routes.

As a result, the FAA concludes there would be no substantial impairment<sup>21</sup> of Section 4(f) resources in the Section 4(f) study area from noise-related effects under Alternative 3. This

<sup>&</sup>lt;sup>21</sup> 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.

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 impact discussion at the Park for cultural resources (see Section 3.4.2, Environmental Consequences for Cultural Resources).

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 geological resources, historic buildings, parklands, and forests suggests that the potential for damage resulting from fixed-wing propeller aircraft overflights is minimal, as the fundamental blade passage frequency of the aircraft is well above the resonant natural frequency of these structures (i.e., the natural vibrational tendency associated with a structure). Additionally, the vibration amplitude associated with fixed-wing aircraft overflights is well below recommended limits described to avoid structural damage (Hanson et al., 1991; Volpe, 2014). 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 existing 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 101 flights and would limit those routes to two flight paths over the Park. These restrictions would result in the same number of air tours occurring on fewer routes within 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.

#### Indirect and Cumulative Effects

**Indirect Effects:** The indirect effects of Alternatives 2 and 3 on Section 4(f) properties reflect those analyzed in the sections for noise and visual effects. Alternatives 2 would prohibit air tours within the ATMP planning area and Alternative 3 would limit the number of routes on which air tours could be conducted within the ATMP planning area 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 in Section 3.1.2, Environmental Consequences 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 and 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 (see Section 3.1.2, Environmental Consequences for Noise and Noise-Compatible Land Use). 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 could be experienced just outside the ATMP planning area (see Section 3.8.2, Environmental Consequences for Visual Effects). 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. The reduced number of air tours under Alternative 2 and the reduced number of routes authorized under Alternatives 2 and 3 within the ATMP planning area would result in a reduction in the intensity of noise directly around and below air tour routes as compared to current conditions. Ongoing present and future Park management actions by the NPS within the ATMP planning area, including administrative helicopter flights, may contribute noise that would continue to negatively affect the acoustic environment of Section 4(f) properties within the ATMP planning area. Other sources of ongoing visual impacts that may affect Section 4(f) properties within the ATMP planning 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. These activities would likely continue under Alternatives 2 and 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 Alternatives 2 and 3 because noise and visual impacts from commercial air tours under these alternatives would not constitute a substantial impairment of Section 4(f) resources in the Section 4(f) study area. As part of the 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.

# **3.10** Summary of Environmental Consequences

Table 14 summarizes the environmental consequences described above for each of the alternatives considered across each environmental impact category.

Environmental	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3
Impact Category			
Noise and Noise- Compatible Land Use	<ul> <li>12-hr equivalent sound level: &lt;35 dBA</li> <li>DNL: &lt;35 dB within the ATMP planning area.</li> <li>Time above 35 dBA: maximum &lt;5 minutes per day in 39% of ATMP planning area.</li> <li>Maximum time above 52 dBA: 0.1 minutes at location point #11 (Rio Grande).</li> <li>Maximum sound level in ATMP planning area: 54.8 dBA at location point #11 (Rio Grande).</li> <li>No indirect effects expected.</li> </ul>	<ul> <li>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.</li> <li>Indirect noise impacts may occur due to air tours displaced to outside the ATMP planning area.</li> </ul>	<ul> <li>12-hr equivalent sound level: &lt;35 dBA within the ATMP planning area.</li> <li>DNL: &lt;35 dB within the ATMP planning area.</li> <li>Time above 35 dBA: ER-S orange route, 0 minutes across ATMP planning area; ER-N red route, &lt;5 minutes in 53% of ATMP planning area.</li> <li>Maximum time above 52 dBA: 0.5 minutes at location point #10 (Capulin Canyon).</li> <li>Maximum sound level in ATMP planning area: 57.7 dBA at location point #10 (Capulin Canyon).</li> <li>Indirect noise impacts may occur due to air tours being displaced to outside the ATMP planning area</li> </ul>
Air Quality and Climate Change	<ul> <li>GHG emissions: 0.46 to 1.13 MT of CO<sub>2</sub> per year.</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>No indirect effects expected.</li> </ul>	<ul> <li>100% reduction in criteria pollutant emissions within the ATMP planning area.</li> <li>Reduction in GHG emissions of 0.46 to 1.13 MT CO<sub>2</sub> within the ATMP planning area.</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP planning area, and some areas not currently exposed</li> </ul>	<ul> <li>No to negligible change in criteria pollutant emissions within the ATMP planning area.</li> <li>No to minimal change to GHG emissions of -0.53 to 0.28 MT of CO<sub>2</sub> per year within the ATMP planning area.</li> <li>Would not cause NAAQS exceedance or increase the frequency or severity of any existing violations.</li> <li>Indirect impacts may occur due to air tours outside the ATMP planning area if winds transport emissions to within the ATMP</li> </ul>

Environmental Impact Category	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3
		<ul> <li>to emissions from air tours (outside the ATMP planning area) may be exposed to emissions.</li> <li>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.</li> </ul>	<ul> <li>planning area, and some areas not currently exposed to emissions from air tours (outside the ATMP planning area) may be exposed to emissions.</li> <li>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.</li> </ul>
Biological Resources	<ul> <li>Commercial air tour noise would continue, having short and infrequent disruptions to wildlife within the ATMP planning area; small risk of direct strikes to airborne species.</li> <li>Time above 35 dBA: &lt;5 minutes in 39% of ATMP planning area.</li> <li>Not expected to result in indirect effects to wildlife.</li> </ul>	<ul> <li>Direct beneficial effects to biological resources are expected.</li> <li>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.</li> </ul>	<ul> <li>Would limit flights to two routes and increase altitudes, overall reducing disruptions to wildlife behavior and reducing risk of direct strikes to airborne species.</li> <li>Time above 35 dBA: ER-S orange route, 0 minutes across ATMP planning area; ER-N red route, &lt;5 minutes across 53% of ATMP planning area.</li> <li>Could result in indirect effects to wildlife due to air tour displacement outside the ATMP planning area</li> </ul>
Cultural Resources	<ul> <li>Cultural resources would continue to be impacted by air tours, as noise and visual effects would impact the feeling and setting of cultural resources.</li> <li>Interruptions to tribal practices would continue associated with violations to tribal privacy.</li> <li>12-hr equivalent sound level: 19.3 dBA at location point #11 (Rio Grande).</li> <li>Time above 35 dBA: &lt;5 minutes across the APE.</li> <li>Not expected to result in indirect effects to cultural resources within the APE.</li> </ul>	<ul> <li>Would reduce the noise and remove visual intrusions from the setting of cultural resources within the APE.</li> <li>Eliminate disruptions to tribal practices from air tours and improve privacy for tribal users of the Park.</li> <li>Could result in some indirect impacts to cultural resources within the APE.</li> </ul>	<ul> <li>Would reduce noise and visual impacts that could detract from the feeling and setting of cultural resources within the APE.</li> <li>Would limit flights to two routes, reducing the spatial area across which air tours could interrupt tribal practices, but would still result in violations to tribal privacy from the presence of air tours in the APE.</li> <li>12-hr equivalent sound level for ER-S orange route, &lt;3 dBA across APE; ER-N red route, &lt;25 dBA across APE.</li> </ul>

Environmental	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3
imput eutegory			<ul> <li>Time above 35 dBA: ER-S orange route, 0 minutes across ATMP planning area; ER-N red route, &lt;5 minutes across 53% of ATMP planning area.</li> <li>Could result in air tour displacement outside the ATMP planning area.</li> </ul>
Wilderness	<ul> <li>Current air tour noise within and near NPS Wilderness would continue to have minor detractions from the natural quality and opportunity for solitude.</li> <li>Time above 35 dBA: &lt;5 minutes in 39% of ATMP planning area.</li> <li>No indirect effects expected.</li> </ul>	<ul> <li>Offers the greatest protection of NPS Wilderness, as commercial air tours would be eliminated over NPS Wilderness.</li> <li>Could result in indirect impacts to USFS Wilderness areas associated with the sights and sounds of air tours if tours were displaced to outside the ATMP planning area.</li> </ul>	<ul> <li>Would limit flights to two routes, overall reducing areas where noise impacts could detract from the natural quality of Wilderness character and opportunities for solitude within NPS Wilderness.</li> <li>Time above 35 dBA: ER-S orange route, 0 minutes across ATMP planning area; ER-N red route, &lt;5 minutes across 53% of ATMP planning area.</li> <li>Could result in some indirect impacts to USFS Wilderness areas if tours were displaced to outside the ATMP planning area and the sights and sounds of those tours affected USFS Wilderness areas. Alternative 3 would likely result in fewer indirect impacts than Alternative 2, as some tours would still be permitted within the ATMP planning area.</li> </ul>
Visitor Use and Experience and Other Recreational Opportunities	<ul> <li>Current minimal impacts to interpretive programs at the Visitor Center due to sound levels from air tours resulting in speech</li> </ul>	<ul> <li>Offers the greatest protection of visitor use and experience but eliminates air tours within the ATMP planning area</li> </ul>	<ul> <li>Limits flights to two routes, overall reducing areas where noise impacts could detract from visitor use and experience.</li> </ul>
	<ul> <li>interference and inability to hear natural sounds would continue.</li> <li>Minor impacts to visitor experience in natural areas of the Park related to the</li> </ul>	<ul> <li>Eliminates the opportunity for those interested in viewing the Park from an aerial perspective.</li> <li>Air tours occurring outside the ATMP planning area</li> </ul>	<ul> <li>Limits the availability of air tours for those interested in viewing the Park from an aerial perspective.</li> <li>Time above 35 dBA: ER-S orange route, 0 minutes</li> </ul>

Environmental	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3
Impact Category	<ul> <li>intrusion of audible air tour noise where visitors would expect natural sounds to prevail during their visit to the Park.</li> <li>Maintains the current availability of air tours for those that wanted to view the Park from an aerial vantage point.</li> <li>39% of the ATMP planning area would experience audible air tour noise at some point in the day.</li> <li>Audible air tour noise &lt;5 minutes a day in areas most heavily used by visitors.</li> <li>Time above 52 dBA: &lt;1 minute a day.</li> <li>No indirect effects expected.</li> </ul>	<ul> <li>may result in noise in other areas near those flights which could affect the visitor experience.</li> <li>Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area.</li> </ul>	<ul> <li>across ATMP planning area; ER-N red route, &lt;5 minutes across 53% of ATMP planning area.</li> <li>Audible air tour noise zero minutes a day for the ER-S orange route and less than 5 minutes a day for the ER-N N red route in areas most heavily used by visitors.</li> <li>Time above 52 dBA: &lt;1 minute for the ER-S orange route and &lt;1 minute a day for the ER-N red route.</li> <li>Indirect impacts to visitor experience and points of interest could occur if flights were displaced to outside the ATMP planning area.</li> </ul>
Environmental Justice and Socioeconomics	<ul> <li>Would not result in disproportionately high and adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>DNL: &lt;35 dB</li> <li>0.46-1.13 MT CO<sub>2</sub></li> <li>Peak month, average day= 1 air tour</li> </ul>	<ul> <li>Would not result in disproportionately high or adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>Could result in changes to employment or the amount of income that the air tour operator and other ancillary businesses generate from conducting air tours within the ATMP planning area.</li> </ul>	<ul> <li>Would not result in disproportionately high or adverse impacts to EJ populations or impact those populations in ways that are unique to those EJ populations.</li> <li>DNL: &lt;35 dB within the ATMP planning area.</li> <li>Δ -0.53-0.28 MT CO<sub>2</sub></li> <li>Could impact employment or the amount of income that the air tour operator and other ancillary businesses generate from conducting air tours within the ATMP planning area; impacts would be less than Alternative 2.</li> </ul>
Visual Effects	<ul> <li>Air tours would continue to have minimal impact to viewsheds.</li> <li>No indirect effects expected.</li> <li>Peak month, average day = 1 air tour</li> </ul>	<ul> <li>Would provide the greatest protection to Park viewsheds and would benefit visual resources and visual character within the Park.</li> <li>Indirect impacts to viewsheds could occur if</li> </ul>	<ul> <li>Would limit flights to two routes, overall reducing the likelihood of impacts to viewsheds.</li> <li>Indirect impacts to viewsheds could occur if flights were displaced to</li> </ul>

Environmental	Alternative 1 (No Action)	Alternative 2 (Preferred)	Alternative 3
Impact Category			
		flights were displaced to outside the ATMP planning area.	outside the ATMP planning area.
DOT Act Section 4(f) Resources	<ul> <li>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 altered to avoid or prevent unacceptable impacts to the Park's Section 4(f) resources.</li> </ul>	<ul> <li>No substantial impairment of Section 4(f) resources in the ATMP planning area.</li> <li>No "constructive use" to any Section 4(f) properties.</li> </ul>	<ul> <li>No substantial impairment of Section 4(f) resources in the ATMP planning area.</li> <li>No "constructive use" to any Section 4(f) properties.</li> <li>DNL: &lt;35 dB within the ATMP planning area.</li> <li>Time above 35 dBA: ER-S orange route, 0 minutes across ATMP planning area; ER-N red route, &lt;5 minutes across 53% of ATMP planning area.</li> <li>Time above 52 dBA: Not anticipated to exceed 1 minute per day.</li> </ul>