5 Environmental Consequences

This chapter discusses the potential environmental impacts that could result from implementing the Proposed Action and the No Action Alternative. Specifically, this EA considers effects on the environmental resource categories identified in FAA Order 1050.1F. Both the Proposed Action and the No Action Alternative were evaluated under forecasted 2023 conditions, which is the first year the Proposed Action could potentially be implemented, and under forecasted 2028 conditions. This evaluation considers the direct, indirect, and cumulative effects associated with the Proposed Action and No Action Alternative, as required under FAA Order 1050.1F.

Potential environmental impacts are identified for the environmental resource categories described in Section 4.3. Neither the Proposed Action nor the No Action Alternative would involve land acquisition; physical changes to the environment resulting from ground disturbance or construction activities; changes in patterns of population movement or growth, increases in public service demands, or business and economic activity; or generation, disturbance, transportation, or treatment of hazardous materials. Therefore, neither alternative is expected to result in impacts to certain environmental resource categories (please see Section 4.2 for a list of excluded categories). The excluded environmental resource categories are not further discussed in this chapter.

Table 5-1 identifies the environmental impact categories that the Proposed Action could potentially affect, the thresholds of significance used to determine the potential for impacts, and a side-by-side comparative summary of the potential for environmental impacts resulting from implementing the Proposed Action under 2023 and 2028 forecast conditions.

Table 5-1 Summary of Potential Environmental Impacts

Environmental Impact Category	Threshold of Significance/Factors to Consider	Significant Impact? 2023	Significant Impact? 2028
Noise and Noise Compatible Land Use	The action 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. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.	No	No
Department of Transportation Act, Section 4(f) Resources	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. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance; and publicly or privately owned land from an historic site of national, state, or local significance. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished.	No	No
Historical, Architectural, Archeological, and Cultural Resources	The FAA has not established a significance threshold for Historical, Architectural, Archeological, and Cultural Resources. For historic properties subject to Section 4(f) of the DOT Act, a significant impact would occur when the action involves more than 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	No	No

Table 5-1 Summary of Potential Environmental Impacts

Environmental Impact Category	Threshold of Significance/Factors to Consider	Significant Impact? 2023	Significant Impact? 2028
Wildlife (Avian and Bat Species)	A significant impact to federally-listed threatened and endangered species would occur when the United States Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS) determines that the Proposed Action would be likely to jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of Federally-designated critical habitat. The FAA has not established a significance threshold for non-listed species.	No	No
Environmental Justice	The FAA has not established a significance threshold for Environmental Justice. However, a significant factor to consider to determine potential significant impact is if the action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population, i.e., a low-income or minority population due to significant impacts in other environmental impact categories, or impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines is unique to the environmental justice population and significant to that population.	No	No
Energy Supply (Aircraft Fuel)	The FAA has not established a significance threshold for Energy Supply. However, a factor to consider is if the action would have the potential to cause demand to exceed available or future (2025) supplies of these resources.	No	No
Air Quality	A significant impact would occur if the Proposed Action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the Environmental Protection Agency under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.	No	No
Climate	The FAA has not established a significance threshold for Climate and has not identified specific factors to consider in making a significance determination for GHG emissions.	No	No
Visual Effects	The FAA has not established a significance threshold for Visual Resources / Visual Character. Factors to consider include 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; the degree to which the action would have the potential to contrast with the visual resources and/or visual character in the study area; and the degree to which the action would have the potential to block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.	No	No

Source: FAA Order 1050.1F, Exhibit 4-1, October 2019, FAA 1050.1F Desk Reference (v2), February 2020.
Prepared By: ATAC Corporation, August 2022.

The following sections describe the impact findings for each environmental resource category, followed by a discussion of potential cumulative impacts. In summary, no significant impacts to any environmental resource category have been identified.

5.1 Noise and Compatible Land Use

This section discusses the analysis of aircraft noise exposure under the Proposed Action and the No Action Alternative, under both 2023 and 2028 forecast conditions. This discussion includes identifying the differences in noise exposure between the Proposed Action and the No Action Alternative. This comparison is used to determine if implementing the Proposed Action would result in significant noise impacts. Additional information on noise metrics and the basics of noise can be found in Appendix F: *Basics of Noise*. Detailed information on the noise analysis is included in Appendix I: *Noise Technical Report*.

5.1.1 Summary of Impacts

Aircraft noise exposure was modeled for both the Proposed Action and the No Action Alternative under 2023 and 2028 forecast conditions. For 2023:

- No significant noise (+1.5 DNL dB resulting in 65 DNL dB or higher) was identified.
- 11 Census block centroid receptor points representing 573 persons were identified in the +5.0 dB resulting in a value of 45-60 DNL dB.
- Six 0.5 NM evenly spaced grid receptor points were identified in the +5.0 dB resulting in a value of 45-60 DNL dB.
- Finally, six 4(f) receptor points representing 11 named resources were identified in the +5.0 dB resulting in a value of 45-60 DNL dB.

For 2028,

- No significant noise (+1.5 DNL dB resulting in 65 DNL dB or higher) was identified.
- Three Census block centroid receptor points representing 100 persons were identified in the +3.0 dB resulting in a value of 60-65 DNL dB.
- Two 0.5 NM evenly spaced grid receptor points were identified in the +3.0 dB resulting in a value of 60-65 DNL dB.
- 108 Census block centroid receptor points representing 8,608 persons were identified in the +5.0 dB resulting in a value of 45-60 DNL dB.
- 130 0.5 NM evenly spaced grid receptor points were identified in the +5.0 dB resulting in a value of 45-60 DNL dB.
- Finally, 19 4(f) receptor points representing 24 named resources were identified in the +5.0 dB resulting in a value of 45-60 DNL dB.

The noise analysis demonstrates that implementing the Proposed Action would not result in a day-night average sound level (DNL) increase of 1.5 DNL dB or higher in noise-sensitive areas exposed to DNL 65 dB or higher. Therefore, neither the Proposed Action nor No Action Alternative would result in a significant noise impact.

5.1.2 Methodology

The noise analysis evaluated noise exposure to communities within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR)-filed flight plans, at altitudes from ground level up to 10,000 feet above ground level (AGL). If the FAA approves the Proposed Action, the agency expects to begin implementation in 2023. Therefore, aircraft noise modeling was conducted for 2023 and five years later (2028), as required by FAA Order 1050.1F.

IFR-filed aircraft activity was forecasted for the years 2023 and 2028 and used to model conditions under both the Proposed Action and the No Action Alternative. Noise modeling was conducted using Aviation Environmental Design Tool version 3d (AEDT 3d), the FAA-required noise model for aviation projects including air traffic changes over large areas and altitudes over 3,000 feet AGL.[54] Due to the presence of a dedicated military airbase (RND) as a Study Airport and joint-use civilian but primarily military Study Airport (SKF), NOISEMAP was use for military aircraft modelling and the results were combined with AEDT 3d noise output using the BaseOPS NMPlot to combine results. Noise was modelled from the ground level up to and including 18,000' AGL for the General Study Area and the 18,000 Foot Study Area due to the presence of national parks and/or wildlife refuges.[55] The SNIDR Supplemental Study Area was also included for screening purposes of dependent utility procedures

Future year noise exposure levels modeled for the Proposed Action and the No Action Alternative were compared to determine whether there is a potential for noise impacts. While the overall number and type of aircraft operations will increase between 2023 and 2028, the number and type of aircraft operations are the same under both the Proposed Action and No Action Alternative in 2023 and 2028. The Proposed Action would not include developing or constructing facilities, such as runways or terminal expansions, that would be necessary to accommodate an increase in aviation activity; therefore, no additional growth in operations associated with the Proposed Action is anticipated. The noise analysis reflects the change in noise exposure resulting from the proposed changes in aircraft routes (i.e., flight tracks) under the Proposed Action compared to the No Action Alternative.

Detailed information on IFR-filed aircraft operations within the General Study Area was assembled for input into AEDT 3d and NOISEMAP, including the following data:

Average Annual Day IFR-Filed Aircraft Flight Schedules: The IFR-filed aircraft flight schedules identify arrival and departure times, aircraft types, and origin/destination information for an average annual day (AAD) in 2023 and 2028. The AAD represents all the aircraft operations for every day in a study year divided by 365, the number of days in a year. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The AEDT forecast was based on the FAA's Fiscal Years 2021-2045 Terminal Area Forecast (TAF),[56] modified for 2023 and 2028 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. For NOISEMAP, the 2023 and 2028 aircraft operations were developed from information contained in the NOISEMAP AICUZ models in combination with projected future basing for T-38C and T-7A taken from the EIS.[57] Future aircraft operations at RND and SKF reflect an overall increase in T-7A operations and a decrease in T-38C operations, among other military aircraft. More detail related to the development of the forecasts is provided in Appendix H: *Flight Schedules Technical Report*.

Weather: The AEDT 3d and NOISEMAP models includes data for multiple meteorological parameters, including temperature, pressure, and humidity. Weather conditions for all Study Airports were defined and used in the noise study. Terrain is consistent between both models, while SKF and RND weather models relied on the respective AICUZ study inputs reflecting typical local April conditions. Further discussion on the weather data employed in the AEDT 3d model can be found in Appendix I: *Noise Technical Report*.

54 FAA 1050.1F *Desk Reference*, *Noise and Noise-Compatible Land Use*, Sec. 11.1.3, February 2020.
55 FAA 1050.1F *Desk Reference*, Noise and Noise-Compatible Land Use, App. B-1.3, February 2020.
56 U.S. Department of Transportation, Federal Aviation Administration, *Terminal Area Forecast, FY 2021-2045* (https://aspm.faa.gov/main/taf.asp; accessed May 2022).
57 Department of the Air Force. *Final Environmental Impact Statement: T-7A Recapitalization at Joint Base San Antonio, Texas*; 2022

Flight Tracks: The flight tracks used in noise modeling were based on radar data collected for the existing conditions (2021/2022) noise analysis and information provided by FAA and US Air Force Air Traffic Control (ATC) personnel.[58] Aircraft routings and flight corridors under both the No Action Alternative and Proposed Action are depicted Appendix AA: *Proposed Action Procedures and Flight Corridors*. For the Proposed Action, flight tracks were developed from the aircraft procedures created by the San Antonio Airspace Modernization Project PBN Design Team using the Terminal Area Route Generation, Evaluation, Traffic and Simulation (TARGETS) program. The majority of the No Action Alternative modeled flight tracks are based on the existing conditions noise analysis. The remaining No Action Alternative flight tracks for amended or new procedures were modeled based on input from the air traffic control experts who developed the procedures. Illustrations depicting Existing Conditions radar tracks and Proposed Action procedure designs were developed and shared with representatives of the PBN Design team as part of the consultation process. The consultations were conducted to seek out key model input assumptions such as frequency of Proposed Action procedure usage and air traffic control techniques such as vectoring. The assumptions were then used for refining model track locations, altitude profiles, and utilization.

TARGETS flyability lines, or the lines indicating the actual 3D path of different categories of aircraft ideally flying the procedure for the Proposed Action procedures served as the center of the 1 nautical mile and 0.3 nautical mile containment area for RNAVs and RNPs, respectively. The containment area is generally where dispersed tracks are contained, but during the PBN Design consultation process, air traffic control experts could indicate the need for vectors off of the RNAV with a rejoin of the RNAV at a later point. For those identified cases AEDT 3d model tracks were developed to account for that type of dispersion. NOISEMAP limitations do not enable track dispersion similar to AEDT 3d, however multiple tracks were used to approximate dispersion along a flight track.

Runway Use: Runway use percentages were identified for all runways at the Study Airports through a number of previously referenced resources for each model. Forecasted aircraft operations were assigned to particular runways representing operating conditions at the Study Airports under Proposed Action and No Action Alternative conditions. Runway use patterns did not change under the Proposed Action Alternative at the Study Airports compared to the No Action Alternative.

More detail related to the development of the AEDT 3d and NOISEMAP model input files is provided in Appendix I: *Noise Technical Report*.

As discussed in Section 4.2.1.1, the AEDT 3d and NOISEMAP models were used to compute DNL values for 2023 and 2028 Proposed Action and No Action Alternative conditions at multiple sets of data points:

- 46,954 2020 Census block centroids;
- 118,489 uniform grid points at 0.5-nautical mile (NM) intervals on a uniform grid covering the General Study Area, which were also used to calculate DNL values at potential Department of Transportation Act (DOT), Section 4(f) resources and historic sites; and,
- 46,453 unique points representing Section 4(f) resources, including 143 National Register of Historic Places (NRHP) listed historic sites. Other unique points evaluated add 198 noise sensitive uses in areas around the Study Airports exposed to noise levels of DNL 65 dB and higher.

58 Due to DOD data security protocols regarding PDARS military flight track data, this document only visualizes those civilian and military flight tracks originating from and arriving to civilian Study Airports (BAZ and SAT). Flight tracks for civilian and military aircraft arriving and departing to all Study Airports including SKF and RND were used for all NEPA analysis.

Also discussed in Section 4.2.1.1, DNL is the FAA's primary noise metric. **Table 5-2** provides the criteria used to assess the changes in aircraft noise exposure attributable to the Proposed Action compared with the No Action Alternative. FAA Order 1050.1F defines a significant impact as an increase of DNL 1.5 dB at noise-sensitive land use locations (e.g., residences, schools, etc.) exposed to aircraft noise of DNL 65 dB or higher under the Proposed Action. For example, an increase from 63.5 dB to 65 dB is considered a significant impact.

FAA Order 1050.1F also recommends that when there are DNL increases of 1.5 dB or more at noise-sensitive locations in areas exposed to aircraft noise of DNL 65 dB and higher, DNL increases of 3 dB or more in areas exposed to aircraft noise between DNL 60 dB and 65 dB should also be evaluated and disclosed. It is important to note that DNL increases of 3 dB in areas exposed to aircraft noise below DNL 65 dB are not considered "significant impacts" but are to be considered in the environmental evaluation of a proposed project.

FAA Order 1050.1F also stipulates that changes in exposure of DNL 5 dB or greater in areas exposed to aircraft noise between DNL 45 dB and 60 dB should be considered for airspace actions such as changes to air traffic routes. This threshold was established in 1990, following issuance of an FAA noise screening procedure to evaluate whether certain airspace actions above 3,000 feet AGL might increase DNL levels by 5 dB or more. The FAA prepared this noise-screening procedure because experience indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern. As shown in **Table 5-2**, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered *reportable noise increases*.

Table 5-2 Criteria for Determining Impact of Changes in Aircraft Noise

DNL Noise Exposure Level	Increase in DNL with Proposed Action	Aircraft Noise Exposure Change Consideration
DNL 65 and higher	DNL 1.5 dB or more 1/	Exceeds Threshold of Significance
DNL 60 to 65	DNL 3.0 dB or more 2/	Reportable Noise Increase (Considered When Evaluating Air Traffic Actions)
DNL 45 to 60	DNL 5.0 dB or more 3/	Reportable Noise Increase (Information Disclosed When Evaluating Air Traffic Actions)

Notes:
1/ Source FAA 1050.1F Desk Reference, Pg. 11-10; Title 14 C.F.R. Part 150.21 (2) (d); and Federal Interagency Committee on Noise, Federal Agency Review of Selected Airport Noise Issues, August 1992.
2/ Source FAA 1050.1F Desk Reference, Pg. 11-10; and Federal Interagency Committee on Noise, Federal Agency Review of Selected Airport Noise Issues, August 1992.
3/ Source FAA, 1050.1F Desk Reference, Pg. 11-10.

Source: FAA 1050.1F *Desk Reference*, Ch. 11, *Noise and Noise-Compatible Land Use*, February 2020.
Prepared by: ATAC Corporation, September 2022

5.1.3 Potential Impacts – 2023 and 2028

Table 5-3 summarizes the results of the noise analysis for 2023 and 2028 conditions. The results for both years indicate that, when compared to the No Action Alternative, the Proposed Action would not result in a DNL 1.5 dB or higher increase in noise-sensitive areas exposed to DNL 65 dB or higher. These results indicate the Proposed Action would not result in a significant noise exposure impact on population exposed to DNL 65 dB or higher levels under the Proposed Action. Additional information, exhibits, as well as a full accounting of all receptor points can be found in Appendix I: *Noise Technical Report*.

5.1.3.1 Census Block Centroids

The 2023 Proposed Action did result in a reportable noise increase of DNL 5.0 dB in areas exposed to DNL 45 dB to 60 dB. According to census data, a total of 573 people, associated with 11 population centroids, would be impacted. The population centroids are located in two general areas. The first area is located approximately 12.5 NM east of SAT near the border of Guadalupe and Bexar Counties. The second area is located approximately 10 NM northeast of SAT in Comal County. The reportable noise increases are attributable to military aircraft departing RND heading north in the 2023 No Action scenario shifting to utilize the YODUH SID in the 2023 Proposed Action scenario.

Additionally, the 2028 Proposed Action did result in reportable noise increases of DNL 3.0 dB in areas exposed to DNL 60 dB to 65 dB. According to census data, a total of 100 people, associated with three population centroids, would be impacted by this increase. The population centroids are located approximately 12.5 NM east of SAT near the border of Guadalupe and Bexar Counties. In the same instance as the 2023 results, these centroids align with modeled departure tracks for military flights and can be attributed to departing RND military aircraft using the proposed YODUH SID.

Finally, the Proposed Action resulted in a reportable noise increase of DNL 5.0 dB in areas exposed to DNL 45 dB to 60 dB. According to census data, a total of 8,068 people, associated with 108 population centroids, would be impacted by this increase. The population centroids are located in five general areas. The first area is located approximately 10 NM northeast of SAT near the border of Bexar and Comal Counties. The second area is located approximately 20 NM north of SAT in Comal and Blanco Counties. The impact points at these first two locations align with modeled departure tracks for flights departing RND using the proposed YODUH SID. The third and fourth areas are located approximately 12 NM north and 17 NM northwest of SAT, respectively. These areas are near the borders of Comal, Bexar, and Kendall counties. These areas align with modeled departure tracks for military flights departing RND using the proposed ALISS SID. The fifth area is about 17 NM northwest of SAT in Bexar County and aligns with modeled tracks for flights arriving to SKF using the proposed POPPO STAR.

The reportable noise increase at the aforementioned locations is attributable to aircraft operations utilizing three Proposed Action procedures. The first set of operations that are the likely cause of these noise impacts are military aircraft departing RND heading north in the 2028 No Action scenario shifting to utilize the YODUH SID in the 2028 Proposed Action scenario. These operations impact locations to the north and east of SAT. The second set of operations that are a likely cause of noise impacts are military aircraft departing RND heading northwest in the 2028 No Action scenario shifting to utilize the ALISS SID in the 2028 Proposed Action scenario. These operations impact locations to the north and northwest of SAT. Finally, arrivals to SKF utilizing the STV arrival procedure in the No Action 2028 Scenario shifting to utilize the POPPO STAR in the Proposed Action 2028 Scenario are attributable to the noise impacted locations northwest of SAT.

5.1.3.2 4(f), Historic, and Cultural Resources

For the 4(f), Historic, and Cultural Resources areas in the 2023 scenarios, the analysis indicates that the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher, nor would it result in a reportable noise increase of DNL 3.0 dB in areas exposed to DNL 60 dB to 65 dB compared with the 2023 No Action scenario. However, the 2023 Proposed Action did result in a reportable noise increase of DNL 5.0 dB in areas exposed to DNL 45 dB to 60 dB. The locations of these 4(f), Historic, and Cultural Resources reportable noise points are in the same two general areas as the noise impacted population centroids found in the 2023

scenarios: one area is approximately 12.5 NM east of SAT near the border of Guadalupe and Bexar Counties; and another approximately 10 NM northeast of SAT in Comal County. The reportable noise increase in the 2023 Proposed Action scenario is attributable to the use of the YODUH SID from RND military aircraft departures.

Similarly, for the 4(f), Historic, and Cultural Resources areas in the 2028 scenarios, the analysis indicates that the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher, nor would it result in a reportable noise increase DNL 3.0 dB in areas exposed to DNL 60 dB to 65 dB compared with the 2028 No Action scenario. However, the 2028 Proposed Action did result in a reportable noise increase of DNL 5.0 dB in areas exposed to DNL 45 dB to 60 dB. The locations of these 4(f), Historic, and Cultural Resources reportable noise points are in similar areas as the noise impacted population centroids found in the 2028 scenarios. The points are all about 10 to 20 NM north and east of SAT. For the reportable noise increase in the 2028 Proposed Action scenario, reportable noise can be attributed to the use of YODUH and ALISS SIDs from RND military aircraft departures.

5.1.3.3 One-Half Nautical Mile Grid

For the 0.5 NM Grid Point data in both the 2023 and 2028 scenarios, the analysis indicates the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher. Moreover, the 2023 Proposed Action scenario also did not result in a DNL 3.0 dB increase in areas exposed to DNL 60 dB to 65 dB compared to the 2023 No Action scenario.

However, the 2028 Proposed Action scenario did result in a reportable noise increase of DNL 3.0 dB in areas exposed to DNL 60 dB to 65 dB compared with the 2028 No Action scenario at two grid points. The locations of these grid points are in similar areas as the noise impacted population centroids found in the 2028 scenarios near Cibolo.

In addition, for the 2023 scenarios, six grid points would experience a greater than DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB in the Proposed Action scenario. The locations of these grid points are in similar areas as the noise impacted population centroids found in the 2023 scenarios. For the 2028 scenarios, 130 grid points would experience a greater than DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB in the Proposed Action scenario. The locations of these grid points are in similar areas as the noise impacted population centroids found in the 2028 scenarios.

Similar to the population centroid results, the reportable noise increase in the 2023 Proposed Action scenario is attributable to the use of the YODUH SID from RND military aircraft departures. For the reportable noise increase in the 2028 Proposed Action scenario, the likely causes are the YODUH and ALISS SIDs from military aircraft departures from RND and the POPPO STAR from SKF arrivals.

5.1.3.4 Noise Sensitive Land Use Areas

For all 2023 and 2028 scenarios, the analysis indicates that the Proposed Action would not result in any significant increase in noise in any of the identified Noise Sensitive Land Use Areas.

5.1.3.5 SNIDR Supplemental Study Area

For all 2023 and 2028 scenarios, the analysis indicates that the Proposed Action would not result in any significant increase in noise in any of the points that intersect the SNIDR Supplemental Study Area.

Table 5-3 Change in Potential Population Exposed to Aircraft Noise – 2023 and 2028

DNL Noise Exposure Level Under the Proposed Action	Increase in DNL with the Proposed Action	Population Exposed to Noise that Exceeds the Threshold	
		2023	2028
DNL 65 and higher	DNL 1.5 dB or greater	0	0
DNL 60 to 65	DNL 3.0 dB or greater	0	108
DNL 45 to 60	DNL 5.0 dB or greater	573	8,068

Sources: U.S. Census Bureau, 2020 Census Population Centroids, ATAC Corporation, August 2022 (AEDT 3d and NOISEMAP modeling results).
Prepared by: ATAC Corporation, September 2022.

Under the No Action Alternative no changes to air traffic routes in the San Antonio Airspace Modernization Project would occur in 2023 and 2028, and no effects related to changes in aircraft noise exposure would be anticipated.

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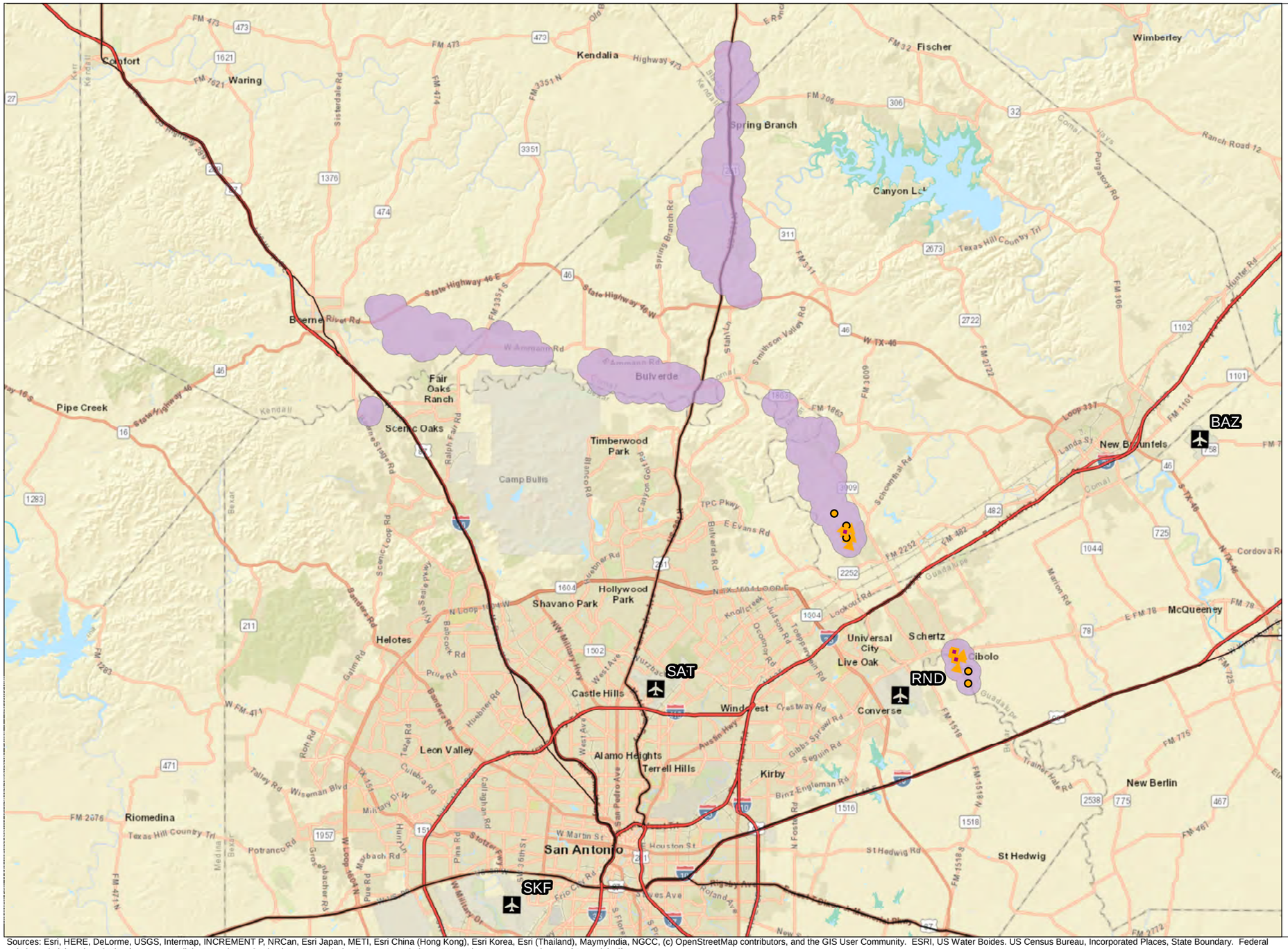

LEGEND

- Section 4(f), Section 106 Historic and Cultural Resource Centroid Exposed to a DNL 45 to 60 dB with a DNL 5 dB Increase
- Evenly-Spaced Grid Centroid Exposed to a DNL 45 to 60 dB with a DNL 5 dB Increase
- Census Grid Centroid Exposed to a DNL 45 to 60 dB with a DNL 5 dB Increase
- Study Airport
- Area of Potential Effect
- General Study Area (GSA)

Water Bodies

- Inundation Area
- Lake/Pond
- Playa
- Reservoir
- Stream/River
- Swamp/Marsh
- US States

Notes:

Major Study Airports
San Antonio International Airport **SAT**

Satellite Study Airports
Kelly Field **SKF**
New Braunfels National Airport **BAZ**
Randolph Air Force Base Airfield **RND**

Projection :GCS North American 1983
Scale: 1:2,631,162

0 1 2 4 Miles

N

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MaymyIndia, NGCC, (c) OpenStreetMap contributors, and the GIS User Community. ESRI, US Water Boides. US Census Bureau, Incorporated Places, State Boundary. Federal Aviation Administration, Code of Instrument Flight Procedures, Study Airports. ATAC, Study Area Boundaries, AEDT Noise Receptors and Area of Potential Effect.
Prepared by: ATAC Corporation, September 2022.

Exhibit 5-1

Change in Aircraft Noise – Reportable Noise Increase 2023

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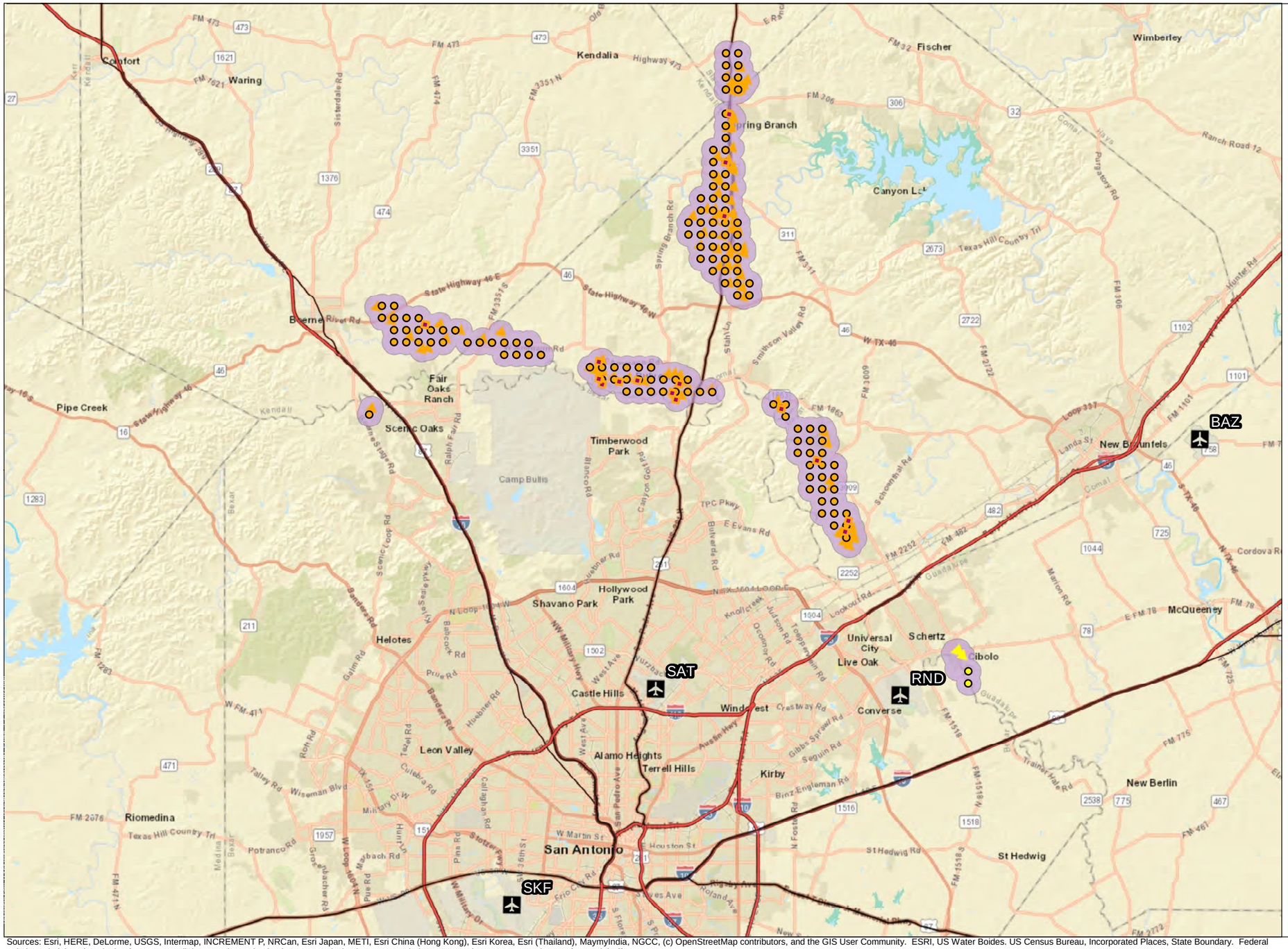

LEGEND

- Section 4(f), Section 106 Historic and Cultural Resource Centroid Exposed to a DNL 45 to 60 dB with a DNL 5 dB Increase
- Evenly-Spaced Grid Centroid Exposed to a DNL 60 to 65 dB with a DNL 3 dB Increase
- Evenly-Spaced Grid Centroid Exposed to a DNL 45 to 60 dB with a DNL 5 dB Increase
- Census Grid Centroid Exposed to a DNL 60 to 65 dB with a DNL 3 dB Increase
- Census Grid Centroid Exposed to a DNL 45 to 60 dB with a DNL 5 dB Increase
- Study Airport
- Area of Potential Effect
- General Study Area (GSA)

Water Bodies

- Inundation Area
- Lake/Pond
- Playa
- Reservoir
- Stream/River
- Swamp/Marsh
- US States

Notes:

Major Study Airports
San Antonio International Airport **SAT**

Satellite Study Airports
Kelly Field **SKF**
New Braunfels National Airport **BAZ**
Randolph Air Force Base Airfield **RND**

Projection :GCS North American 1983
Scale: 1:2,631,162

0 1 2 4 Miles

N

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MaymyIndia, NGCC, (c) OpenStreetMap contributors, and the GIS User Community. ESRI, US Water Boides. US Census Bureau, Incorporated Places, State Boundary. Federal Aviation Administration, Code of Instrument Flight Procedures, Study Airports. ATAC, Study Area Boundaries, AEDT Noise Receptors and Area of Potential Effect.
Prepared by: ATAC Corporation, September 2022.

Exhibit 5-2

Change in Aircraft Noise – Reportable Noise Increase 2028

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5.1.4 Noise Sensitive Uses and Areas

In addition to disclosing potential noise impacts to residential population, FAA Order 1050.1F requires the FAA to identify and describe noise sensitive uses and areas in the General Study Area. As defined in Paragraph 11-5b(10) of FAA Order 1050.1F, a noise sensitive area is "an 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." Potential impacts to residential population are discussed in Sections 5.1.3. Potential impacts to recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites are discussed in Sections 5.2 and 5.3. Excluding these resources, Appendix I Table S6.1 lists those locations identified as noise sensitive in the General Study Area and reports the noise values associated with each location. The noise analysis results indicate that the Proposed Action when compared to the No Action Alternative would not result in a DNL 1.5 dBA or higher increase to noise sensitive uses or noise sensitive areas in locations exposed to DNL 65 dB or higher. In addition, none of these resources would experience reportable noise increases between DNL 60 dB and 65 dB and DNL 45 and 60 dB.

5.1.5 Noise Compatible Land Use

FAA Order 1050.1F requires that EA documents discuss possible conflicts between the Proposed Action and the objectives of federal, regional, state, local, and tribal land use plans, policies, and controls for the area concerned. Analysis of the potential impacts to noise compatible land use was focused on changes in aircraft noise exposure resulting from implementing the Proposed Action. FAA Order 1050.1F states, "The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impact. If the noise analysis concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use." Air traffic actions like the San Antonio Airspace Modernization Project do not result in direct impacts to land such as ground disturbance. Accordingly, the compatible land use analysis relies on changes in aircraft noise exposure between the Proposed Action and the No Action Alternative (discussed in Section 5.1) as the basis for determining compatible land use impacts within the General Study Area.

5.1.5.1 Potential Impacts – 2023 and 2028

As stated in Section 5.1, the Proposed Action, when compared with the No Action Alternative, would not result in changes in aircraft noise exposure in 2023 and 2028 that would exceed the FAA's significance threshold. Likewise, there are no conflicts with federal, regional, state, or local land use plans, policies, and controls. Therefore, the Proposed Action would not result in significant compatible land use impacts.

Under the No Action Alternative, there would be no changes to air traffic routing in the General Study Area and no changes in aircraft noise exposure expected to occur in either 2023 or 2028. Therefore, the No Action Alternative would not result in significant compatible land use impacts.

5.2 Department of Transportation Act, Section 4(f) Resources

This section discusses potential impacts to Department of Transportation (DOT) Act, Section 4(f) Resources. In Chapter 4, **Exhibit 4-3** depicts Section 4(f) resources other than those listed or eligible for listing in the National Register of Historic Places (NRHP) within the Study Areas as described in Section 4.2.2.

5.2.1 Summary of Impacts

Evaluating potential impacts to Section 4(f) resources focuses on changes in aircraft noise exposure resulting from implementing the Proposed Action. The FAA's aircraft noise exposure analysis indicates that the Proposed Action would result in a reportable noise increase at six Section 4(f) resources in 2023 and 19 identified Section 4(f) resources in 2028 within the General Study Area, when compared with the No Action Alternative. The Section 4(f) resources identified within the areas of reportable noise increase consist of recreational parks, cemeteries, historical markers, and private attractions. None of the resources are managed for a quiet setting, are located in suburban, intensive recreational, or near high traffic areas, and are easily vehicle accessible. None of the resources have been designated by the state, local, or federal resource managers as having a high potential value for further noise reduction. Those closest to RND have historically experienced jet aircraft noise since the earliest days of military jet aviation in the 1950s and identified resources in the Cibolo area were converted from residential to park uses in the prior 15 years. RND itself is a National Park Service Historic District and a listed NRHP resource.[59] Furthermore, changes in aircraft overflight would occur at altitudes and distances from viewers that would not substantially impair the view or setting of Section 4(f) resources. Therefore, no constructive use of a Section 4(f) resource associated with the Proposed Action would occur and no significant impact would be anticipated.

Under the No Action Alternative, no changes in air traffic routes in the General Study Area would occur. Therefore, no changes to aircraft noise exposure or aircraft overflight patterns would occur over Section 4(f) resources and no impacts would be anticipated.

5.2.2 Methodology

The FAA evaluates potential effects on Section 4(f) resources in terms of both physical impacts (i.e., physical use) and non-physical impacts (i.e., constructive use). A physical impact would occur as a result of land acquisition, construction, or other ground disturbance activities that would result in physical use of all or a portion of a Section 4(f) property. As land acquisition, construction, or other ground disturbance activities would not occur under either the Proposed Action or the No Action Alternative, neither alternative would have the potential to cause a physical impact to a Section 4(f) resource. Therefore, analysis of potential impacts to Section 4(f) resources is limited to identifying non-physical impacts resulting from constructive use.

A constructive use of a Section 4(f) resource would occur if there were a substantial impairment of the resource to the degree that the activities, features, or attributes of the site that contribute to its significance or enjoyment are substantially diminished. This could occur as a result of both visual and/or noise impacts. Concerning aircraft noise, a constructive use would occur if noise levels substantially impair the resource. Refer to Section 5.9, Visual Effects, regarding potential visual impacts within the General Study Area.

Noise exposure levels were calculated for noise receptor points placed at Section 4(f) resources. A list of the resources evaluated is provided in Appendix I: *Noise Technical Report*. The analysis

59 https://npgallery.nps.gov/NRHP/GetAsset/NHLS/96000753_text, Accessed August 2022.

of potential impacts to Section 4(f) resources considered whether these resources would experience a significant or reportable noise increase when comparing the Proposed Action with the No Action Alternative using the applicable thresholds shown in **Table 5-2**.

FAA Order 1050.1F identifies additional factors in deciding whether to apply the thresholds listed above to determine the significance of noise impacts on Section 4(f) resources. If a reportable noise increase were to occur, the Section 4(f) resources would be evaluated further to determine if the project-related effects would constitute a constructive use. Further evaluation can include confirming that the property is in fact a Section 4(f) resource and identifying the specific attributes for which the resource is managed (e.g., for traditional recreational uses or where other noise is very low and a quiet setting is a generally recognized purpose and attribute).

In cases where Land and Water Conservation Fund Act (LWCF)[60] resources are "used" by a transportation project, FAA Order 1050.1F stipulates that a replacement satisfactory to the Secretary of the Interior is required for recreation lands aided by the Department of Interior's LWCF. Therefore, these resources are considered as part of the Section 4(f) impact analysis process.

5.2.3 Potential Impacts – 2023 and 2028

As stated in Section 5.1, the Proposed Action, when compared with the No Action Alternative, would not result in changes in aircraft noise exposure in 2023 or 2028 that would exceed the FAA's significance threshold for noise increases to Section 4(f) resources. Noise analysis results for Section 4(f) resources can be found in Appendix I: *Noise Technical Report*.

For 2023 and 2028, no 4(f) resources would experience a DNL 1.5 dB increase or decrease in areas exposed to DNL of 65 dB and higher, nor would they experience a reportable noise increase or decrease of DNL 3 dB in areas exposed to DNL 60 dB to 65 dB. For 2023, **Table 5-4** identifies the six 2023 and seven 2028 named 4(f) resources experiencing a greater than DNL 5 dB increase in areas exposed to DNL 45 dB to 60 dB for 2023 and 2028. See Section 5.3 for THC listed Section 106 Resources. A description of each resource relative to the potential for constructive use follows.

Table 5-4 4(f) Resources Exposed to Reportable Aircraft Noise – 2023 and 2028

Resource	+5.0 db DNL or Greater Value by Alternative	
	2023	2028
Cibolo[2]	5.13	
Cibolo[2]	5.13	
Crescent Bend Nature Park[3]	5.89	
Niemietz Park[1]	5.22	
Park, Cibolo, City of[4]	5.22	
Park Lane Park[1]	6.50	9.18
Bulverde Community Park[1]		5.62
Jumbo Evans Sports Park[3]		6.27

60 16 U.S.C. §§ 460l-4, et seq.

Resource	+5.0 db DNL or Greater Value by Alternative	
	2023	2028
Natural Bridge Caverns[2]		8.37
Natural Bridge Caverns[2]		8.38
Pinta Trail in Kendall County[2]		5.88
Pinta Trail in Kendall County[2]		5.88

Notes:
/1 Resource has same name and same unique receptor point across multiple federal, state, and/or local 4(f) databases. These resources are only mentioned once here to avoid duplication.
/2 Resource has same name and different unique receptor point across multiple federal, state, and/or local 4(f) databases.
/3 Resource has different names and same unique receptor point across multiple federal, state, and/or local 4(f) databases. These resources are referred to by the most used common name for ease of identification (e.g. rather than County of Comal County Park from one database, there is an identical receptor point reference for Jumbo Evans Sports Park. Jumbo Evans Sports Park is a most used common name, thus used for clarity).
4/ Resource is a different name, different point, but same resource as Niemetz Park.

Sources: ATAC Corporation, Appendix I: *Noise Technical Report*, Supplement 4.1 *Inventory*. ATAC Corporation, AEDT 3d and NOISEMAP modeling results, August 2022.
Prepared by: ATAC Corporation, September 2022.

The following presents a brief discussion of the resource attributes and features relevant to the applicability for potential constructive use:

- Cibolo: See Niemietz Park, below. The unique point as identified for this named 4(f) resource is located at the north end of Niemietz Park between the football field and the Farm to Market Road 78.
- Cibolo: See Niemietz Park, below. The unique point as identified for this named 4(f) resource is located at the north end of Niemietz Park between the football field and the Farm to Market Road 78.
- Crescent Bend Nature Park:[61] This park, accessed off Schaefer Road, is owned and managed by the City of Schertz and is bordered on the northwest and north by Cibolo Creek, and single family residential on the south, southwest, and west. The park was once a private residential neighborhood that frequently flooded and was eventually purchased and converted to public use in 2009. The park features bird blinds, picnic grounds, and a 1.3 mile walking trail with restroom facilities. The avian diversity and general wildlife presence is well documented. The park is immediately adjacent to Niemietz Park at the northern edge across the Cibolo River. The park is approximately 2.2 miles east-northeast of the RND Study Airport Runway 15L/33R complex and is located below the downwind arrival and upwind departure paths for RND.
- Niemietz Park[62]: Located in the City of Cibolo and accessed off Farm to Market Road 78 at the north end. The park was dedicated in 1977 as a Land and Water Conservation Project (making this a Section 6(f) resource) sponsored by the City of Cibolo, Texas Park and Wildlife Department, the Bureau of Outdoor Recreation and the United States Department of the Interior. The park features a lighted football/soccer field, lighted baseball diamond, walking trails, playground, parking, and public facilities for meetings and events. The park is immediately adjacent to Crescent Bend Nature Park and across the Cibolo River at the southern edge. The park is approximately 2.4 miles east-northeast of the RND Runway 15L/33R complex and is located under the downwind arrival and upwind departure paths for RND.

61 https://friendscbnp.zenfolio.com/, Accessed September, 2022.
62 https://cibolotx.gov/Facilities/Facility/Details/Niemietz-Park-4, Accessed September 2022.

- Park, Cibolo, City of: See Niemietz Park, above. The unique point as identified for this named 4(f) resource is located behind home plate of the baseball diamond in Niemietz Park.
- Park Lane Park:[63] This park is a neighborhood corner park located on the south corner of the Bat Cave Road and Park Lane Drive intersection in the City of Garden Ridge. It is located approximately 7.6 miles north-northeast of RND. It is considered a "pocket park" along with 3 other parks in the City and is bordered on the south and east sides by residences. The park features parking, picnic tables, a gazebo, and water fountain. The park historically experienced overflight arrival and departure traffic from RND, SKF, BAZ, and SAT.
- Bulverde Community Park:[64] This park is a 13 acre facility dedicated in February 2014 and is owned and operated by the City of Bulverde, located approximately 16 miles north of SAT. The park is bordered by residences and rural open land on 3 sides and is accessed from and located across Bulverde Lane from the privately owned and operated Bulverde Airpark (FAA identifier 1TT8).[65] The park features parking, 0.77 miles of walking paths, baseball diamond, multi-sport practice fields, a basketball court, playground, pavilions, gazebo, and restrooms. The FAA remarks for the Airpark users include the following translation from the literal print FAA uses for aviation shorthand: "Use extreme caution for high performance military aircraft from Randolph Air Force Base at or above 3000 feet MSL Monday through Friday 8am-10pm and when tower hours extend by Notices to Air Missions (NOTAMS), occasional Saturdays and Sundays." The park historically experienced overflight arrival and departure traffic from SKF and SAT as well.
- Jumbo Evans Sports Park:[66] This park is approximately 65 acres and is owned and operated by Comal County located approximately 24.8 miles north northeast of SAT. The park is bordered by rural and commercial land on the north and residential land to the south. Access is off of US Highway 281on Jumbo Evans Boulevard. The park features 7 soccer fields, 4 baseball fields, a football field, and six tennis courts with a pavilion. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Natural Bridge Caverns: This unique point is located in the public area of the for-profit privately-owned and operated attraction immediately south of the main buildings and parking lot. The area is accessed from Natural Bridge Caverns Road and is bordered by Natural Bridges Wildlife Ranch to the East, the Cibolo Bluffs Nature Preserve to the west, the Bracken Cave Bat preserve to the south, and private rural land to the north. This underground natural cavern discovered in 1960 is the largest known commercial cavern in Texas ranging from the entrance at ground level to 230 feet below ground and is listed as a State Historical Site and a National Natural Landmark[67]. The co-located area known as the Natural Bridge Caverns Sinkhole Site is an underground archaeological preservation area listed in the National Register of Historic Places (see Section 5.3) and is an undisclosed and off limits to the public due to the significant resources present in the Sinkhole. The resource historically experienced overflight arrival and departure traffic from RND, SKF, BAZ, and SAT.

63 https://www.ci.garden-ridge.tx.us/114/Parks, Accessed September, 2022.
64https://bulverdetx.gov/168/Bulverde-Community-Park, Accessed September 2022.
65 https://nfdc.faa.gov/nfdcApps/services/ajv5/airportDisplay.jsp?airportId=1TT8, Accessed September 2022.
66 https://cceo.org/parks/jumbo-evans , Accessed September, 2022.
67 https://naturalbridgecaverns.com/natural-bridge-caverns-hires-general-manager-to-assist-with-future-growth, Accessed September 2022.

- Natural Bridge Caverns: This unique point is located in the public area immediately south of the main buildings and parking lot; see Natural Bridge Caverns, above.
- Pinta Trail in Kendall County:[68] This unique 4(f) resource point is located as a THC Marker on the north side of approximately 229 Ammann Road east of the City of Boerne in a rural residential area. No facilities are present other than the Historical Marker and a small single car gravel pull-off for viewing. The marker commemorates a rough corridor that extended from San Antonio northwest to Menard, Texas to serve as the eventual Upper Immigrant Trail used by the Forty-Niners on their way to the California gold fields. No actual trail is at or near the site nor are any resources other than the commemorative marker. All surrounding property save and except Ammann Road and associated right-of-way or other utility rights-of-way is residential and rural private property. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Pinta Trail in Kendall County: This unique 4(f) resource point is located feet from the above-referenced Pinta Trail in Kendall County unique point.

Constructive use of a 4(f) resource occurs when the impacts of a project on a Section 4(f) property are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the Section 4(f) property that contribute to its significance or enjoyment are substantially diminished. This means that the value of the Section 4(f) property, in terms of its prior significance and enjoyment, is substantially reduced or lost. Special consideration was given to noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks, national wildlife and waterfowl refuges and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR part 150 are not relevant to the value, significance, and enjoyment of the area in question. Parks and recreation plans and descriptions for Bexar, Blanco, Comal, Guadalupe, and Kendall Counties, state parks and recreation plans and regulations, and local parks and recreation plans and regulations were reviewed for quiet enjoyment and noise intrusions, with a focus on the identified APEs within the areas of reportable noise. Amplified noise is the primary land use or zoning tool used to describe noise intrusions, while “quiet hours” are generally a rule in camping areas between 10pm and 6am. These hours are related to camper behavior and are not attributed to external noise. However, no specific descriptions of resources being managed for natural quiet were found that would indicate expectations of prior use and enjoyment thresholds.

In reviewing the aforementioned properties, the historic incidence of overflight, and the respective dB DNL changes in 2023 and 2028, the noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a resource or portion of a resource for air transportation purposes. Due to the reportable noise values that are less than significant noise values, the FAA does not find that the reportable noise values amount to a taking of a park or a portion of a park, nor does the reportable noise diminish the significance or enjoyment of the 4(f) resource. Thus, the Proposed Action, when compared to the No Action alternative, would not result in a constructive use of the aforementioned Section 4(f) resources.

As stated in Section 5.9, the Proposed Action, when compared with the No Action Alternative, would not cause a significant visual impact in 2023 and 2028. Any changes in aircraft traffic patterns would occur at altitudes and distances from viewers that would not substantially impair the view or setting of the Section 4(f) resources. As stated in Section 5.3, there would be no physical taking of a Section 106 property or adverse effects that would substantially impair a Section 106 resource’s historical integrity, thus there would be no potential for “use” under Section 4(f) of those resources. Therefore, the Proposed Action would not result in potential impacts to

68 https://www.fbgtx.org/928/Pinta-Trail, Accessed September 2022.

Section 4(f) resources. Similarly, because there would be no constructive use of Niemietz Park as a Section 4(f) park, as a Section 6(f) public outdoor recreation area, there would be no use or conversion of a Section 6(f) resource.

Under the No Action Alternative, no changes to air traffic routes in the San Antonio Airspace Modernization Project would occur in either 2023 or 2028, and no effects related to changes in aircraft noise exposure or impairment to the view or setting of Section 4(f) resources would be anticipated. Therefore, the No Action Alternative would not result in potential impacts to Section 4(f) resources or 6(f) resources.

5.3 Historic and Cultural Resources

This section discusses the analysis of impacts to historic and cultural resources under the Proposed Action and the No Action Alternative. Section 4.2.3 provides information on historic or cultural resources within the General Study Area and 18,000 Foot Study Area. The FAA initiated consultation with the State Historic Preservation Officers (SHPOs) for the State of Texas and Tribal Historic Preservation Officers (THPOs) of Indian tribes that may have interests within the General Study Area in October, 2022, in accordance with Section 106 of the *National Historic Preservation Act of 1966* (16 U.S.C. § 470 *et seq*.) and the implementing regulations at 36 C.F.R. Part 800. The original outreach effort included contacting eight tribes with identified interests in the Counties of the General Study Area in the outreach. For additional information, see Appendix A – *Agency Coordination, Public Involvement, and List of Receiving Parties*. There are no tribal lands located within the General Study Area or revised Areas of Potential Effect (APEs). The FAA is in the process of consulting with federal and state agencies regarding the APEs.

5.3.1 Summary of Impacts

The aircraft noise exposure analysis indicates that there would be no significant impact to the noise environment at any historic or cultural resources under the Proposed Action compared with the No Action Alternative. The aircraft noise exposure analysis indicates there would be reportable noise increases (see Exhibits 5-1 and 5-2) in the vicinity of Bulverde, Spring Branch, and Cibolo within the General Study Area. Changes in historic and current aircraft traffic patterns would occur at altitudes and distances from viewers that would not substantially impair the view or setting of historic or cultural resources or those resources potentially eligible for NHRP listing. The Proposed Action would not directly or indirectly change any known characteristics qualifying or potentially qualifying a historic resource for inclusion in or its eligibility for the NRHP. Consultation is ongoing regarding historic resources in the APEs. No adverse effects to historic or cultural resources under the Proposed Action would be anticipated for either 2023 or 2028.

Under the No Action Alternative, no changes to air traffic routes in the San Antonio Airspace Modernization Project would occur in either 2023 or 2028 and no changes to aircraft noise exposure or changes in aircraft overflight patterns over historic or cultural resources would be anticipated. Therefore, no historic or cultural resources would be affected by aircraft noise, nor would there be any visual impacts at historic or cultural resources under the No Action Alternative.

5.3.2 Methodology

Section 106 of the National Historic Preservation Act of 1966 requires the FAA to consider the effects of its undertakings on historic properties listed or eligible for listing in the NRHP. **Exhibit 4-4** in Section 4.2.3 shows the historic and cultural resources listed on the NRHP that are found within the General Study Area. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion

in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The Proposed Action is located over and above the ground and would not involve the construction, disturbance, or alteration of any physical structure on, in, or emanating from the ground. Resources were obtained from multiple federal, state, and local georeferenced databases specific to Section 106 resources. These are identified in Appendix I: *Noise Technical Report*. Consistent with the Section 106 regulations, the FAA has focused its analysis on whether the Proposed Action would introduce visual elements or noise effects that would diminish the integrity of any historic properties.

Federal regulations require the FAA to define an APE as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.[69] At the time of project initiation, the FAA had initially defined the APE as contiguous with the General Study Area boundary in order to ensure capturing the broadest range of resources. Overflights may vary for any number of reasons (e.g. weather, ATC vectors, ATC safety factors, aircraft performance capability), both related and unrelated to flight procedures. The flight procedures themselves have overflight variance within acceptable safety parameters of precision and accuracy. The FAA subsequently determined that the Proposed Action would not introduce aircraft overflights to any area within the General Study Area where they do not or have not already occurred given the extensive military and civilian aviation history within the General Study Area. Accordingly, the FAA redefined the APE to focus on the potential for the Proposed Action to cause adverse effects, primarily based on noise, on Section 106 resources. Once the FAA identified the instances of reportable noise (see Section 5.1.3), the reportable noise receptor points depicted in Exhibits 5-1 and 5-2 were combined into geographically proximate areas and bounded. The redefined APEs were determined based upon the 2023 and 2028 reportable noise results. The FAA presented both the original and these redefined APEs to the Texas SHPO and Tribal THPOs for consultation purposes.

Noise exposure levels at points representing historic properties in the redefined APE were calculated to determine potential adverse effects. Noise exposure results for the uniform grid points located at 0.5 NM intervals throughout the APE were evaluated to identify potential adverse noise effects on historic properties that are eligible but may not be listed on the NRHP, or whose exact location may not be disclosed. See **Table 5-5**, below. The 0.5 NM grid provides noise results within 2,148 feet or less of any location within the General Study Area. For noise exposure levels at NRHP listed properties within the General Study Area, see Appendix I: *Noise Technical Report*. State listed properties with the THC include NRHP properties, and other similar state and local databases may result in multiple receptor points for the same resource, multiple resources for the same receptor point, or different names and different receptor points for the same resource.

Consultation with the Texas SHPO is ongoing with respect to the APEs and the FAA's methodology for assessing potential effects on historic properties. Communication regarding the resources, methodology, and preliminary draft conclusion of this EA are ongoing with the SHPO.

Table 5-5 Section 106 Resources Exposed to Reportable Aircraft Noise – 2023 and 2028

Resource as Named	+5.0 db DNL or Greater Value by Alternative	
	2023	2028
Boehm		6.72
Kuebel		7.28
Kupferschmidt		5.80
Natural Bridge Caverns Sinkhole[1]		8.37
Poss		5.48

69 Title 36 CFR 800.16(d).

Resource as Named	+5.0 db DNL or Greater Value by Alternative	
	2023	2028
Prasch		6.25
Romple #1		5.25
Romple #2		5.18
Scharmann		5.14
Spring Branch		5.74
Stahl		6.04
Traughott #2		6.55
Tristan Grave		5.39

Note:
/1 This resource is undisclosed except to licensed archaeologists, so the FAA is using the nearby named 4(f) resource "Natural Bridge Caverns" as the preliminary location of the unknown but reasonably nearby Sinkhole location. Additionally, closely spaced 0.5nm grid point receptor values across the General Study Area are always less than 2,148 feet away from any 0.5nm grid point should the chosen resource be no nearer.
/2 With the exception of the Natural Bridge Caverns Sinkhole, no other Section 106 THC listed resources presented here are NHRP listed. All THC listed Section 106 resources are assumed to be resources potentially eligible for NRHP listing.

Sources: ATAC Corporation, Appendix I: *Noise Technical Report*, Supplement 4.1 *Inventory*. ATAC Corporation, Texas Historic Commission Atlas (https://atlas.thc.texas.gov/ [Accessed August, September, October, 2022]). AEDT 3d and NOISEMAP modeling results, August 2022.
Prepared by: ATAC Corporation, September 2022.

- Boehm: This unique THC Section 106 resource point is a cemetery with at least 3 graves located on private property at or about 22420 Bat Cave Road in San Antonio approximately 150 feet north of a power transmission line right of way. It is located 7.8 miles north-northwest of RND. The resource location was verified and has no public access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, BAZ, and SAT.
- Kuebel: This unique THC Section 106 resource point is located at 1310 Whispering Water in the City of Spring Branch Extra Territorial Jurisdiction (ETJ) area of Comal County. The FAA was unable to verify the private or public ownership of the vacant lot. It is approximately 250 feet west of the Guadalupe River. It is located 14.28 miles north of SAT. The resource location was verified and is on a vacant lot in a residential setting between two residences. No signs or markers are present, nor is the area fenced to prevent access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Kupferschmidt: This unique THC Section 106 resource point is a cemetery located on unimproved private property at 30547 Blanco Road in Bulverde at the intersection of Green Pastures and Blanco Road. It is located 22.35 miles north-northeast of SAT. The resource location was verified and has no public access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, BAZ, and SAT.
- Natural Bridge Caverns Sinkhole: This unique point is an underground, undisclosed location on private property in the vicinity of the underground Natural Bridge Caverns 4(f) resource described in Section 5.2. For the purposes of analysis, FAA assumed the same location as Natural Bridge Caverns, however, multiple 0.5NM evenly spaced grid points with reportable noise are also in the immediate vicinity should the actual location need to be disclosed to qualified FAA archeological personnel for further analysis. The underground archaeological preservation area is accessed from Natural Bridge Caverns Road and is National Register of Historic Places listed (2004 NRHP reference #04001202). It is undisclosed and off limits to the public due to the significant historic resources present in the Sinkhole under the Archaeological Resources Protection Act of

1979[70]. The resource historically experienced overflight arrival and departure traffic from RND, SKF, BAZ, and SAT.

- Poss: This unique THC Section 106 resource is a cemetery on private property at 1051 Comanche Drive in Comal County east of the intersection of Blanco Road and Comanche Drive. It is located 14.0 miles north of SAT. The resource location was verified and has no public access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Prasch: This unique THC Section 106 resource point is a cemetery on private property in the vicinity of 91 West Specht Road in Bulverde off the intersection of Aleman Way and Ludwig Trail. It is located approximately 14.1 miles north of SAT. The resource location was verified and has no public access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Romple #1: This unique THC Section 106 resource point is a cemetery on private property at approximately 6040 Farm to Market Road 1863 in Bulverde. It is located approximately 13.9 miles north northeast of SAT. The resource location was verified and has no public access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Romple #2: This unique THC Section 106 resource point is a cemetery on private property approximately 645 feet south of Romple #1, above.
- Scharmann: This unique THC Section 106 resource point is a cemetery on private property with no public access approximately 950 feet southwest of the previously cited, privately owned and operated Bulverde Airpark (FAA identifier 1TT8). The resource location was verified and has no public access except on foot from a gas line right-of way. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT as well as local 1TT8 traffic (1TT8 is not a Study Airport).
- Spring Branch (also referred to as “Gass” by THC): This unique THC Section 106 resource point is a cemetery containing over a dozen plots with above ground granite headstones and gated public access at approximately 13745 US-281 in Spring Branch. It is located approximately 27.16 miles north northeast of SAT. The resource historically experienced overflight arrival and departure traffic from RND, SKF, BAZ, and SAT.
- Stahl: This unique THC Section 106 resource point is a cemetery on private property approximately 360 feet north of 30235 Heimer Cove in Bulverde appearing to be in the public right of way of Heimer Cove. There is no marker or sign visible from the roadway and no dedicated pull-off from the roadway. It is approximately 890 feet northeast of the previously cited, privately owned and operated Bulverde Airpark (FAA identifier 1TT8). In addition to regular and historic 1TT8 overflight, the resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.
- Traughott #2 (THC also refers to the spelling as “Traugott”): This unique THC 4(f) resource point is on private property with no public access approximately 1.9 miles west of the previously cited, privately owned and operated Bulverde Airpark (FAA identifier 1TT8). The resource location was verified at 30450 Leroy Scheel Road in Bulverde and has no public access. The resource historically experienced 1TT8 Airpark historic and current overflight as well as arrival and departure traffic from RND, SKF, and SAT.

70 16 U.S.C. 470hh

- Tristan Grave: This unique THC Section 106 resource point is a cemetery on private property at 31361 Blanco Road in Bulverde north of Adams Road. It is approximately 15.16 miles from SAT. The resource location was verified and has no public access. The resource historically experienced overflight arrival and departure traffic from RND, SKF, and SAT.

The analysis of potential impacts to the Section 106 listed and eligible resources identified above considers whether these resources would experience a significant noise increase, when comparing the Proposed Action with the No Action Alternative, using the applicable thresholds shown in Table 5-2. Properties exposed to DNL 65 dB or higher under the Proposed Action and an increase of DNL 1.5 dB or higher may be considered to be potentially adversely affected by the Proposed Action. Reportable increases in noise were detected for resources listed within the THC Atlas, with each of these assumed to eligible for the NRHP, and one listed with the NRHP. These properties would be exposed to noise between DNL 45 dB and lower than 65 dB, thus the FAA considered further whether the increase would result in an adverse effect on historic or cultural resources. The noise analysis indicated a reportable change to the resources identified above within the APEs.

Aircraft have been operating in the area, and therefore have been visually present, since approximately 1916 with the leasing of 500 acres for Stinson Municipal Airport and the primary tenant of Stinson Flying School. The flying school was taken over by the US Government from 1917-1919 to train military pilots.[71] Roughly six miles away, SKF was officially receiving military aircraft in April 1917, and quickly became the primary military aviation training facility in the US by graduating thousands of pilots supporting World War I.[72] In the later part of World War II, SKF employed 15,000 civilians and 16,000 military members. From 1927-1930, RND was constructed and in 1931 RND opened their first military primary flying school with thousands of graduates by 1935 and the earliest military jet aircraft arriving in the mid-1950's.[73] On the commercial front, SAT airport was opened in 1941 and became San Antonio Internal Airport in 1944. Jet traffic has served the region since the mid-1950s. An archaeological property has been identified whose location is undisclosed within an APE due to the proprietary and sensitive nature of those resources and cemeteries have been identified as historic resources. In these instances, the FAA does not anticipate at this time that the reportable noise increases within the APEs would diminish the integrity of any cemetery or below ground sinkhole resources for which the setting contributes to historical or cultural significance. Consultation and historic review is ongoing.

5.3.3 Potential Impacts – 2023 and 2028

As stated in Section 5.1, the Proposed Action, when compared with the No Action Alternative, would not result in changes in aircraft noise exposure in 2023 or 2028 that would exceed the FAA's significance threshold for noise increases to Section 106 resources. Noise analysis results for Section 4(f) resources can be found in Appendix I: *Noise Technical Report*.

For 2023 and 2028, no listed Section 106 resources would experience a DNL 1.5 dB increase or decrease in areas exposed to DNL of 65 dB and higher, nor would they experience a reportable noise increase or decrease of DNL 3 dB in areas exposed to DNL 60 dB to 65 dB. For 2023, **Table 5-5** identifies the 13 2028 Section 106 listed and potentially eligible resources experiencing a greater than DNL 5 dB increase in areas exposed to DNL 45 dB to 60 dB for 2023 and 2028.

As stated in Section 5.1, when compared with the No Action Alternative, the Proposed Action would not result in changes in aircraft noise exposure in 2023 or 2028 that would exceed the

71 https://history.txtransportationmuseum.org/san-antonio-airports/, Accessed August 2022.
72 https://www.kellyheritage.org/1917-1941era.php, Accessed July 2022.
73 https://en.wikipedia.org/wiki/Randolph_Air_Force_Base, Accessed September 2022.

FAA's significance threshold for noise. The historic and archaeological properties in the APEs are anticipated to experience no effect in their continuing potential eligibility for NRHP listing from implementation of the Proposed Action due to the historic and continuing substantial overflight presence of civilian and military propeller aircraft since 1917, and civilian and military jet aircraft since the mid-1950s. The single NHRP listed Section 106 property is an underground resource, and is not subject to overflight noise that would introduce an atmospheric, audible, or visual feature to the area that would diminish the integrity of the property's significant historic features, all of which are below ground. Therefore, the Proposed Action is not anticipated to result in an adverse effect to historic or cultural resources. Noise analysis results for historic and cultural resources located within the General Study Area, as well as the refined APEs reflecting reportable noise, can be found in Appendix I: *Noise Technical Report.*

Under the No Action Alternative no changes to air traffic routes in the San Antonio Airspace Modernization Project would occur in either 2023 or 2028, and no adverse effects related to changes in aircraft noise exposure would be anticipated. Therefore, the No Action Alternative would not result in an adverse effect to historic or cultural resources.

5.4 Wildlife (Avian and Bat Species) and Migratory Birds

This section discusses the analysis of potential impacts to avian and bat species under the Proposed Action and the No Action Alternative.

5.4.1 Summary of Impacts

The greatest potential for impacts to wildlife species would result from wildlife strikes on avian and bat species at altitudes below 3,000 feet AGL. Changes to flight paths under the Proposed Action would primarily occur at or above 3,000 feet AGL. Further, the Proposed Action would not increase the frequency of military or civilian flight operations. Therefore, the Proposed Action would not result in significant impacts to avian and bat species when compared with the No Action Alternative.

The No Action Alternative would not involve changes to air traffic flows, land acquisition, construction, or other ground disturbance activities. Therefore, the No Action Alternative would not result in significant impacts to fish, wildlife, or plants.

5.4.2 Methodology

The FAA's *Wildlife Strike Database* is the best information available for assessing potential impacts of aircraft on wildlife for civilian airports. Strike reports over the past 32 years are aggregated nationally as well as for individual airports and are available from the database to understand existing conditions. Strike reports are comparable to known information on the presence of specific species of concern to corroborate the reports. The FAA has initiated consultation with the USFWS to ascertain any additional factors useful to determining potential adverse effects.

This analysis involved a review of wildlife strike reports[74] for the Study Airports that have primarily civilian air traffic (SAT and BAZ) under both the Proposed Action and the No Action Alternative, and an evaluation of the potential for the presence of federal- and state-listed threatened and endangered species (i.e., special-status species) within the 18,000' Study Area and the Supplemental Study Area. The FAA compared modifications in flight procedures to the

74 U.S. Department of Transportation, Federal Aviation Administration, *Wildlife Strike Database* (http://www.faa.gov/airports/airport_safety/wildlife/database/ [Accessed August 2022]).

occurrence of special-status species to qualitatively assess the likelihood of whether wildlife strikes might change under the Proposed Action.

The USAF maintains aggregate data across the service and does not provide airfield-specific breakdowns in a fashion similar to the FAA. However, the aggregate data available does identify species and phase of flight aggregate data. The FAA compared modifications in flight procedures to the occurrence of special-status species to qualitatively assess the likelihood of whether wildlife strikes might change under the Proposed Action.

5.4.3 Potential Impacts – 2023 and 2028

A significant impact would be likely to occur if the Proposed Action were to jeopardize the existence of special-status species or result in destroying or adversely modifying critical habitat in the General Study Area. Changes to flight paths under the Proposed Action would primarily occur at or above 3,000 feet AGL, so there is no potential for these effects in the General Study Area. The FAA is conducting on-going consultation to obtain any noise related potential thresholds for adverse effects. Accordingly, the analysis is focused on the potential for significant impacts to species resulting from increased wildlife strikes with aircraft.

Since 1990, the FAA has compiled reports of wildlife strikes with aircraft. The information is available to the public through the FAA's *Wildlife Strike Database* and the "Annual Report: Wildlife Strikes to Civil Aircraft in the United States." Between 1990 and 2021, the Wildlife Strike Database reported 238,652 wildlife strikes nationally.[75] Of the records that identify the type of animal involved in the strike incident, birds represent 96 percent of all strikes.[76] Of those records, for commercial and GA aircraft, 71 percent of the strikes occurred at or below 500 feet AGL and declined by 32 percent for every 1,000-foot gain in height for commercial aircraft and 43 percent for general aviation aircraft. The Wildlife Strike Database reports that of identified species, waterfowl, gulls, and raptors are the species groups of birds with the most damaging strikes.[77] No state or federally listed or eligible species were identified in reviewing generalized military strike records containing species identification and a specific 32 year period for FAA civilian strike records for SAT and BAZ.

Table 5-6 provides a summary of wildlife strikes reported for the two civilian owned and operated Study Airports (BAZ and SAT) between January 1, 1990 and December 31, 2021 (32 years). The US Military maintains no publically accessible and location-specific bird strike data for RND or for SKF. However, anecdotal data about the Bird/Wildlife Aircraft Strike Hazard (BASH) program at Joint Base San Antonio has been published in military news articles and publically released environmental documents. According to the 12th Flying Training Wing BASH manager, RND in 2019 averaged 38 bird strikes per year and SKF averages 50 bird strikes per year.[78] No time frame of reference for the averages is given, however, between 2015 and 2019, RND had 314 bird strikes, which was a slightly higher 62.8 strikes per year average.[79] RND also cites 51 bird strikes in federal fiscal year 2020.[80] No similar data or analyses can be located for SKF.

The *Migratory Bird Treaty Act (MBTA) of 1918* (16 U.S.C. §§ 703–712) protects all the bird species identified in these reports. Furthermore, federal and state laws protect listed endangered and threatened species. In Chapter 4, **Table 4-2** identifies the six federally-listed bird species and **Table 4-3** lists the six state-listed bird species found in counties in the 18,000 Foot Study Area.

75 Federal Aviation Administration. Wildlife Strikes to Civil Aircraft in the United States 1990-2021, July 2022
76 Id.
77 Id.
78 https://www.jbsa.mil/News/News/Article/1759554/bash-program-keeps-jbsa-kelly-field-safe/ February 15, 2019. Accessed July 12, 2022.
79 US Air Force. *BASH Risk Mitigation through Habitat Management Draft Environmental Assessment*. Page 1-4. May, 2021.
80 Id. at Page 2-1

None of the bird strike reports at the Study Airports included the species listed in **Table 4-2** or **Table 4-3**.

The number of aircraft operations under the Proposed Action and No Action Alternative would be the same. Therefore, the assessment of the potential impacts focuses on changes to flight paths and the potential for impact due to wildlife strikes. As shown in **Table 5-6**, 296 of bird/bat strikes (an average of 9.2/year) occurred at altitudes above 3,000 feet AGL. According to the 12th Flight Training Wing BASH manager, from 2008-2019, approximately 62 percent of the bird strikes occurred during takeoff/landing or initial climb/approach operations at RND.[81]The decline in the number of civilian strikes reported above 3,000 feet AGL and USAF strikes above the takeoff/landing or initial climb/approach operational phases of flight indicates that there is a decreasing likelihood of bird/bat strikes at higher altitudes. Under the Proposed Action, changes to proposed flight paths would primarily occur at or above 3,000 feet AGL and no significant changes to arrival and departure corridors below 3,000 feet AGL would be expected. Military aircraft aircrews would adhere to existing flight safety regulations and BASH protocols to avoid impacts on migratory birds. Aircraft transiting to and from RND and SKF are generally between 7,000 feet and 18,000 feet AGL. Continuing adherence to existing BASH protocols would limit the potential adverse effects. Therefore, no effects on biological resources would be expected due to continued military aircraft operations for SAT and RND. Therefore, no significant impacts to avian or bat species would occur.

The No Action Alternative would not involve changes to air traffic flows, land acquisition, construction, or other ground disturbance activities. Therefore, no impacts to avian or bat species would occur.

Table 5-6 FAA Wildlife Strike Records for BAZ and SAT by Altitude (1990 – 2021)

Type of Strike	Civilian Airport	3,000 ft. AGL or less	>3,000 ft. AGL to ≤ 10,000 ft. AGL	Greater than 10,000 ft. AGL	Total
Identified Bird and Bat Species	BAZ	10	0	0	10
	SAT	2,786	286	10	3,082
Total		2,796	286	10	3,092
Annual Average		87.4	8.9	0.3	96.6

Source: U.S. Department of Transportation, Federal Aviation Administration, *FAA Wildlife Strike Database* (https://wildlife.faa.gov/search [Accessed August 2022]).
Prepared by: ATAC Corporation, August 2022.

5.5 Environmental Justice

This section presents a summary of the analysis of environmental justice impacts under the Proposed Action and the No Action Alternative.

5.5.1 Summary of Impacts

Neither the Proposed Action nor the No Action Alternative would displace people or businesses; therefore, implementing the Proposed Action or No Action Alternative would not result in direct impacts in this category. No areas within the General Study Area would experience significant impacts to air quality or noise. While some areas would be exposed to reportable noise increases of DNL 5 dB within areas exposed to DNL 45 to 60 dB, these would not constitute a significant impact related to a change in DNL exposure to people, including members of minority and/or low-income populations (see Section 5.1). Moreover, the FAA has engaged and is engaging with environmental justice communities within the study area and has not identified impacts that would

81 Id. at Page 1-4

affect an environmental justice population in a way that would be unique to the environmental justice population and significant to that population. Therefore, no disproportionately high and adverse effects to minority populations or low-income populations would occur under either the Proposed Action or the No Action Alternative.

5.5.2 Methodology

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies include environmental justice as part of their mission by identifying and addressing as appropriate, the potential for disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Environmental justice applies to all environmental resources. Therefore, a disproportionately high and adverse human health or environmental effect on minority and low-income populations may represent a significant impact. **Table 4-4** identified those counties in the General Study Area who have minority and/or low-income census block groups of concern for consideration of a disproportionately high and adverse human health or environmental effect. Out of those listed in **Table 4-4**, no counties would experience FAA-defined significant noise. Bexar is the only county with a minority population of concern that would experience aircraft overflight resulting in reportable noise.

5.5.3 Potential Impacts – 2023 and 2028

Under the Proposed Action, neither people nor businesses would be displaced. As discussed in Section 5.1, under the Proposed Action, no census block centroids in the General Study Area, and therefore no minority or low-income population, would experience a change in noise exposure in 2023 or 2028 that exceeds any of the FAA's significance thresholds for noise impacts on people. No census block centroids in Bexar County, as an environmental justice minority population of concern, were identified for reportable noise. Guadalupe, Kendall, and Comal Counties each had reportable noise census centroids representing 573 persons in 2023 and 8,168 persons in 2028, but each County is below the General Study Area average in minority or low-income populations. Therefore, no adverse direct or indirect effects would occur to any environmental justice populations within the General Study Area under the Proposed Action for 2023 and 2028.

Under the No Action Alternative, neither people nor businesses would be displaced. Furthermore, air traffic routes would not change and there would be no change in aircraft noise exposure in 2023 or 2028 that could result in an indirect impact. Therefore, the No Action Alternative would not result in disproportionately high and adverse human health or environmental effects on minority and low-income populations.

5.6 Energy Supply (Aircraft Fuel)

This section discusses whether changes in the movement of aircraft would result in measurable effects on local energy supplies under the Proposed Action and the No Action Alternative.

5.6.1 Summary of Impacts

In comparison to the No Action Alternative, the Proposed Action would result in a slight increase in aircraft fuel consumed in 2023 of 1.59 percent. The Proposed Action would result in a slight increase in aircraft fuel consumed in 2028 of 1.59 percent. These increases would not be expected to be disruptive to or meaningfully affect local aircraft fuel supplies. Therefore, no significant impacts to energy supply would be anticipated.

The No Action Alternative would not involve changes to air traffic flows, construction, or other ground disturbance activities. Therefore, the No Action Alternative would not result in the depletion of local energy supply.

5.6.2 Methodology

The Proposed Action would involve changes to air traffic flows during the departure, descent, and approach phases of flight. These changes affect both the route an aircraft may follow as well as its climb-out and descent profiles. This in turn may directly affect aircraft fuel consumed. Aircraft fuel consumption is considered a proxy for determining whether the Proposed Action would have a measurable effect on local fuel supplies when compared with the No Action Alternative.

In addition to calculating aircraft noise exposure, the FAA's AEDT 3d model calculates aircraft-related fuel consumption (e.g., AAD flight schedules, flight tracks, and runway use). See Section 5.1.2 and Appendix I: *Noise Technical Report* for further discussion on AEDT 3d input data. NOISEMAP does not calculate fuel consumption, thus no consumption was calculated for aircraft arriving and departing SKF and RND. Determining the difference in fuel consumption between alternatives can be used as an indicator of changes in fuel consumption resulting from implementation of the Proposed Action when compared with the No Action Alternative.

5.6.3 Potential Impacts – 2023 and 2028

Table 5-7 presents the results of the fuel consumption analysis for the Proposed Action and No Action Alternative. In comparison to the No Action Alternative, the Proposed Action would result in a relatively small increase in aircraft fuel consumed in 2023 of 1.59 percent. The proposed Action would result in a slight increase in aircraft fuel consumed in 2028 of 1.59 percent. The FAA expects that when compared with the No Action Alternative, the Proposed Action would not have a measurable effect on local fuel supplies. Therefore, no significant impacts to energy supply would be anticipated.

Table 5-7 Energy Consumption Comparison

	2023		2028	
	No Action Alternative	**Proposed Action**	**No Action Alternative**	**Proposed Action**
Fuel Consumption (MT)	231.25	234.92	263.27	267.46
Weight Change (MT) (Proposed Action – No Action Alternative)		3.67		4.19
Percent Change from No Action Alternative		1.59%		1.59%

Note: MT = Metric Ton

Source: ATAC Corporation, AEDT 3d modeling results, September 2022.
Prepared by: ATAC Corporation, September 2022.

5.7 Air Quality

This section discusses the analysis of air quality impacts under the Proposed Action and the No Action Alternative.

5.7.1 Summary of Impacts

The Proposed Action would result in a slight increase in emissions when compared to the No Action Alternative. However, changes to flight paths under the Proposed Action would primarily

occur at or above 3,000 feet AGL and are presumed to conform to the applicable state implementation plans (SIPs). Furthermore, changes to flight paths below the mixing height are also presumed to conform when modifications to procedures are designed to enhance operational efficiency. The slight increase in emissions is expected to have little if any effect on emissions or ground concentrations. Therefore, no significant impacts to air quality would be anticipated.

The No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no impacts to air quality would be anticipated.

5.7.2 Methodology

Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed.[82] Section 176(c) of the *Clean Air Act* requires that federal actions conform to the appropriate SIP in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the *de minimis* levels established in regulations issued by EPA.[83] FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's *de minimis* thresholds.[84] The EPA regulations identify certain actions that would not exceed these thresholds, including ATC activities and adoption of approach, departure, and en route procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet AGL in places without an established mixing height). In addition, the EPA regulations allow federal agencies to identify specific actions as "presumed to conform" (PTC) to the applicable SIP.[85] In a notice published in the Federal Register, the FAA has identified several actions that "will not exceed the applicable *de minimis* emissions levels" and, therefore, are presumed to conform, including ATC activities and adoption of approach, departure, and en route procedures for air operations.[86] The FAA's PTC notice explains that aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. The notice also specifically notes that changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations."[87] Furthermore, "air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay)."[88]

5.7.3 Potential Impacts – 2023 and 2028

Under the Proposed Action there would be a slight increase in fuel consumption (1.59 percent) in 2023 and a slight increase in fuel consumption (1.59 percent) in 2028 when compared to the No Action Alternative. While increased fuel consumption corresponds with an increase in emissions, operational changes that could result in an increase in fuel consumption would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. Any operational changes that could result in an increase in fuel consumption would occur at or above 3,000 feet AGL. Procedures above 3,000 feet AGL are considered a *de minimis* action, would have little if any effect on emissions and ground concentrations, and are presumed to conform to all SIPs for criteria pollutants. Therefore, no further air quality analysis is necessary, a conformity determination is not required, and the Proposed Action would not result in a significant impact to

82 FAA 1050.1F *Desk Reference*, Section 1, February 2020.
83 40 C.F.R. § 93.153(b).
84 FAA 1050.1F *Desk Reference (v2)*, Section 1, February 2020.
85 Id at 93.153(f).
86 Federal Presumed to Conform Actions under General Conformity, 72 Fed. Reg. 41565 (July 30, 2007).
87 Id.
88 Id.

air quality. The No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no impacts to air quality would be anticipated.

5.8 Climate

This section discusses greenhouse gas (GHG) emissions and effects to the climate as they relate to the Proposed Action and the No Action Alternative.

5.8.1 Summary of Impacts

Although fuel consumption would increase slightly under the Proposed Action as compared to the No Action Alternative, no significant impacts to the climate would be anticipated.

The No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no impacts to climate would be anticipated.

5.8.2 Methodology

In accordance with FAA guidance, estimated CO_2 emissions were calculated from the amount of fuel consumed under the No Action Alternative and the Proposed Action in 2023 and 2028 (see Section 5.8). The only GHG emissions AEDT calculates are CO_2 emissions from aircraft engines.[89] The resulting CO_2 emissions were then reported as CO_2e (carbon dioxide equivalent).

5.8.3 Potential Impacts – 2023 and 2028

Table 5-8 shows project-related CO_2e emissions. In 2023, the Proposed Action would produce approximately 741.16 MT of CO_2e, and the No Action Alternative would produce approximately 730.00 MT of CO_2e. This represents a slight increase of approximately 11.16 MT of CO2e or 1.53 percent under the Proposed Action when compared to the No Action Alternative. This would comprise less than 0.00000024 percent of U.S.-based CO_2e greenhouse gas emissions as reported for 2020.[90] Similarly, in 2028, the No Action Alternative would produce approximately 831.00 MT of CO_2e, and the Proposed Action would produce approximately 843.85 MT of CO2e. This represents a slight increase of approximately 12.85 MT of CO_2e or 1.55 percent under the Proposed Action when compared to the No Action Alternative. This would comprise less than 0.00000027 percent of U.S.-based CO_2e greenhouse gas emissions as reported for 2020.

Table 5-8 CO_2e Emissions – 2023 and 2028

	2023		2028	
	No Action Alternative	**Proposed Action**	**No Action Alternative**	**Proposed Action**
CO_2e Emissions (MT)	730.00	741.16	831.00	843.85
Weight Change (MT)		11.16		12.85
(Proposed Action – No Action Alternative)		1.53%		1.55%

Note: CO_2e = Carbon Dioxide Equivalent where the CO_2 Global Warming Potential conversion is 1.

Source: ATAC Corporation, AEDT 3d modeling results, September 2022.
Prepared by: ATAC Corporation, October 2022.

89 US Department of Transportation, Federal Aviation Administration, *Guidance on Using the Aviation Environmental Design Tool (AEDT) to Conduct Environmental Modeling for FAA Actions Subject to NEPA, Section 1.1.3 Fuel burn and greenhouse gas emissions*, https://aedt.faa.gov/Documents/guidance_aedt_nepa.pdf, Accessed September 2022.
90 US Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020 Executive Summary* https://www.epa.gov/system/files/documents/2022-04/us-ghg-inventory-2022-chapter-executive-summary.pdf, Accessed September 2022.

5.9 Visual Effects

This section discusses the analysis of visual impacts under the Proposed Action and the No Action Alternative.

5.9.1 Summary of Impacts

As stated in Section 5.1, implementation of the Proposed Action would not increase the number of aircraft operations at the Study Airports compared with the No Action Alternative. Changes in aircraft traffic movement under the Proposed Action are expected to be at altitudes and distances sufficiently removed from viewers that new visual impacts would not be anticipated.

Under the No Action Alternative, no changes in air traffic routes would occur and no changes in aircraft overflight would be expected. Therefore, the No Action Alternative would not result in visual impacts.

5.9.2 Methodology

As discussed in FAA Order 1050.1F, visual, or aesthetic, impacts are difficult to define and evaluate because of the subjectivity involved. Aesthetic impacts deal more broadly with the extent that the project contrasts with the existing environment and whether the difference is considered objectionable by the agency responsible for the location in which the project is set. Visual impacts are typically related to the disturbance of the aesthetic integrity of an immediate lateral foreground "view shed" (typically less than 0.5 mile) caused by development, construction, or demolition. Thus, these criteria would not apply to airspace changes which typically occur at vertical distances of over 0.5 mile or greater than 2,600 feet AGL. As noted in Sections 5.2 and 5.3, both 4(f) and Section 106 resources identified in this EA have current and historic day and night overflight of military and civilian aircraft beginning in 1917 and continuing to the current era.

To evaluate the potential for indirect impacts resulting from changes in aircraft routings and visual intrusion, the general altitudes at which aircraft route changes occur beyond the immediate airport environs which experience overflights on a routine basis and are considered to evaluate the potential for visual impacts.

5.9.3 Potential Impacts – 2023 and 2028

According to FAA Order 1050.1F, the visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact. Changes to flight paths under the Proposed Action would primarily occur at or above 3,000 feet AGL; therefore, the visual sight of aircraft and aircraft lights would not be considered intrusive. Close to the respective Study Airports, the lateral and vertical movement of aircraft is fixed by the length, location, and direction of a particular runway or runways. IFR military and civilian aircraft below 3,000 feet AGL are generally either on approach to a runway, or within the designated landing pattern for a specific runway. Similarly, aircraft departing a runway do so climbing on a departure runway heading, and typically alter course after exiting the immediate tower controlled airfield area. The Proposed Action does not consider aircraft repetitively landing and departing in a closed loop operation since they would not use flight procedures included in the Proposed Action. Consequently, the Proposed Action would not result in significant visual impacts. Neither the Proposed Action nor the No Action Alternative would result in significant visual impacts.

5.10 Cumulative Impacts

Consideration of cumulative impacts applies to the impacts resulting from the implementation of the Proposed Action with other actions. CEQ regulations define a cumulative impact as "an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."[91] The regulations also state that cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

5.10.1 Summary of Impacts

The implementation of the Proposed Action when considered with other past, present, and reasonably foreseeable future actions would not be expected to result in significant cumulative impacts.

The No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no cumulative impacts would be anticipated.

5.10.2 Methodology

Research was conducted to identify planned airport improvement projects at all Study Airports that in combination with the Proposed Action might result in cumulative environmental impacts relevant to the alternatives evaluated in this document. Due to the nature of the resources affected by the Proposed Action, only past, present, and reasonably foreseeable future actions that would have direct or indirect effects on aircraft flight patterns within the General Study Area were to be considered. Therefore, the type of projects that would be considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. "Reasonably foreseeable future actions" refers to projects that would likely be completed and in-service before 2028.

The same significance thresholds used to determine impacts associated with the Proposed Action are applied to determine significant cumulative impacts. Because there is no potential for impact, those environmental resource categories that are not affected by the Proposed Action (listed in Section 4.1) are not further evaluated for cumulative impacts. Similarly, if no impacts to an environmental resource category were identified under the Proposed Action when compared to the No Action Alternative, then no further analysis for cumulative impacts was required.

5.10.3 Potential Impacts – 2023 and 2028

As stated in Section 5.10.2, research was conducted to identify relevant airport improvement projects related to runway and parallel taxiway changes. Sources reviewed included FAA, state, and local Capital Improvement Project lists and websites for all airports and associated state, county, and local planning, public works, and transportation agencies. FAA is conducting a VOR-MON program that will reduce the number of ground-based navigation aids over time to serve as a backup to PBN. However, the decommissioning would not typically require NEPA analysis and all changes to flight procedures as a result of VOR decommissioning (e.g. THX VOR) are cleared through NEPA. SAT is conducting a landside focused major terminal project, and an eventual series of improvements to the airport's airfield, including runway decoupling, runway lengthening, and other changes. The terminal project is not relevant to this analysis due to completion beyond 2028 and the Runway 31R decoupling lacks of a dependent utility to current flight procedures. A

91 40 C.F.R § 1508.7

future series of runway projects (lengthening, taxiway changes) are similarly not relevant to this analysis due to a lack of dependent utility and a time horizon for implementation extending beyond 2028 for which separate NEPA analysis will be conducted.[92] For the SAT Runway 31R decoupling project, a separate NEPA analysis or analyses would address amendments to that portion or those portions of the Proposed Action procedures that are dependent on the fixed location and elevation of SAT Runway 31R. No additional documents were identified that included information on past, present, and reasonably foreseeable future actions with the potential for direct or indirect effects on aircraft flight patterns within the General Study Area. Accordingly, no cumulative impacts would be anticipated for the Proposed Action when compared to the No Action Alternative for either 2023 or 2028.

92 https://flysanantonio.com/business/about-saas/strategic-development and https://flysanantonio.com/wp-content/uploads/2022/09/SAP_Executive-Summary_online.pdf, Accessed October 2022.

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