

## 5 Environmental Consequences

This chapter of the Environmental Assessment (EA) discusses the potential environmental impacts that could result from implementation of the Proposed Action and the No Action Alternative on all relevant environmental resource categories described in Appendix A of Federal Aviation Administration (FAA) Order 1050.1E, Change 1 (FAA Order 1050.1E). Both the Proposed Action and No Action Alternative were evaluated under forecasted 2014 conditions, the first year of implementation for the Proposed Action, and under forecasted 2019 conditions, five years after the expected implementation of the Proposed Action. This impact evaluation includes consideration of the direct, indirect, and cumulative effects associated with the Proposed Action and No Action Alternative, as required under FAA Order 1050.1E.

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 would be 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 discussed any further in this chapter.

**Table 5-1** identifies the environmental impact categories analyzed in this EA, the thresholds of significance used to determine the potential for impacts, and a side-by-side comparative summary of the potential environmental impacts resulting from implementation of the Proposed Action and No Action Alternative

**Table 5-1 Summary of Potential Environmental Impacts of Implementing the Proposed Action (2014 and 2019)**

Environmental Impact Category	2014	2019
Noise	Proposed Action would not result in a DNL increase of 1.5 dB or more in noise sensitive areas exposed to aircraft noise at or above DNL 65 dB. No significant impact. Furthermore, the Proposed Action would not result in any reportable noise impacts per the criteria(s) shown in Table 5-2 below.	Same as 2014
Compatible Land Use	Proposed Action would not directly affect land use and would not result in aircraft noise exposure exceeding the FAA’s significance threshold for noise. No significant impact.	Same as 2014
Department of Transportation Act, Section 4(f)	Proposed Action would not use any resources protected under Section 4(f). No significant impact.	Same as 2014
Historical, Architectural, Archaeological, and Cultural Resources	Proposed Action would not adversely affect the historical or cultural characteristics of Tribal Lands or historic resources. No significant impact.	Same as 2014
Fish, Wildlife, and Plants	Proposed Action would not increase the probability of aircraft strikes to migratory birds, nor would it result in an increase in noise that would have the potential to adversely affect the long-term survival of any species. No significant impact.	Same as 2014

Environmental Impact Category	2014	2019
Environmental Justice	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority and low income populations. No significant impact.	Same as 2014
Energy Supply (Aircraft Fuel)	Proposed Action would not result in depletion of local supplies of energy. No significant impact.	Same as 2014
Air Quality	Proposed Action would result in less fuel burned and, therefore, a reduction in air emissions. Accordingly, is presumed to conform to Texas State Implementation Plans (SIP). No significant impact.	Same as 2014
Greenhouse Gases and Climate Change	Proposed action would result in decreased fuel burn. No significant impact.	Same as 2014
Light Emissions and Visual Impacts	Proposed Action would not cause aircraft to be more visually intrusive to normal activities on the ground surface. No significant impact.	Same as 2014

Source: FAA Order 1050.1E, Chg 1, Appendix A; Harris Miller Miller & Hanson Inc, April 2013  
Prepared by: Harris Miller Miller & Hanson Inc., August 2013

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**

This section provides a summary of the NIRS calculations of future noise exposure in 2014 and 2019 resulting from the Proposed Action and the No Action Alternative, as required by FAA Order 1050.1E. Additionally, this section identifies the differences in noise exposure between the two alternatives in order to determine if implementation of the Proposed Action would result in significant or reportable noise impacts. The Noise Modeling Technical Report (available on the OAPM website) provides additional information on this analysis. Section 4.3.1 presents a discussion of existing aircraft noise exposure in the General Study Area (GSA).

### **5.1.1 Summary of Impacts**

Aircraft noise exposure was modeled for both the Proposed Action and the No Action Alternative under 2014 and 2019 conditions. Implementation of the Proposed Action would not result in a DNL increase of 1.5 dB or more in noise sensitive areas exposed to aircraft noise at or above DNL 65 dB when compared with the No Action Alternative. Therefore, in accordance with the FAA Order 1050.1E significant noise impact threshold, no significant noise impacts would occur with implementation of the proposed project.

### **5.1.2 Methodology**

The noise analysis evaluated noise exposure to communities within the Study Area generated by aircraft forecasted to be operating under Instrument Flight Rules (IFR) filed flight plans in areas from ground level to 10,000 ft. AGL. The analysis forecasted IFR-filed aircraft activity for the years 2014 and 2019, which was then used to model conditions under both the Proposed Action and the No Action Alternative. Noise modeling was

conducted using the NIRS Version 7.0b.3, the FAA's noise model for projects involving air traffic changes over broad geographic areas.

If the Proposed Action is approved, the FAA expects to begin implementation in 2014. Therefore, aircraft noise was modeled for 2014 and five (5) years later (2019), as required by FAA Order 1050.1E. Noise exposure levels for future years modeled for the Proposed Action and the No Action Alternative were compared to determine whether there is a potential for noise impacts.

The Proposed Action is not expected to cause additional growth in operations. Furthermore, the number of operations and aircraft types is the same for the Proposed Action and the No Action Alternatives in 2014; similarly the number of operations and aircraft types is the same for the two Alternatives in 2019. Therefore, the noise analysis compares the change in noise exposure between the Proposed Action and the No Action Alternative for each study year.

Detailed information on IFR-filed aircraft operations within the Study Area was assembled for input into NIRS using the following types of 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 2014 and in 2019. For the 2014 and 2019 forecast years, the data was based on the FAA's 2012 Terminal Area Forecast (TAF),<sup>51</sup> which was supplemented with additional details such as arrival/departure times, aircraft types, and origin/destination information (for additional details please refer to the Average Annual Day Flight Schedules Technical Report, available on the North Texas OAPM EA website, [http://oapmenvironmental.com/ntx\\_metroplex/ntx\\_docs.html](http://oapmenvironmental.com/ntx_metroplex/ntx_docs.html)).

**Flight Tracks:** The modeled flight tracks were based on radar data collected for the existing conditions (2011) noise analysis and information provided by FAA ATC personnel. Aircraft routings under both the Proposed Action and the No Action Alternative are depicted on Exhibits 3-15 through 3-32 in Chapter 3, *Alternatives*. For the Proposed Action, flight tracks were developed from the aircraft procedures created by the North Texas OAPM D&I Team using the *Terminal Area Route Generation, Evaluation, Traffic and Simulation (TARGETS)* program. The modeled flight tracks for the No Action Alternative are based on the existing conditions noise analysis.

**Runway Use:** Runway use percentages<sup>52</sup> were identified for all runways at the Study Airports. Forecasted aircraft operations were assigned to particular runways representing operating conditions at the Study Airports under Proposed Action and No Action Alternative conditions.

More detail related to the development of the NIRS model input files is provided in the *Noise Modeling Technical Report* (available on the North Texas OAPM EA website, [http://oapmenvironmental.com/ntx\\_metroplex/ntx\\_docs.html](http://oapmenvironmental.com/ntx_metroplex/ntx_docs.html)).

As discussed in Section 4.3.1.1, the NIRS model was used to compute DNL values for 2014 and 2019 Proposed Action and No Action Alternative conditions for three sets of data points throughout the GSA:

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<sup>51</sup> Federal Aviation Administration, Terminal Area Forecast (2012) (<https://aspm.faa.gov/main/taf.asp>)(Accessed March 2013.)

<sup>52</sup> 2011 PDARS Data

- 98,297 census (2010) block centroids representing 6,745,544 people,
- 42,998 uniform grid points, including 28,490 grid points at 0.5 NM intervals and 14,508 grid points at 1.0 NM intervals on a uniform grid covering the Study Area and used to calculate DNL values at potential DOT Act, Section 4(f) resources and historic sites,
- 1,208 grid points representing sites of interest too small to be captured in the uniform grid.

As also discussed in Section 4.3.1.1, FAA Order 1050.1E requires analysis of aircraft noise using the DNL 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 1050.1E describes a significant impact as a DNL increase of 1.5 dB at a noise sensitive land use location (e.g., residences, schools, etc.) exposed to aircraft noise of DNL 65 dB or higher under the Proposed Action.<sup>53</sup>

Additionally, in response to a recommendation made in 1992 by the Federal Interagency Committee on Noise (FICON), FAA Order 1050.1E recommends that – when DNL increases of 1.5 dB or more occur at noise sensitive locations in areas exposed to aircraft noise of DNL 65 dB and higher – noise increases of DNL 3 dB or more should also be evaluated and disclosed in noise sensitive areas exposed to aircraft noise between DNL 60 dB and 65 dB.

As stated in section 4.3.1.1. for air traffic actions where the study area is larger than the immediate vicinity of the airport, incorporates more than one airport, or includes actions above 3000 ft. AGL, FAA Order 1050.1E also states that NIRS will be used to produce change-of-exposure tables and maps at population centroids using the following screening criteria: changes of 5.0 dB or greater for DNL 45-60 and changes of 3.0 dB or greater for DNL 60-65.

**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 greater <sup>1</sup>	Exceeds Threshold of Significance
DNL 60 to 65	DNL 3.0 dB or greater <sup>2</sup>	Considered When Evaluating Air Traffic Actions
DNL 45 to 60	DNL 5.0 dB or greater <sup>3</sup>	Information Disclosed When Evaluating Air Traffic Actions

*Notes:*

*1/ Source FAA, Order 1050.1E, Appendix A, Paragraph 14.3; 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 Order 1050.1E, Appendix A, Paragraphs 14.4c and 14.5e; and Federal Interagency Committee on Noise, Federal Agency Review of Selected Airport Noise Issues, August 1992.*

*3/ Source FAA Order 1050.1E, Appendix A, Paragraph 14.5e.*

Source: FAA Order 1050.1E, Appendix A, June 8, 2004  
Prepared by: Harris Miller Miller & Hanson Inc., August 2013

<sup>53</sup> FAA, Order 1050.1E, Appendix A, Paragraph 14.3.

### 5.1.3 Potential 2014 Impacts

**Table 5-3** summarizes the results of the noise change analysis conducted to determine the significance of the changes in noise exposure associated with the Proposed Action compared with the No Action Alternative under 2014 conditions. As depicted in **Exhibit 5-1**, under the Proposed Action, no population would experience increases in aircraft noise exposure that would be considered significant (i.e., an increase in DNL of 1.5 dB or greater in an area exposed to aircraft noise of DNL 65 dB).

In addition, no population would be exposed to reportable noise increases (3 dB or more) between DNL 60 dB and 65 dB due to the Proposed Action, and no population would experience a DNL 5 dB increase between DNL 45 dB to 60 dB in 2014 due to the Proposed Action.

In summary, these results indicate that the Proposed Action would not result in any significant or reportable noise exposure under the Proposed Action.

**Table 5-3 Change in Potential Population Exposed to Aircraft Noise – 2014**

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

Source: 2010 U.S. Census (population centroid data), August 2012; Harris Miller Miller & Hanson Inc., April 2013 (NIRS modeling results)

Prepared By: Harris Miller Miller & Hanson Inc., April 2013

### 5.1.4 Potential 2019 Impacts

Potential impacts were also evaluated under 2019 conditions for both the Proposed Action and No Action Alternative using the same methodology and criteria employed to analyze impacts under 2014 conditions.

**Table 5-4** summarizes the results of a noise change analysis conducted to determine the significance of the changes in noise exposure associated with the Proposed Action compared with the No Action Alternative under 2019 conditions. As depicted in **Exhibit 5-2** under the Proposed Action, no population would experience increases in aircraft noise exposure that would be considered significant (i.e., an increase in DNL of 1.5 dB or greater in an area exposed to aircraft noise of DNL 65 dB).

In addition, no population would be exposed to reportable noise increases (3 dB or more) between DNL 60 dB and 65 dB due to the Proposed Action, and no population would experience a DNL 5 dB increase between DNL 45 dB to 60 dB in 2019 due to the Proposed Action.

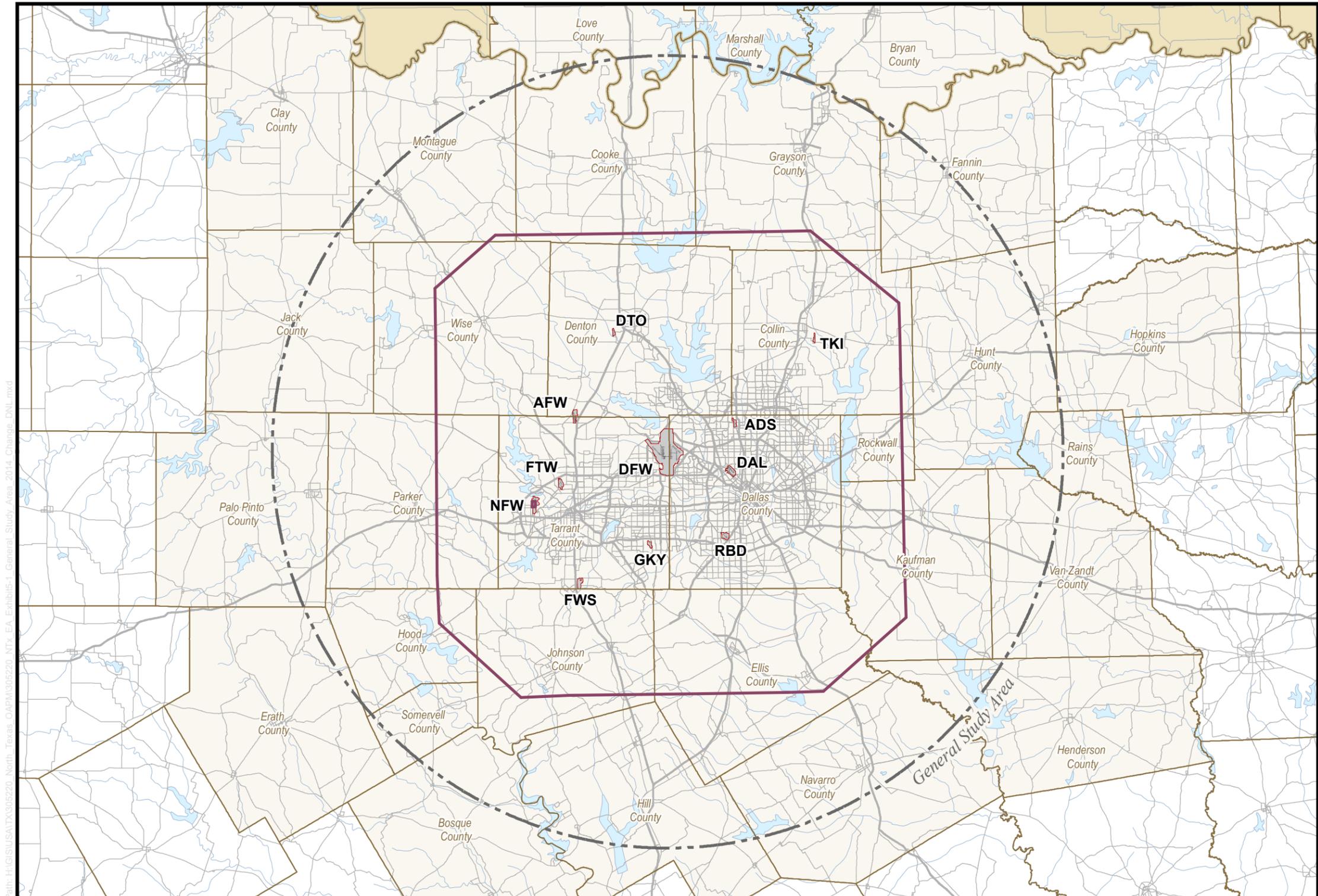
In summary, these results indicate that the Proposed Action would not result in any significant or reportable noise exposure under the Proposed Action.

**Table 5-4 Change in Potential Population Exposed to Aircraft Noise – 2019**

<u>DNL Noise Exposure Level Under the Proposed Action</u>	<u>Increase in DNL with the Proposed Action</u>	<u>Population Exposed to Noise that Exceeds the Threshold</u>
DNL 65 and higher	DNL 1.5 dB or greater	0
DNL 60 to 65	DNL 3.0 dB or greater	0
DNL 45 to 60	DNL 5.0 dB or greater	0

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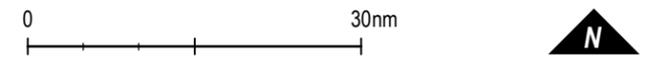
Source: 2010 U.S. Census (population centroid data), August 2012; Harris Miller Miller & Hanson Inc., April 2013 (NIRS modeling results)  
Prepared By: Harris Miller Miller & Hanson Inc., April 2013



**LEGEND**

- General Study Area
  - Study Airport Boundary
  - TRACON Boundary
- 2014 Change in Noise DNL Levels**
- Noise Increases**
- 1.5 dB or greater for location with a Proposed Action DNL  $\geq$  65 dB
  - 3.0 dB or greater for location with a Proposed Action DNL  $\geq$  60 dB and  $<$  65 dB
  - 5.0 dB or greater for location with a Proposed Action DNL  $\geq$  45 dB and  $<$  60 dB
  - New to DNL 65 dB, but no 1.5 dB increase
- Noise Decrease**
- 1.5 dB for location with a No Action DNL  $\geq$  65 dB
  - 3.0 dB for location with a No Action DNL  $\geq$  60 dB and  $<$  65 dB
  - 5.0 dB for location with a No Action DNL  $\geq$  45 dB and  $<$  60 dB
  - Removed from DNL 65 dB, but no 1.5 dB decrease
- State Boundary
  - County Boundary
  - Interstate Highway
  - Secondary Roads
  - Highways
  - Water
  - River/Stream

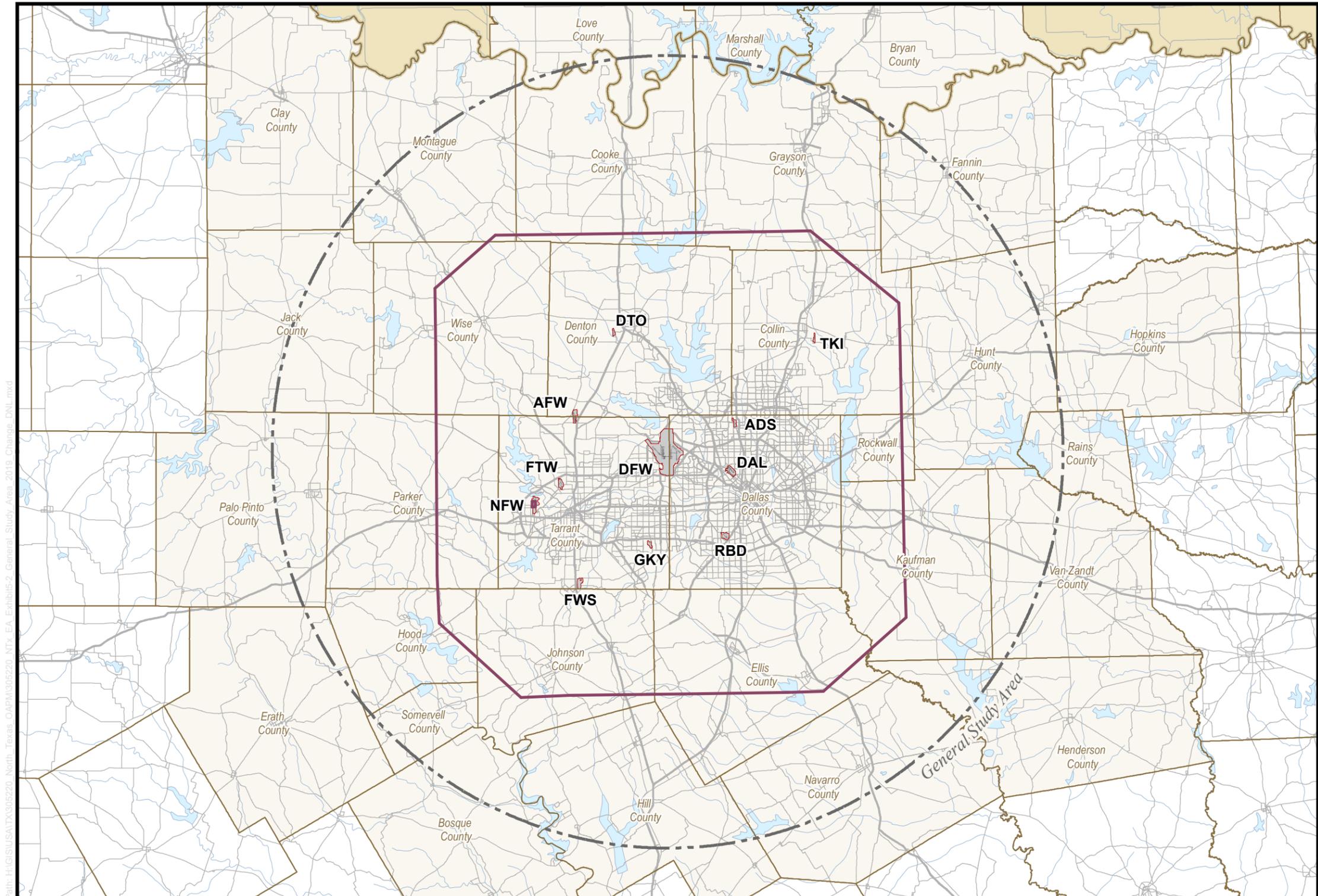
- Notes:
- ADS - Addison Airport
  - AFW - Fort Worth Alliance Airport
  - DAL - Dallas Love Field
  - DFW - Dallas Fort Worth International Airport
  - DTO - Denton Municipal Airport
  - FTW - Fort Worth Meacham International Airport
  - FWS - Fort Worth Spinks Airport
  - GKY - Arlington Municipal Airport
  - NFW - Fort Worth Naval Air Station
  - RBD - Dallas Executive Airport
  - TKI - Collin County Regional Airport at McKinney



Path: H:\GIS\USATX\305220\_North\_Texas\_OAPM\305220\_NTX\_EA\_Exhibit5-1\_General\_Study\_Area\_2014\_Change\_DNL.mxd

Data Source: MITRE (TRACON Boundary), August 22, 2012; National Atlas(Lakes/Rivers), September 10, (Updated); Environmental Systems Research Institute, Inc. (State/County Boundaries, Roads, Airport Boundaries), May 03, 2012; United States Census (Census Block Centroids), July 24, 2012; Prepared By: Harris Miller Miller & Hanson Inc., October, 2012

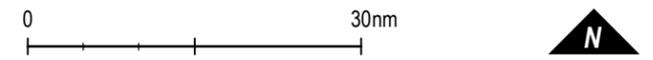
**2014 Change of Potential Population  
Exposed to Aircraft Noise  
Proposed Action vs. No Action**



**LEGEND**

- General Study Area
  - Study Airport Boundary
  - TRACON Boundary
- 2019 Change in Noise DNL Levels**
- Noise Increases**
- 1.5 dB or greater for location with a Proposed Action DNL  $\geq$  65 dB
  - 3.0 dB or greater for location with a Proposed Action DNL  $\geq$  60 dB and  $<$  65 dB
  - 5.0 dB or greater for location with a Proposed Action DNL  $\geq$  45 dB and  $<$  60 dB
  - New to DNL 65 dB, but no 1.5 dB increase
- Noise Decrease**
- 1.5 dB for location with a No Action DNL  $\geq$  65 dB
  - 3.0 dB for location with a No Action DNL  $\geq$  60 dB and  $<$  65 dB
  - 5.0 dB for location with a No Action DNL  $\geq$  45 dB and  $<$  60 dB
  - Removed from DNL 65 dB, but no 1.5 dB decrease
- State Boundary
  - County Boundary
  - Interstate Highway
  - Highways
  - Water
  - River/Stream
  - Secondary Roads

- Notes:
- ADS - Addison Airport
  - AFW - Fort Worth Alliance Airport
  - DAL - Dallas Love Field
  - DFW - Dallas Fort Worth International Airport
  - DTO - Denton Municipal Airport
  - FTW - Fort Worth Meacham International Airport
  - FWS - Fort Worth Spinks Airport
  - GKY - Arlington Municipal Airport
  - NFW - Fort Worth Naval Air Station
  - RBD - Dallas Executive Airport
  - TKI - Collin County Regional Airport at McKinney



Data Source: MITRE (TRACON Boundary), August 22, 2012; National Atlas(Lakes/Rivers), September 10, (Updated); Environmental Systems Research Institute, Inc. (State/County Boundaries, Roads, Airport Boundaries), May 03, 2012; United States Census (Census Block Centroids), July 24, 2012; Prepared By: Harris Miller Miller & Hanson Inc., October, 2012

**2019 Change of Potential Population  
Exposed to Aircraft Noise  
Proposed Action vs. No Action**

## 5.2 Compatible Land Use

This section presents a summary of the potential impacts to Compatible Land Use under the Proposed Action, as compared to the No Action Alternative.

### 5.2.1 Summary of Impacts

Under both the Proposed Action and No Action Alternative, there would be no changes in aircraft noise exposure that would exceed the FAA's significance thresholds for noise impacts on people. Therefore, neither the Proposed Action nor the No Action Alternative would result in compatible land use impacts.

### 5.2.2 Methodology

The analysis of potential impacts to compatible land use was focused on changes in aircraft noise exposure resulting from implementation of the Proposed Action. FAA Order 1050.1E 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 impacts.... If the noise analysis... concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use." (FAA Order 1050.1E, Appendix A, Sec. 4.1a.) 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 GSA.

### 5.2.3 Potential Impacts – 2014 and 2019

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 2014 or 2019 that would exceed the criteria for significant or reportable noise increases. 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 GSA and no changes in aircraft noise exposure would be anticipated to occur in either 2014 or 2019. Therefore, the No Action Alternative would not result in significant compatible land use impacts.

## 5.3 Department of Transportation Act, Section 4(f) Resources

This section presents a summary of the analysis of potential impacts to Section 4(f) resources under the Proposed Action and No Action alternatives. Section 4(f) resources discussed in this section and present within the GSA are described in Section 4.3.3, and are depicted on **Exhibit 4-4**.

### 5.3.1 Summary of Impacts

Because the Proposed Action would not result in any construction on the ground or direct use of 4(f) resources, the analysis of potential impacts to Section 4(f) resources focused on the potential for constructive use of Section 4(f) resources based on changes in aircraft noise exposure resulting from implementation of the Proposed Action. Under the Proposed Action, the aircraft noise exposure analysis indicates that the Proposed Action would not significantly change (no DNL increase of 1.5 dB or more at or above DNL 65 dB) the noise environment at any Section 4(f) resource identified within the GSA when compared with the

No Action Alternative. The Proposed Action would not cause any reportable increases in noise exposure to potential Section 4(f) resources below DNL 65 dB. Therefore, no substantial impairment and no constructive use of a Section 4(f) resource associated with the Proposed Action would occur. No significant impacts would be anticipated under the Proposed Action.

Under the No Action Alternative, no changes in air traffic routes in the GSA would occur; therefore, no changes to aircraft noise exposure or aircraft overflight patterns would occur over Section 4(f) resources and no constructive use or significant impacts would be anticipated.

Furthermore, the FAA on May24th 2013 received a letter from the National Park Service (NPS) in response to early outreach efforts. In the letter the NPS requested that the FAA treat all NNLs as well as NHLs within the GSA as sensitive noise areas and as such apply Airspace Circular 91-36. Following the recommendation of the NPS, the FAA reviewed criteria set forth in AC 91-36 and determined that the specific AC would not be applicable to this project as no changes under either of the alternatives require aircraft to fly lower than what is done currently. Specifically, the AC refers to aircraft operations during Visual Flight Rule (VFR) conditions as well as recommends having a minimum 2000' flying altitude above any NNL or NHL environment. As proposed, neither alternative changes the recommended flying altitudes over any NPS property, continuing to keep the aircraft well above the recommended 2000' nor does this project modify any VFR operations for any Aircraft.

The FAA also measured impacts against criteria set forth in **Table 5-2** and determined that neither the Proposed Action nor the No Action alternative will have any significant or reportable impacts in 2014 and 2019 to any NNLs or NHLs identified within the GSA. For further information please refer to Appendix A section A.1.2 for more information.

### **5.3.2 Methodology**

The FAA evaluates potential effects on Section 4(f) resources in terms of both direct impacts (physical use) and indirect impacts (constructive use). A direct 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 direct impact to a Section 4(f) resource. Therefore, analysis of potential impacts to Section 4(f) resources is limited to identifying indirect impacts resulting from "constructive use." A constructive use of a Section 4(f) resource would occur if there is a substantial impairment of the resource to the degree that the activities, features, or attributes of the site that contribute to its significance or enjoyment are substantially diminished. This could occur as a result of both visual and noise impacts. Visual Impacts are further discussed in Section 5.10. As regards aircraft noise, a constructive use would occur should noise levels substantially impair the resource.

Noise exposure levels were calculated for grid points placed at Section 4(f) properties. The grid points used are further discussed in Section 5.1.2.

Pursuant to FAA Order 1050.1E, the analysis of noise impacts of a project at a Section 4(f) resource would involve further evaluation if the Proposed Action compared to the No Action

Alternative would produce changes in noise exposure levels at noise sensitive locations at or greater than:

- DNL 1.5 dB in areas exposed aircraft noise of DNL 65 and higher,
- DNL 3.0 dB in areas exposed to aircraft noise from DNL 60 to 65, or
- DNL 5.0 dB in areas exposed to aircraft noise from DNL 45 to 60.

If a change in predicted noise exposure meeting the above criteria were identified, the potential Section 4(f) resource would be evaluated further to determine whether the effects from implementation of the Proposed Action would rise to a level of being a constructive use. Further evaluation may include confirming that a property is in fact a Section 4(f) resource as well as identifying the specific attributes for which a property 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).

With regard to Land and Water Conservation Fund (LWCF) resources, FAA Order 1050.1E states that replacement satisfactory to the Secretary of the Interior is specifically required for recreation lands aided by the Department of Interior's LWCF in cases where such a resource is "used" by a transportation project. Therefore, these resources are considered as a part of the Section 4(f) impact analysis process

### **5.3.3 Potential Impacts – 2014 and 2019**

The FAA conducted noise modeling for the potential Section 4(f) resources discussed in Section 4.3.3.1. The modeling showed that the Proposed Action would not result in a significant noise increase (i.e., a DNL increase of 1.5 dB or more at or above DNL 65 dB) at any potential Section 4(f) resource for both 2014 and 2019. In addition, there are no potential Section 4(f) resources that would experience reportable noise increases (i.e., a DNL increase of 5 dB or more between DNL 45 dB and 60 dB, or a DNL increase of 3 dB or more between DNL 60 dB and 65 dB). Appendix F lists those potential Section 4(f) resources that the FAA modeled for noise analysis and provides a comparison of noise exposure between the No Action Alternative and Proposed Action based on grid points associated with potential Section 4(f) resources.

As described in Section 5.11, the Proposed Action would not involve changes to ground-based light sources and the potential visual effects would be substantially the same as any aircraft overflight, i.e., visual sight of aircraft, contrails, or aircraft lights at night. These effects would not be materially differ from those occurring under the No Action Alternative, and therefore would not result in a constructive use of potential Section 4(f) resources in 2014 and 2019 under the Proposed Action.

The No Action Alternative would not change air traffic routes in the GSA and the FAA anticipates no effects related to changes in aircraft noise exposure or visual intrusion. Therefore, the No Action Alternative would not result in a use of potential Section 4(f) resources.

## **5.4 Historical, Architectural, Archeological, and Cultural Resources**

This section discusses the analysis of impacts to historic resources and tribal lands under the Proposed Action and the No Action Alternative. Additional information on historic

resources and tribal lands within the GSA is provided in Section 4.3.4. The FAA initiated consultation with the appropriate State Historic Preservation Officers (SHPOs) and Tribal Historic Preservation Officer (THPOs), as well as relevant local agencies, 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. Additionally, as discussed in section 4.3.4 and section 5.3.1, per the request of the NPS, the FAA also applied Historic Sites Act of 1935 (Public Law 74-292) (16 U.S.C. 461 et seq.) as it related to NHLs and NNLs in the GSA.

### **5.4.1 Summary of Impacts**

The aircraft noise exposure analysis indicates that there would be no adverse effects to any historic resource, tribal land, NHL or NNL as a result of noise under the Proposed Action compared with the No Action Alternative. Furthermore, any changes in aircraft traffic patterns are expected to occur at altitudes and distances from viewers that would not substantially impair the view or setting of historic resources, tribal lands, NHLs or NNLs. Therefore, no adverse indirect effects to historic resources or tribal lands under the Proposed Action would be anticipated for 2014 or 2019. Furthermore, because the airspace changes do not involve any changes on the ground, there would no adverse direct effects to historic resources under the Proposed Action would be anticipated for 2014 or 2019. .

Under the No Action Alternative no changes to air traffic routes in the North Texas Metroplex would occur in either 2014 or 2019 and no changes to aircraft noise exposure or changes in aircraft overflight patterns over historic resources, tribal lands, NHLs or NNLs would be anticipated. Therefore, historic resources, tribal lands, NHLs or NNLs would not be affected by aircraft noise nor would viewers at historic resources or tribal lands experience visual impacts under the No Action Alternative.

### **5.4.2 Methodology**

The National Historic Preservation Act of 1966 requires federal agencies to consider the effects of its undertakings on properties listed or eligible for listing in the NRHP. In assessing whether an undertaking, such as the Proposed Action, affects a property listed or eligible for listing on the NRHP, FAA must consider both direct and indirect effects. Direct effects include the physical removal or alteration of an historic resource. Indirect effects include changes in the environment of the historic resource that could substantially alter the characteristics that made it eligible for listing on the National Register. Such changes could include changes in noise exposure and visual impacts. Visual Impacts are further discussed in Section 5.10.

To assess the potential indirect effects of the Proposed Action on historic resources, an area of potential effect (APE) was defined. Federal regulations define the APE as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, should any such properties exist. The definition of 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. For purposes of this analysis, the APE was defined as being contiguous with the GSA. Potential historic resources were identified within the GSA and their locations are shown on Exhibit 1-1 **Exhibit 4-5** in Section 4.3.4. No Indian reservations or tribal lands were identified within the GSA. For purposes of determining potential adverse effects, noise exposure levels were calculated at points representing these properties.

The analysis of potential impacts to historic resources considers whether these properties would experience a significant or reportable noise increase, when comparing the Proposed Action with the No Action Alternative, using the applicable criteria shown in **Table 5-2**.

Noise sensitive areas exposed to DNL 65 dB or higher under the Proposed Action and an increase of DNL 1.5 dB or higher would be significantly impacted and may be considered to be potentially adversely effected by the project.

If reportable increases in noise are detected for properties exposed between DNL 45 dB and lower than 65 dB, further research and/or survey on the subject property may be conducted to determine if the reportable increase would diminish the integrity of the property's setting for which the setting contributes to the property's historical or cultural significance.

### **5.4.3 Potential Impacts – 2014 and 2019**

Neither the Proposed Action nor the No Action Alternative would include any ground disturbance, construction, or land acquisition; therefore, neither alternative would physically destroy or alter any historic, architectural, or cultural resources, including any on Tribal Lands. The FAA also assessed noise levels at historic properties within the APE to determine if the Proposed Action would result in any noise increases that would diminish the integrity of a property's setting for those properties for which their setting contributes to historical or cultural significance.

The modeling showed that the Proposed Action would not result in a significant noise increase (i.e., a DNL increase of 1.5 dB or more at or above DNL 65 dB) at any historic resource or tribal lands for both 2014 and 2019. In addition, there are no historic resources or tribal lands that would experience reportable noise increases (i.e., a DNL increase of 5 dB or more between DNL 45 dB and 60 dB, or a DNL increase of 3 dB or more between DNL 60 dB and 65 dB).

Appendix G, *Inventories of Historic Resources and Noise Exposure* provides the predicted noise exposure information for both the Proposed Action and the No Action Alternative for all historic resources identified in the GSA.

As described in Section 5.10, the Proposed Action would not involve changes to ground-based light sources. Therefore, it would not have an adverse effect on a historical, architectural, archaeological, or cultural resource through introduction of a visual feature that would diminish the integrity of the setting for those properties where setting contributes to the property's historic, architectural, archaeological, or cultural significance. The FAA initiated consultation with the THC and OHS in spring of 2013. With the publication of this EA, the FAA is seeking concurrence from that agency with this finding.

Under the No Action Alternative, air traffic routes in the North Texas area would not change. Therefore, no effects would occur related to changes in aircraft noise exposure or visual effects.

Furthermore, implementation of the No Action Alternative would present no change to the noise environment or visual setting and thus would have no effect on Historic and Cultural Resources. Formal consultation with the appropriate SHPO/THPO is being conducted to confirm the determination.

## 5.5 Wildlife (Avian and Bat Species)

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

### 5.5.1 Summary of Impacts

The greatest potential for impacts to wildlife species would result from wildlife strikes on avian and bat species at altitudes below 2,500 ft. AGL. Changes to air traffic flows under the Proposed Action would primarily occur above 3,000 ft. AGL and any changes to air traffic flows under the Proposed Action that would occur below 3,000 ft. AGL are overlays to existing procedures thereby not altering current flight paths (for additional information please refer to Chapter 3). Furthermore, levels of operation would remain the same as the No Action Alternative; therefore, there would be no significant impacts to avian and bat species under the Proposed Action 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.

The FAA initiated informal consultation with the U.S. Fish and Wildlife Service (FWS) in May 2013 for this project and is seeking concurrence with the FAA's finding.

### 5.5.2 Methodology

The FAA's Wildlife Strike Database is the best information source available for assessing potential impacts of aircraft on wildlife. Strike reports over the past 22 years, aggregated nationally as well as for individual airports, are available from the database to analyze existing conditions.

The analysis for this project involved a review of arrival and departure flight tracks for the Study Airports, for both the Proposed Action and the No Action Alternative. Additionally, flight tracks with altitudes both above and below 2,500 ft. AGL were reviewed, because research has documented that 88 percent of all wildlife strikes nationwide occur below 2,500 ft. AGL.<sup>54</sup> The FAA compared modifications in flight procedures to the occurrence of species and populations of concern to assess if existing wildlife strike reports might change under the Proposed Action.

### 5.5.3 Potential Impacts – 2014 and 2019

Since 1990, the FAA has compiled reports of wildlife strikes with aircraft. The information is available to the public through the FAA Wildlife Strikes Database and its annual report.<sup>55</sup> The Wildlife Strike Database reported 119,917 wildlife strikes nationally for the 22-year period between 1990 and 2011. Birds represent 97.1 percent of all strikes. Of those, 88 percent of bird strikes affecting commercial civil aircraft occurred below 2,500 ft. AGL, and 92 percent occurred below 3,500 ft. AGL. The Wildlife Strike Database reports that gulls have the highest occurrence of strikes (16%), followed by doves/pigeons (15%).

The Wildlife Strike Database provides strike information that is reportable by airport, including species struck, height of strike, and type and extent of aircraft damage. **Table 5-5**

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<sup>54</sup> Wildlife strike data is available in 1,000ft increments starting at 500ft AGL (500', 1,500', 2,500', etc.); altitude of 2,500ft AGL was used to approximate potential impacts below 3,000ft AGL

<sup>55</sup> [www.faa.gov](http://www.faa.gov)

provides a summary of wildlife strikes reported by Study Airport between 1990 and March 2013. The Wildlife Strike Database reports 4,765 strikes at the Study Airports. One of the limitations of the data is that not all reports provide the full complement of available information. For example, 47 percent of the recorded bird strikes for the Study Airports from 1990 through March 2013 did not identify the affected species. However, 623 strikes were reported at the Study Airports that include species identification and are available for analysis.

Sixty-four (64) percent of all wildlife strike reports included strike altitude data. **Table 5-5** provides a summary of wildlife strikes by altitude for the Study Airports for data available from 1990 through March 2013. Eighty-six (86) percent of the strikes associated with the Study Airports occurred below 2,500 ft. of which bats were responsible for less than 0.5 percent.

The Migratory Bird Treaty Act protects all the bird species identified in these reports. Furthermore, state and federal laws protect listed endangered and threatened species. The only two species identified in the database that are listed for protection under Federal or state endangered species laws are the Bald Eagle (one report) and the Least Tern (two reports).

The changes to altitudes and flight paths that would be implemented under the Proposed Action would not vary between 2014 and 2019. However, the levels of operations would increase as a result of previously forecast growth. The operations counts as noted previously would be the same and would occur under the No Action Alternative. Therefore, the effects anticipated would be similar to the Proposed Action in 2014 and 2019. Based on the strikes of known species (3,055 reports), the Proposed Action is not likely to adversely affect avian and bat wildlife compared with the No Action Alternative. Therefore, the Proposed Action is not likely to adversely affect federal/state listed species or their critical habitat. As stated previously, the FAA initiated informal consultation with the FWS in May 2013. The FAA sent a copy of this draft EA to the FWS for comment and to request concurrence with the FAA's finding.

**Table 5-5 FAA Wildlife Strike Database Records for Study Airports by Altitude (1990 – March 2013)**

Type of Strike <sup>1</sup>	2,500 ft. AGL or less	>2,500 ft. AGL to <= 10,000 ft. AGL	Greater than 10,000 ft. AGL	Total
Identified Bird	1,101	31	2	2,498
Bats	4	0	0	4
Unknown Bird (avian)	38	9	1	48
Unknown Bird (avian) – Large	26	15	1	42
Unknown Bird (avian) – Medium	582	155	31	768
Unknown Bird (avian) – Small	843	172	18	1,033
Identified Non Avian	26	0	0	26
<b>Total<sup>2</sup></b>	<b>2,620</b>	<b>382</b>	<b>53</b>	<b>1,387</b>
<b>Percent<sup>3</sup></b>	<b>86%</b>	<b>12%</b>	<b>2%</b>	<b>100%</b>

*Notes:*

*1/ Includes total number of strikes, even if species was unknown. Uses data for KADS, KAFW, KCPT, KDAL, KDFW, KDTO, KFTW, KFWS, KGKY, KHQZ, KLNC, KNFW, KRBD, and KTKI. No strikes reported for KGPM, 4T2, 50F, KLUD, F46, F41, KWEA, and KJWY. This table presents strike data for all 22 airports affected by the Proposed Action.*

*2/ One thousand seven-hundred ten (1,710) reported strikes did not include altitude information and are not included in this table.*

*3/ Percentages may not add to 100% due to rounding.*

Source: U.S. Department of Transportation, Federal Aviation Administration, FAA Wildlife Strike Database (<http://wildlife.faa.gov>)

Prepared by: Harris Miller Miller & Hanson Inc., August 2013

## 5.6 Environmental Justice

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

### 5.6.1 Summary of Impacts

Neither the Proposed Action nor the No Action Alternative would displace people or businesses; therefore, implementation of the Proposed Action and No Action Alternative would not result in direct impacts in this category.

No areas within the GSA would experience a significant or reportable noise impact associated with a change in DNL exposure to people (refer to Section 5.1); therefore, no disproportionately high or adverse effects to children, minority populations, or low-income populations would occur under either the Proposed Action or the No Action Alternative.

### 5.6.2 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, low-income populations, and Native American tribes. 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.

### **5.6.3 Potential Impacts – 2014 and 2019**

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 GSA would experience a change in noise exposure in 2014 or 2019 that exceeds any of FAA's criteria for significant or reportable noise impacts on people. Therefore, no adverse direct or indirect effects would occur to any environmental justice populations within the GSA under the Proposed Action for 2014 and 2019.

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 2014 or 2019 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.

## **5.7 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.

### **5.7.1 Summary of Impacts**

The Proposed Action would involve changes to air traffic flows. However, the optimized air traffic routes under the Proposed Action would improve route efficiency where possible and would be expected to reduce aircraft fuel consumption overall. Therefore, the Proposed Action would not result in the depletion of local supplies of energy.

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 supplies.

### **5.7.2 Methodology**

The Proposed Action would not change the number of aircraft operations relative to the No Action Alternative, but it 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 burn (or fuel expended). Aircraft fuel burn is considered a proxy for determining whether the Proposed Action would have a measurable effect on local energy supplies when compared with the No Action Alternative.

In addition to calculating aircraft noise exposure, the FAA NIRS model calculates aircraft-related fuel burn. The same data used in the noise analysis (e.g., AAD flight schedules, flight tracks, and runway use) is also used to estimate aircraft-related fuel burn.

Determining the difference in fuel burn 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.

### 5.7.3 Potential Impacts – 2014 and 2019

**Table 5-6** presents the results of the fuel burn analysis for the Proposed Action and No Action Alternative. Compared with the No Action Alternative, the Proposed Action would result in a decrease in total metric tons of aircraft fuel burned: 229.1 metric tons (MT) less in 2014 and 254.7 MT less in 2019. Therefore, there would be no significant adverse impact to energy supply.

**Table 5-6 Energy Consumption Comparison**

	2014		2019	
	<u>No Action</u>	<u>Proposed Action</u>	<u>No Action</u>	<u>Proposed Action</u>
Fuel Burn (MT)	3,106.50	3,095.9	3,497.1	3,484.9
Volume Change (MT) (Proposed Action – No Action)		-10.6		-12.2
Percent Change from No Action		--0.34%		-0.35%

Source: Harris Miller Miller & Hanson Inc., June 2013 (NIRS modeling results)  
Prepared By: Harris Miller Miller & Hanson Inc., June 2013

## 5.8 Air Quality

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

### 5.8.1 Summary of Impacts

The Proposed Action when compared to the No Action Alternative would result in a decrease in emissions due to a reduction in fuel burn. Accordingly, implementation of the Proposed Action would not have a significant impact on air quality and is presumed to conform to the State Implementation Plan (SIP) for Texas.

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.

### 5.8.2 Methodology

Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the National Ambient Air Quality Standards (NAAQS) for any time period analyzed.<sup>56</sup> Section 176(c) of The Clean Air Act (CAA) 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.<sup>57</sup> FAA Order 1050.1E provides that further analysis for NEPA purposes is normally

<sup>56</sup> FAA Order 1050.1E, Chg.1, App. A, sec. 2.3.

<sup>57</sup> 40 C.F.R. § 93.153(b).

not required where emissions do not exceed EPA's de minimis thresholds.<sup>58</sup> The EPA regulations<sup>59</sup> 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 ft. 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.<sup>60</sup> 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 are therefore presumed to conform, including ATC activities and adoption of approach, departure, and en route procedures for air operations.<sup>61</sup> 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 ft. AGL and below the mixing height "would have little if any effect on emissions and ground concentrations."<sup>62</sup>

### **5.8.3 Potential Impacts – 2014 and 2019**

Under the Proposed Action a decrease in fuel burn would be anticipated compared to the No Action Alternative. Therefore, no further air quality analysis is necessary and a conformity determination is not required.

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.

## **5.9 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.

### **5.9.1 Summary of Impacts**

Fuel burn would decrease under the Proposed Action compared to the No Action Alternative (see Section 5.8). Therefore, no significant project-related effects on climate would be anticipated.

### **5.9.2 Methodology**

In accordance with FAA guidance, estimated CO<sub>2</sub> emissions were calculated from the amount of fuel burned under the No Action Alternative and the decreased fuel burn projected for the Proposed Action in 2014 and 2019 (see Section 5.8). The resulting CO<sub>2</sub> emissions were then calculated as CO<sub>2</sub>e.

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<sup>58</sup> FAA Order 1050.1E, Chg. 1, App. A, sec. 2.1c.

<sup>59</sup> Title 40, Section 93.153(c) xxi

<sup>60</sup> Id at 93.153(f).

<sup>61</sup> U.S. National Archives and Records Administration, "Federal Presumed to Conform Actions Under General Conformity," Federal Register 72, no. 145 (July 20, 2007): 41565-41580.

<sup>62</sup> U.S. National Archives and Records Administration, "Federal Presumed to Conform Actions Under General Conformity," Federal Register 72, no. 145 (July 20, 2007): 41565.

### 5.9.3 Potential Impacts – 2014 and 2019

**Table 5-7** shows project-related CO<sub>2</sub>e emissions: 33.6 MT<sup>63</sup> less in 2014 and 38.5 MT less in 2019. In 2014, CO<sub>2</sub> emissions under the Proposed Action would be 9,767.5 MT of CO<sub>2</sub>e (0.34 percent lower than the No Action Alternative). In 2019, CO<sub>2</sub> emissions under the Proposed Action would be 10,994.8 MT of CO<sub>2</sub>e (0.35 percent lower than the No Action Alternative). In sum, the Proposed Action would reduce fuel burn in comparison with the No Action Alternative and, thus, reduce MT of CO<sub>2</sub>e emissions. Therefore, no increase in GHGs would result from implementation of the Proposed Action when compared to the No Action Alternative and no impacts would be anticipated.

**Table 5-7 CO<sub>2</sub>e Emissions – 2014 and 2019**

	2014		2019	
	<u>No Action</u>	<u>Proposed Action</u>	<u>No Action</u>	<u>Proposed Action</u>
CO <sub>2</sub> e Emissions (MT)	9,801.1	9,767.5	11,033.3	10,994.8
Volume Change (MT)		-33.6		-38.5
(Proposed Action – No Action)		-0.34%		-0.35%

*Notes: MT = Metric tons of CO<sub>2</sub> equivalent*

Source: Harris Miller Miller & Hanson Inc., June 2013 (NIRS modeling results)  
Prepared By: Harris Miller Miller & Hanson Inc., June 2013

## 5.10 Visual Impacts

This section presents a summary of the analysis of light emissions and visual impacts under the Proposed Action and the No Action Alternative.

### 5.10.1 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 patterns under the Proposed Action are expected to be at altitudes and distances sufficiently removed from viewers that 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 patterns would be expected. Therefore, the No Action Alternative would not result in visual impacts.

### 5.10.2 Methodology

As discussed in FAA Order 1050.1E, Appendix A, Section 12.2b, 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 proposed project is set. Visual impacts are

<sup>63</sup> From section 4.3.9 "The federal guidance also established a single metric for reporting all GHGs in metric tons (MT) of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) or MTCO<sub>2</sub>e".

normally related to the disturbance of the aesthetic integrity of an area caused by development, construction, or demolition, and thus, do not typically apply to airspace changes.

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, are considered to evaluate the potential for visual impacts.

### **5.10.3 Potential Impacts – 2014 and 2019**

According to FAA Order 1050.1E, Appendix A, 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 in aircraft routes associated with the Proposed Action would generally occur at altitudes above 3,000 ft. AGL; therefore, the visual sight of aircraft and aircraft lights would not be considered intrusive. Consequently, the Proposed Action would not result in significant visual impacts. Air traffic routes under the No Action Alternative would not change, and therefore, would not result in changes in light emissions to people on the ground, so no significant impacts relating to light emissions would occur. Accordingly, significant visual impacts resulting from the Proposed Action or the No Action Alternative would not be anticipated.

## **5.11 Cumulative Impacts**

Consideration of cumulative impacts applies to the impacts resulting from the implementation of the Proposed Action, in conjunction with those from other actions. Council on Environmental Quality (CEQ) regulations define "cumulative impact" as "the 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."<sup>64</sup> The period of time that is generally considered under cumulative impacts is 3-5 years in the past and 3-5 years into the future.

### **5.11.1 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.

### **5.11.2 Methodology**

Projects within the vicinity of the Study Airports were reviewed to evaluate the potential for cumulative impacts. A list of potential projects proposed on or near the Study Airports is provided in **Table 5-8**. Due to the nature of the resources affected by the Proposed Action, only projects with direct or indirect effects on aviation within the General Study Area were considered.

Potential impacts related to implementation of the Proposed Action, although demonstrated to not be significant in the preceding sections of this chapter fell into one category:

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<sup>64</sup> 40 CFR, Sec. 1508.7

- **Aircraft Noise** - Effects related to changes in aircraft noise exposure, including potential impacts on populations in the Study Area, compatible land use, potential Section 4(f) resources, historic and cultural resources.

Other categories of impacts considered in this EA, but demonstrated to not affect the resource, include:

- **Fuel Burn** - The Proposed Action results in lower quantities of fuel burned and correspondingly lower amounts air pollutants and greenhouse gases emitted; therefore, the Proposed Action would not cumulatively contribute to potential effects on energy use, air pollutants emitted, and greenhouse gases emitted of other past, present, and reasonably foreseeable future projects.
- **Avian and Bat Species** - The Proposed Action is not expected to result in a change in the occurrence of wildlife strikes; therefore, the Proposed Action would not cumulatively contribute to potential effects on avian and bat species of other past, present, and reasonably foreseeable future projects.
- **Other Categories** - As the Proposed Action would not involve land acquisition or other shifts in population or communities, physical changes such as ground disturbance or facility development, or construction activities, it would not affect the other environmental resource categories specified in FAA Order 1050.1E, as listed in the introduction to this Chapter.

Therefore, only other past, present, and reasonably foreseeable proposed projects with the potential for impacts related to changes in aircraft noise exposure were considered. The projects identified in **Table 5-8** were evaluated for their potential to collectively, with the Proposed Action, contribute to significant noise impacts affecting population, Section 4(f) resources, and historic and cultural properties.

### 5.11.3 Potential 2014 and 2019 Impacts

For each of the relevant past, present, and reasonably foreseeable future projects identified by the FAA, **Table 5-8** presents a summary of the potential for cumulative effects. Additional discussion of potential cumulative impacts, by environmental resource category, follows the table.

**Table 5-8 Potential for Cumulative Impacts from the Proposed Action and Other Past, Present, and Reasonably Foreseeable Future Actions**

Projects at North Texas OAPM Airports		
Project	Description	Potential for Cumulative Effects
Dallas Love Field (DAL) Taxiway "M"	FAA has received signed agreement and funding to review the City's plans and specifications. The FAA provided general support for the City's design and the project is continuing.	Proposed flight operations activity levels for the North Texas OAPM Proposed Action and No Action were modeled using TAF data, which included best available information on future planned operations levels. There is no indication that this project would alter aircraft operations levels in the TAF. No significant impacts are expected in conjunction with implementation of the Proposed Action.
DFW - End-Around Taxiway Project (NE)	DFW has completed the end around taxiway Southeast (SE) quadrant project and continues	Proposed flight operations activity levels for the North Texas OAPM Proposed Action

**Projects at North Texas OAPM Airports**

Project	Description	Potential for Cumulative Effects
Quadrant)	<p>airport improvements with the end-around taxiway Northeast (NE) quadrant project. The following facilities will be impacted:</p> <p>17L/17C Touchdown RVR, 17L/17C Midfield RVR, 17R Glide Slope(GS), 17C GS, 35L Localizer (LOC), 35C LOC / 17C Far Field Monitor (FFM) / 17C Inner Marker (IM)/ Northeast Fiber Optics Transmission System (FOTS), 17R Medium-Intensity Approach Lighting System with Runway Alignment Indicator (MALSR), 17R Precision Approach Path Indicator (PAPI), 17R Touchdown RVR, 17R Midfield RVR, 17C PAPI, 17C Approach Lighting System With Sequenced Flashing Lights (ALSF), 31R Roll-Out RVR, 31R LOC, 31R DME, 13L PAPI, 13L Runway End Identification Lights (REIL).</p>	<p>and No Action were modeled using TAF data, which included best available information on future planned operations levels. There is no indication that this project would alter aircraft operations levels in the TAF. No significant impacts are expected in conjunction with implementation of the Proposed Action.</p>
Fort Worth Alliance Runway Extensions (AFW)	<p>The FAA Airport Improvement Program (AIP) grant will pay for continued work to extend each of Alliance's two runways to 11,000 ft. The project has been underway for several years and involves extensive work to relocate a nearby state highway and a railroad to make way for the longer runways.<sup>65</sup></p>	<p>Proposed flight operations activity levels for the North Texas OAPM Proposed Action and No Action were modeled using TAF data, which included best available information on future planned operations levels. There is no indication that this project would alter aircraft operations levels in the TAF. The runway extensions were modeled as part of the 2019 No Action and Proposed Action modeling. No significant impacts are expected in conjunction with implementation of the Proposed Action.</p>
Collin County Regional Airport (TKI) – Runway Relocation	<p>The runway was relocated to the east and renamed 18-36 (previously 17-35).</p>	<p>Proposed flight operations activity levels for the North Texas OAPM Proposed Action and No Action were modeled using TAF data, which included best available information on future planned operations levels. There is no indication that this project would alter aircraft operations levels in the TAF. The shift in the runway location was incorporated into all of the 2014 and 2019 noise modeling. No significant impacts are expected in conjunction with implementation of the Proposed Action.</p>
Addison Airport (ADS) – Runway Safety Area Implementation	<p>Insufficient open land beyond the runway was available to implement required runway safety area. 610 ft. of runway length was allocated as a result to comply with regulations. There are new (shorter) runway 15-33 declared distances.</p>	<p>Proposed flight operations activity levels for the North Texas OAPM Proposed Action and No Action were modeled using TAF data, which included best available information on future planned operations levels. There is no indication that this project would alter aircraft operations levels in the TAF. This project does not alter the runway threshold locations so no changes were made in the 2014 and 2019 modeling. No significant impacts are expected in conjunction with implementation of the Proposed Action.</p>

<sup>65</sup> FAA Press Release [http://www.faa.gov/news/press\\_releases/news\\_story.cfm?newsId=13855](http://www.faa.gov/news/press_releases/news_story.cfm?newsId=13855), Sept 2012

**Regional Airspace Projects**

Project	Description	Potential for Cumulative Effects
Houston OAPM	The Houston OAPM project would optimize air traffic operations in the Houston, Texas metroplex airspace.	FAA has undertaken a separate NEPA analysis to characterize impacts arising from implementation. Points of boundary interface where potential Houston OAPM changes to IFPs abut or coincide with North Texas OAPM IFP changes were included in modeling for noise and air quality impacts for the North Texas OAPM. No significant cumulative impacts are expected with the Proposed Action.

**Surface Transportation Projects**

Project	Description	Potential for Cumulative Effects
The "Tex" Rail and DART Rail	The TEX Rail commuter rail is designed to serve Southwest Fort Worth to DFW Airport terminal areas, while the Dallas Area Rapid Transit (DART) rail is designed to serve the DFW, Irving, and Las Colinas areas to DFW Airport terminal areas.	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.
LBJ Express	There are significant highway expansion and improvements to I635 and I35E in the vicinity of DFW, DAL and environs. The expected outcomes are traffic relief, improved mobility and economic stimulation.	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.
Resurface Roadway	SH183 (Airport Freeway): Tarrant County line to Loop 12	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.
Construct New Lanes	SH161: From SH183 to Belt Line Rd	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.
Resurface Roadway	IH638: From Beltline Rd to IH35E	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.
Construct New Toll Road	IH35E/SH183 to US175/SH130 (Trinity Pkwy)	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.
Resurface Roadway	SH183: From Trinity River Bridge to IH35E	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.

Surface Transportation Projects

Project	Description	Potential for Cumulative Effects
Resurface Roadway	US67: From Wheatland Rd to IH35E	Separate NEPA analysis would be undertaken by TxDOT and the Federal Highway Administration (FHWA) to characterize impacts arising from construction and roadway use activities. No significant cumulative impacts are expected with the Proposed Action.

Source: HMMH memo "Cumulative Effects Analysis" November 2012  
 Prepared By: Harris Miller Miller & Hanson Inc., June 2013

5.11.3.1 Potential for Cumulative Noise Impacts

Noise and noise-related impacts include changes in noise exposure for populations, Tribal Lands, compatible land use, potential Section 4(f) resources, and historic properties.

Implementation of the Proposed Action would not result in significant changes in noise exposure, as discussed in this chapter. Three of the categories of past, present, and reasonably foreseeable projects have the potential to contribute cumulatively to the noise impacts of the Proposed Action:

- **Projects at North Texas OAPM Airports:** As discussed in **Table 5-8**, these projects would not be expected to have a significant cumulative noise impact.
- **Regional Airspace Projects:** Since the grid points having a value of DNL 65 dB or greater are concentrated in the vicinity of the study airports, the combination of the regional airspace actions with the Proposed Action would not be expected to have significant cumulative noise impacts. Project-specific analysis is presented in **Table 5-8**.
- **Surface Transportation Projects:** In general and when viewed in aggregate, the proposed surface transportation project corridor rights-of-way are typically at sufficient distances from airports such that the noise from the linear corridors and the noise in the vicinity of airports ordinarily would not overlap. Thus, no significant cumulative noise impacts are expected.

In summary, based on the review of past, present, and reasonably foreseeable projects, the FAA does not expect the Proposed Action to contribute to changes in noise exposure that would cumulatively result in significant impacts.