

# Chapter One:

## Purpose and Need

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### 1.1 Introduction

The City of Dallas Department of Aviation (DOA/ Sponsor), the owner/operator of Dallas Love Field Airport (DAL), proposes to reconstruct Runway 13R-31L and construct associated improvements beneficial to the runway reconstruction. DAL is an air carrier airport located in the City of Dallas, in Dallas County, Texas, which serves three commercial airlines: Southwest Airlines, Delta Airlines, and Alaska Airlines, with Southwest Airlines corporate headquarters located at DAL. Seven fixed base operators (FBOs) provide general aviation (GA) service at DAL, including fuel, maintenance, hangar rentals, and charters.

This Environmental Assessment (EA) has been prepared pursuant to the requirements of the *National Environmental Policy Act of 1969* (NEPA); the Council on Environmental Quality (CEQ) implementing regulations 40 Code of Federal Regulations (CFR) 1500-1508; Federal Aviation Administration (FAA) Order 1050.1F, *Policies and Procedures for Considering Environmental Impacts*; and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. This EA is intended to identify and consider potential temporary and permanent environmental impacts associated with the proposed reconstruction of Runway 13R-31L and associated improvements.

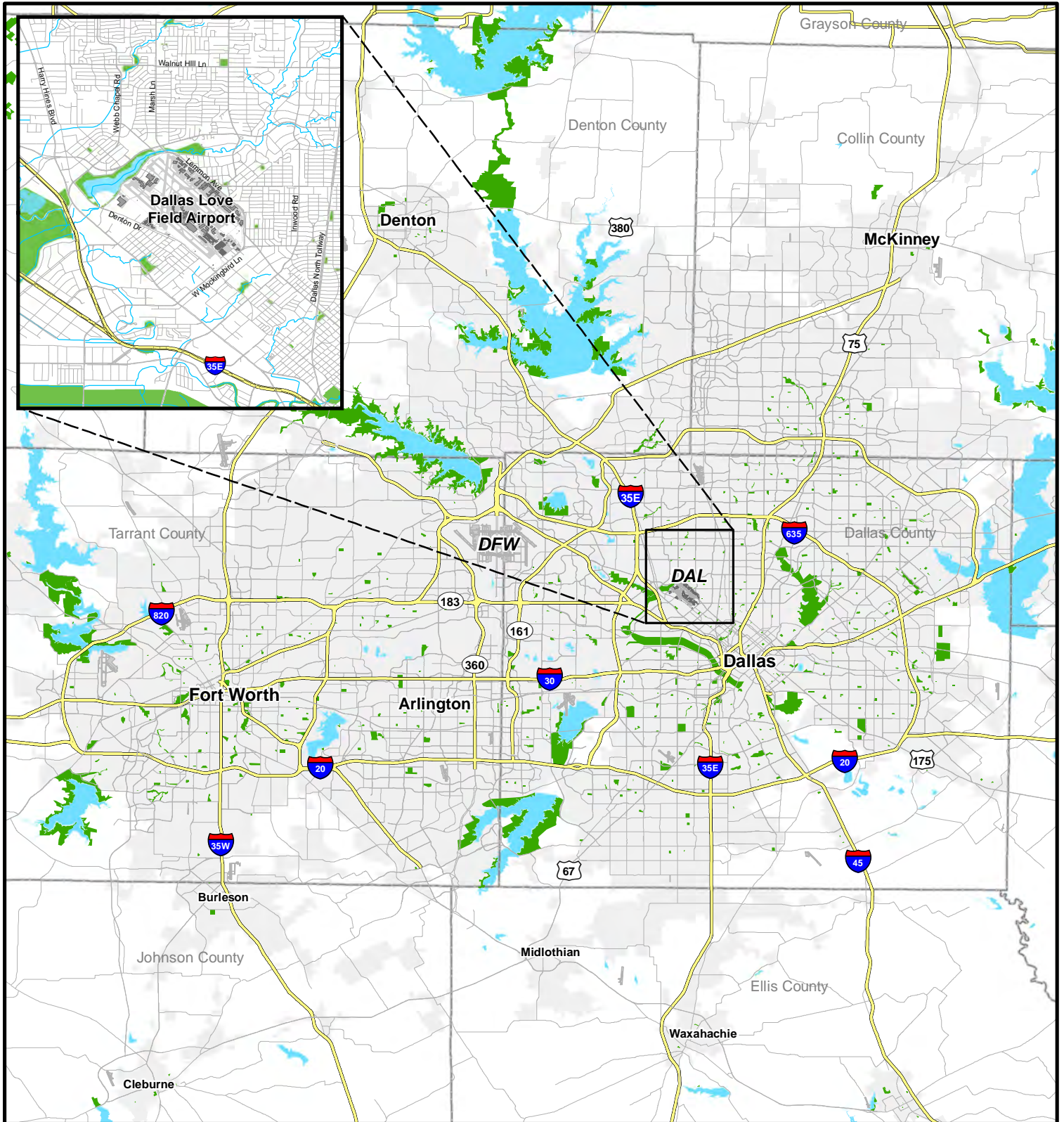
### 1.2 Background

DAL is located approximately four miles northwest of downtown Dallas and 11 miles southeast of Dallas Fort Worth International Airport (DFW). The airfield includes a system of taxiways and two parallel runways (Runway 13R-31L and Runway 13L-31R). The Airport is generally bound by Bachman Lake to the northwest, Lemmon Avenue to the northeast, Mockingbird Lane to the southeast, and Denton Drive to the southwest. **Figure 1-1** illustrates the general location of the Airport.

At 8,800' long, Runway 13R-31L is the longer of the parallel runways and serves as the main commercial air carrier runway at DAL. In 1990 the Runway was improved by applying a Portland Cement Concrete (PCC) overlay. FAA pavement design criteria specifies a 20-year design life. After 28 years of use, the existing overlay has performed beyond its effective design life. Additionally, changes in airport fleet mix and pavement design methodology since 1990 suggest that the existing overlay is too thin for current aircraft traffic. A pavement evaluation completed in May 2014 reported that Runway 13R-31L had deteriorated from the condition reported in the previous pavement evaluation conducted in 2008. The pavement evaluation report recommended closely monitoring the runway for further deterioration.

It is important to note that the pavement condition determined in May 2014 was prior to the repeal of the Wright Amendment in

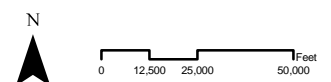
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## Legend

- Highway
- Other Road
- Park
- Water

**Figure 1-1**  
**Project Location**



October 2014.<sup>1</sup> Increased air traffic at DAL in the post Wright Amendment era, combined with continued deterioration, prompted the re-evaluation of Runway 13R-31L in February of 2016 to investigate the severity of deterioration that had occurred since May 2014. This re-evaluation revealed the quantity and severity of load-related distresses had increased significantly from 2014 to 2016. The 2016 update reported the Runway 13R-31L keel section (center 75-feet) had deteriorated below the critical Pavement Condition Index (PCI) value for primary runway pavements. This critical value represents a condition where it is no longer cost effective to undertake preventive maintenance or major rehabilitation. The 2016 update recommended full reconstruction due to the keel section falling below the critical PCI value and other sections projected to approach or exceed this value within a seven to 10-year period.

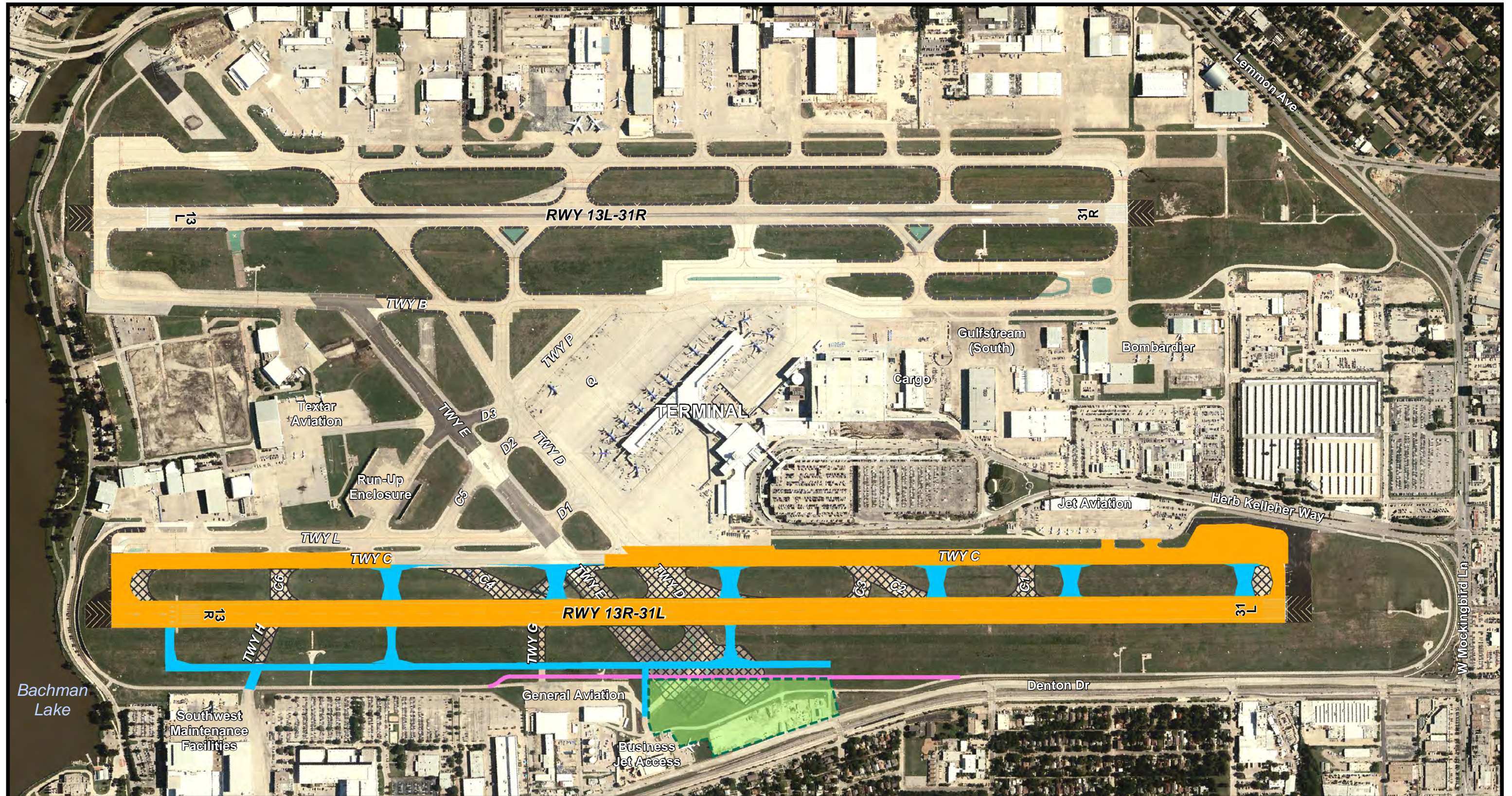
In November 2017, a Documented Categorical Exclusion (CATEX) was completed for the Runway 13R-31L Reconstruction project with the presumption that the reconstruction effort would only require a change in runway use (runway closure) for six months or less. With the construction schedule better defined, it was determined that the project will require a runway closure for greater than six months. Therefore, this EA is being completed to fully disclose the potential temporary impacts related to the runway use change as well as the potential impacts of associated improvements to be completed as part of the Runway 13R-31L reconstruction effort.

### **1.3 Description of the Proposed Action**

The Proposed Action is illustrated in **Figure 1-2** and the construction staging areas are illustrated in **Figure 1-3**. The Proposed Action includes the following proposed projects:

- Reconstruction of Runway 13R-31L (i.e., full depth replacement of the existing 8,800' runway and improvements to the existing grade, drainage structures, airfield lighting, and communications pathways);
- Reconstruction of Taxiway C from Taxiway D to Runway 31L end (including hold pad);
- Reconstruction of Taxiway C from the Runway 13R end to the midpoint between the Taxiway K and C5 connectors;
- Reconstruction of the Runway 13R and 31L ends at their intersection with Taxiway C;
- Demolition of all non-90-degree taxiway connectors between Taxiway C and Runway 13R-31L;
- Demolition of Taxiway E end (decommissioned Runway 36 end pavement);
- Demolition of taxiway connectors from apron areas providing direct access to Runway 13R-31L;
- New 90-degree taxiway connectors between Taxiway C and Runway 13R-31L;
- New Partial Parallel Taxiway from the Runway 13R Threshold to future Denton Drive Development;



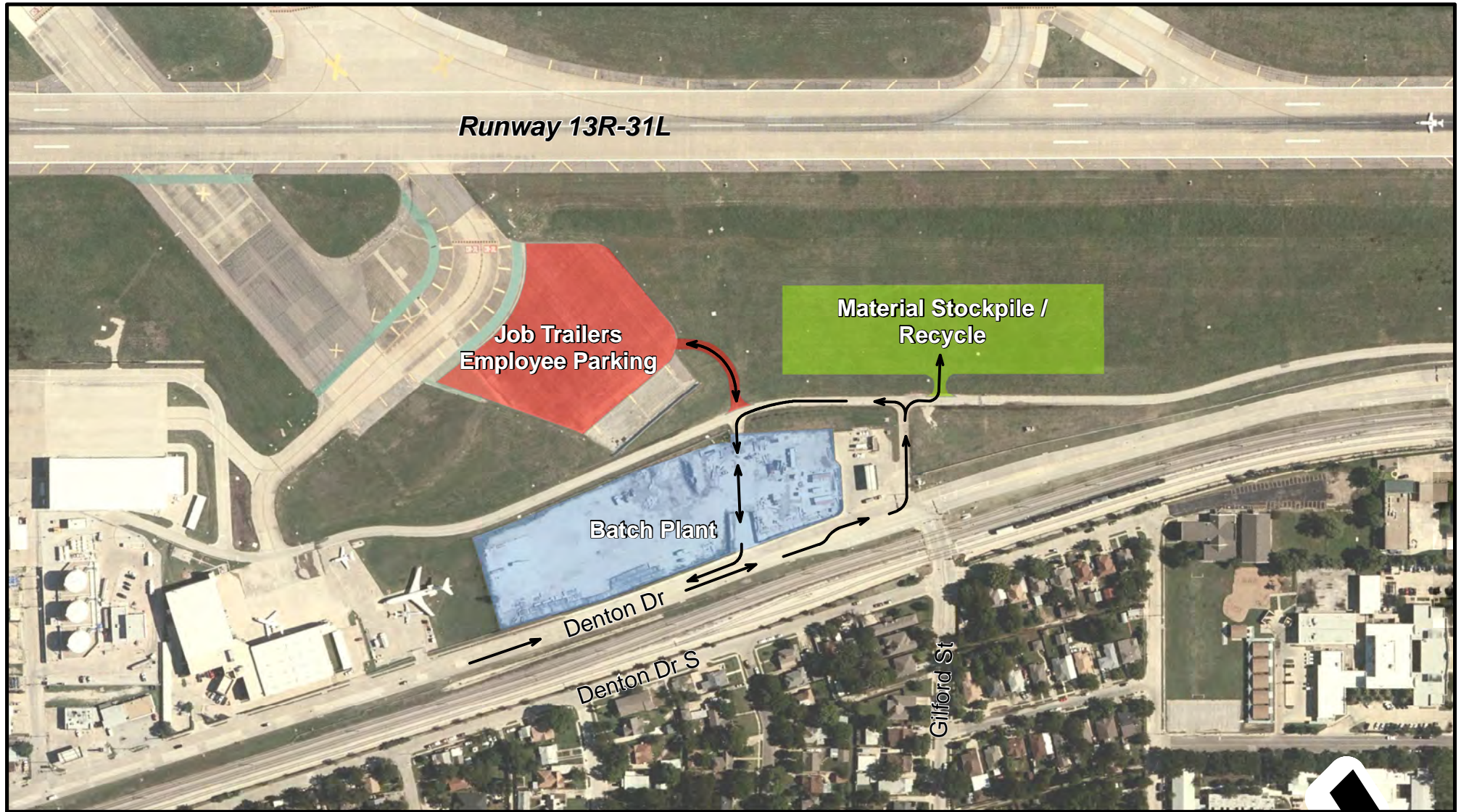


- LEGEND**
- Reconstructed Pavement
  - New Taxiway Pavement
  - New Vehicle Service Road (VSR)
  - Pavement to be Removed
  - Denton Drive Development (Future Action)

**Figure 1-2**  
**Proposed Action**



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## Legend

- Batch Plant
- Job Trailers / Employee Parking
- Material Stockpile / Recycle
- Haul Route

**Figure 1-3  
Staging Areas**



0 75 150 300 Feet

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- New 90-degree taxiway connectors between Runway 13R-31L and New Partial Parallel Taxiway; and
- New Vehicle Service Road (VSR) to connect existing Perimeter Road segments.

## **1.4 Purpose and Need**

Defining the Purpose and Need is essential in providing a sound justification for the proposed action. In addition, the Purpose and Need is used as the primary foundation to develop reasonable alternatives to the Proposed Action.

The purpose of the Proposed Action is to meet FAA runway and taxiway design criteria while enhancing airfield safety and improving airfield efficiencies associated with Runway 13R-31L. The Proposed Action is needed to address Runway 13R-31L and accompanying taxiway deficiencies to meet FAA design criteria and to reduce airfield inefficiencies.

### **1.4.1 Meet FAA Design Criteria**

Airfield improvements are needed at DAL because certain aspects of the airfield do not meet FAA standards. The following sections define these standards and the associated deficiencies at DAL.

#### **1.4.1.1 Runway and Taxiway Pavement**

In accordance with FAA Advisory Circular (AC) 150/5320-6F, *Airport Pavement Design and Evaluation*, pavements on federally funded FAA projects are designed for a 20-year structural life. The existing Runway 13R-31L overlay has performed beyond its effective 20-year design life as specified by FAA pavement design criteria and exhibits unacceptable PCI values. Multiple taxiway

pavements have also deteriorated to unacceptable PCI levels.

Runway 13R-31L and various taxiway segments have deteriorated due to age and current aircraft traffic volume, which present operational safety concerns. The existing and predicted future PCI of Runway 13R-31L and various taxiway pavements supports the need for reconstruction, and demolition/realignment activities. As part of the Love Field Pavement Management Program (PMP), pavement evaluations are completed to manage airfield pavement and maintain a reasonable maintenance rehabilitation schedule for airport pavements. Airfield pavement evaluations were completed in 2001, 2009, 2015, and 2016, in accordance with American Society for Testing and Materials (ASTM) Standard 5340 “*Standard Test Method for Airport Pavement Condition Index Surveys*.” The Love Field PMP assigns a critical PCI of 70 for primary pavements (runways and some taxiways), a critical PCI of 65 for secondary pavements (taxiways and holding aprons), and a critical PCI of 55 for tertiary pavements (shoulders). Critical PCI values indicate the point where rehabilitation is no longer cost effective. Key considerations from the pavement evaluations include:

- Predicted 2019 PCI of Taxiway D/E (secondary pavement) ranges from 47 to 67 which supports demolition and realignment.
- Predicted 2019 PCI of Taxiway G (secondary pavement) is 61 which supports reconstruction or demolition.
- Predicted 2019 PCI of Taxiway C2/C3 (primary pavement) ranges from 15 to 70 which supports reconstruction or demolition.

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- Predicted 2019 PCI of Taxiway H (secondary pavement) is 65 which supports reconstruction or demolition.
- PCI of keel section (center 75-feet) of Runway 13R-31L supports reconstruction:
  - 2008 PCI of 96 (2008 Report)
  - 2014 PCI of 81 (2015 Report)
  - 2016 PCI of 69 (2016 pavement evaluation update)
  - Predicted 2021 PCI of 58 (2016 pavement evaluation update)
  - Predicted 2026 PCI of 42 (2016 pavement evaluation update)
- PCI of Taxiway C (east of Taxiway D) supports reconstruction:
  - 2014 PCI ranges from 56 to 92 (2015 Report)
  - Predicted 2019 PCI ranging from 37 to 87 (2015 Report)
  - Predicted 2024 PCI ranging from 13 to 83 (2015 Report)
- PCI of Taxiway C (west of Taxiway K) supports reconstruction:
  - 2014 PCI ranges from 64 to 100 (2015 Report)
  - Predicted 2019 PCI ranging from 49 to 96 (2015 Report)
  - Predicted 2024 PCI ranging from 29 to 92 (2015 Report)

#### 1.4.1.2 Runway Safety Area

In accordance with FAA AC 150/5300-13A, change 1, *Airport Design*, runways are

required to have a runway safety area (RSA) which is usually a graded area clear of obstacles. Additionally, all existing structures within the RSA should be capable of supporting aircraft without causing structural damage to the aircraft on occasion. Per FAA design standards, Runway 13R-31L is classified as D-III runway which requires a standard 500-foot RSA. DAL previously had a modification of standards for a 400-foot RSA but recently implemented changes to comply with the full 500-foot RSA standard. The existing grading along Runway 13R-31L for the 50-foot outboard of the previous 400-foot RSA does not meet FAA design standards for a 500-foot RSA.

#### 1.4.1.3 Taxiway Geometry

Multiple taxiway intersections with Runway 13R-31L include wide expanses of pavement that are not compliant with FAA taxiway geometry design criteria per AC 150/5300-13A, change 1, *Airport Design*, paragraph 401(d)(5). Taxiway to runway interface encompassing wide expanses of pavement is not recommended. Existing Taxiway D/E, C4, and the wide expanse of Taxiway E pavement (decommissioned Runway 36 end) currently do not conform to FAA taxiway geometry design criteria. Additionally, the existing Taxiway C intersection at the Runway 13R and 31L ends includes wide expanses of pavement that also do not meet FAA taxiway geometry design criteria.

#### 1.4.2 Reduce Airfield Inefficiencies

There are airfield projects that are needed to improve efficiency of airport operations. Additional information regarding each of these needs is provided in the following sections.

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#### 1.4.2.1 Taxiway Alignment

To meet FAA AC 150/5300-13A, change 1, *Airport Design* standards, relocations and improvements to several taxiways are needed to modify runway / taxiway intersections to reduce the risk of runway incursions. A runway incursion is defined as an unintentional or unauthorized presence of an object, including aircraft, on a runway that could increase the risk for an accident. Methods to reduce runway incursions include avoiding/eliminating:

- Wide expanses of pavement at runway/taxiway crossings that may inhibit a pilot's situational awareness.
- "High energy" taxiway intersections (located in the middle third of the runway).
- Acute angle runway crossings.
- Direct access from an apron area to the runway.

The current airfield configuration provides three crossing points across Runway 13R-31L for tenants south of the runway: Taxiway H, G and D/E. Elimination of Taxiway H is needed to remove direct access from the Southwest Maintenance apron area to the runway, reducing the potential for incursions. The removal of the Taxiway G crossing is needed to eliminate a crossing within the "high energy" zone of the runway and eliminate direct access from the General Aviation facility apron area to the runway. **Figure 1-4** illustrates the high energy and exit zones along the Runway in relation to the existing and proposed taxiway crossings. A crossing point within the "high energy" zone would remain at the reconfigured Taxiway D, however the removal of the wide expanse of pavement at the existing Taxiway D/E end is needed to increase airfield safety.

The reconfiguration of the Taxiway D/E and C4 intersections with Runway 13R-31L to two 90-degree intersections is needed to eliminate wide expanses of pavement and acute angle runway crossings, and to reduce the total crossings within the "high energy" zone.

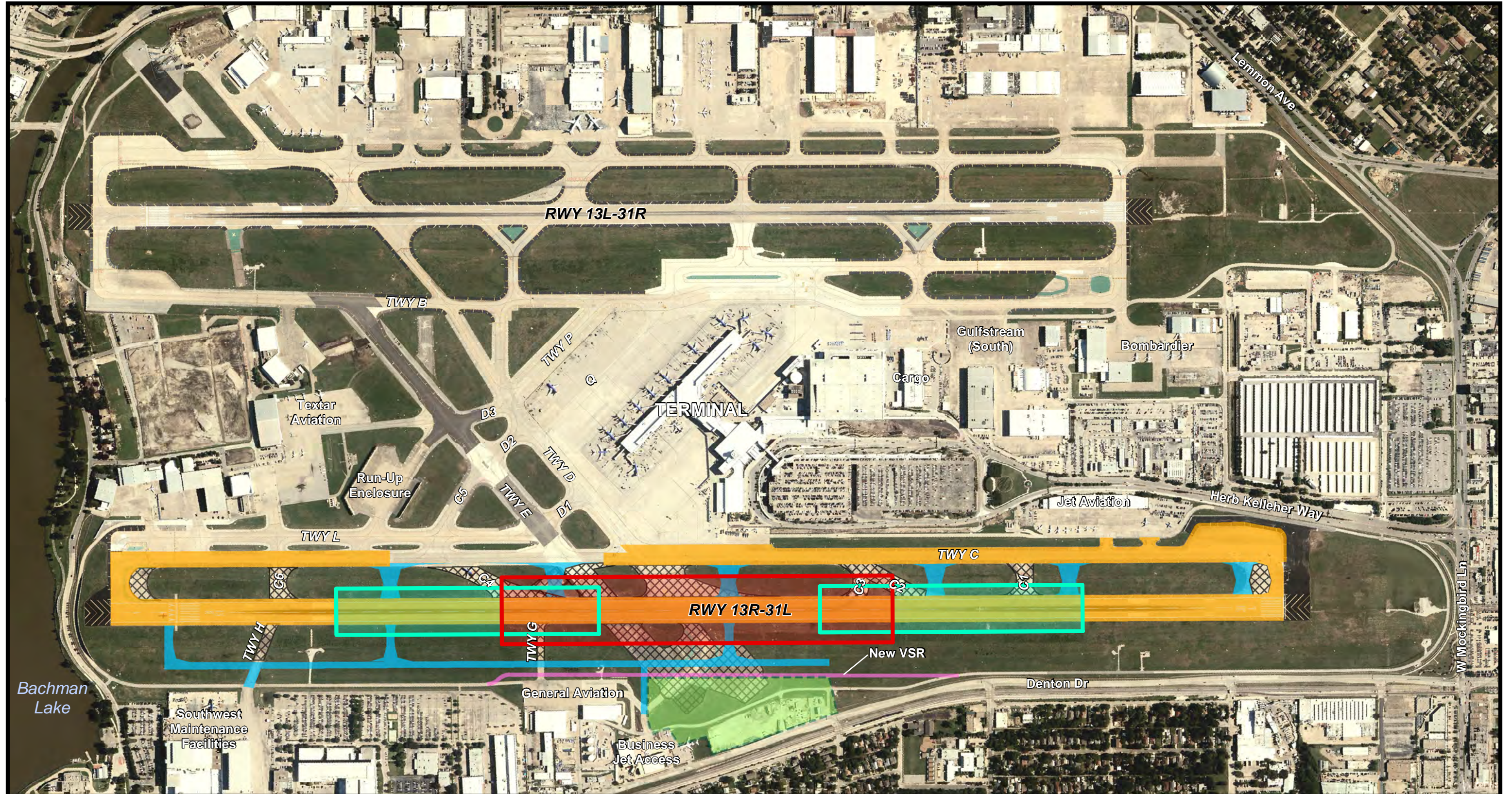
The reconfiguration of the Taxiway C1, C2, and C3 intersections with Runway 13R-31L to two 90-degree intersections is needed to eliminate taxiway crossings within the "high energy" zone (C2 and C3), while still providing two new crossings within the exit zone.

Taxiway C converges at the 13R and 31L runway ends and creates a large expanse of pavement. According to AC 150/5300-13A, change 1, *Airport Design* this could lead to pilot disorientation. The removal of existing pavement is needed to eliminate the wide expanses of pavement at the runway ends.

#### 1.4.2.2 Partial Parallel Taxiway

In accordance with AC 150/5300-13A, change 1, *Airport Design*, an airport's taxiway system should allow for non-circuitous taxiing routes between the runway and other airport facilities such as hangars and aprons. Additionally, paragraph 405 of the AC recommends "the taxiway system include a parallel taxiway that extends the full length of the runway and for high density traffic, airport planners should consider multiple access points to runways through the use of multiple parallel taxiways." At DAL, there is a parallel taxiway on the north side of Runway 13R-31L and no parallel taxiway on the south side of the runway. Aircraft traveling to and from the facilities on the south side of the runway have to cross the runway and taxi along parallel Taxiway C. A partial parallel taxiway is needed to





## LEGEND

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|---|---|
| <span style="color: red;">■</span> High Energy Zone                     | <span style="color: orange;">■</span> Reconstructed Pavement                              |
| <span style="color: green;">■</span> Exit Zone                          | <span style="color: blue;">■</span> New Taxiway Pavement                                  |
|   | <span style="color: magenta;">■</span> New Vehicle Service Road (VSR)                     |
| <span style="border: 1px dashed black;">■</span> Pavement to be Removed | <span style="border: 1px dashed green;">■</span> Denton Drive Development (Future Action) |

**Figure 1-4**  
**High Energy and Exit Zones**



0 350 700 1,400 Feet

Source: HNTB Preliminary Design and DAL Ultimate Airport Layout Drawing (08/2018).



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increase airfield efficiencies and eliminate the need for tenants on the south side to cross the runway to reach the 13R threshold.

It should be noted that a future apron development along Denton Drive is planned that would connect to the proposed partial parallel taxiway at its southern end. The Denton Drive development will be part of a separate environmental review.

#### 1.4.2.3 Vehicle Service Road

The existing vehicle service road on the south side of Runway 13R-31L (Perimeter Road) requires multiple turns to navigate around the existing expanse of Taxiway D/E pavement (decommissioned Runway 36 end). Following demolition of the Taxiway D/E pavement, the Perimeter Road will need to be realigned to eliminate the confusion and inefficiencies associated with multiple turn movements around the airfield.

### 1.5 Requested Federal Action

The requested federal actions include:

- FAA unconditional approval of the Sponsor's Proposed Action as depicted on the Airport Layout Plan (ALP), pursuant to 49 United States Code (USC) 40103(b) and 47107(a)(16). The FAA's approval includes a determination that the EA satisfies the applicable environmental statutes and regulations, including those identified in FAA Orders 1050.1F and 5050.4B.
- Determination under 49 USC § 44502(b) that the Proposed Action is reasonably necessary for use in air commerce or in the interests of national defense.

- Continued close coordination with the Sponsor and appropriate FAA program offices, as required, to ensure safety during construction in accordance with 14 CFR Part 139, *Airport Certification*, under 49 USC 44706.

### 1.6 Timeframe for Implementation

Reconstruction of Runway 13R-31L and the associated improvements are scheduled to be completed in late 2020, 2021, and early 2022 over an approximately 18-month period. It is anticipated that construction of initial improvements would begin in October of 2020 with full runway closure for a maximum of nine months to begin as early as January 5, 2021 and as late as mid-February 2021, with the runway re-opening prior to the 2021 holiday season. The final phase of Taxiway C reconstruction would occur in early 2022.

### 1.7 Document Organization

- *Chapter One Purpose and Need:* Provides a brief description of the Airport and the Proposed Action, its purpose, and why it is needed.
- *Chapter Two Alternatives:* Provides an overview of the identification of alternatives considered as part of the environmental evaluation process.
- *Chapter Three Affected Environment:* Describes existing environmental conditions within the project study area.
- *Chapter Four Environmental Consequences:* Discusses and compares the environmental impacts associated with the Proposed Action



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Alternative and the No Action Alternative.

- *Chapter Five Coordination and Public Involvement:* Discusses the coordination and public involvement associated with the EA process.
- *Chapter Six List of Preparers.*
- *Chapter Seven List of Abbreviations and Acronyms.*
- *Appendices:* Contain various reference material, including technical information and record of coordination activities.

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**Endnotes**

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<sup>1</sup> The Wright Amendment of 1979 was a federal law that limited non-stop flights from DAL to destinations within Texas and neighboring states in order to encourage airline use of Dallas Fort Worth International Airport (DFW), the new airport at the time. The law was amended to allow flights from DAL to additional states in 1997 and 2005, was partially repealed in 2006, and fully repealed in 2014, allowing airlines to fly from DAL to any U.S. city.